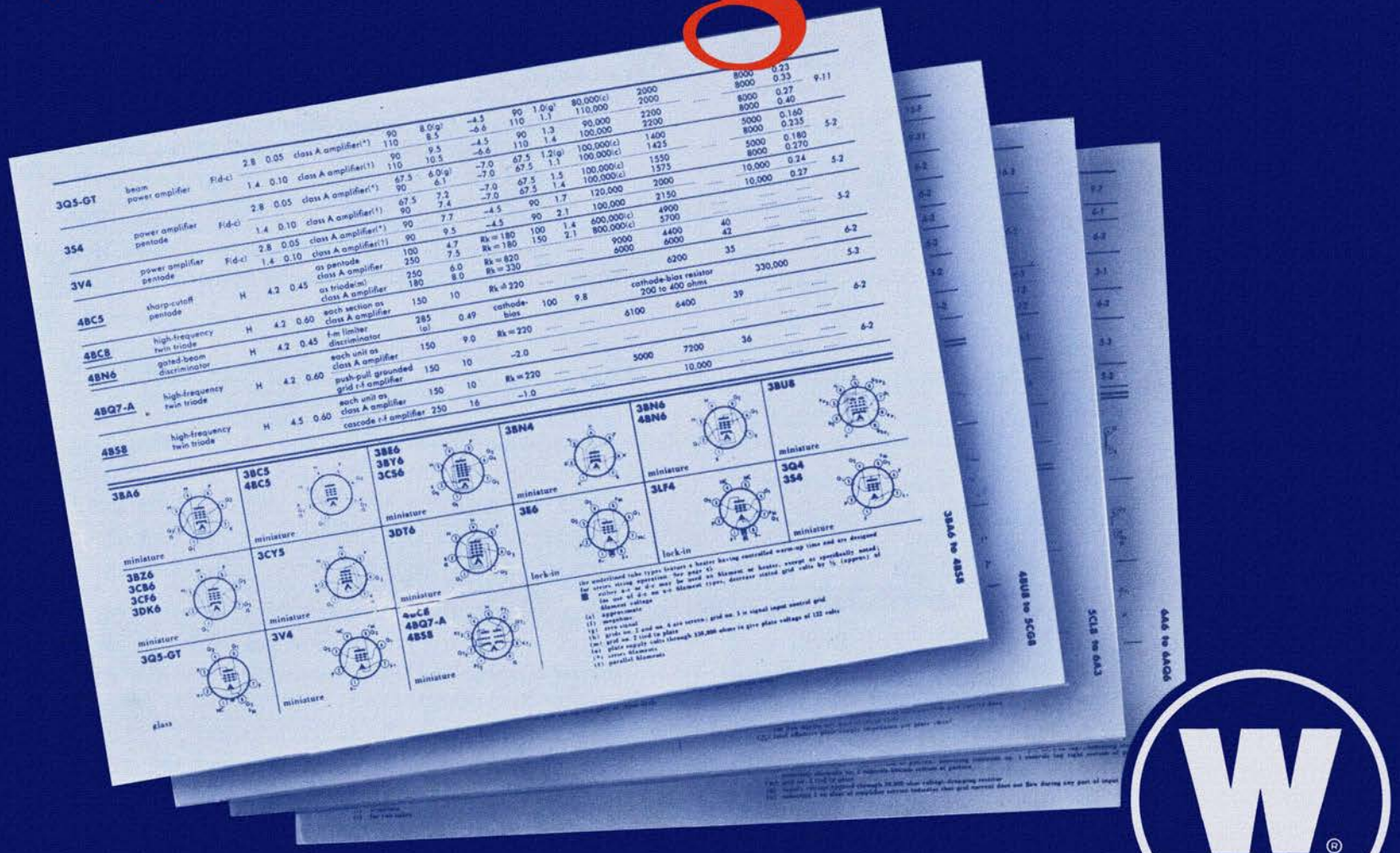
Westinghouse®



ready guide for receiving tubes

electronic tubes . . . and Westinghouse

Westinghouse is justifiably proud of nearly 40 years of experience in the development, manufacture and application of electronic tubes. The Westinghouse Electronic Tube Division is continuing to make noteworthy contributions to the art in its plants at Bath and Elmira, N. Y. The Electronic Tube Division with its modern facilities and experienced personnel is turning out tubes of great reliability and superior performance for use in radio and television entertainment and in the various industrial fields.

your ready guide is easy to use

Your **ready guide** was prepared to present a convenient source of essential data on Westinghouse receiving tubes to service technicians, amateurs and engineers. The more than 600 tubes described in this book represent more than 95% of the tubes involved in radio and television servicing.

For your ease of use, the following features have been incorporated: large, clear tube socket diagrams on the same page as the associated data; tube type numbers are bold for quick location; data in open style for easy readability; footnotes and cross-references reduced to a practical minimum.

definition of data

Except where indicated to the contrary, the data with each tube represents typical characteristics that an average tube would exhibit in conventional circuits under the given conditions. For a few special-service tubes, maximum ratings are given and identified as such.

type number

The tube type numbers are listed in numerical-alphabetical sequence by type *number* without regard to the structure or application. Tube types having the same basic type number are in sequence (such as 6F6, 6F6-G, 6F6-GT). The suffix letters indicate the structural elements: *-G* indicates a glass bulb with octal base; *-GT* indicates a T-9 straight-side glass bulb with octal base; *-Y* indicates a base of special low-loss material; *-A*, *-B* etc. indicate modified types which can replace earlier versions having the same basic type number. The structure of each tube type is further clarified by the description (miniature, metal, glass, lock-in) given with its socket diagram.

cathode

The cathode supplies the electrons necessary for tube operation; the electrons are released usually by heat provided by the passage of current. The cathode may be either a filament, indicated by *F*; or an indirectly-heated cathode, indicated by *H*. Some filaments may be operated with either a-c or d-c supply; other filaments are operated with d-c supply only, indicated by *F(d-c)*. The required voltage and current for either a filament or an indirectly-heated cathode are given in the fourth and fifth columns.

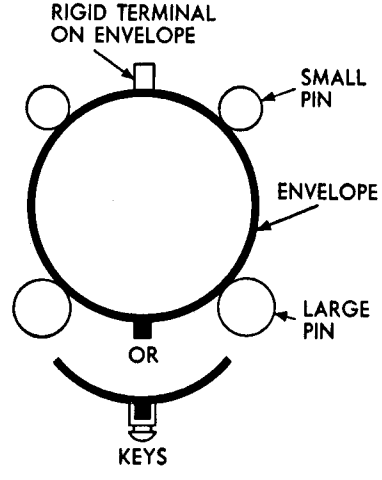
reference point

For grid-bias voltages, positive-electrode voltages and supply voltages, the reference point is: the negative terminal of filaments operating on d-c; the electrical mid-point of filaments operating on a-c (center-tap of filament transformer or shunting resistor); or the cathode of indirectly-heated unipotential cathodes.

key to socket connection diagrams

abbreviations used on diagrams for identification of pins

- BC • base sleeve
- BS • base shell
- F • filament
- F_m • filament mid-tap
- G • grid
- H • heater
- H_1 • heater tap for panel lamp
- H_m • heater mid-tap
- IC • internal connection; do not use
- IS • internal shield
- K • cathode
- NC • no connection
- P • plate or anode
- RC • ray-control electrode
- S • shell
- TA • target
- U • unit



The following subscripts are used to differentiate between units in multi-unit tube types:

- B • beam unit
- D • diode unit
- HP • heptode unit
- HX • hexode unit
- PN • pentode unit
- T • triode unit
- TT • tetrode unit

definitions

maximum ratings

for rectifier, TV deflection and damper-type tubes only.

maximum peak inverse voltage: This is the highest instantaneous plate voltage which the tube can withstand recurrently in the direction opposite to that in which it is designed to pass current. The peak inverse voltage depends on the individual characteristics of the circuit rather than on purely calculated values. Measured values, therefore, should not exceed the rated values for the tubes. In single-phase rectifier circuits, the peak inverse plate voltage may be as much as 2.8 times the rms value of the applied plate voltage.

maximum peak plate current: This is the highest instantaneous plate current that a tube can safely carry in the direction of normal current flow. The value of this quantity is related to the duration of the plate-current pulse in each cycle.

maximum d-c output current: This is the highest average plate current which can be handled continuously. Under conditions of steady load, the average d-c plate current can be measured with a d-c meter.

transconductance (control-grid — plate transconductance)

This may be defined as the ratio of a small change in a plate current to the small change in control-grid voltage producing it, with all other voltages held constant. It is also the quotient of amplification factor divided by the plate resistance.

amplification factor

This is the ratio of the change in plate voltage to a change in control-grid voltage with the plate current remaining unchanged and all other electrode voltages held constant. It is a measure of the effectiveness of the control-electrode voltage relative to that of the plate voltage upon the plate current.

plate resistance

This is the resistance to the flow of alternating current in the grid-to-plate path. It is defined as the quotient of a small change in plate voltage divided by the corresponding change in plate current, with all other electrode voltages held constant.

conversion transconductance

The conversion transconductance of a frequency converter or mixer is defined as the quotient of a small change in the output intermediate-frequency current divided by the small change in the input radio-frequency voltage producing it.

types of amplifiers

class A: In this type of amplifier, the grid bias and alternating grid voltages are such that plate current in a specific tube flows at all times. In the ideal class A amplifier, the alternating component of the plate current is an exact reproduction of the form of the alternating grid voltage. It is characterized by low efficiency and output.

class AB: In this type of amplifier the grid bias and alternating grid voltages are such that plate current in a specific tube flows for appreciably more than half but less than the entire electrical cycle. Efficiency and output are intermediate to those of class A and class B amplifiers. Subscript 1 is used to indicate that grid current does not flow during any part of the input cycle. Subscript 2 indicates that grid current flows during some part of the cycle.

class B: In this type of amplifier the grid bias is approximately equal to the cutoff value — so that plate current is approximately zero when no exciting grid voltage is applied; and so that plate current in a specific tube flows for approximately one-half of each cycle when alternating grid voltage is applied. In the ideal class B amplifier, the alternating component of plate current is an exact reproduction of the form of the alternating grid voltage for the half cycle when the grid is positive with respect to the grid bias, and plate current flows during one-half of the electrical cycle. It is characterized by medium efficiency and output.

class C: In this type of amplifier, the grid bias is appreciably larger than the cutoff bias so that plate current is zero when no alternating grid voltage is applied, and plate current flows for appreciably less than one-half cycle when alternating grid voltage is applied. In class C amplifiers, the relation between input and output is not linear, and plate circuit efficiency and power output are high.

controlled heater warm-up time

When electron tube heaters are operated in series, the heaters of individual tubes whose heating time is short are subject to voltage surges when the set is turned on. These surges tend to reduce heater life and with the increased number of heaters in a series string in a television receiver, these surges reach serious magnitude. In order to reduce the surges applied to individual tubes in this type of service, uniformity of heating time is essential. This is accomplished by control, during manufacture, of factors affecting heating rate to produce a variety of tube types having uniform warm-up characteristics.

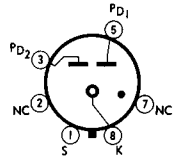
These tubes are identified in the data section by underlined type numbers. "Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current."

The standardized heater warm-up time for tubes listed in this book is 11 seconds.

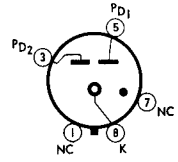
Inclusion of a tube type in this booklet does not necessarily imply availability of that type from Westinghouse

type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg—47
OZ4	full-wave gas rectifier	cold	.....	.....	rectifier	starting-supply peak voltage per plate: 300 volts (min) d-c output current: 75 ma (max); 30 ma (min)						peak plate current: 200 ma (max) d-c output voltage: 300 volts (max)				8-3
OZ4-G																7-A
1A3	h-f diode	H	1.4	0.15	detector rectifier	peak inverse voltage: 330 volts (max) peak plate current: 5 ma peak heater-cathode voltage: 140 volts (max)						d-c output current: 0.5 ma (max) typical a-c plate voltage, rms: 117 volts				5-2
1A5-GT	power amplifier pentode	F(d-c)	1.4	0.05	class A amplifier	85 90	3.5 4.0	–4.5 –4.5	85 90	0.7 0.8	300,000 300,000	800 850	....	25,000 25,000	0.100 0.115	9-11
1A7-GT	pentagrid converter (b)	F(d-c)	1.4	0.05	converter	90	0.6	0	45(a)	0.7	600,000	anode-grid (no. 2): 90 volts (max); 1.2 ma oscillator-grid (no. 1) resistor: 0.2 meg conversion transconductance: 250 μmhos				9-18
1AB5	pentode	F(d-c)	1.2	0.13	remote cut-off r-f amplifier	90 150	3.5 6.8	0(d) –1.5	90 150	0.8 2.0	275,000(c) 125,000(c)	1100 1350	....	....	....	9-32
1AG4	power pentode	F	1.25	0.04	class A amplifier	41.4	2.4	–3.6	41.4	0.6	180,000	1000	.....	12,000	0.035	2X3-A
1AH4	r-f pentode	F	1.25	0.04	class A amplifier	45	0.75	.....	45	0.2	1.5(f)	750	grid 1 resistor: 0.5 megohm			2X3-A
1AJ5	diode: pentode	F	1.25	0.04	class A amplifier	45	1.0	.....	45	0.3	300,000	425	grid 1 resistor: 5 megohms			2X3-A
1AX2	half-wave high-voltage rectifier	F	1.4	0.65	rectifier	peak inverse plate voltage: 25,000 volts (n) (max) peak plate current: 11 ma (c) (max)						d-c output current: 1.1 ma (n) (max)				6-7
1B3-GT	half-wave high-voltage rectifier	F	1.25	0.2	rectifier	peak plate current: 17 ma (max) peak inverse plate voltage: 30,000 volts (max)						average plate current: 2 ma (max) supply voltage frequency: 300 kc (max)				9-A
1C5-GT	power amplifier pentode	F(d-c)	1.4	0.1	class A amplifier	83 90	7.0 7.5	–7.0 –7.5	83 90	1.6 1.6	110,000 115,000	1500 1550	....	9000 8000	0.20 0.24	9-11
1D8-GT	diode: triode: power amplifier pentode	F(d-c)	1.4	0.1	pentode unit as class A amplifier	45 90	1.6 5.0	–4.5 –9.0	45 90	0.3 1.0	300,000 200,000	650 925	....	20,000 12,000	0.035 0.200	9-17
					triode unit as class A amplifier	45 90	0.3 1.1	0 0	....	....	77,000 43,500	325 575	25 25	....	....	
1G3-GT	half-wave high-voltage rectifier	F	1.25	0.20	rectifier	max peak inverse plate voltage: 26,000 volts max peak plate current: 50 ma						max average plate current: 0.5 ma				9-B
1G4-GT	medium-mu triode	F(d-c)	1.4	0.05	class A amplifier	90	2.3	–6.0	.....	.....	10,700	825	8.8	.....	.....	9-11
1G6-GT	twin-triode amplifier	F(d-c)	1.4	0.10	class A amplifier (each section)	90	1.0	0	.....	.....	40,000(c)	825	33	.....	.....	9-11
					class B amplifier	90	.....	0	power output is for one tube at stated plate-to-plate load					12,000	0.350	
1H5-GT	diode: high-mu triode	F(d-c)	1.4	0.05	triode unit as class A amplifier	90	0.15	0	.....	.....	240,000	275	65	.....	.....	9-18
1J3	half-wave high-voltage rectifier	F	1.25	0.20	rectifier	max peak inverse plate voltage: 26,000 volts max peak plate current: 50 ma						max average plate current: 0.5 ma				9-A
1L4	r-f amplifier pentode	F(d-c)	1.4	0.05	class A amplifier	90 90	2.9 4.5	0 0	67.5 90	1.2 2.0	600,000 350,000	925 1025	....	....	....	5-2
1L6	pentagrid converter	F(d-c)	1.4	0.05	converter	90	0.5	0	45	0.6	650,000(c)	300(e)	E_{C2} (oscillating plate) = 90 I_{C2} = 1.2 ma			5-2
1LA4	power amplifier pentode	F(d-c)	1.4	0.05	class A amplifier	85 90	3.5 4.0	–4.5 –4.5	85 90	0.7 0.8	300,000 300,000	800 850	....	25,000 25,000	0.100 0.115	9-30

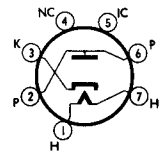
1LA6	pentagrid converter	F(d-c)	1.4	0.05	converter	90	0.55	0	45(a)	0.6	750,000	anode-grid (no. 2): 90 volts (max); 1.2 ma oscillator-grid (no. 1) resistor: 0.2 meg conversion transconductance: 250 μmhos				9-30
1LB4	power amplifier pentode	F(d-c)	1.4	0.05	class A amplifier	45 67.5 90	1.6 3.8 5.0	−4.5 −6.0 −9.0	45 67.5 90	0.3 0.8 1.0	400,000 300,000 250,000	650 875 925	....	20,000 16,000 12,000	0.035 0.100 0.200	9-30
1LC5	r-f amplifier pentode	F(d-c)	1.4	0.05	class A amplifier	45 90	1.10 1.15	0 0	45 45	0.35 0.30	700,000 1.0(f)	750 775	....	....	....	9-30
1LC6	pentagrid converter	F(d-c)	1.4	0.05	converter	45 90	0.70 0.75	0 0	35 35	0.75 0.70	300,000 650,000	anode-grid (no. 2): 45 volts (max); 1.4 ma oscillator-grid (no. 1) resistor: 1.0 meg conversion transconductance: 275 μmhos				9-30
1LD5	diode: pentode	F(d-c)	1.4	0.05	pentode unit as class A amplifier	45 90	0.55 0.60	0 0	45 45	0.12 0.10	750,000 750,000	550 575	....	....	....	9-30
1LE3	medium-mu triode	F(d-c)	1.4	0.05	class A amplifier	90 90	4.5 1.4	0 −3	....	....	11,200 19,000	1300 760	14.5 14.5	....	....	9-30
1LH4	diode: high-mu triode	F(d-c)	1.4	0.05	triode unit as class A amplifier	90	0.15	0	.....	.....	240,000	275	65	.....	.....	9-30

OZ4 

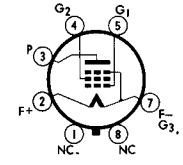
metal

OZ4-G 

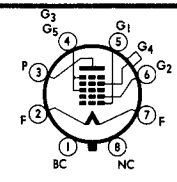
glass

1A3 

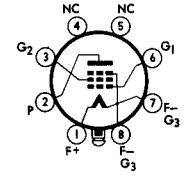
miniature

1A5-GT
1C5-GT 

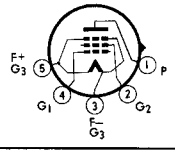
glass

1A7-GT 

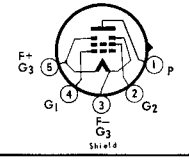
glass

1AB5 

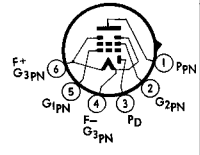
lock-in

1AG4 

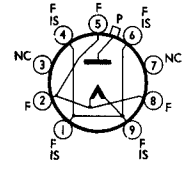
sub-min.

1AH4 

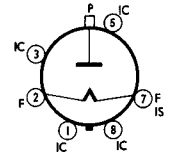
sub-min.

1AJ5 

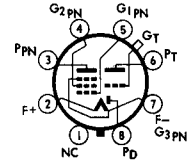
sub-min.

1AX2 

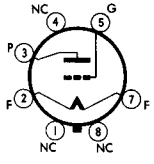
miniature

1B3-GT
1G3-GT
1J3 

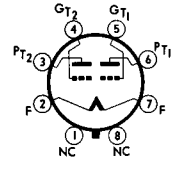
glass

1D8-GT 

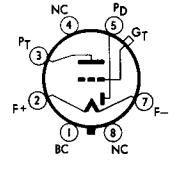
glass

1G4-GT 

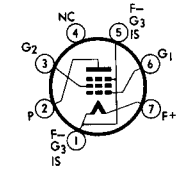
glass

1G6-GT 

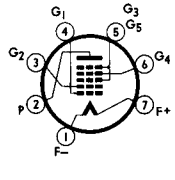
glass

1H5-GT 

glass

1L4 

miniature

1L6 

miniature

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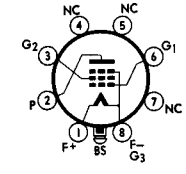
1LB4 

lock-in

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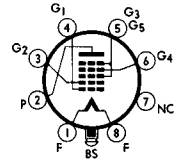
1LC6 

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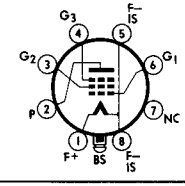
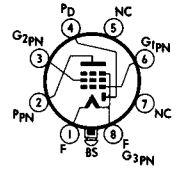
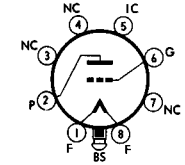
1LC5 

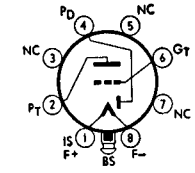
lock-in

1LD5 

lock-in

1LE3 

lock-in

1LH4 

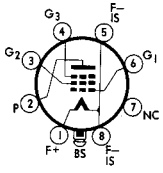
lock-in

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage
(a) obtained preferably by using 70,000-ohm voltage-dropping resistor in series with 90-volt supply
(b) grids no. 3 and no. 5 are screen; grid no. 4 is signal input grid
(c) approximate
(d) with zero bias, a resistance of at least 1.0 megohm should be in the grid circuit
(e) conversion transconductance
(f) megohms
(n) absolute maximum rating

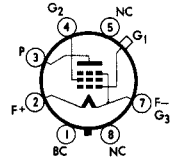
type number	name	cathode			typical use	plate		grid bias*	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
1LN5	r-f amplifier pentode	F(d-c)	1.4	0.05	class A amplifier	90	1.6	0	90	0.35	1.1(f)	800	.....	.....	.....	9-30
1N5-GT	r-f amplifier pentode	F(d-c)	1.4	0.05	class A amplifier	90	1.2	0	90	0.3	1.5(f)	750	.....	.....	.....	9-18
1P5-GT	remote-cutoff pentode	F(d-c)	1.4	0.05	class A amplifier	90	2.3	0	90	0.7	800,000	750	.....	.....	.....	9-18
1Q5-GT	beam power amplifier	F(d-c)	1.4	0.1	class A amplifier	85 90	7.0(g) 9.5(g)	–5.0 –4.5	85 90	0.8(g) 1.3(g)	70,000(c) 90,000(c)	1950 2200	....	9000 8000	0.25 0.27	9-11
1R5	pentagrid converter (h)	F(d-c)	1.4	0.05	converter	45 90	0.7 1.6	0 0	45 67.5	1.9 3.2	600,000 600,000	grid no. 1 resistor: 100,000 ohms conversion transconductance: 300 μmhos				5-2
1S4	power amplifier pentode	F(d-c)	1.4	0.1	class A amplifier	45 90	3.8 7.4	–4.5 –7.0	45.0 67.5	0.8 1.4	100,000 100,000	1250 1575	....	8000 8000	0.065 0.270	5-2
1S5	diode: pentode	F(d-c)	1.4	0.05	pentode unit as a-f amplifier	67.5	1.6	0	67.5	0.4	600,000(c)	625	.....	.....	.....	5-2
1T4	r-f pentode	F(d-c)	1.4	0.05	class A amplifier	45 90	1.7 3.5	0 0	45.0 67.5	0.7 1.4	350,000 500,000	700 900	....	....	....	5-2
1T5-GT	beam power amplifier	F(d-c)	1.4	0.05	class A amplifier	90	6.5	–6.0	90	0.8	250,000(c)	1150	.....	14,000	0.17	9-11
1U4	r-f pentode	F(d-c)	1.4	0.05	class A amplifier	90	1.6	0	90	0.50	1.0(f)	900	.....	.....	.....	5-2
1U5	diode: pentode	F(d-c)	1.4	0.05	pentode unit as class A amplifier	67.5	1.6	0	67.5	0.4	600,000(c)	625	.....	.....	.....	5-2
1-v	half-wave rectifier	H	6.3	0.3	with capacitive-input filter	a-c plate voltage (rms): 325 volts max) d-c output current: 45 ma (max)						effective plate-supply impedance, minimum total: up to 117 volts, 0 ohms; at 150 volts, 30 ohms; at 325 volts, 75 ohms				12-5
1V2	half-wave rectifier	F	0.625	0.3	pulsed rectifier	peak inverse plate voltage: 8250 volts (max) peak plate current: 11 ma (max)						average plate current: 0.6 ma (max)				6-2
1V6	triode: pentode converter	F	1.25	0.04	triode as oscillator	45	0.4	.....	.....	.....	grid current: 12 μamp	grid resistor: 1 megohm				2X3-A
					pentode as mixer	45	0.4	.....	45	0.15	grid 1 resistor: 5 megohms					
1X2-B	half-wave high-voltage rectifier	F	1.25	0.2	rectifier	peak inverse plate voltage: 22,000 volts (max) peak plate current: 45 ma (c) (max)						d-c output current: 0.5 ma (max)				6-7
2A3	power amplifier triode	F	2.5	2.5	class A amplifier	250	60.0	–45.0	.....	.....	800	5250	4.2	2500	3.5	16-1
					push-pull class AB_1 amplifier(u)	300 300	80.0(i) 80.0(i)	cath. bias: 780 ohms (for two tubes) fixed bias: –62 volts				.....	.....	5000 3000	10.0(j) 15.0(j)	
2A5	power amplifier pentode	H	2.5	1.75	class A amplifier	250 285	34.0 38.0	–16.5 –20.0	250 285	6.5 7.0	80,000 78,000	2500 2550	....	7000 7000	3.2 4.8	14-1
2AF4	UHF triode	H	2.35	0.60	class A amplifier	80	17.5	Rk = 150	.....	.....	2100	6500	13.5	.....	.....	5-2
2AF4-A					1000 Mc oscillator	100	17.5	grid resistor: 10,000 ohms			grid current: 750 μamp		plate load: 220 ohms			5-1
2B3	half-wave high-voltage rectifier	F	1.75	0.25	rectifier	peak inverse plate voltage: 27,000 volts (max.) peak plate current: 50 ma							dc output current: 1.0 ma			9-A
2BN4	medium-mu triode	H	2.3	0.60	class A amplifier	150	9.0	Rk = 200	.....	.....	6300	6800	43	.....	.....	5-2
2CY5	sharp cutoff r-f tetrode	H	2.4	0.60	class A amplifier	125	10.0	–1	80	1.4	125,000	8000	.....	.....	.....	5-2

2X2-A	half-wave rectifier	H	2.5	1.75	rectifier	d-c output current: 7.5 ma (max.) peak inverse voltage: 12,500 volts (max.)						peak plate current: 60 ma (max.) typical rms supply voltage: 5500 volts			12-6
3A2	half-wave rectifier	H	3.15	0.22	TV high voltage rectifier	peak inverse plate voltage: 18,000 volts (max.) peak plate current: 80 ma.						average plate current: 1.5 ma.			6-A
3A3	half-wave rectifier	H	3.15	0.22	TV high voltage rectifier	peak inverse plate voltage: 30000 volts (max.) peak plate current: 80 ma. (max.)						average plate current: 1.5 ma. (max.)			9-A
3AF4-A	UHF triode	H	3.2	0.45	class A amplifier	80	17.5	Rk = 150	.....	.....	2100	6500	13.5	.....	.....	5-1
					1000 Mc oscillator	100	17.5	grid resistor: 10,000 ohms			grid current: 750 μamp		plate load: 220 ohms			
3AL5	twin diode	H	3.15	0.60	detector rectifier	maximum inverse plate voltage: 330 volts peak plate current: 54 ma							d-c output current: 9 ma		5-1
3AU6	r-f amplifier pentode	H	3.15	0.60	as pentode class A amplifier	100 250	5.0 10.6	cathode-bias	100 150	2.1 4.3	500,000 1.0(f)	3900 5200	cath.-bias resistor: 150 ohms cath.-bias resistor: 68 ohms			5-2
					as triode class A amplifier	250	12.2	cathode-bias	.....	.....	.....	4800	cath.-bias resistor: 330 ohms			
3AV6	twin diode: high-mu triode	H	3.15	0.60	triode unit as class A amplifier	100 250	0.5 1.2	−1.0 −2.0	.....	.....	80,000 62,500	1250 1600	100 100	.....	.....	5-2

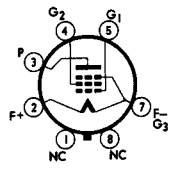
1LN5 lock-in



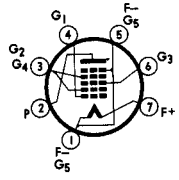
1N5-GT
1P5-GT glass



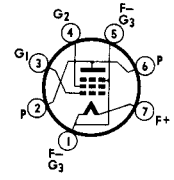
1Q5-GT
1T5-GT glass



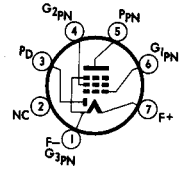
IR5 miniature



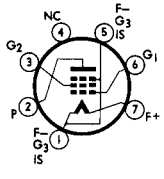
1S4 miniature



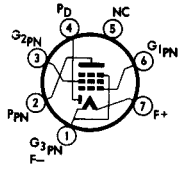
1S5 miniature



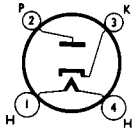
1T4
1U4 miniature



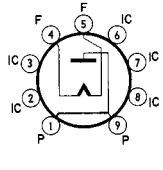
1U5 miniature



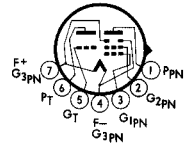
1-V glass



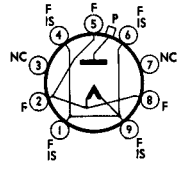
1V2 miniature



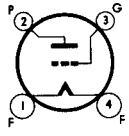
1V6 sub-min.



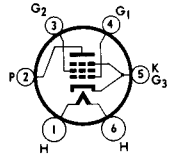
1X2-B miniature



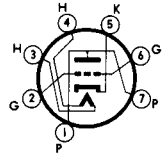
2A3 glass



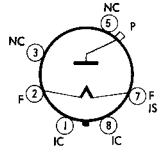
2A5 glass



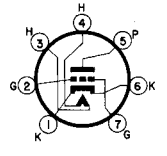
2AF4
2AF4-A
3AF4-A miniature



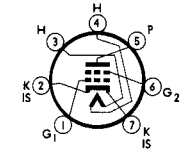
2B3 glass



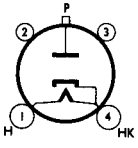
2BN4 miniature



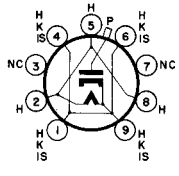
2CY5 miniature



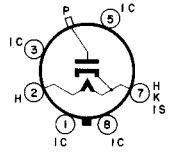
2X2-A glass



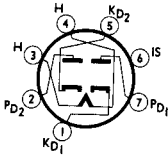
3A2 miniature



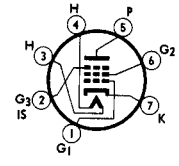
3A3 glass



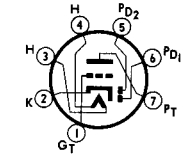
3AL5 miniature



3AU6 miniature



3AV6 miniature



the underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

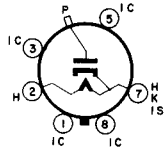
(c) approximate
(f) megohms
(g) zero signal input control grid
(h) grids no. 2 and no. 4 are screen; grid no. 3 is signal

(i) for two tubes
(j) power output is for two tubes at stated plate-to-plate load
(u) subscript 1 on class of amplifier service indicates that grid current does not flow during any part of input cycle

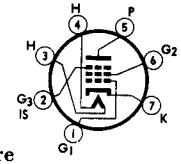
type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	transconductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen. index
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	pg–47
3B2	half-wave high-voltage rectifier	H	3.15	0.22	TV high voltage rectifier	peak inverse plate voltage: 35,000 volts (max) average plate current: 1.1 ma (max)										12-G
3BA6	r-f amplifier pentode	H	3.15	0.60	class A amplifier	100 250	10.8 11.0	Rk=68 Rk=68	100 100	4.4 4.2	250,000 1.0(f)	4300 4400	....	....	....	5-2
3BC5	sharp-cutoff pentode	H	3.15	0.60	as pentode class A amplifier	100 250	4.7 7.5	Rk=180 Rk=180	100 150	1.4 2.1	600,000(c) 800,000(c)	4900 5700	....	....	....	5-2
					as triode (m) class A amplifier	250 180	6.0 8.0	Rk=820 Rk=330	....	....	9000 6000	4400 6000	40 42	....	....	
3BE6	pentagrid converter(h)	H	3.15	0.60	converter	100 250	2.6 2.9	–1.5 –1.5	100 100	7.0 6.8	400,000 1.0(f)	grid no. 1 resistor: 20,000 ohms conversion transconductance: 475 μmhos				5-2
3BN4	med-mu triode	H	2.8	0.45	class A amplifier	150	9.0	Rk=200	.....	.....	6300	6800	43	.....	.....	5-2
3BN6	gated-beam discriminator	H	3.15	0.60	f-m limiter discriminator	285 (o)	0.49	cathode-bias	100	9.8	cathode-bias resistor 200 to 400 ohms			330,000		5-3
3BU8	twin pentode	H	3.15	0.60	each section as class A amplifier	100	2.2	0	67.5	3.3	.....	.....	.....	.....	.....	6-3
3BY6	pentagrid amplifier	H	3.15	0.60	class A amplifier	250	6.5	G_3:–2.5 G_1:–2.5	100	9	.....	G_3: 500 G_1: 1900	.....	.....	.....	5-2
					sync clipper and sync separator	10	1.4	G_1: 0 G_3: 0	25	3.5	.....	.....	.....	.....	.....	
3BZ6	r-f pentode	H	3.15	0.60	class A amplifier	125	14	Rk=56	125	3.6	260,000	8000	.....	.....	.....	5-2
3CB6	r-f pentode	H	3.15	0.60	class A amplifier	125	13.0	Rk=56	125	3.7	280,000	8000	.....	.....	.....	5-2
3CF6	r-f pentode	H	3.15	0.60	class A amplifier	125	12.5	Rk=56	125	3.7	300,000	7800	.....	.....	.....	5-2
3CS6	pentagrid amplifier	H	3.15	0.60	sync clipper and sync separator	10	2	G_1: 0 G_3: 0	30	4.5	.....	.....	.....	.....	.....	5-2
3CY5	r-f tetrode	H	2.9	0.45	class A amplifier	125	10.0	–1	80	1.4	125,000	8000	.....	.....	.....	5-2
3DK6	sharp cutoff r-f pentode	H	3.15	0.60	class A amplifier	125	12.0	Rk=56	125	3.8	350,000	9800	.....	.....	.....	5-2
3DT6	dual-control pentode	H	3.15	0.60	class A amplifier	150	1.1	Rk=560	100	2.1	150,000	G_1: 615 G_3: 515	.....	.....	.....	5-2
					f-m detector	250	0.23	G_3:–5 G_1:–2	100	3.4	cathode-bias resistor: 560 ohms					
3E6	sharp-cutoff r-f pentode	F(d-c)	2.8	0.05	class A amplifier(*)	90	2.9	Rg=2 megohms	90	1.2	325,000(c)	1700	.....	.....	.....	9-30
			1.4	0.10	class A amplifier(†)	90	4.2		90	1.7	250,000(c)	2000				
3LF4	beam power amplifier	F(d-c)	2.8	0.05	class A amplifier(*)	90 110	8.0 8.5	–4.5 –6.6	90 110	1.0 1.1	80,000(c) 110,000(c)	2000 2000	.....	8000 8000	0.23 0.33	9-30
			1.4	0.10	class A amplifier(†)	90 110	9.5 10.0	–4.5 –6.6	90 110	1.3 1.4	90,000(c) 100,000(c)	2200 2200	.....	8000 8000	0.27 0.40	
3Q4	power amplifier pentode	F(d-c)	2.8	0.05	class A amplifier(*)	90	7.7	–4.5	90	1.7	120,000	2000	.....	10,000	0.24	5-2
			1.4	0.10	class A amplifier(†)	90	9.5	–4.5	90	2.1	100,000	2150		10,000	0.27	

3Q5-GT	beam power amplifier	F(d-c)	2.8	0.05	class A amplifier(*)	90 110	8.0(g) 8.5	−4.5 −6.6	90 110	1.0(g) 1.1	80,000(c) 110,000	2000 2000	.....	8000 8000	0.23 0.33	9-11
			1.4	0.10	class A amplifier(†)	90 110	9.5 10.5	−4.5 −6.6	90 110	1.3 1.4	90,000 100,000	2200 2200		8000 8000	0.27 0.40	
3S4	power amplifier pentode	F(d-c)	2.8	0.05	class A amplifier(*)	67.5 90	6.0(g) 6.1	−7.0 −7.0	67.5 67.5	1.2(g) 1.1	100,000(c) 100,000(c)	1400 1425	.....	5000 8000	0.160 0.235	5-2
			1.4	0.10	class A amplifier(†)	67.5 90	7.2 7.4	−7.0 −7.0	67.5 67.5	1.5 1.4	100,000(c) 100,000(c)	1550 1575		5000 8000	0.180 0.270	
3V4	power amplifier pentode	F(d-c)	2.8	0.05	class A amplifier(*)	90	7.7	−4.5	90	1.7	120,000	2000	.....	10,000	0.24	5-2
			1.4	0.10	class A amplifier(†)	90	9.5	−4.5	90	2.1	100,000	2150		10,000	0.27	
4BC5	sharp-cutoff pentode	H	4.2	0.45	as pentode	100	4.7	Rk = 180	100	1.4	600,000(c)	4900	.....	.....	.....	5-2
					class A amplifier	250	7.5	Rk = 180	150	2.1	800,000(c)	5700	.....	.....	.....	
					as triode(m)	250	6.0	Rk = 820	.....	.....	9000	4400	40	.....	.....	
					class A amplifier	180	8.0	Rk = 330	.....	.....	6000	6000	42	.....	.....	
4BC8	high-frequency twin triode	H	4.2	0.60	each section as class A amplifier	150	10	Rk = 220	.....	.....	.....	6200	35	.....	.....	6-2
4BN6	gated-beam discriminator	H	4.2	0.45	f-m limiter discriminator	285 (o)	0.49	cathode-bias	100	9.8	cathode-bias resistor 200 to 400 ohms			330,000		5-3
4BQ7-A	high-frequency twin triode	H	4.2	0.60	each unit as class A amplifier	150	9.0	Rk = 220	.....	.....	6100	6400	39	.....	.....	6-2
					push-pull grounded grid r-f amplifier	150	10	−2.0	.....	.....	.....	.....	.....	.....	.....	
4BS8	high-frequency twin triode	H	4.5	0.60	each unit as class A amplifier	150	10	Rk = 220	.....	.....	5000	7200	36	.....	.....	6-2
					cascode r-f amplifier	250	16	−1.0	.....	.....	.....	10,000	.....	.....	.....	

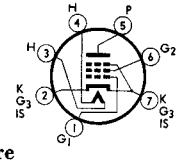
3B2 — glass



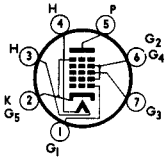
3BA6 — miniature



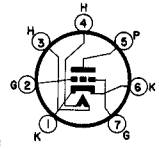
3BC5
4BC5 — miniature



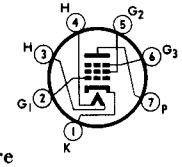
3BE6
3BY6
3CS6 — miniature



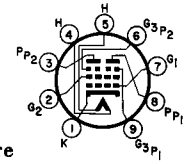
3BN4 — miniature



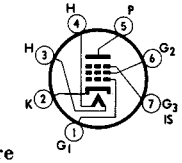
3BN6
4BN6 — miniature



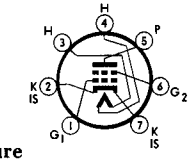
3BU8 — miniature



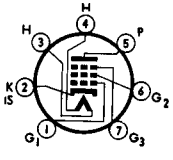
3BZ6
3CB6
3CF6
3DK6 — miniature



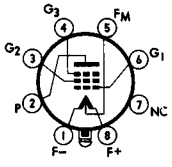
3CY5 — miniature



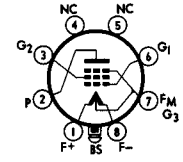
3DT6 — miniature



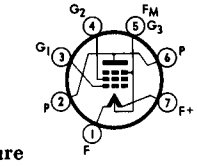
3E6 — lock-in



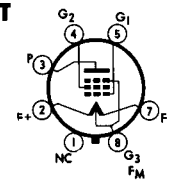
3LF4 — lock-in



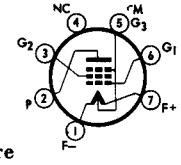
3Q4
3S4 — miniature



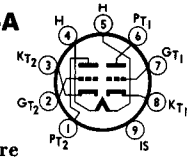
3Q5-GT — glass



3V4 — miniature



4BC8
4BQ7-A
4BS8 — miniature



the underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

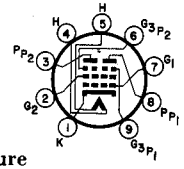
■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(c) approximate
(f) megohms
(g) zero signal
(h) grids no. 2 and no. 4 are screen; grid no. 3 is signal input control grid
(m) grid no. 2 tied to plate
(o) plate supply volts through 330,000 ohms to give plate voltage of 122 volts
(*) series filaments
(†) parallel filaments

type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg—47
4BU8	twin pentode	H	4.2	0.45	each section as class A amplifier	100	2.2	0	67.5	3.3	.....	.....	.....	.....	.....	6-3
4BX8	high-frequency twin triode	H	4.5	0.60	each unit as class A amplifier	65	11	−1.0	.....	.....	.....	6700	25	.....	.....	6-2
					cascode r-f amplifier	125	11	−0.5	.....	.....	.....	7500	.....	.....	.....	
4BZ6	r-f pentode	H	4.2	0.45	class A amplifier	125	14	Rk = 56	125	3.6	260,000	8000	.....	.....	.....	5-2
4BZ7	high-frequency twin triode	H	4.2	0.60	each unit as class A amplifier	150	10	Rk = 220	.....	.....	5600	6800	38	.....	.....	6-2
4CB6	r-f pentode	H	4.2	0.45	class A amplifier	125	13.0	Rk = 56	125	3.7	280,000	8000	.....	.....	.....	5-2
4CE5	r-f pentode	H	4.2	0.45	class A amplifier	125	11	−1	125	2.8	300,000	7600	.....	.....	.....	5-2
4CS6	pentagrid amplifier	H	4.2	0.45	sync clipper and sync separator	10	2	G_1: 0 G_3: 0	30	4.5	.....	.....	.....	.....	.....	5-2
4CY5	sharp-cutoff r-f tetrode	H	4.5	0.30	class A amplifier	125	10.0	−1	80	1.4	125,000	8000	.....	.....	.....	5-2
4DT6	dual-control pentode	H	4.2	0.45	class A amplifier	150	1.1	Rk = 560	100	2.1	150,000	G_1: 615 G_3: 515	.....	.....	.....	5-2
					f-m detector	250	0.23	G_3: −5 G_1: −2	100	3.4	cathode bias resistor: 560 ohms					
5AM8	diode: sharp-cutoff pentode	H	4.7	0.60	pentode unit as class A amplifier	125	12.5	Rk = 56	125	3.2	300,000	7800	.....	.....	.....	6-2
					diode as detector	characteristics similar to one half of a 6AL5						.....	.....	.....	.....	
5AN8	medium-mu triode: sharp-cutoff pentode	H	4.7	0.60	class A amplifier — pentode	125	12	0	125	3.8	170,000	7800	.....	.....	.....	6-2
					triode	150	15	−3	.....	.....	4700	4500	21	.....	.....	
5AQ5	beam pentode	H	4.7	0.60	class A amplifier	180 250	29 45	−8.5 −12.5	180 250	3.0 4.5	58,000 52,000	3700 4100	....	5500 5000	2.0 4.5	5-3
					push-pull class AB_1 amplifier(u)	250	70 (i)	−15.0	250	5.0 (i)	power output is for 2 tubes at stated load			10,000	10	
5AS4	full-wave rectifier	F	5.0	3.0	capacitance-input filter	max. peak inverse voltage: 1550 volts. max. peak plate current: 1.0 amperes					max. d-c output voltage: 460 volts max. d-c output current: 275 ma.					16-3
5AS8	diode: sharp-cutoff pentode	H	4.7	0.60	pentode unit as class A amplifier	200	9.5	Rk = 180	150	3.0	300,000	6200	.....	.....	.....	6-2
5AT8	triode: sharp-cutoff pentode	H	4.7	0.60	pentode as mixer	150	6.2	−3.5	150	1.8	grid no. 1 circuit resistance: 120,000 ohms conversion transconductance: 2100 μmhos					6-2
					triode as oscillator	150	13	grid resistor: 2700 ohms grid current: 3.6 ma	} at 250 Mc.							
5AU4	full-wave rectifier	F	5.0	4.5	capacitance-input filter	max. peak inverse voltage: 1400 volts max. peak plate current: 1075 ma.					max. d-c output voltage: 400 volts max. d-c output current: 325 ma.					12-D
5AV8	medium-mu triode: sharp-cutoff pentode	H	4.7	0.60	class A amplifier — pentode	200	9.5	Rk = 180	150	2.8	300,000	6200	.....	.....	.....	6-2
					triode	200	13	−6.0	.....	.....	5750	3300	19	.....	.....	

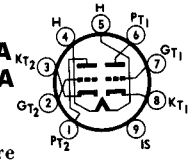
5AW4	full-wave rectifier	F	5.0	3.7	rectifier		peak inverse plate voltage: 1550(n) peak plate current 750 ma d-c output current: 250 ma with voltage drop of 46										12-F
5AZ4	full-wave rectifier	F	5.0	2.0	rectifier with inductive-input filter		a-c voltage per plate (rms): 500 volts (max) peak inverse voltage: 1400 volts (max) value of input choke: 10 henries (min)						d-c output current: 125 ma (max) peak plate current: 400 ma (max)				9-31
5B8	triode: pentode	H	4.7	0.60	class A amplifier	triode	200	13	−6	.....	.....	5750	3300	19	.....	.....	6-2
						pentode	200	9.5	Rk = 180	150	2.8	300,000	6200	.....	.....	.....	
5BE8	triode: pentode converter	H	4.7	0.60	class A amplifier	triode	150	18	Rk = 56	.....	.....	5000	8500	40	.....	.....	6-2
						pentode	250	10	Rk = 68	110	3.5	400,000	5200	.....	.....	.....	
5BK7-A	high-frequency twin triode	H	4.7	0.60	each unit as class A amplifier		150	18	Rk = 56	.....	.....	4600(c)	9300	43	.....	.....	6-2
5BQ7-A	high-frequency twin triode	H	5.6	0.45	each unit as class A amplifier		150	9	Rk = 220	.....	.....	5900	6400	38	.....	.....	6-2
5BR8	triode: pentode	H	4.7	0.60	class A amplifier	triode	150	18	Rk = 56	.....	.....	5000	8500	40	.....	.....	6-2
						pentode	250	10	Rk = 68	110	3.5	400,000	5200	.....	.....	.....	
5BT8	twin diode: sharp-cutoff pentode	H	4.7	0.60	pentode unit as class A amplifier		200	9.5	Rk = 180	150	2.8	300,000	6200	.....	.....	.....	6-2
					diode as detector		max d-c current: 1 ma							peak heater-cathode voltage: 200			

4BU8



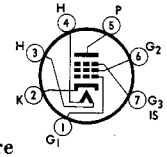
miniature

4BX8
4BZ7
5BK7-A
5BQ7-A



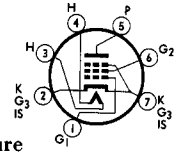
miniature

4BZ6
4CB6



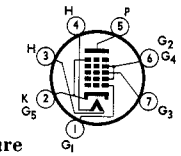
miniature

4CE5



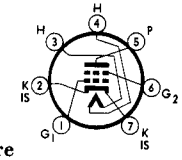
miniature

4CS6



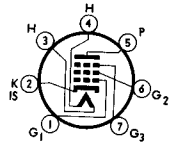
miniature

4CY5



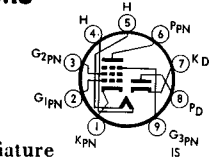
miniature

4DT6



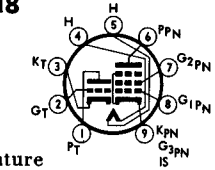
miniature

5AM8



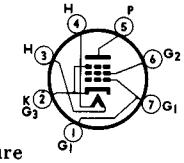
miniature

5AN8



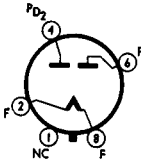
miniature

5AQ5



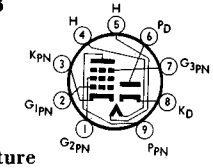
miniature

5AS4
5AU4
5AW4



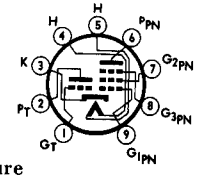
glass

5AS8



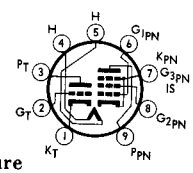
miniature

5AT8



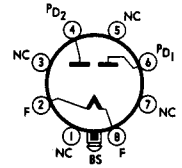
miniature

5AV8



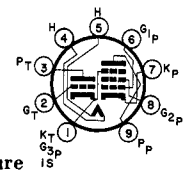
miniature

5AZ4



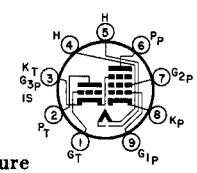
lock-in

5B8



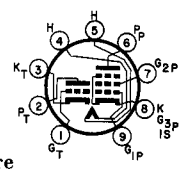
miniature

5BE8



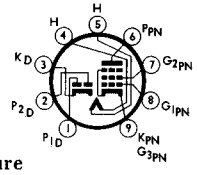
miniature

5BR8



miniature

5BT8



miniature

the underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(c) approximate

(i) for two tubes

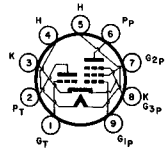
(n) absolute maximum rating

(u) subscript 1 on class of amplifier service indicates that grid current does not flow during any part of input cycle

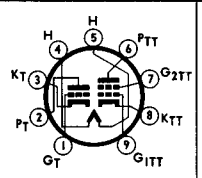
type number	name	cathode			typical use		plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp			volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
5CG8	triode: pentode converter	H	4.7	0.60	class A amplifier	triode	125	12	–1	.....	.....	6000	6500	40	.....	.....	6-2
						pentode	125	9	–1	125	2.2	300,000	5500	.....	.....	.....	
5CL8	triode: tetrode	H	4.7	0.60	class A amplifier	tetrode	125	12	–1	125	4	100,000	5800	.....	.....	.....	6-2
						triode	125	15	Rk=56	.....	.....	5000	8000	40	.....	.....	
5CL8-A	triode-tetrode	H	4.7	0.60	class A amplifier	triode	125	14	–1	.....	.....	5000	8000	40	.....	.....	6-2
						tetrode	125	12	–1	125	4.0	200,000	6500	.....	.....	.....	
5CM8	triode: pentode	H	4.7	0.60	class A amplifier	triode	250	1.8	–2	.....	.....	50,000	2000	100	.....	.....	6-2
						pentode	200	9.5	Rk=180	150	2.8	600,000	6200	.....	.....	.....	
5CQ8	triode: pentode	H	4.7	0.60	class A amplifier	triode	125	15	Rk=56	.....	.....	5000	8000	40	.....	.....	6-2
						pentode	125	12	–1	125	4.2	140,000	5800	.....	.....	.....	
5CZ5	beam pentode	H	4.7	0.60	class A amplifier		250	46	–14	250	4.6	73,000	4800	.....	5000	5.4	6-4
5DH8	high-mu triode: sharp-cutoff pentode	H	5.2	0.60	class A amplifier	triode	250	7.3	Rk=390	.....	.....	12,000	4400	53	.....	.....	6-2
						pentode	125	13.5	Rk=56	125	3.8	150,000	8600	.....	.....	.....	
5J6	twin triode	H	4.7	0.60	each unit as class A amplifier		100	8.5	Rk=50	.....	.....	7100	6000	38	.....	.....	5-2
					r-f oscillator		150	30	grid resistor: 625 ohms							grid current: 16 ma	
5R4-GY	full-wave rectifier	F	5.0	2.0	with capacitive-input filter		peak inverse voltage: 2100 volts (max) peak plate current: 650 ma (max) d-c output current: 250 ma (max)					peak inverse voltage: 2400 volts (max) peak plate current: 650 ma (max) d-c output current: 175 ma (max)					16-3
5R4-GYA																	12-H
5T4	full-wave rectifier	F	5.0	2.0	with capacitive-input filter		a-c voltage per plate (rms): 450 volts (max) peak inverse voltage: 1550 volts (max)					d-c output current: 225 ma (max) peak plate current: 675 ma (max)			impedance: 150 ohms (△)		10-1
					with inductive-input filter		a-c voltage per plate (rms): 550 volts (max) peak inverse voltage: 1550 volts (max)					d-c output current: 225 ma (max) peak plate current: 675 ma (max)			input choke value: 3 henries (min)		
5T8	triple diode: high mu triode	H	4.7	0.60	triode unit as class A amplifier		100	0.8	–1.0	.....	.....	54,000	1300	70	.....	.....	6-2
							250	1.0	–3.0	.....	.....	58,000	1200	70	.....	.....	
5U4-G	full-wave rectifier	F	5.0	3.0	with capacitive-input filter		a-c voltage per plate (rms): 450 volts (max) peak inverse voltage: 1550 volts (max)					d-c output current: 225 ma (max) peak plate current: 675 ma (max)			impedance: 170 ohms (△)		16-3
					with inductive-input filter		a-c voltage per plate (rms): 550 volts (max) peak inverse voltage: 1550 volts (max)					d-c output current: 225 ma (max) peak plate current: 675 ma (max)			input choke value: 10 henries (min)		
5U4-GA	full-wave rectifier	F	5.0	3.0	capacitance input filter		max inverse plate voltage: 1550 volts peak plate current: 900 ma (max)					max d-c output voltage: 460 volts max d-c output current: 250 ma					11-B
5U4-GB	full-wave rectifier	F	5.0	3.0	capacitance input filter		max peak inverse voltage: 1550 volts max peak plate current: 1.0 ampere					max d-c output current: 275 ma max d-c output voltage: 460 volts					12-16
5U8	medium mu triode: sharp-cutoff pentode	H	4.7	0.60	class A amplifier	triode	125	13.5	–1	.....	.....	5000	7500	40	.....	.....	6-2
						pentode	125	9.5	–1	110	3.5	200,000	5000	.....	.....	.....	
5V3	full-wave rectifier	F	5.0	3.80	rectifier with capacitor-input filter		max peak inverse voltage: 1400 volts max peak plate current: 1200 ma					max rms a-c voltage per plate: 500 volts max d-c output current: 350 ma					12-D
5V4-G	full-wave rectifier	H	5.0	2.0	with capacitive-input filter		a-c voltage per plate (rms): 375 volts (max) peak inverse voltage: 1400 volts (max)					d-c output current: 175 ma (max) peak plate current: 525 ma (max)			impedance: 100 ohms (△)		14-3
5V4-GA					with inductive-input filter		a-c voltage per plate (rms): 500 volts (max) peak inverse voltage: 1400 volts (max)					d-c output current: 175 ma (max) peak plate current: 525 ma (max)			input choke value: 4 henries (min)		12-A

5V6-GT	beam-power pentode	H	4.7	0.60	class A amplifier	250	45	−12.5	250	4.5	50,000	4100	.....	5000	4.5	9-11
					push-pull class A_1 amplifier(u)	285	70 (i)	−19.0	285	4.0 (i)	.....	.....	.....	8000	14(j)	
5W4-GT	full-wave rectifier	F	5.0	1.5	with capacitive-input filter	a-c voltage per plate (rms): 350 volts (max) peak inverse voltage: 1400 volts (max)					d-c output current: 100 ma (max) peak plate current: 300 ma (max)			impedance: 50 ohms (△)		9-13
					with inductive-input filter	a-c voltage per plate (rms): 500 volts (max) peak inverse voltage: 1400 volts (max)					d-c output current: 100 ma (max) peak plate current: 300 ma (max)			input choke value: 6 henries (min)		
5X4-G	full-wave rectifier	F	5.0	3.0	with capacitive-input filter	a-c voltage per plate (rms): 450 volts (max) peak inverse voltage: 1550 volts (max)					d-c output current: 225 ma (max) peak plate current: 675 ma (max)			impedance: 170 ohms (△)		16-3
					with inductive-input filter	a-c voltage per plate (rms): 550 volts (max) peak inverse voltage: 1550 volts (max)					d-c output current: 225 ma (max) peak plate current: 675 ma (max)			input choke value: 10 henries (min)		
5X8	medium-mu triode: sharp-cutoff pentode	H	4.7	0.60	class A amplifier	triode	125	12	−1	.....	.....	6000	6500	40	.....	.....	6-2
						pentode	125	9	−1	125	2.2	300,000	5500	.....	.....	.....	
					triode as 250 Mc. oscillator		150	13	grid resistor: 2700 ohms						0.5		
					pentode as vhf mixer		150	6.2	−3.5	150	1.8	.....	2100	.....	.....	.....	
5Y3-G	full-wave rectifiers	F	5.0	2.0	with capacitive-input filter	a-c voltage per plate (rms): 350 volts (max) peak inverse voltage: 1400 volts (max)					d-c output current: 125 ma (max) peak plate current: 400 ma (max)			impedance: 50 ohms (△)		14-3
5Y3-GT																9-13
5Y4-GT					with inductive-input filter	a-c voltage per plate (rms): 500 volts (max) peak inverse voltage: 1400 volts (max)					d-c output current: 125 ma (max) peak plate current: 400 ma (max)			input choke value: 10 henries (min)		9-13
5Z3	full-wave rectifier	F	5.0	3.0	with capacitive input filter	a-c voltage per plate (rms): 450 volts (max) peak inverse voltage: 1550 volts (max)					d-c output current: 225 ma (max) peak plate current: 675 ma (max)			impedance: 170 ohms (△)		16-1
					with inductive-input filter	a-c voltage per plate (rms): 550 volts (max) peak inverse voltage: 1550 volts (max)					d-c output current: 225 ma (max) peak plate current: 675 ma (max)			input choke value: 10 henries (min)		

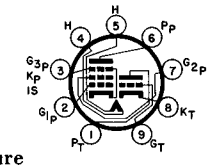
5CG8 — miniature



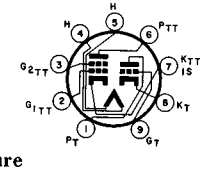
5CL8
5CL8-A — miniature



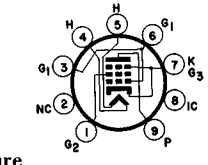
5CM8 — miniature



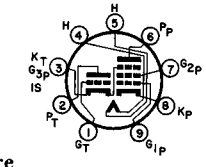
5CQ8 — miniature



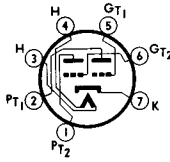
5CZ5 — miniature



5DH8 — miniature

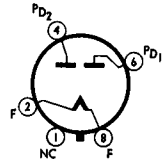


5J6 — miniature

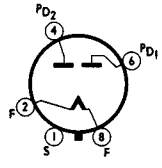


5R4-GY
5R4-GYA
5U4-G
5U4-GA
5U4-GB — glass

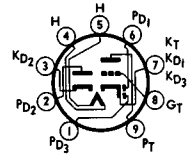
5V3
5W4-GT
5Y3-G
5Y3-GT



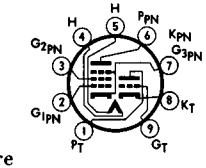
5T4 — metal



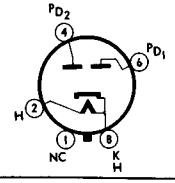
5T8 — miniature



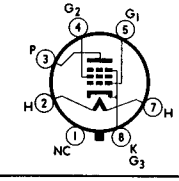
5U8 — miniature



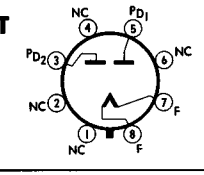
5V4-G
5V4-GA — glass



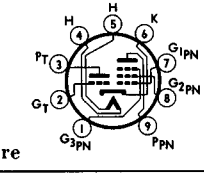
5V6-GT — glass



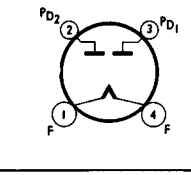
5X4-G
5Y4-GT — glass



5X8 — miniature



5Z3 — metal



The underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

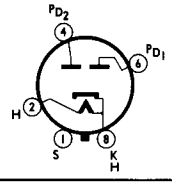
■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(i) for two tubes
(j) power output is for two tubes at stated plate-to-plate load
(n) absolute maximum rating
(u) subscript 1 on class of amplifier service indicates that grid current does not flow during any part of input cycle
(△) total effective plate-supply impedance per plate (min)

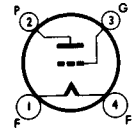
type number	name	cathode			typical use	plate		grid bias[a]	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
5Z4	full-wave rectifier	H	5.0	2.0	with capacitive-input filter	a-c voltage per plate (rms): 350 volts (max); peak inverse voltage: 1440 volts (max)					d-c output current: 125 ma (max); peak plate current: 375 ma (max)			impedance: 50 ohms (△)		8-6
					with inductive-input filter	a-c voltage per plate (rms): 500 volts (max); peak inverse voltage: 1400 volts (max)					d-c output current: 125 ma (max); peak plate current: 375 ma (max)			input choke value: 5 henries (min)		
6A3	power amplifier triode	F	6.3	1.0	class A amplifier	250	60.0	–45.0	.....	.....	800	5250	4.2	2500	3.2	16-1
					push-pull class AB_1 amplifier(u)	325 325	80.0(i) 80.0(i)	cath.-bias: 850 ohms (i) fixed bias: –68 volts	.....	.....	....	....	....	5000 3000	10.0(j) 15.0(j)	
6A6	twin-triode amplifier	H	6.3	0.8	class A amplifier (as driver) (k)	250 294	6.0 7.0	–5.0 –6.0	....	....	11,300 11,000	3100 3200	35 35	20,000 or more	exceeds 0.4	14-1
					class B amplifier	300		0	(power output is for 1 tube at stated plate-to-plate load)					8000	10.0	
6A7	pentagrid converter(b)	H	6.3	0.3	converter	100 250	1.1 3.5	–1.5 –3.0	50 100	1.3 2.7	600,000 360,000	anode-grid (no.2): 250 volts (max)(q); 4.0 ma oscillator-grid (no.1) resistor: 50,000 ohms conversion transconductance: 550 μmhos				12-6
6A8	pentagrid converters(b)	H	6.3	0.3	converter	100 250	1.1 3.5	–1.5 –3.0	50 100	1.3 2.7	600,000 360,000	anode-grid (no.2): 250 volts (max)(q): 4.0 ma oscillator-grid (no.1) resistor: 50,000 ohms conversion transconductance: 550 μmhos				8-4
6A8-G																12-8
6A8-GT																9-18
6AB4	r-f amplifier triode	H	6.3	0.15	class A amplifier	100 250	4.5 6.5	cathode-bias	100 150	1.4 2.0	600,000 800,000	4000 5500	60 60	....	....	5-2
6AB5/ 6N5	electron-ray tube	H	6.3	0.15	visual indicator	plate and target supply voltage: 135 volts triode plate resistor: 0.25 megohms target current: 2.0 ma						grid bias: –10.0 volts, shadow angle 0° grid bias: 0 volts, shadow angle 90° plate current: 0.5 ma				9-26
6AB7	r-f pentode	H	6.3	0.45	class A amplifier	300	12.5	–3.0	200	3.2	700,000	5000	.....	.....	.....	8-1
6AC5-GT	high-mu power amplifier triode	H	6.3	0.4	class B amplifier	250	5.0(i)	0	power output is for 2 tubes at stated plate-to-plate load					10,000	8.0	9-11
					dynamic-coupled amplifier with 76 driver	250		bias for both 6AC5-GT and 76 is developed in coupling circuit plate current of driver: 5.5 ma (average) plate current of 6AC5-GT: 32 ma (average)						7000	3.7	
6AC7	sharp-cutoff pentode	H	6.3	0.45	class A amplifier	300	10.0	Rk = 160	150	2.5	1.0(f)	9000	.....	.....	.....	8-1
6AF4	UHF triode	H	6.3	0.225	class A amplifier	80	17.5	Rk = 150	.....	.....	2100	6500	13.5	.....	.....	5-2
6AF4-A					1000 Mc oscillator	100	17.5	grid resistor: 10,000 ohms			grid current: 750 μamp			plate load: 220 ohms		5-1
6AF6-G	electron-ray tube (twin-indicator type)	H	6.3	0.15	visual indicator	target voltage: 135 volts target current: 1.5 ma					control-electrode voltage: 0 volts, shadow angle, 100° control-electrode voltage: 81 volts, shadow angle, 0°					9-1
						target voltage: 250 volts target current: 3.75 ma					control-electrode voltage: 0 volts, shadow angle, 100° control-electrode voltage: 155 volts, shadow angle, 0°					
6AG5	sharp-cutoff pentode	H	6.3	0.3	as pentode class A amplifier	100 250	3.7 10.0	–1 –2	....	....	15,000 10,900	4500 5000	cath.-bias resistor: 180 ohms cath.-bias resistor: 180 ohms			5-2
					as triode(m) class A amplifier	180 250	7.0 5.5	cathode-bias	....	....	8000 10,000	5700 3800	cath.-bias resistor: 330 ohms cath.-bias resistor: 820 ohms			
6AG7	video-power-amplifier pentode	H	6.3	0.65	class A amplifier	300	28.0	Rk = 57	125	7.0	load resistance: 3500 ohms peak-to-peak output: 140 volts (approx)					8-6
6AH4-GT	high-perveance triode	H	6.3	0.75	class A amplifier	250	30	–23	.....	.....	1780	4500	8	.....	.....	9-11

6AH6	sharp-cutoff pentode	H	6.3	0.45	pentode connection	300	10.0	cath.-bias	150	2.5	500,000(c)	9000	cath.-bias resistor: 160 ohms			5-2
					triode connection	150	12.5	Rk = 160	(m)	.....	3600(c)	11,000	40	.....	.....	
6AK5	sharp-cutoff pentode	H	6.3	0.175	class A amplifier	120 180	7.5 7.7	cathode-bias	120 120	2.5 2.4	300,000 500,000	5000 5100	cath.-bias resistor: 180 ohms			5-1
6AK6	power amplifier pentode	H	6.3	0.15	class A amplifier	180	15.0	–9.0	180	2.5	200,000	2300	.....	10,000	1.1	5-2
6AL5	twin diode	H	6.3	0.3	detector rectifier	peak inverse voltage: 330 volts (max) peak plate current per plate: 54 ma (max)					d-c ouput current per plate: 9 ma (max) peak heater-cathode voltage: 330 volts (max)					5-1
6AL7-GT	electron-ray tube (indicator type)	H	6.3	0.15	visual indicator	target voltage: 315 volts grid voltage: 0 volts cathode-bias resistor: 3300 ohms (c)					grid voltage for pattern cutoff: –7 volts (approx) deflecting-electrodes: no. 1, no. 2 and no. 3 voltage: 0 (l)					9-7
6AM4	high-mu triode	H	6.3	0.225	class A amplifier	150	7.5	Rk = 100	.....	.....	9500	9000	85	.....	.....	6-1
6AM8 **6AM8-A**	diode: sharp-cutoff pentode	H	6.3	0.45	pentode unit as class A amplifier	125	12.5	Rk = 56	125	3.2	300,000	7800	.....	.....	.....	6-2

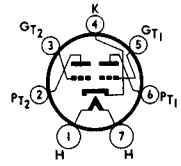
5Z4 metal



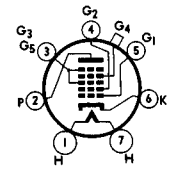
6A3 glass



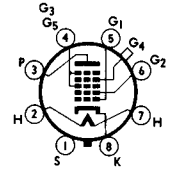
6A6 glass



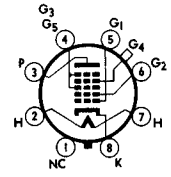
6A7 glass



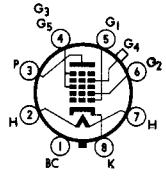
6A8 metal



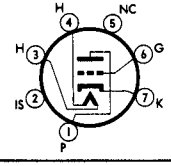
6A8-G glass



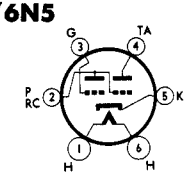
6A8-GT glass



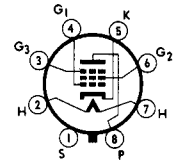
6AB4 miniature



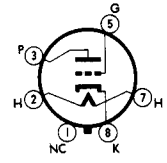
6AB5/6N5 glass



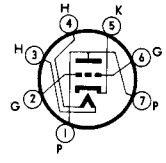
6AB7
6AC7 metal



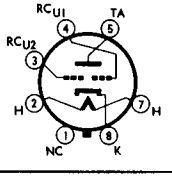
6AC5-GT glass



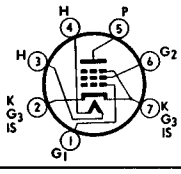
6AF4
6AF4-A miniature



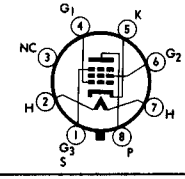
6AF6-G glass



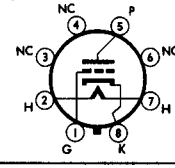
6AG5
6AK5 miniature



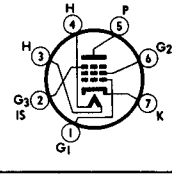
6AG7 metal



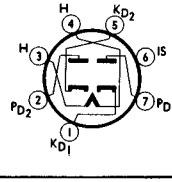
6AH4-GT glass



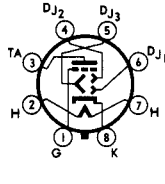
6AH6
6AK6 miniature



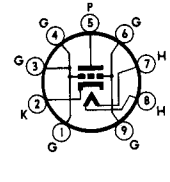
6AL5 miniature



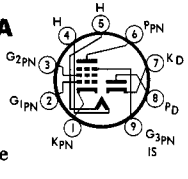
6AL7-GT glass



6AM4 miniature



6AM8
6AM8-A miniature



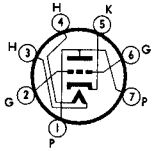
the underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage
(b) grids no. 3 and no. 5 are screen; grid no. 4 is signal input grid
(c) approximate
(f) megohms
(i) for two tubes
(j) power output is for two tubes at stated plate-to-plate load
(k) both grids connected together; likewise, both plates
(l) with tube mounted horizontally and pins no. 4 and no. 8 in a vertical plane (pin no. 4 on top), deflecting electrode no. 1 controls top lefthand section of pattern; deflecting electrode no. 2 controls top right section of pattern; deflecting electrode no. 3 controls bottom section of pattern
(m) grid no. 2 tied to plate
(q) supply voltage applied through 20,000 ohm voltage-dropping resistor
(u) subscript 1 on class of amplifier service indicates that grid current does not flow during any part of input cycle
(△) total effective plate-supply impedance per plate (min)

type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg—47
6AN4	high-mu triode	H	6.3	0.225	class A amplifier	200	13	Rk = 100	.....	.....	.....	10,000	70	.....	.....	5-1
					UHF mixer	125	7	Rk = 270	conversion transconductance: 2900 μmhos oscillator injection voltage: 1.4 (rms)							
6AN8	medium-mu triode: sharp-cutoff pentode	H	6.3	0.45	class A amplifier — triode	125	15	–3	.....	.....	4700	4500	21	.....	.....	6-2
					class A amplifier — pentode	125	12	0	125	3.8	170,000	7800	.....	.....	.....	
6AQ5 **6AQ5-A**	beam power amplifier	H	6.3	0.45	single tube class A amplifier	180	29.0	–8.5	180	3.0	58,000	3700	.....	5500	2.0	5-3
						250	45.0	–12.5	250	4.5	52,000	4100	.....	5000	4.5	
					push-pull class AB_1 amplifier (u)	250	70.0(i)	–15.0	250	5.0(i)	60,000	.....	.....	10,000	10.0 (j)	
6AQ6	duplex-diode high-mu triode	H	6.3	0.15	triode unit as class A amplifier	100	0.8	–1.0	.....	.....	61,000	1150	70	.....	.....	5-2
						250	1.0	–3.0	.....	.....	58,000	1200	70	.....	.....	
6AQ7-GT	twin-diode high-mu triode	H	6.3	0.3	triode unit as class A amplifier	100	1.1	–1.0	.....	.....	64,000(c)	1250	79	.....	.....	9-11
						250	2.3	–2.0	.....	.....	44,000(c)	1600	70	.....	.....	
6AR5	power pentode	H	6.3	0.4	class A amplifier	250	34.0	–16.5	250	5.7(g)	65,000	2400	.....	7000	3.2	5-3
						250	32.0	–18.0	250	5.5(g)	68,000	2300	.....	7600	3.4	
6AS5	beam power amplifier	H	6.3	0.80	class A amplifier	150	35.0	–8.5	110	2.0	.....	5600	.....	4500	2.2	5-3
6AS6	dual-control-sharp-cutoff pentode	H	6.3	0.175	class A amplifier	120	3.6	G_3:–3 G_1:–2	120	4.8	.....	G_3: 810 G_1: 1850	.....	.....	.....	5-1
						120	5.2	–2	120	3.5	110,000	3200	.....	.....	.....	
6AS7-G	low-mu twin power triode	H	6.3	2.50	d-c amplifier	135	125.0	cathode-bias resistor: 250 ohms			280	7000	2	.....	.....	16-3
6AS7-GA					booster tube for television scanning	peak inverse plate voltage (p): 1700 volts (max) heater-cathode voltage: ±300 volts (max)					peak plate current (per plate): 125 ma (max) plate dissipation (per plate): 13 watts (max)					12-16
6AS8	diode: sharp-cutoff pentode	H	6.3	0.45	pentode unit as class A amplifier	200	9.5	Rk = 180	150	3	300,000	6200	.....	.....	.....	6-2
6AT6	duplex-diode high-mu triode	H	6.3	0.30	triode unit as class A amplifier	100	0.8	–1.0	.....	.....	54,000	1300	70	.....	.....	5-2
						250	1.0	–3.0	.....	.....	58,000	1200	70	.....	.....	
6AT8	medium-mu triode sharp-cutoff pentode	H	6.3	0.45	pentode as mixer	150	6.2	–3.5	150	1.8	conversion transconductance: 2100 μmhos grid resistor: 120,000 ohms grid current: 2.0 μa					6-2
					triode as 250 Mc oscillator	150	13	grid resistor: 2700 ohms					grid current: 3.6 ma			
6AU4-GT	half-wave rectifier	H	6.3	1.8	TV damper-diode	max peak inverse voltage: 4500 volts (p) d-c output current: 175 ma (max)					max peak plate current: 1050 ma not recommended for use as a power rectifier					9-44
6AU4-GTA	half-wave rectifier	H	6.3	1.8	TV damper-diode	max peak inverse voltage: 4500 volts (p) d-c output current: 210 ma (max)					max peak plate current: 1300 ma not recommended for use as a power rectifier					9-44
6AU5-GT	beam power amplifier	H	6.3	1.25	horizontal deflection amplifier	d-c plate voltage: 450 volts (max) d-c plate current: 100 ma (max) screen input: 2.5 watts (max)					peak positive-pulse plate voltage (p): 5000 volts (max) plate dissipation: 10 watts (max)					9-41
6AU6 **6AU6-A**	r-f amplifier pentode	H	6.3	0.30	as pentode class A amplifier	100	5.0	cathode-bias	100	2.1	500,000	3900	cath.-bias resistor: 150 ohms			5-2
						250	10.6		150	4.3	1.0(f)	5200	cath.-bias resistor: 68 ohms			
					as triode class A amplifier	250	12.2	cathode-bias	(m)	.....	.....	4800	cath.-bias resistor: 330 ohms			

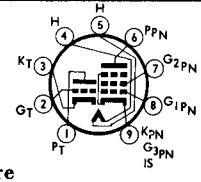
6AU8	medium-mu triode: sharp-cutoff r-f pentode	H	6.3	0.60	class A amplifier	pentode	200	15	Rk = 82	125	3.4	150,000	7000	.....	.....	.....	6-3
						triode	150	8.5	Rk = 150	.....	.....	8200	4900	40	.....	.....	
6AV5-GA	beam pentode	H	6.3	1.2	TV horizontal deflection amplifier	peak positive pulse plate voltage: 5500 volts (p) plate dissipation: 11 watts								max screen input: 2.5 watts max d-c plate current: 110 ma			11-A
6AV5-GT	beam pentode	H	6.3	1.20	TV horizontal deflection amplifier	d-c plate voltage: 550 volts (max) d-c plate current: 100 ma (max) screen input: 2.5 watts (max)						peak positive-pulse plate voltage (p): 5500 volts (max) plate dissipation: 11 watts (max)					9-41
6AV6	twin diode high-mu triode	H	6.3	0.30	triode unit as class A amplifier		100	0.5	−1.0	.....	.....	80,000	1250	100	.....	.....	5-2
							250	1.2	−2.0	.....	.....	62,500	1600	100	.....	.....	
6AW8 **6AW8-A**[♦]	high-mu triode: sharp-cutoff pentode	H	6.3	0.60	class A amplifier	triode	200	4	−2.0	.....	.....	17,500	4000	70	.....	.....	6-3
						pentode	200	13	Rk = 180	150	3.5	400,000	9000	.....	.....	.....	
6AX4-GT	half-wave rectifier	H	6.3	1.20	TV damper diode	peak inverse voltage (p): 4400 volts (max) peak plate current: 600 ma (max)						d-c output current: 125 ma (max)					9-41
6AX5-GT	full-wave rectifier	H	6.3	1.20	with capacitive-input filter	a-c voltage per plate (rms): 350 volts (max) peak inverse voltage: 1250 volts (max)						d-c output current: 125 ma (max) peak plate current: 375 ma (max)			impedance (△): 105 ohms		9-41
					with inductive-input filter	a-c voltage per plate (rms): 450 volts (max) peak inverse voltage: 1250 volts (max)						d-c output current: 125 ma (max) peak plate current: 375 ma (max)			input choke value: 10 henries (min)		
6AX8	triode: pentode	H	6.3	0.45	class A amplifier	triode	150	18	Rk = 56	.....	.....	5000	8500	40	.....	.....	6-2
						pentode	250	10	Rk = 120	110	3.5	400,000	4800	.....	.....	.....	

6AN4



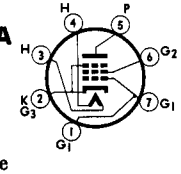
miniature

6AN8



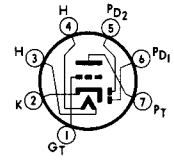
miniature

6AQ5
6AQ5-A



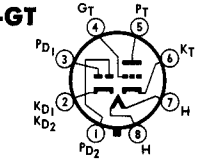
miniature

6AQ6



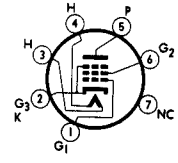
miniature

6AQ7-GT



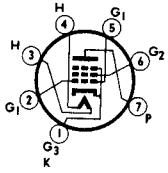
glass

6AR5



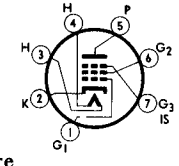
miniature

6AS5



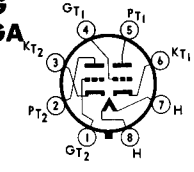
miniature

6AS6



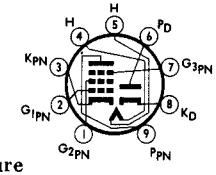
miniature

6AS7-G
6AS7-GA



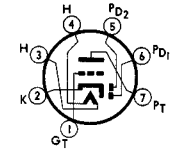
glass

6AS8



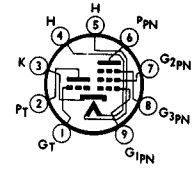
miniature

6AT6
6AV6



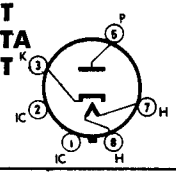
miniature

6AT8



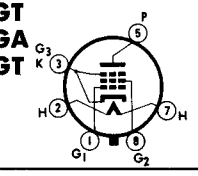
miniature

6AU4-GT
6AU4-GTA
6AX4-GT



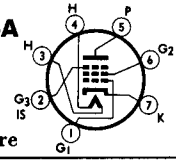
glass

6AU5-GT
6AV5-GA
6AV5-GT



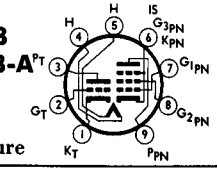
glass

6AU6
6AU6-A



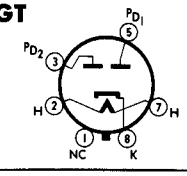
miniature

6AU8
6AW8
6AW8-A[♦]



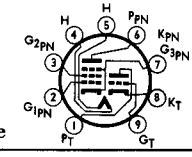
miniature

6AX5-GT



glass

6AX8



miniature

the underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

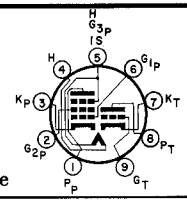
■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(e) approximate
(f) megohms
(g) zero signal
(i) for two tubes
(j) power output is for two tubes at stated plate-to-plate load
(m) grid no. 2 tied to plate
(p) the duration of the pulse voltage must not exceed 15% of one scanning cycle
(u) subscript 1 on class of amplifier service indicates that grid current does not flow during any part of input cycle
(△) total effective plate — supply impedance per plate (min)
(♦) low voltage plate knee characteristic

type number	name	cathode			typical use		plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp			volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
6AZ8	triode: pentode	H	6.3	0.45	class A amplifier	triode	200	13	–6	.....	.....	5750(c)	3300	19	.....	.....	6-2
						pentode	200	9.5	Rk = 180	150	3	300,000(c)	6000	.....	.....	.....	
6B4-G	power amplifier triode	F	6.3	1.0	class A amplifier		250	60.0	–45.0	.....	.....	800	5250	4	2500	3.2	16-3
					push-pull class AB_1 amplifier(u)		325	80.0(i)	cathode-bias: 850 ohms(i)			power output is for two tubes			5000	10.0	
							325	80.0(i)	fixed bias: –68 volts			at stated plate-to-plate load			3000	15.0	
6B6-G	duplex-diode: high-mu triode	H	6.3	0.3	triode unit as amplifier		250	0.9	–2.0	.....	.....	91,000	1100	100	.....	.....	12-8
6B7	duplex-diode: pentode	H	6.3	0.3	pentode unit as amplifier		100	5.8	–3.0	100	1.7	300,000	950	.....	.....	.....	12-6
							250	9.0	–3.0	125	2.3	600,000(c)	1125	.....	.....	.....	
6B8	duplex-diode: pentode	H	6.3	0.3	pentode unit as amplifier		250	10.0	–3.0	125	2.3	600,000(c)	1325	.....	.....	.....	8-4
6BA6	r-f amplifier pentode	H	6.3	0.3	class A amplifier		100	10.8	cathode-bias	100	4.4	250,000	4300	cath.-bias resistor: 68 ohms			5-2
							250	11.0		100	4.2	1.0(f)	4400	cath.-bias resistor: 68 ohms·			
6BA7	pentagrid converter(h)	H	6.3	0.3	converter		100	3.6	–1.0	100	10.2	500,000	grid no. 1 resistor: 20,000 ohms				6-3
							250	3.8	–1.0	100	10.0	1.0(f)	conversion transconductance: 950 μmhos				
6BA8 ..... **6BA8-A•**	triode: pentode	H	6.3	0.60	class A amplifier	triode	200	8.0	–8	.....	.....	6700	2700	18	.....	.....	6-3
						pentode	200	13	Rk = 180	150	3.5	400,000	9000	.....	.....	.....	
6BC5	sharp-cutoff pentode	H	6.3	0.3	as pentode class A amplifier		100	4.7	cathode-bias	100	1.4	600,000(c)	4900	cath.-bias resistor: 180 ohms			5-2
							250	7.5		250	2.1	800,000(c)	5700	cath.-bias resistor: 180 ohms			
					as triode (m) class A amplifier		250	6.0	Rk = 820	.....	.....	9000(c)	4400	40	.....	.....	
							180	8.0	Rk = 330	.....	.....	6000(c)	6000	42	.....	.....	
6BC7	triple diode	H	6.3	0.450	each unit as rectifier		peak inverse plate voltage: 330 volts (max) peak plate current: 54 ma (max)					d-c output current: 12 ma (max)					6-2
6BC8	high frequency twin triode	H	6.3	0.40	each section as class A amplifier		150	10	Rk = 220	.....	.....	.....	6200	35	.....	.....	6-2
6BD6	remote-cutoff pentode	H	6.3	0.3	class A amplifier		100	13.0	–1.0	100	5.0	150,000	2550	.....	.....	.....	5-2
							250	9.0	–3.0	100	3.0	800,000	2000	.....	.....	.....	
6BE6	pentagrid converter(h)	H	6.3	0.3	converter		100	2.6	–1.5	100	7.0	400,000	grid no. 1 resistor: 20,000 ohms				5-2
							250	2.9	–1.5	100	6.8	1.0(f)	conversion transconductance: 475 μmhos				
6BF5	beam power amplifier	H	6.3	1.2	as pentode power amplifier		110	49.0(g)	–7.5	110	4.0(g)	10,000	7500	.....	2500	1.9	5-3
					as triode (m) vertical deflection amplifier		positive-pulse plate voltage (p): 700 volts (max) plate dissipation: 5 watts (max)						screen dissipation: 1.25 watts (max)				
6BF6	duplex-diode: triode	H	6.3	0.3	triode unit as class A amplifier		250	9.5	–9.0	.....	.....	8500	1900	16	10,000	0.3	5-2
6BG6-G	beam-power amplifier	H	6.3	0.9	TV horizontal deflection amplifier		d-c plate voltage: 700 volts (max) d-c plate current: 100 ma (max) screen dissipation: 3.2 watts (max)					peak positive-pulse plate voltage (p): 6000 volts (max) plate dissipation: 20 watts (max)					16-5
6BG6-GA	beam-power amplifier	H	6.3	0.90	TV horizontal deflection amplifier		max d-c plate voltage: 700 volts max plate dissipation: 20 watts max d-c cathode current: 110 ma						max screen dissipation: 3.2 watts				12-21
6BH6	sharp-cutoff pentode	H	6.3	0.15	class A amplifier		100	3.6	–1.0	100	1.4	700,000	3400	.....	.....	.....	5-2
							250	7.4	–1.0	150	2.9	1.4(f)	4600	.....	.....	.....	

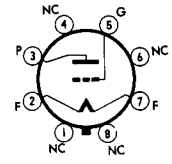
6BH8	medium-mu triode: sharp-cutoff pentode	H	6.3	0.60	class A amplifier	triode	150	9.5	−5.0	.....	.....	5150	3300	17	.....	.....	6-3
						pentode	200	15	Rk = 82	125	3.4	150,000	7000	.....	.....	.....	
6BJ6	r-f amplifier pentode	H	6.3	0.15	class A amplifier		100	9.0	−1.0	100	3.5	250,000	3650	.....	.....	.....	5-2
							250	9.2	−1.0	100	3.3	1.3(f)	3600	.....	.....	.....	
6BJ7	triple diode	H	6.3	0.45	TV d-c restorer	max inverse plate voltage: 330 volts peak plate current: 10 ma peak heater-cathode voltage: 100 volts (max)								max d-c output current: 1 ma			6-2
6BK4	low current beam triode	H	6.3	0.20	TV high-voltage regulator	plate voltage: 25,000 volts plate current: 1.0 ma								grid bias: −8.2 volts amplification factor: 2000			12-G
6BK5	beam-power amplifier	H	6.3	1.2	class A amplifier		250	35	−5.0	250	3.5	100,000	8500	.....	6500	3.5	6-3
6BK7	high-frequency twin triode	H	6.3	0.45	each section as class A amplifier		100	9.0	Rk = 120	.....	.....	6100(c)	6100	37	.....	.....	6-2
							150	18.0	Rk = 56	.....	.....	4700(c)	8500	40	.....	.....	
6BK7-A **6BK7-B**	high-frequency twin triode	H	6.3	0.45	each section as class A amplifier		150	18	Rk = 56	.....	.....	4600	9300	43	.....	.....	6-2
					cascode amplifier		250	13	−1.0	.....	.....	.....	8000	.....	.....	.....	
6BL7-GT **6BL7-GTA**	medium-mu twin triode	H	6.3	1.5	vertical deflection amplifier (each section)		250	40.0	−9.0	.....	.....	2150	7000	15	.....	.....	9-41
						positive-pulse plate voltage (p): 2000 volts (n) plate dissipation: 10 watts (max)								plate dissipation (for both sections): 12 watts d-c plate current: 60 ma (max)			

6AZ8



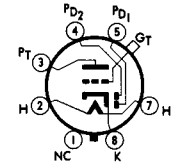
miniature

6B4-G



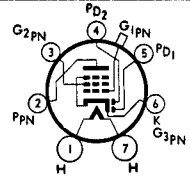
glass

6B6-G



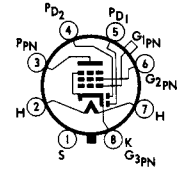
glass

6B7



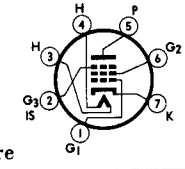
glass

6B8



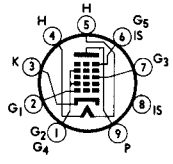
metal

6BA6
6BD6



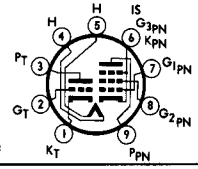
miniature

6BA7



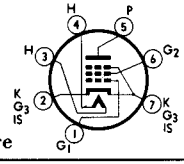
miniature

6BA8
6BA8-A
6BH8



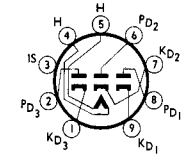
miniature

6BC5



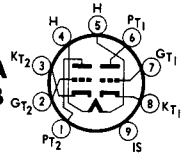
miniature

6BC7
6BJ7



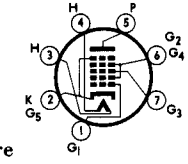
miniature

6BC8
6BK7
6BK7-A
6BK7-B



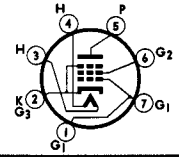
miniature

6BE6



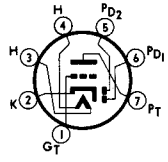
miniature

6BF5



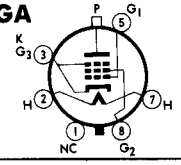
miniature

6BF6



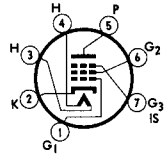
miniature

6BG6-G
6BG6-GA



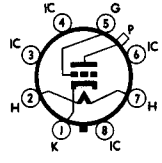
glass

6BH6
6BJ6



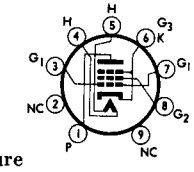
miniature

6BK4



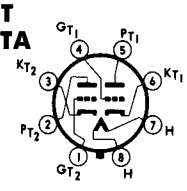
glass

6BK5



miniature

6BL7-GT
6BL7-GTA



glass

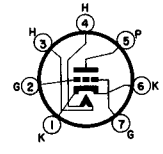
the underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage
(c) approximate
(f) megohms
(g) zero signal
(h) grids no. 2 and no. 4 are screen; grid no. 3 is signal input control grid
(i) for two tubes
(m) grid no. 2 tied to plate
(n) absolute maximum rating
(p) the duration of the pulse voltage must not exceed 15% of one scanning cycle
(u) subscript 1 on class of amplifier service indicates that grid current does not flow during any part of input cycle
(♦) low voltage plate knee characteristic

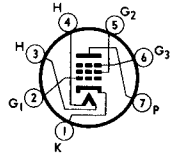
type number	name	cathode			typical use	plate		grid bias*	screen		a-c plate resistance	transconductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
6BN4	medium-mu triode	H	6.3	0.2	class A amplifier	150	9.0	Rk=200	.....	.....	6300	6800	43	.....	.....	5-2
6BN6	gated-beam discriminator	H	6.3	0.3	f-m limiter discriminator	285(o)	0.49	.....	100	9.8	cathode-bias resistor: 200 to 400 ohms			330,000	.....	5-3
6BN8	double-diode: high-mu triode	H	6.3	0.60	triode unit as class A amplifier	100	1.5	–1	.....	.....	21,000	3500	75	.....	.....	6-3
						250	1.6	–3	.....	.....	28,000	2500	70	.....	.....	
					diode unit as rectifier	d-c output current: 9 ma (max)								average current with plate volts = 10: 50 ma		
6BQ5	beam-power amplifier	H	6.3	0.76	class AB_1 amplifier as triode — single tube	250	34	Rk=270	(m)	(m)	.....	.....	.....	3500	1.95	6-4
					class AB_1 amplifier as triode — two tubes push-pull	250	40	Rk=270	(m)	(m)	.....	.....	.....	10,000	3.4	
						300	48	Rk=270	(m)	(m)	.....	.....	.....	10,000	5.2	
					class A amplifier	250	48	Rk=135	250	5.5	38,000	11,300	.....	5200	6.0	
						250	48	Rk=135	250	5.5	38,000	11,300	.....	4500	6.0	
						250	36	Rk=210	250	4.1	40,000	10,000	.....	7000	5.6	
						250	36	Rk=160	210	3.9	40,000	10,400	.....	7000	4.7	
					class AB_1 amplifier — two tubes push-pull	250	62	Rk=130	250	7	.....	.....	.....	8000	11	
						300	72	Rk=130	300	8	.....	.....	.....	8000	17	
					class B amplifier — two tubes push-pull	250	20	–11.6	250	2.2	.....	.....	.....	8000	11	
						300	15	–14.7	300	1.6	.....	.....	.....	8000	17	
6BQ6-GT	beam-power pentode	H	6.3	1.2	TV horizontal deflection amplifier	peak positive plate voltage: 5500 volts (max) d-c plate voltage: 550 volts (max)						plate dissipation: 11 watts (max) screen dissipation: 2.5 watts (max)				9-49
6BQ6-GTA **6BQ6-GTB**	beam-power pentode	H	6.3	1.2	TV horizontal deflection amplifier	peak positive plate voltage: 6000 volts (n) d-c plate voltage: 600 volts (max)						plate dissipation: 11 watts (max) screen dissipation: 2.5 watts (max)				9-49
6BQ7-A	high-frequency twin triode	H	6.3	0.4	each section as class A amplifier	150	9.0	cathode-bias	.....	.....	5900	6400	38	cath.-bias resistor: 220 ohms		6-2
6BR8	triode: pentode	H	6.3	0.45	class A amplifier — triode	150	18	Rk=56	.....	.....	5000	8500	40	.....	.....	6-2
					pentode	250	10	Rk=68	110	3.5	400,000	5200	.....	.....	.....	
6BS8	high-frequency twin triode	H	6.3	0.40	each section as class A amplifier	150	10	Rk=220	.....	.....	5000	7200	36	.....	.....	6-2
					cascode amplifier	250	16	–1.0	.....	.....	.....	10,000	.....	.....	.....	
6BT8	twin diode: sharp-cutoff pentode	H	6.3	0.45	pentode unit as class A amplifier	200	9.5	Rk=180	150	2.8	300,000	6200	.....	.....	.....	6-2
					diode unit	max d-c output current: 1 ma						peak heater-cathode rating: 200 volts				
6BU8	twin pentode	H	6.3	0.30	each section as class A amplifier	100	2.2	0	67.5	3.3	.....	.....	.....	.....	.....	6-3
6BV8	duplex-diode: medium-mu triode	H	6.3	0.60	triode section as class A amplifier	200	11	Rk=330	.....	.....	5900	5600	33	.....	.....	6-2
6BW8	duplex-diode: pentode	H	6.3	0.45	pentode unit as class A amplifier	250	10.0	Rk=68	110	3.5	250,000	5200	.....	.....	.....	6-2

6BX7-GT	twin triode	H	6.3	1.5	each section as class A amplifier	250	42	Rk = 390	.....	.....	1300	7600	10	.....	.....	9-41
					TV vertical deflection amplifier	max d-c plate voltage: 500 volts max plate dissipation: 12 watts (both plates)										
6BX8	high-frequency twin triode	H	6.3	0.40	each section as class A amplifier	65	9	−1.0	.....	.....	.....	6700	25	.....	.....	6-2
					cascode amplifier	125	11	−0.5	.....	.....	.....	7500	.....	.....	.....	
6BY5-G **6BY5-GA**	twin diode	H	6.3	1.6	rectifier, C-input filter	a-c voltage per plate (rms): 375 volts (max) peak inverse voltage: 1400 volts (max)					d-c output current: 175 ma (max) peak plate current: 525 ma (max)			impedance (△): 100 ohms		14-3
					TV damper diode	peak inverse voltage: 3000 volts (p) (max) d-c output current: 175 ma (max)					peak plate current: 525 ma (max)					12-A
6BY6	dual-control pentagrid amplifier	H	6.3	0.30	sync clipper and sync separator	10	1.4	G_1: 0 G_3: 0	25	3.5	.....	.....	.....	.....	.....	5-2
						max grid circuit resistance { fixed bias: 50,000 ohms cathode bias: 1,000,000 ohms										
6BY8	diode: sharp-cutoff pentode	H	6.3	0.60	pentode unit as class A amplifier	100 250	5 10.6	Rk = 150 Rk = 68	100 150	2.1 4.3	500,000 1.0(f)	3900 5200	....	....	....	6-3
6BZ6	r-f pentode	H	6.3	0.3	class A amplifier	125	14	Rk = 56	125	3.6	260,000	8000	.....	.....	.....	5-2
6BZ7	high-frequency twin triode	H	6.3	0.40	each section as class A amplifier	150	10	Rk = 220	.....	.....	5600	6800	38	.....	.....	6-2
6BZ8	high-frequency twin-triode	H	6.3	0.40	each section as class A amplifier	125	10	Rk = 100	.....	.....	5600	8000	45	.....	.....	6-2

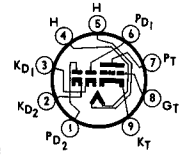
6BN4 — miniature



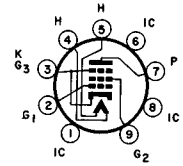
6BN6 — miniature



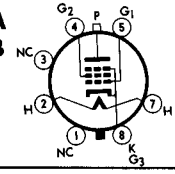
6BN8 — miniature



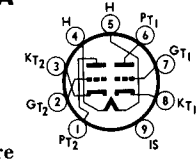
6BQ5 — miniature



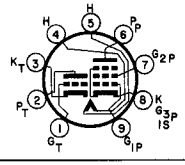
6BQ6-GT
6BQ6-GTA
6BQ6-GTB — glass



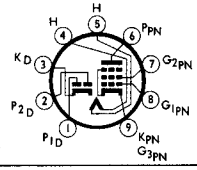
6BQ7-A
6BS8
6BX8
6BZ7
6BZ8 — miniature



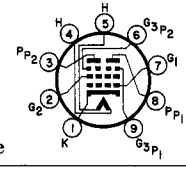
6BR8 — miniature



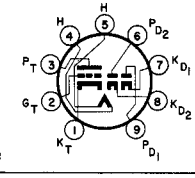
6BT8 — miniature



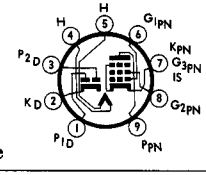
6BU8 — miniature



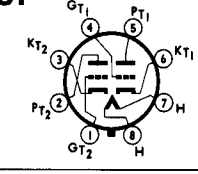
6BV8 — miniature



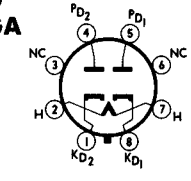
6BW8 — miniature



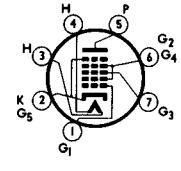
6BX7-GT — glass



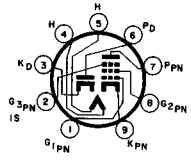
6BY5-G
6BY5-GA — glass



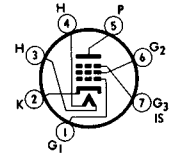
6BY6 — miniature



6BY8 — miniature



6BZ6 — miniature



the underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(f) megohms

(m) grid no. 2 tied to plate

(n) absolute maximum rating

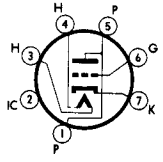
(o) plate supply volts through 330,000 ohms to give plate voltage of 122 volts

(△) total effective plate-supply impedance per plate (min)

type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
6C4	high frequency power triode	H	6.3	0.15	class A amplifier	100 250	11.8 10.5	0 –8.5	....	....	6250 7700	3100 2200	19.5 17.0	....	....	5-2
					class C amplifier	300	25.0	–27.0	.....	.....	grid current: 7 ma driving power: 0.35 watt		.....	.....	5.5	
6C5	medium-mu triode	H	6.3	0.3	class A amplifier	250	8.0	–8.0	.....	.....	10,000	2000	20	.....	.....	8-1
6C5-GT					bias detector	250	.....	–17.0(c)	plate current to be adjusted to 0.2 ma with no signal							9-12
6C6	sharp-cutoff pentode	H	6.3	0.3	amplifier	100 250	2.0 2.0	–3.0 –3.0	100 100	0.5 0.5	1.0(f) 1.0+(f)	1185 1225	.....	.....	.....	12-2
6C8-G	twin-triode amplifier	H	6.3	0.3	each unit as amplifier	250	3.2	–4.5	.....	.....	22,500	1600	36	.....	.....	12-8
6CB5	beam-power amplifier	H	6.3	2.5	TV horizontal deflection amplifier	max d-c plate voltage: 700 volts max d-c cathode current: 200 ma					max plate dissipation: 23 watts max screen dissipation: 3.6 watts					16-A
6CB5-A	beam-power amplifier	H	6.3	2.5	TV horizontal deflection amplifier	max d-c plate voltage: 880 volts max d-c cathode current: 240 ma					max plate dissipation: 26 watts max screen dissipation: 4 watts					12-21
6CB6 **6CB6-A**	r-f pentode	H	6.3	0.3	class A amplifier	125	13.0	Rk=56	125	3.7	280,000	8000	.....	.....	.....	5-2
6CD6-G	beam power amplifier	H	6.3	2.5	TV horizontal deflection amplifier	d-c plate voltage: 700 volts (max) d-c plate current: 170 ma (max) screen input: 3 watts (max)					peak positive-pulse plate voltage (p): 6000 volts (max) plate dissipation: 15watts (max)					16-5
6CD6-GA	beam pentode	H	6.3	2.5	TV horizontal deflection amplifier	peak positive-pulse plate voltage (p): 7000 volts (max)										12-21
						175	75	–30	175	5.5	7200	7700	.....	.....	.....	
6CE5	r-f pentode	H	6.3	0.30	class A amplifier	125	11	–1	125	2.3	300,000	7600	.....	.....	.....	5-2
6CF6	r-f pentode	H	6.3	0.30	class A amplifier	125	12.5	Rk=56	125	3.7	300,000	7800	.....	.....	.....	5-2
6CG7	medium-mu twin triode	H	6.3	0.60	each section as class A amplifier	90 250	10 9	0 –8.0	....	....	6700 7700	3000 2600	20 20	....	....	6-3
6CG8 **6CG8-A**	triode: pentode converter	H	6.3	0.45	class A amplifier — triode	125	12	–1	.....	.....	6000	6500	40	.....	.....	6-2
					pentode	125	9	–1	125	2.2	300,000	5500	.....	.....	.....	
6CH8	triode: pentode	H	6.3	0.45	class A amplifier — triode	200	13	–6	.....	.....	5750(c)	3300	19	.....	.....	6-2
					pentode	200	9.5	Rk=180	150	2.8	300,000(c)	6200	.....	.....	.....	
6CL6	power pentode	H	6.3	0.65	class A amplifier	250	30	–3.0	150	7.0	150,000	11,000	.....	7500	2.8	6-3
					video amplifier	300	30	–2.0	300	7.0	correct plate load: 3900 ohms peak-to-peak voltage output: 132 volts					
6CL8	triode: tetrode	H	6.3	0.45	class A amplifier — triode	125	14	–1	.....	.....	5000	8000	40	.....	.....	6-2
					tetrode	125	12	–1.0	125	4	120,000	6000	.....	.....	.....	
6CL8-A	triode: tetrode	H	6.3	0.45	class A amplifier — triode	125	14	–1	.....	.....	5000	8000	40	.....	.....	6-2
					tetrode	125	12	–1	125	4.0	200,000	6500	.....	.....	.....	
6CM6	beam-power pentode	H	6.3	0.45	class A amplifier	250	45	–12.5	250	4.5	50,000	4100	.....	5000	4.5	6-3
					TV vertical deflection amplifier	250	49.5	–12.5	.....	.....	1960	5000	9	.....	.....	

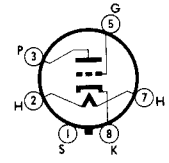
6CM7	dual triode	H	6.3	0.60	triode no. one as oscillator	200	5	−7.0	.....	.....	11,000	2000	20	.....	.....	6-3
					triode no. two as class A amplifier	250	20	−8.0	.....	.....	4100	4400	18	.....	.....	
6CN7	twin diode high-mu triode	H	6.3 3.15	0.30 0.60	triode unit as class A amplifier	100 250	0.8 1.0	−1.0 −3.0	.....	.....	54,000 58,000	1300 1200	70 70	.....	.....	6-2
6CQ8	triode: pentode	H	6.3	0.45	class A amplifier — triode	125	15	Rk = 56	.....	.....	5000	8000	40	.....	.....	6-2
					class A amplifier — pentode	125	12	−1	125	4.2	140,000	5800	.....	.....	.....	
6CR6	diode: pentode	H	6.3	0.30	pentode unit as class A amplifier	250	9.6	−2.0	100	2.6	800,000	2200	.....	.....	.....	5-2
6CS6	dual-control pentagrid amplifier	H	6.3	0.30	class A amplifier	100	0.8	G_1: 0 G_3: −1	30	5.5	700,000	grid three-plate transconductance: 1500 μmhos				5-2
						100	1.0	G_1: −1 G_3: 0	30	1.3	1.0(f)	grid one-plate transconductance: 1100 μmhos				
6CS7	dual triode	H	6.3	0.60	triode no. one as vertical oscillator	500 (n)	20					maximum plate dissipation: 1.25 watts maximum peak cathode current: 70 ma				6-3
					triode no. two as vertical output amplifier	500 (n)	30					maximum plate dissipation: 6.5 watts peak positive pulse plate voltage: 2200 volts maximum peak cathode current: 105 ma				

6C4



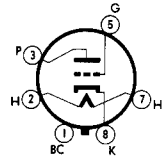
miniature

6C5



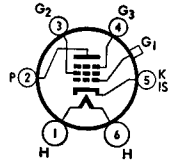
metal

6C5-GT



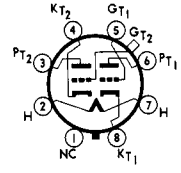
glass

6C6



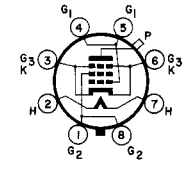
glass

6C8-G



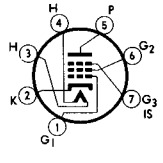
glass

6CB5
6CB5-A



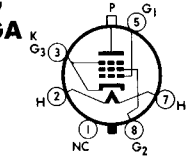
glass

6CB6
6CB6-A
6CF6



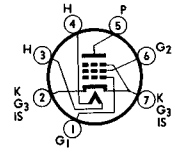
miniature

6CD6-G
6CD6-GA



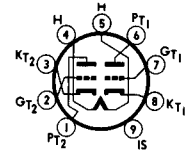
glass

6CE5



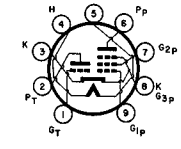
miniature

6CG7



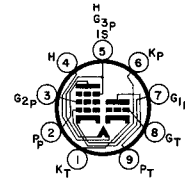
miniature

6CG8
6CG8-A



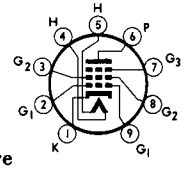
miniature

6CH8



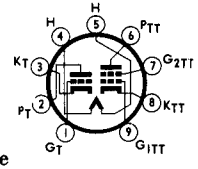
miniature

6CL6



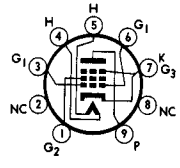
miniature

6CL8
6CL8-A



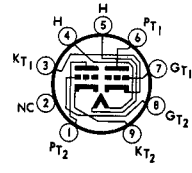
miniature

6CM6



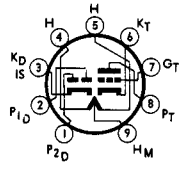
miniature

6CM7



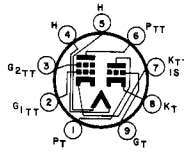
miniature

6CN7



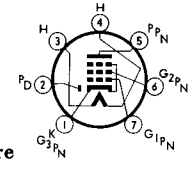
miniature

6CQ8



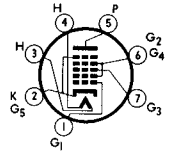
miniature

6CR6



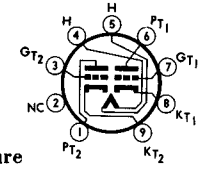
miniature

6CS6



miniature

6CS7



miniature

the underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as sperifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(c) approximate

(f) megohms

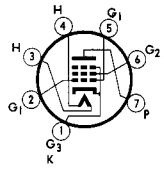
(n) absolute maximum rating

(p) the duration of the pulse voltage must not exceed 15% of one scanning cycle

type number	name	cathode			typical use		plate		grid bias*	screen		a-c plate resistance	transconductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp			volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
6CU5	beam-power amplifier	H	6.3	1.2	class A amplifier		120	49	–8	110	4	10,000	7500	.....	2500	2-3	5-3
6CU6/ 6BQ6-GA	beam-power amplifier	H	6.3	1.2	TV horizontal deflection amplifier		max peak positive pulse plate voltage: 6000 volts (n) max d-c plate voltage: 600 volts						max plate dissipation: 11 watts max screen dissipation: 2.5 watts				12-B
6CU8	medium-mu triode: sharp-cutoff pentode	H	6.3	0.45	class A amplifier	triode	125	17	–1	.....	.....	4100	5800	24	.....	.....	6-2
						pentode	125	12	Rk = 56	125	3.8	170,000	7800	.....	.....	.....	
6CX8	triode: pentode	H	6.3	0.75	class A amplifier	triode	150	9.2	Rk = 150	.....	.....	8700	4600	40	.....	.....	6-3
						pentode	200	24	Rk = 68	125	5.2	70,000	10,000	.....	.....	.....	
6CY5	r-f tetrode	H	6.3	0.20	class A amplifier		125	10.0	–1	80	1.4	125,000	8000	.....	.....	.....	5-2
6CY7	dual triode	H	6.3	0.75	class A amplifier	triode 1	250	1.2	–3	.....	.....	52,000	1300	68	.....	.....	6-3
						triode 2	150	30	Rk = 620	.....	.....	920	5400	5	.....	.....	
6CZ5	beam-pentode	H	6.3	0.45	class A amplifier		250	46	–14	250	4.6	73,000	4800	.....	5000	5.4	6-4
6D6	remote-cutoff pentode	H	6.3	0.3	amplifier		100 250	8.0 8.2	–3.0 –3.0	100 100	2.2 2.0	250,000(c) 800,000(c)	1500 1600	....	....	....	12-2
6D8-G	pentagrid converter(b)	H	6.3	0.15	converter		250	3.5	–3.0	100	2.6	400,000	anode-grid no. 2: 250 volts(q)(max); 4.3 ma oscillator-grid no. 1 resistor: 50,000 ohms conversion transconductance: 550 μmhos				12-8
6DA4	half-wave rectifier	H	6.3	1.20	TV damper diode		max inverse plate voltage: 4400 volts (p) max peak plate current: 700 ma						max plate dissipation: 5.5 watts max d-c output current: 145 ma				9-11
6DB6	dual-control pentode	H	6.3	0.30	class A amplifier		150	5.8	G_1: –1 G_3: –3	150	6.6	50,000	grid one-plate transconductance: 2050 μmhos; grid three-plate transconductance: 1000 μmhos				5-2
6DC6	r-f pentode	H	6.3	0.30	class A amplifier		200	9	Rk = 180	150	3	500,000	5500	.....	.....	.....	5-2
6DE6	r-f pentode	H	6.3	0.30	class A amplifier		125	15.5	Rk = 56	125	4.2	250,000	8000	.....	.....	.....	5-2
6DE7	dual triode	H	6.3	0.90	class A amplifier	triode 1	250	5.5	–11	.....	.....	8750	2000	17.5	.....	.....	6-3
						triode 2	150	35	–17.5	.....	.....	925	6500	6	.....	.....	
6DG6-GT	beam-power amplifier	H	6.3	1.2	class A amplifier		110 200	49.0 46.0	–7.5 Rk = 180	110 125	4.0 2.2	13,000 28,000	8000 8000	....	2000 4000	2.1 3.8	9-11
6DK6	sharp-cutoff r-f pentode	H	6.3	0.3	class A amplifier		125	12.0	Rk = 56	125	3.8	350,000	9800	.....	.....	.....	5-2
6DN6	beam-power amplifier	H	6.3	2.5	TV horizontal deflection amplifier		max d-c plate voltage: 700 volts max d-c cathode current: 200 ma						max plate dissipation: 15 watts max screen dissipation: 3.0 watts				12-21
6DQ6	beam-power amplifier	H	6.3	1.2	TV horizontal deflection amplifier		max peak positive pulse plate voltage: 6000 volts (n) max d-c plate voltage: 550 volts						max plate dissipation: 15 watts max screen dissipation: 2.5 watts				12-B
6DQ6-A	beam-power amplifier	H	6.3	1.2	TV horizontal deflection amplifier		max peak positive pulse plate voltage: 6000 volts (n) max d-c plate voltage: 700 volts						max plate dissipation: 15 watts max screen dissipation: 3 watts				12-B
6DS5	beam-pentode	H	6.3	0.80	class A amplifier		250 250	29 27	–8.5 Rk = 270	200 200	3 3	28,000 28,000	5800 5800	....	8000 8000	3.8 3.6	5-3
6DT5	beam-pentode	H	6.3	1.2	class A amplifier		250	44	–16.5	250	1.5	.....	6200	.....	.....	.....	6-3

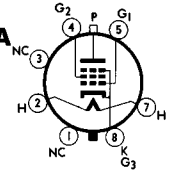
6DT6	dual-control pentode	H	6.3	0.30	class A amplifier	150	1.1	Rk = 560	100	2.1	150,000	grid one-plate transconductance: 615 μmhos; grid three-plate transconductance: 515 μmhos					5-2
					FM detector	250	0.22	Rk = 560	100	5.5	.....	.....	.....	.....	.....	.....	
6E5	electron-ray tube	H	6.3	0.3	visual indicator	plate and target supply voltage: 250 volts triode plate resistor: 1.0 meg target current: 4 ma						grid bias: −8 volts; shadow angle 0° grid bias: 0 volts; shadow angle 90° plate current: 0.24 ma					9-26
6EA8	triode-pentode	H	6.3	0.45	class A amplifier	triode	150	18	Rk = 56	.....	.....	5000	8500	40	.....	.....	6-2
						pentode	125	12	−1	125	4	80,000	6400	.....	.....	.....	
6EB8	high-mu triode sharp-cutoff pentode	H	6.3	0.75	class A amplifier	triode	250	2	−2	.....	.....	37,000	2700	100	.....	.....	6-3
						pentode	200	25	Rk = 68	125	7	75,000	12,500	.....	.....	.....	
6F5	high-mu triode	H	6.3	0.3	class A amplifier		100	0.4	−1.0	.....	.....	85,000	1150	100	.....	.....	8-4
6F5-GT							250	0.9	−2.0	.....	.....	66,000	1500	100	.....	.....	9-17

6CU5



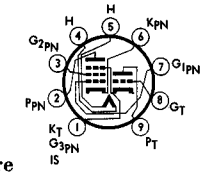
miniature

6CU6/ 6BQ6-GA 6DQ6 6DQ6-A



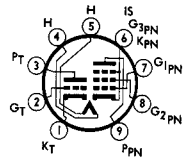
glass

6CU8



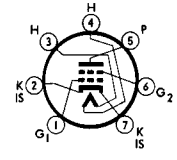
miniature

6CX8 6EB8



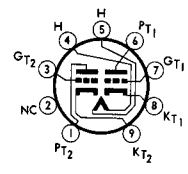
miniature

6CY5



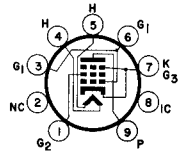
miniature

6CY7



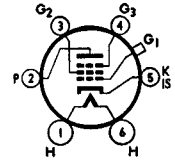
miniature

6CZ5



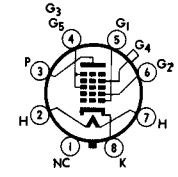
miniature

6D6



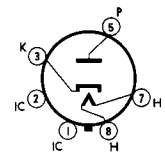
glass

6D8-G



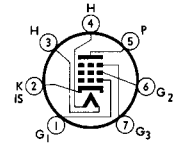
glass

6DA4



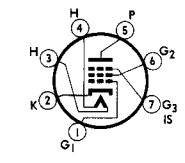
glass

6DB6



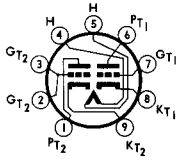
miniature

6DC6 6DE6 6DK6



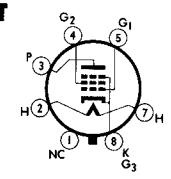
miniature

6DE7



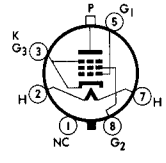
miniature

6DG6-GT



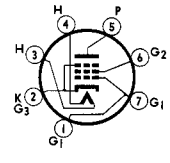
glass

6DN6



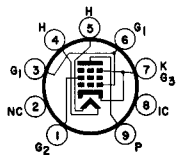
glass

6DS5



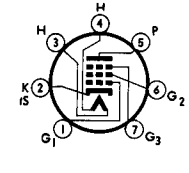
miniature

6DT5



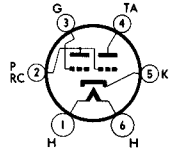
miniature

6DT6



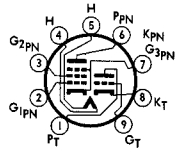
miniature

6E5



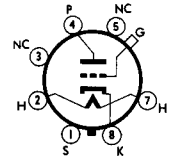
glass

6EA8



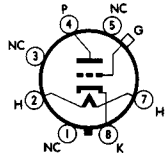
miniature

6F5



metal

6F5-GT



glass

the underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(b) grids no. 3 and no. 5 are screen; grid no. 4 is signal input grid

(c) approximate

(n) absolute maximum rating

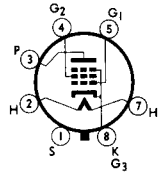
(p) the duration of the pulse voltage must not exceed 15% of one scanning cycle

(q) supply voltage applied through 20,000 ohm voltage-dropping resistor

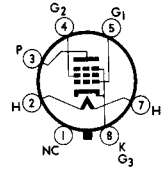
type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
6F6	power pentodes	H	6.3	0.7	pentode class A amplifier	250 285	34.0 38.0	–16.5 –20.0	250 285	6.5 7.0	80,000 78,000	2500 2550	....	7000 7000	3.20 4.80	8-6
.....					triode(m) class A amplifier	250	31.0	–20.0	.....	.....	2600	2600	6.8	4000	0.85	
6F6-G					pentode push-pull class A amplifier	315 315	62.0(i) 62.0(i)	cath.-bias –24.0	285 285	12.0(i) 12.0(i)	cathode-bias resistor: 320 ohms(i)			10,000 10,000	10.5 11.0(j)	14-3
.....					pentode push-pull class AB_2 amplifier(w)	375 375	54.0(i) 34.0(i)	cath.-bias –26.0	250 250	8.0(i) 5.0(i)	cathode-bias resistor: 340 ohms(i)			10,000 10,000	19.0 18.5(j)	
6F6-GT					triode push-pull (m)class AB_2 amplifier(w)	350 350	50.0(i) 48.0(i)	cath.-bias –38.0	....	....	cathode-bias resistor: 730 ohms(i)			10,000 6000	9.0 13.0(j)	9-5
6F7	triode-pentode	H	6.3	0.3	triode unit as class A amplifier	100	3.5	–3.0 (min.)	.....	.....	16,000	500	8	.....	.....	12-6
					pentode unit as class A amplifier	100 250	6.3 6.5	–3.0 (min)	100 100	1.6 1.5	290,000 850,000	1050 1100	....	....	....	
					pentode unit as mixer	250	2.8	–10.0	100	0.6	oscillator peak voltage: 7.0 volts		conversion transconductance: 300 micromhos			
6F8-G	twin-triode amplifier	H	6.3	0.6	class A amplifier (each section)	250	9.0	–8.0	.....	.....	7700(c)	2600(c)	20	.....	.....	12-8
6FV8	triode: pentode	H	6.3	0.45	class A amplifier triode	125	14	–1	.....	.....	5000	8000	40	.....	.....	6-2
					class A amplifier pentode	125	12	–1	125	4	200,000	6500	.....	.....	.....	
6G6-G	power amplifier pentode	H	6.3	0.15	pentode class A amplifier	135 180	11.5 15.0	–6.0 –9.0	135 180	2.0 2.5	170,000 175,000	2100 2300	....	12,000 10,000	0.60 1.10	12-7
					triode(m) class A amplifier	180	11.0	–12.0	.....	.....	4750	2000	9.5	12,000	0.25	
6H6	twin diodes	H	6.3	0.3	voltage doubler	a-c supply voltage per plate(rms): 150 volts(max) d-c output current: 8 ma(max)					total effective plate-supply impedance per plate: half-wave–30 ohms(min); full-wave–15 ohms(min)					8-5
.....																
6H6-GT					half-wave rectifier	a-c plate voltage(rms: 150 volts(max) d-c output current per plate: 8 ma(max)					total effective plate-supply impedance: up to 117 volts –15 ohms; at 150 volts –40 ohms					9-11
6J5	medium-mu triode	H	6.3	0.3	class A amplifier	90 250	10.0 9.0	0 –8.0	....	....	6700 7700	3000 2600	20 20	....	....	8-1
6J5-GT																9-12
6J6	medium-mu twin triode	H	6.3	0.45	each unit as class A amplifier	100	8.5		Rk = 50(i)		7100	5300	38	.....	.....	5-2
6J6-A					push-pull class C amplifier	150	30.0	–10.0	Rk = 220(i)		grid current: 16 ma driving power: 0.35 watt				3.5	
6J7	sharp-cutoff pentode	H	6.3	0.3	pentode class A r-f amplifier	100 250	2.0 2.0	–3.0 –3.0	100 100	0.5 0.5	1.0(f) 1.0+(f)	1185 1225	....	....	....	8-4
6J7-G					triode(x) class A amplifier	180 250	5.3 6.5	–5.3 –8.0	....	....	11,000 10,500	1800 1900	20 20	....	....	12-8
6J7-GT																9-18
6J8-G	triode: heptode	H	6.3	0.3	mixer	250	1.3	–3.0	100	2.9	4.0(f)	conversion transconductance: 290 μmhos				12-8
					oscillator	250(q)	grid resistor: 50,000 ohms				grid current: 0.4 ma		plate current: 5 ma			

6K5-GT	high-mu triode	H	6.3	0.3	class A amplifier	100 250	0.35 1.10	−1.5 −3.0	....	....	78,000 50,000	900 1400	70 70	....	....	9-12
6K6-GT	power amplifier pentode	H	6.3	0.4	single-tube class A amplifier	100 250 315	9.0 32.0 25.0	−7.0 −18.0 −21.0	100 250 250	1.6 5.5 4.0	104,000 90,000 110,000	1500 2300 2100	....	12,000 7600 9000	0.35 3.40 4.50	9-11
					push-pull class A amplifier	285 285	55.0(i) 55.0(i)	−25.5 cath.-bias	285 285	9.0(i) 9.0(i)	..... cathode-bias resistor: 400 ohms		.....	12,000 12,000	10.50(j) 9.80(j)	
6K7 **6K7-G** **6K7-GT**	remote-cutoff pentode	H	6.3	0.3	class A amplifier	100 250	9.5 10.5	−1.0 −3.0	100 125	2.7 2.6	150,000 600,000	1650 1650	....	....	....	8-4 12-8 9-18
6K8 **6K8-G** **6K8-GT**	triode: hexode converter	H	6.3	0.3	triode unit as oscillator	100	3.8	triode-grid resistor: 50,000 ohms			triode-grid and hexode-grid current: 0.15 ma					8-2 12-8 9-24
					hexode unit as mixer	250	2.5	−3.0	100	6.0	600,000	conversion transconductance: 350 μmhos				
6L5-G	medium-mu triode	H	6.3	0.15	class A amplifier	250	8.0	−9.0	.....	.....	9000	1900	17	.....	.....	12-7

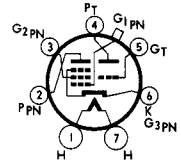
6F6 metal



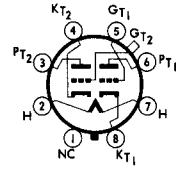
6F6-G
6F6-GT
6G6-G
6K6-GT glass



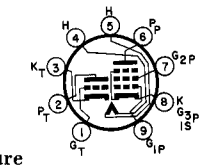
6F7 glass



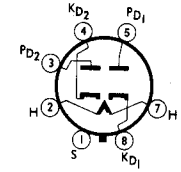
6F8-G glass



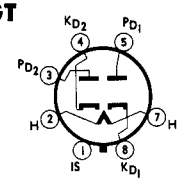
6FV8 miniature



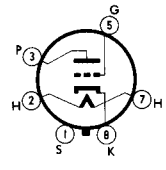
6H6 metal



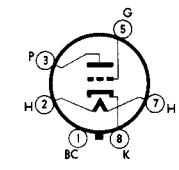
6H6-GT glass



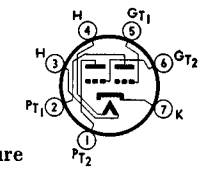
6J5 metal



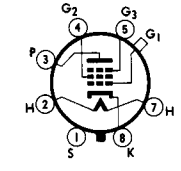
6J5-GT glass



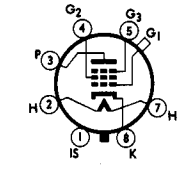
6J6
6J6-A miniature



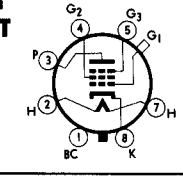
6J7
6K7 metal



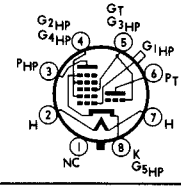
6J7-G glass



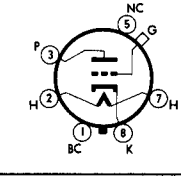
6J7-GT
6K7-GT glass



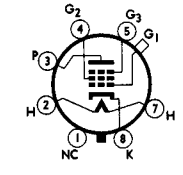
6J8-G glass



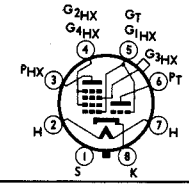
6K5-GT glass



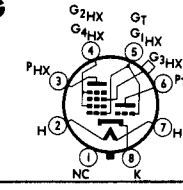
6K7-G glass



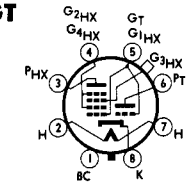
6K8 metal



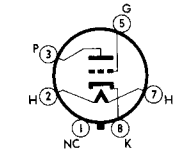
6K8-G glass



6K8-GT glass



6L5-G glass



the underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(c) approximate

(f) megohms

(i) for two tubes

(j) power output is for two tubes at stated plate-to-plate load

(m) grid no. 2 tied to plate

(q) supply voltage applied through 20,000 ohm voltage-dropping resistor

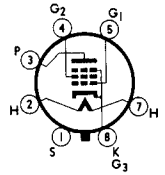
(w) subscript 2 on class of amplifier service indicates that grid current flows during some part of input cycle

(x) grids no. 2 and no. 3 tied to plate

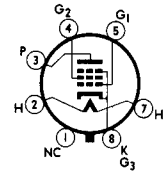
type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
6L6	beam power amplifiers	H	6.3	0.9	single-tube class A amplifier	250 250	72.0 75.0	–14.0 cath.-bias	250 250	5.0 5.4	22,500 cathode-bias resistor: 170 ohms	6000	.....	2500 2500	6.5 6.5	10-1
6L6-G					push-pull class A amplifier	270 270	134.0(i) 134.0(i)	–17.5 cath.-bias	270 270	11.0(i) 11.0(i)	23,500 cathode-bias resistor: 125 ohms(i)	5700	.....	5000 5000	17.5(j) 18.5(j)	16-3
6L6-GA					push-pull class AB_1 amplifier(u)	360 360	88.0(i) 88.0(i)	–22.5 cath.-bias	270 270	5.0(i) 5.0(i)	..... cathode-bias resistor: 250 ohms(i)	.....	.....	6600 9000	26.5(j) 24.5(j)	14-3
6L6-GB					push-pull class AB_2 amplifier(w)	360 360	78.0(i) 88.0(i)	–18.0 –22.5	225 270	3.5(i) 5.0(i)	....	.....	.....	6000 3800	31.0(j) 47.0(j)	
					single triode(m) class A amplifier	250 250	40.0 40.0	–20.0 cath.-bias	....	....	1700 cathode-bias resistor: 490 ohms	4700	8	5000 6000	1.4 1.3	12-15
6L7	pentagrid mixer(r)	H	6.3	0.3	mixer in superheterodyne	250	3.3	–6.0	150	9.2	oscillator-grid (no. 3) bias: 15 volts grid no. 3 peak swing: 18 volts (min) conversion transconductance: 350 micromhos					8-4
					class A amplifier	250	5.3	–3.0(y)	100	6.5	600,000	1100	.....	.....	.....	
6N7	high-mu twin power triode	H	6.3	0.8	class A amplifier (as driver)(k)	250 294	6.0 7.0	–5.0 –6.0	....	....	11,300 11,000	3100 3200	35 35	20,000 or more	exceeds 0.4	8-6
6N7-GT					class B amplifier	300	.....	0	power output is for one tube at stated plate-to-plate load					8000	10.0	9-11
6P5-GT	medium-mu triode	H	6.3	0.3	class A amplifier	250	5.0	–13.5	.....	.....	9500	1450	13.8	.....	.....	9-11
6Q7	twin-diode: high-mu triode	H	6.3	0.3	triode unit as class A amplifier	100 250	0.8 1.1	–1.0 –3.0	....	....	58,000 58,000	1200 1200	70 70	....	....	8-4
6Q7-G																12-8
6Q7-GT																9-18
6R7	twin-diode: high-mu triode	H	6.3	0.3	triode unit as class A amplifier	250	9.5	–9.0	.....	.....	8500	1900	16	.....	.....	8-4
6R7-GT																9-17
6S4	medium-mu triode	H	6.3	0.6	vertical deflection amplifier	d-c plate voltage: 550 volts (max) d-c cathode current: 30 ma (max)					peak positive-pulse plate voltage (p): 2200 volts (max) plate dissipation: 8.5 watts (max)					6-3
6S4-A					class A amplifier	250	26.0	–8.0	.....	.....	3600	4500	16	.....	.....	
6S7	remote-cutoff pentode	H	6.3	0.15	class A amplifier	135 250	3.7 8.5	–3.0 –3.0	67.5 100	0.9 2.0	1.0(f) 1.0(f)	1250 1750	.....	.....	.....	8-2
6S8-GT	triple-diode: triode	H	6.3	0.3	triode unit as class A amplifier	100 250	0.4 0.9	–1.0 –2.0	....	....	110,000 91,000	900 1100	100 100	.....	.....	9-24
6SA7	pentagrid converter(h)	H	6.3	0.3	mixer	100 250	3.3 3.5	–2.0 –2.0	100 100	8.5 8.5	500,000 1.0(f)	grid no. 1 resistor: 20,000 ohms conversion transconductance: 450 μmhos				8-1
6SA7-GT																9-11
6SB7-Y	pentagrid converter(h)	H	6.3	0.3	mixer	100 250	3.6 3.8	–1.0 –1.0	100 100	10.2 10.0	500,000 1.0(f)	grid no. 1 resistor: 20,000 ohms conversion transconductance: 950 μmhos				8-1
6SC7	twin-triode amplifier	H	6.3	0.3	each unit as class A amplifier	250	2.0	–2.0	.....	.....	53,000	1325	70	.....	.....	8-1
6SD7-GT	semi-remote cutoff pentode	H	6.3	0.3	class A amplifier	250	9.5	–2.0	125	3.0	700,000	4250	.....	.....	.....	9-12

6SF5	high-mu triodes	H	6.3	0.3	class A amplifier	100	0.4	−1.0	.....	.....	85,000	1150	100	.....	.....	8-1
6SF5-GT						250	0.9	−2.0	.....	.....	66,000	1500	100	.....	.....	9-11
6SF7	diode: remote-cutoff pentode	H	6.3	0.3	pentode unit as class A amplifier	100	12.0	−1.0	100	3.4	200,000	1975	.....	.....	.....	8-1
						250	12.4	−1.0	100	3.3	700,000	2050	.....	.....	.....	
6SG7	remote-cutoff pentode	H	6.3	0.3	class A amplifier	100	8.2	−1.0	100	3.2	250,000	4100	.....	.....	.....	8-1
						250	11.8	−1.0	125	4.4	900,000	4700	.....	.....	.....	
						250	9.2	−2.5	150	3.4	1.0+(f)	4000	.....	.....	.....	
6SH7	sharp-cutoff pentode	H	6.3	0.3	class A amplifier	100	5.3	−1.0	100	2.1	350,000	4000	.....	.....	.....	8-1
						250	10.8	−1.0	150	4.1	900,000	4900	.....	.....	.....	
6SJ7	sharp-cutoff pentodes	H	6.3	0.3	class A amplifier	100	2.9	−3.0	100	0.9	700,000	1575	.....	.....	.....	8-1
						250	3.0	−3.0	100	0.8	1.0(f)	1650	.....	.....	.....	
6SJ7-GT					triode connection class A amplifier	180	6.0	−6.0	(x)	.....	8200	2300	19	.....	.....	9-12
						250	9.2	−8.5		.....	7600	2500	19	.....	.....	
6SK7	remote-cutoff pentode	H	6.3	0.3	class A amplifier	100	13.0	−1.0	100	4.0	120,000	2350	.....	.....	.....	8-1
6SK7-GT						250	9.2	−3.0	100	2.6	800,000	2000	.....	.....	.....	9-12

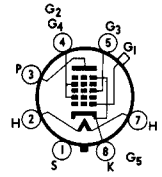
6L6 — metal



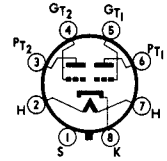
6L6-G
6L6-GA
6L6-GB — glass



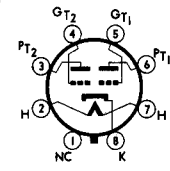
6L7 — metal



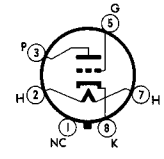
6N7 — metal



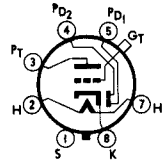
6N7-GT — glass



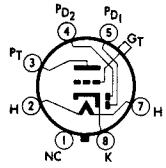
6P5-GT — glass



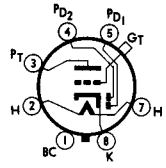
6Q7
6R7 — metal



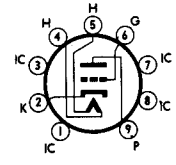
6Q7-G
6R7-GT — glass



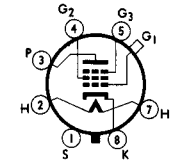
6Q7-GT — glass



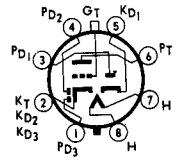
6S4
6S4-A — miniature



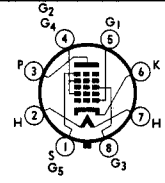
6S7 — metal



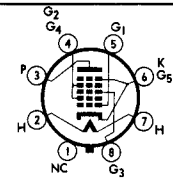
6S8-GT — glass



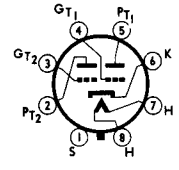
6SA7
6SB7-Y — metal



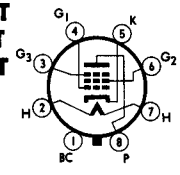
6SA7-GT — glass



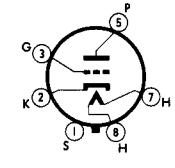
6SC7 — metal



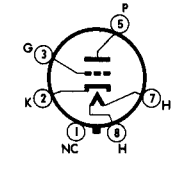
6SD7-GT
6SJ7-GT
6SK7-GT — glass



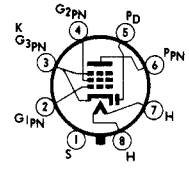
6SF5 — metal



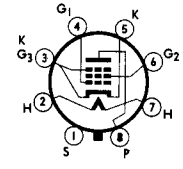
6SF5-GT — glass



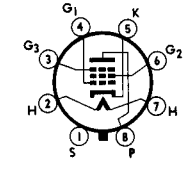
6SF7 — metal



6SG7
6SH7 — metal



6SJ7
6SK7 — metal



The underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

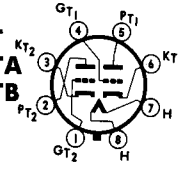
■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(f) megohms
(h) grids no. 2 and no. 4 are screen; grid no. 3 is signal input control grid
(i) for two tubes
(j) power output is for two tubes at stated plate-to-plate load
(k) both grids connected together; likewise, both plates
(m) grid no. 2 tied to plate
(p) the duration of the pulse voltage must not exceed 15% of one scanning cy
(r) grids no. 2 and no. 4 are screen; grid no. 1 is signal input control grid
(u) subscript 1 on class of amplifier service indicates that grid current does not flow during any part of input cycle
(w) subscript 2 on class of amplifier service indicates that grid current flows during some part of input cycle
(x) grids no. 2 and no. 3 tied to plate
(y) for signal-input control-grid (no. 1); control grid no. 3 bias, −3 volts

type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg—47
6SL7-GT	twin triode amplifier	H	6.3	0.3	each unit as amplifier	250	2.3	−2.0	.....	.....	44,000	1600	70	.....	.....	9-11
6SN7-GT **6SN7-GTA** **6SN7-GTB**	twin-triode amplifier	H	6.3	0.6	class A amplifier per section	90 250	10.0 9.0	0 −8.0	....	....	6700 7700	3000 2600	20 20	....	....	9-11
6SQ7 **6SQ7-GT**	twin-diode: high-mu triode	H	6.3	0.3	triode unit as class A amplifier	100 250	0.5 1.1	−1.0 −2.0	....	....	110,000 85,000	925 1175	100 100	....	....	8-1 9-12
6SR7 **6SR7-GT**	duplex-diode: triode	H	6.3	0.3	triode unit as class A amplifier	250	9.5	−9.0	.....	.....	8500	1900	16	10,000	0.3	8-1 9-11
6SS7	remote-cutoff pentode	H	6.3	0.15	class A amplifier	100 250	12.2 9.0	−1.0 −3.0	100 100	3.1 2.0	120,000 1.0(f)	1930 1850	....	....	....	8-1
6SV7	diode: sharp-cutoff r-f pentode	H	6.3	0.3	class A amplifier	100 250	3.7 7.5	−1.0 −1.0	100 150	1.4 2.8	700,000(c) 1.5(f)(c)	2600 3600	....	....	....	8-1
6T4	low-mu UHF triode	H	6.3	0.225	class A amplifier	80	18	Rk = 150	.....	.....	1860	7000	13	.....	.....	5-1
					950 Mc oscillator	80	18	−4	grid resistor: 10,000 ohms							
6T8 **6T8-A**	triple-diode high-mu triode	H	6.3	0.45	triode unit as class A amplifier	100 250	0.8 1.0	−1.0 −3.0	....	....	54,000 58,000	1300 1200	70 70	....	....	6-2
6U5	electron-ray tube	H	6.3	0.3	visual indicator	plate and target supply voltage: 250 volts triode plate resistor: 1.0 megohm target current: 4.0 ma						grid bias, −22 volts; shadow angle, 0° grid bias, 0 volts; shadow angle, 90° plate current: 0.24 ma				9-26
6U7-G	remote-cutoff pentode	H	6.3	0.3	class A amplifier	100 250	8.0 8.2	−3.0 −3.0	100 100	2.2 2.0	250,000 800,000	1500 1600	....	....	....	12-4
6U8 **6U8-A**	triode pentode	H	6.3	0.45	class A amplifier — pentode	125	9.5	−1	110	3.5	200,000(c)	5000	.....	.....	.....	6-2
					class A amplifier — triode	125	13.5	−1	.....	.....	5000(c)	7500	40	.....	.....	
6V3-A	half-wave high-vacuum rectifier	H	6.3	1.75	half-wave rectifier	supply voltage (rms): 350 volts (max) d-c output current: 125 ma (max)					total plate-supply impedance: 145 ohms (min)					6-8
					TV damper service	peak inverse voltage (p): 6000 volts (n) (max) d-c output current (n): 135 ma (max)					peak plate current (n): 600 ma (max)					
6V6 **6V6-GT** **6V6-GTA**	beam power amplifiers	H	6.3	0.45	single-tube class A amplifier	180 250 315	29.0 45.0 34.0	−8.5 −12.5 −13.0	180 250 225	3.0 4.5 2.2	58,000 52,000 77,000	3700 4100 3750	....	5500 5000 8500	2.0 4.5 5.5	8-6
					push-pull class AB_1 amplifier(u)	250 285	70.0(i) 70.0(i)	−15.0 −19.0	250 285	5.0(i) 4.0(i)	60,000 70,000	3750 3600	....	10,000 8000	10.0(j) 14.0(j)	9-11
6W4-GT	half-wave rectifier	H	6.3	1.2	with capacitive-input filter	peak inverse voltage: 1250 volts (max) a-c plate voltage (rms): 350 volts (max)					d-c output current: 125 ma (max) peak plate current: 600 ma (max)			impedance: 145 ohms (△)		9-41
					TV damper service	peak inverse voltage (p): 3500 volts (max) d-c output current: 125 ma (max)					peak plate current: 600 ma (max)					
6W6-GT	beam power amplifier	H	6.3	1.2	class A amplifier	110 200	49.0(g) 46.0(g)	−7.5 Rk = 180	110 125	4.0(g) 2.2(g)	13,000(c) 28,000(c)	8000 8000	....	2000 5000	2.1 3.8	9-41
					vertical deflection amplifier	positive-pulse plate voltage (p): 1000 volts (max) plate dissipation: 10 watts (max)						screen dissipation: 1.25 watts (max)				

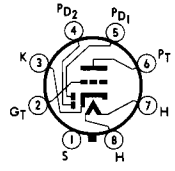
6X4 **6X5** **6X5-GT**	full-wave rectifiers	H	6.3	0.6	with capacitive input filter	a-c voltage per plate (rms): 360 volts (max) peak inverse voltage: 1250 volts (max)					d-c output current: 90 ma (max) peak plate current: 245 ma (max)			impedance: 150 ohms (△)		5-3 8-6
					with inductive input filter	a-c voltage per plate (rms): 450 volts (max) peak inverse voltage: 1250 volts (max)					d-c output current: 90 ma (max) peak plate current: 245 ma (max)			input choke value: 8 henries (min)		9-11
6X8	triode: pentode converter	H	6.3	0.45	pentode unit as class A amplifier	125	12	−1	125	2.2	300,000(c)	5500	.....	.....	.....	6-2
					triode unit as class A amplifier	125	9	−1	.....	.....	6000(c)	6500	40.0	.....	.....	
6Y6-G **6Y6-GA**	beam power amplifier	H	6.3	1.25	single-tube class A amplifier	135 200	58.0 61.0	−13.5 −14.0	135 135	3.5 2.2	9300 18,300	7000 7100	....	2000 2600	3.6 6.0	14-3 12-A
6ZY5-G	full-wave rectifier	H	6.3	0.3	with capacitive-input filter	a-c voltage per plate (rms): 325 volts (max) peak inverse voltage: 1250 volts (max)					d-c output current: 40 ma (max) peak plate current: 120 ma (max)			impedance (△): 225 ohms		12-7
					with inductive-input filter	a-c voltage per plate (rms): 450 volts (max) peak inverse voltage: 1250 volts (max)					d-c output current: 40 ma (max) peak plate current: 120 ma (max)			input choke value: 13.5 henries (min)		
7A4/XXL	medium-mu triode	H	6.3	0.3	class A amplifier	250	9.0	−8.0	.....	.....	7700	2600	20	.....	.....	9-30
7A5	beam power amplifier	H	6.3	0.75	class A amplifier	110	40.0	−7.5	110	3.0	16,000	5800	.....	2500	1.5	9-31

6SL7-GT
6SN7-GT
6SN7-GTA
6SN7-GTB



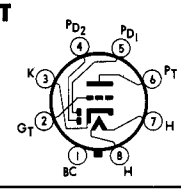
glass

6SQ7
6SR7



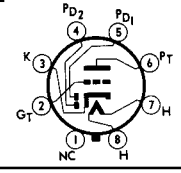
metal

6SQ7-GT



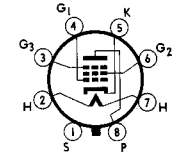
glass

6SR7-GT



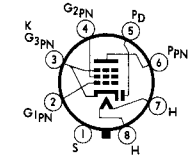
glass

6SS7



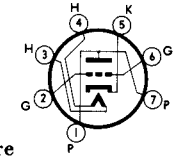
metal

6SV7



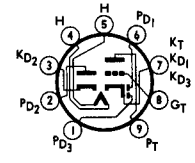
metal

6T4



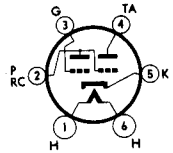
miniature

6T8
6T8-A



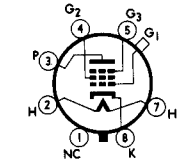
miniature

6U5



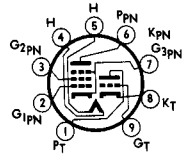
glass

6U7-G



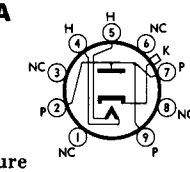
glass

6U8
6U8-A



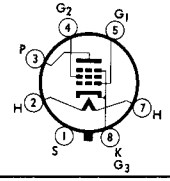
miniature

6V3-A



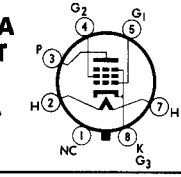
miniature

6V6



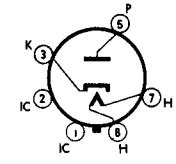
metal

6V6-GT
6V6-GTA
6W6-GT
6Y6-G
6Y6-GA



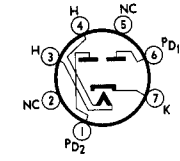
glass

6W4-GT



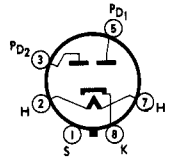
glass

6X4



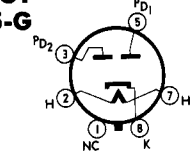
miniature

6X5



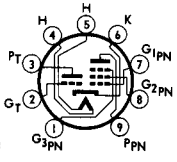
metal

6X5-GT
6ZY5-G



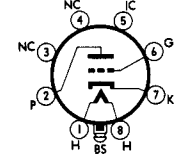
glass

6X8



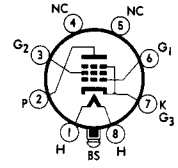
miniature

7A4/XXL



lock-in

7A5



lock-in

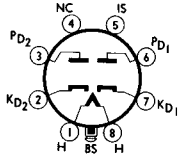
the underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage
(c) approximate
(f) megohms
(g) zero signal
(i) for two tubes
(j) power output is for two tubes at stated plate-to-plate load
(n) absolute maximum rating
(p) the duration of the pulse voltage must not exceed 15% of one scanning cycle
(u) subscript 1 on class of amplifier service indicates that grid current does not flow during any part of input cycle
(△) total effective plate-supply impedance per plate (min)

type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
7A6	twin diode	H	6.3	0.15	detector rectifier	a-c voltage per plate (rms): 150 volts (max)						d-c output current per plate: 8 ma (max)				9-30
7A7	remote-cutoff pentode	H	6.3	0.3	class A amplifier	100 250	13.0 9.2	–1.0 –3.0	100 100	4.0 2.6	120,000(c) 800,000(c)	2350 2000	....	.....	.....	9-30
7A8	octode converter	H	6.3	0.15	converter	100 250	1.8 3.0	–3.0 –3.0	75 100	2.7 3.2	650,000 700,000	conv. transcond: 375 μmhos anode-grid: 100 volts conv. transcond: 550 μmhos anode-grid: 250 volts				9-30
7AF7	medium-mu twin triode	H	6.3	0.3	each unit as class A amplifier	100 250	5.0 9.0	–3.0 –10.0	....	....	8400 7600	1900 2100	16 16	....	....	9-30
7AG7	sharp-cutoff pentode	H	6.3	0.15	class A amplifier	250	6.0	cath.-bias	250	2.0	1.0+(f)	4200	cath.-bias resistor: 250 ohms			9-30
7AU7	twin triode	H	7.0 3.5	0.30 0.60	each section as class A amplifier	100 250	11.8 10.5	0 –8.5	....	....	6250 7700	3100 2200	20 17	....	....	6-2
7B4	high-mu triode	H	6.3	0.3	class A amplifier	100 250	0.4 0.9	–1.0 –2.0	....	....	85,000 66,000	1150 1500	100 100	....	....	9-30
7B5	power amplifier pentode	H	6.3	0.4	class A amplifier	315	25.5(g)	–21.0	250	4.0(g)	75,000	2100	.....	9000	4.5	9-31
7B6	duplex-diode: high-mu triode	H	6.3	0.3	triode unit as amplifier	250	0.9	–2.0	.....	.....	91,000	1100	100	.....	.....	9-30
7B7	remote-cutoff pentode	H	6.3	0.15	class A amplifier	250	8.5	–3.0	100	1.7	750,000	1750	.....	.....	.....	9-30
7B8	pentagrid converter(b)	H	6.3	0.3	converter	250	3.5	–3.0	100	2.7	360,000(c)	conversion transconductance: 550 μmhos				9-30
7C5	beam power amplifier	H	6.3	0.45	class A amplifier	180 315	29.0(g) 34.0(g)	–8.5 –13.5	180 225	3.0(g) 2.2(g)	58,000(c) 77,000(c)	3700 3750	.....	5500 8500	2.0 5.5	9-31
7C6	duplex-diode: high-mu triode	H	6.3	0.15	triode unit as class A amplifier	250	1.3	–1.0	.....	.....	100,000	1000	100	.....	.....	9-30
7C7	sharp-cutoff pentode	H	6.3	0.15	class A amplifier	100 250	1.8 2.0	–3.0 –3.0	100 100	0.4 0.5	1.2(f) 2.0(f)	1225 1300	....	....	....	9-30
7E6	duplex-diode: triode	H	6.3	0.3	triode unit as amplifier	250	9.5	–9.0	.....	.....	8500	1900	16	.....	.....	9-30
7E7	duplex-diode: pentode	H	6.3	0.3	pentode unit as class A amplifier	100 250	10.0 7.5	–1.0 –3.0	100 100	2.7 1.6	150,000 700,000	1600 1300	....	....	....	9-30
7F7	twin-triode amplifier	H	6.3	0.3	each unit as amplifier	250	2.3	–2.0	.....	.....	44,000(c)	1600	70	.....	.....	9-30
7F8	twin-triode amplifier	H	6.3	0.3	each unit as amplifier	250	6.0	cathode-bias resistor: 500 ohms			.....	3300	48	.....	.....	9-32
7H7	sharp-cutoff pentode	H	6.3	0.3	class A amplifier	100 250	7.5 10.0	–1.5 cath.-bias	100 150	2.6 3.2	350,000 800,000	4000 4000	..... cath.-bias resistor: 180 ohms	.....	.....	9-30
7J7	triode: heptode converter	H	6.3	0.3	triode unit as oscillator	100 250(q)	3.2 5.0	triode-grid resistor: 50,000 ohms				triode-grid and heptode-grid current: 0.3 ma triode-grid and heptode-grid current: 0.4 ma				9-30
					heptode unit as mixer	100 250	1.5 1.4	–3.0 –3.0	100 100	2.6 2.8	500,000 1.5(f)	conversion transconductance: 280 μmhos conversion transconductance: 290 μmhos				
7L7	r-f amplifier pentode	H	6.3	0.3	class A amplifier	100 250	5.5 4.5	–1.0 –1.5	100 100	2.4 1.5	100,000 1.0(f)	3000 3100	....	.....	.....	9-30

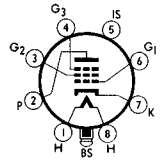
7N7	twin-triode amplifier	H	6.3	0.6	each unit as class A amplifier	90 250	10.0 9.0	0 −8.0	....	....	6700 7700	3000 2600	20 20	....	....	9-31
7Q7	pentagrid converter(h)	H	6.3	0.3	converter	100 250	3.3 3.5	−2.0 −2.0	100 100	8.5 8.5	500,000 1.0(f)	grid no. 1 resistor: 20,000 ohms conversion transconductance: 525 μmhos				9-30
7R7	duplex-diode: pentode	H	6.3	0.3	pentode unit as class A amplifier	100 250	5.5 6.2	−1.0 −1.0	100 100	2.2 1.6	350,000 1.0(f)	3000 3400	....	....	....	9-30
7S7	triode-heptode converter	H	6.3	0.3	triode unit as oscillator	100 250(q)	3.0 5.0	triode-grid resistor: 50,000 ohms				triode-grid and heptode-grid current: 0.3 ma triode-grid and heptode-grid current: 0.4 ma				9-30
					heptode unit as mixer	100 250	1.9 1.8	−2.0 −2.0	100 100	3.0 3.0	500,000 1.25(f)	conversion transconductance: 500 μmhos conversion transconductance: 525 μmhos				
7V7 ..... **7W7**	r-f pentode	H	6.3	0.45	class A amplifier	300	10.0	cath.-bias	150	3.9	300,000	5800	cath.-bias resistor: 160 ohms			9-30
7X7/ XXFM	duplex-diode: high-mu triode	H	6.3	0.3	class A amplifier	250	1.9	−1.0	.....	.....	67,000	1500	100	.....	.....	9-31
7Y4	full-wave rectifier	H	6.3	0.5	with capacitive-input filter	a-c voltage per plate (rms): 325 volts (max) peak inverse voltage: 1250 volts (max)					d-c output current: 70 ma (max) peak plate current: 210 ma (max)		impedance (△): 150 ohms			9-30
					with inductive-input filter	a-c voltage per plate (rms): 450 volts (max) peak inverse voltage: 1250 volts (max)					d-c output current: 70 ma (max) peak plate current: 210 ma (max)		input choke value: 10 henries (min)			
7Z4	full-wave rectifier	H	6.3	0.9	with capacitive-input filter	a-c voltage per plate (rms): 325 volts (max) peak inverse voltage: 1250 volts (max)					d-c output current: 100 ma (max) peak plate current: 300 ma (max)		impedance (△): 75 ohms			9-31
					with inductive-input filter	a-c voltage per plate (rms): 450 volts (max) peak inverse voltage: 1250 volts (max)					d-c output current: 100 ma (max) peak plate current: 300 ma (max)		input choke value: 6 henries (min)			
8AU8	medium-mu triode: sharp-cutoff r-f pentode	H	8.4	0.45	class A amplifier	pentode	200	15	Rk = 82	125	3.4	150,000	7000	.....	.....	.....	6-3
						triode	150	8.5	Rk = 150	.....	.....	8200	4900	40	.....	.....	

7A6 lock-in

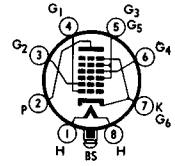


7A7
7AG7
7B7
7C7 lock-in

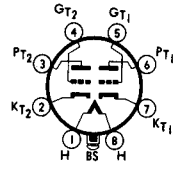
7H7
7L7
7V7



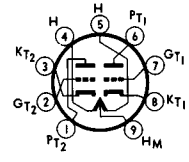
7A8 lock-in



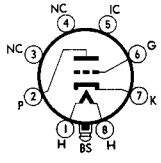
7AF7
7F7
7N7 lock-in



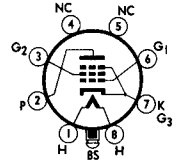
7AU7 miniature



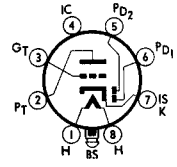
7B4 lock-in



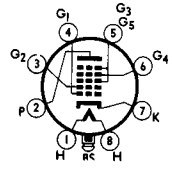
7B5
7C5 lock-in



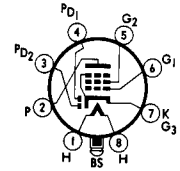
7B6
7C6
7E6 lock-in



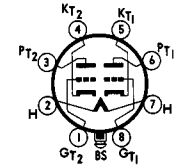
7B8 lock-in



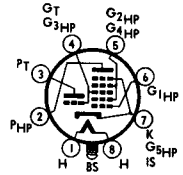
7E7
7R7 lock-in



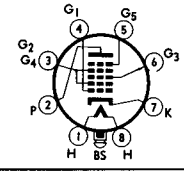
7F8 lock-in



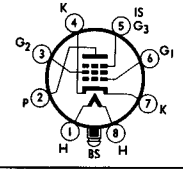
7J7
7S7 lock-in



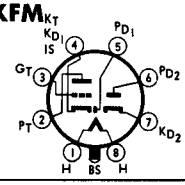
7Q7 lock-in



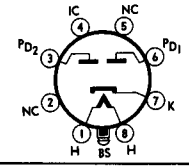
7W7 lock-in



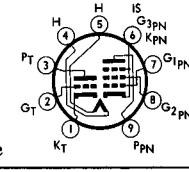
7X7/XXFM lock-in



7Y4
7Z4 lock-in



8AU8 miniature



the underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

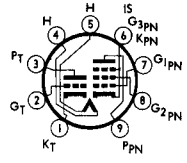
(b) grids no. 3 and no. 5 are screen; grid no. 4 is signal input grid

(c) approximate
(f) megohms
(g) zero signal
(h) grids no. 2 and no. 4 are screen; grid no. 3 is signal input control grid
(q) supply voltage applied through 20,000-ohm voltage-dropping resistor
(△) total effective plate-supply impedance per plate (min)

type number	name	cathode			typical use		plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp			volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
8AW8-A•	high-mu triode: sharp-cutoff pentode	H	8.4	0.45	class A amplifier	triode	200	4	–2.0	.....	.....	17,500	4000	70	.....	.....	6-3
						pentode	200	13	Rk = 180	150	3.5	400,000	9000	.....	.....	.....	
8CG7	medium-mu twin triode	H	8.4	0.45	each section as class A amplifier		90	10	0	.....	.....	6700	3000	20	.....	.....	6-3
							250	9	–8.0	.....	.....	7700	2600	20	.....	.....	
8CM7	dual triode	H	8.4	0.45	triode no. one as oscillator		200	5	–7.0	.....	.....	11,000	2000	20	.....	.....	6-3
					triode no. two as class A amplifier		250	20	–8.0	.....	.....	4100	4400	18	.....	.....	
8CS7	dual triode	H	8.4	0.45	triode no. one as vertical oscillator		500 (n)	20		maximum plate dissipation: 1.25 watts maximum peak cathode current: 70 ma							6-3
					triode no. two as vertical output amplifier		500 (n)	30		maximum plate dissipation: 6.5 watts peak positive pulse plate voltage: 2200 volts maximum peak cathode current: 105 ma							
9U8-A	triode: pentode	H	9.45	0.30	class A amplifier	pentode	125	9.5	–1	110	3.5	200,000(c)	5000	.....	.....	.....	6-2
						triode	125	13.5	–1	.....	.....	9000(c)	7500	40	.....	.....	
10DE7	dual triode	H	9.7	0.60	class A amplifier	triode #1	250	5.5	–11	.....	.....	.....	2000	17.5	.....	.....	6-3
						triode #2	150	35	–17.5	.....	.....	.....	6500	6.0	.....	.....	
12A6	beam-power amplifier	H	12.6	0.15	class A amplifier		250	30	–12.5	250	3.5	50,000(c)	3000	.....	7500	2.5	8-6
12A7	rectifier: pentode	H	12.6	0.3	pentode unit as class A amplifier		135	9.0	–13.5	135	2.5	102,000	975	.....	13,500	0.55	12-6
					half-wave rectifier		a-c voltage per plate (rms): 125 volts (max)							d-c output current: 30 ma (max)			
12A8-GT	pentagrid converter(b)	H	12.6	0.15	converter		100	1.1	–1.5	50	1.3	600,000	anode-grid: 250 volts(q) (max); 4.0 ma oscillator-grid resistor: 50,000 ohms conversion transconductance: 550 μmhos				9-18
							250	3.5	–3.0	100	2.7	360,000					
12AB5	beam-power pentode	H	12.6	0.20	class A amplifier		180	29	–8.5	180	3	50,000	3700	.....	5500	2.0	6-3
							250	33.5	Rk = 270	200	1.6	.....	4000	.....	6000	3.3	
							250	45	–12.5	250	4.5	50,000	4100	.....	5000	4.5	
					push-pull class A_1 amplifier(u)		250	70(i)	–15	250	5(i)	.....	.....	.....	10,000	10(j)	
12AC6	r-f pentode	H	12.6	0.15	class A amplifier		12.6	0.55	0	12.6	0.20	500,000	730	.....	.....	.....	5-2
12AD6	pentagrid converter (h)	H	12.6	0.15	converter		12.6	0.45	0	12.6	1.5	1.0(f)	grid 1 resistor: 33000 ohms conversion transconductance: 260 μmhos				5-2
12AD7	high-mu twin-triode	H	6.3 12.6	0.45 0.225	each section as class A amplifier		250	1.25	–2	.....	.....	62,500	1600	100	.....	.....	6-2
12AE6	twin diode: medium-mu triode	H	12.6	0.15	triode unit as class A amplifier		12.6	0.75	0	.....	.....	15,000	1000	15	.....	.....	5-2
12AF6	r-f pentode	H	12.6	0.15	class A amplifier		12.6	0.75	0	12.6	0.35	300,000	1150	.....	.....	.....	5-2
12AH7-GT	twin triode	H	12.6	0.15	each unit as class A amplifier		100	3.7	–3.6	.....	.....	10,300	1550	16	.....	.....	9-7
							180	7.6	–6.5	.....	.....	8400	1900	16	.....	.....	
12AJ6	twin-diode: medium-mu triode	H	12.6	0.15	triode unit as class A amplifier		12.6	0.75	0	.....	.....	45,000	1200	55	.....	.....	5-2

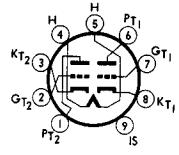
12AL5	twin diode	H	12.6	0.15	detector rectifier	peak inverse voltage: 330 volts (max) peak plate current per plate: 54 ma (max)					d-c output current per plate: 9 ma (max) peak heater-cathode voltage: 330 volts (max)					5-1
12AQ5	beam-power amplifier	H	12.6	0.225	class A amplifier	180 250	29 45	−8.5 −12.5	180 250	3.0 4.5	58,000 52,000	3700 4100	....	5500 5000	2.0 4.5	5-3
					push-pull class AB_1 amplifier(u)	250	70(i)	−15	250	5.0(i)	.....	.....	.....	10,000	10(j)	
12AT6	duplex-diode: high-mu triode	H	12.6	0.15	triode unit as class A amplifier	100 250	0.8 1.0	−1.0 −3.0	....	....	54,000 58,000	1300 1200	70 70	....	....	5-2
12AT7	high-mu twin triode	H	6.3 12.6	0.30 0.15	each unit as class A amplifier	100 250	3.7 10.0	Rk = 270 Rk = 200	....	....	15,000 10,900	4000 5500	60 60	....	....	6-2
12AU6	r-f amplifier pentode	H	12.6	0.15	as pentode class A amplifier	100 250	5.0 10.6	cathode-bias	100 150	2.1 4.3	500,000 1.0(f)	3900 5200	cath.-bias resistor: 150 ohms cath.-bias resistor: 68 ohms			5-2
					as triode class A amplifier	250	12.2	cathode-bias resistor: 330 ohms			.....	4800	36	.....	.....	
12AU7 **12AU7-A**	twin-triode amplifier	H	6.3 12.6	0.30 0.15	each unit as class A amplifier	100 250	11.8 10.5	0 −8.5	....	....	6250 7700	3100 2200	20 17	....	....	6-2
12AV5-GA	beam pentode	H	12.6	0.60	TV horizontal deflection amplifier	peak positive pulse plate voltage: 5500 volts (p) plate dissipation: 11 watts							max screen input: 2.5 watts max d-c plate current: 110 ma			11-A
12AV6	twin-diode: high-mu triode	H	12.6	0.15	triode unit as class A amplifier	100 250	0.5 1.2	−1.0 −2.0	....	....	80,000 62,500	1250 1600	100 100	....	....	5-2
12AV7	twin triode	H	6.3 12.6	0.450 0.225	each unit as class A amplifier	100 150	9.0 18.0	Rk = 120 Rk = 56	....	....	6100 4800	6100 8500	37 41	....	....	6-2

8AW8-A



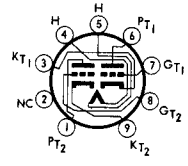
miniature

8CG7



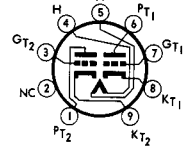
miniature

8CM7



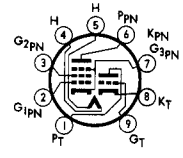
miniature

8CS7



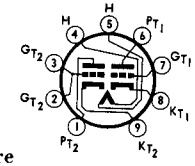
miniature

9U8-A



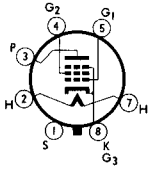
miniature

10DE7



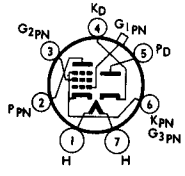
miniature

12A6



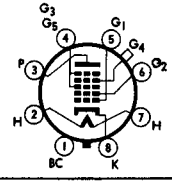
metal

12A7



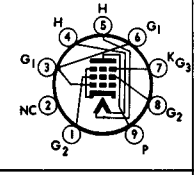
glass

12A8-GT



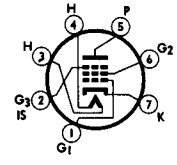
glass

12AB5



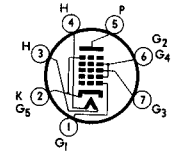
miniature

12AC6
12AF6
12AU6



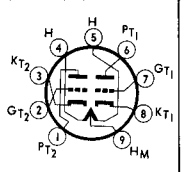
miniature

12AD6



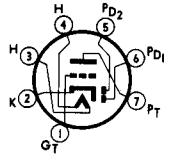
miniature

12AD7
12AT7
12AU7
12AU7-A
12AV7



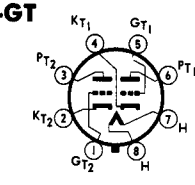
miniature

12AE6
12AJ6
12AT6
12AV6



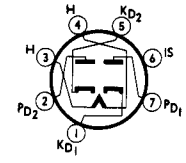
miniature

12AH7-GT



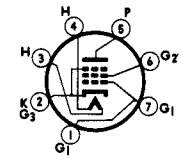
glass

12AL5



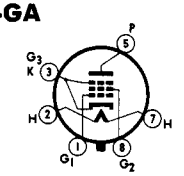
miniature

12AQ5



miniature

12AV5-GA



glass

the underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(b) grids no. 3 and no. 5 are screen; grid no. 4 is signal input grid

(c) approximate

(f) megohms

(h) grids no. 2 and no. 4 are screen; grid no. 3 is signal input control grid

(i) for two tubes

(j) power output is for two tubes at stated plate-to-plate load

(p) the duration of the pulse voltage must not exceed 15% of one scanning

(q) supply voltage applied through 20,000-ohm voltage-dropping resistor

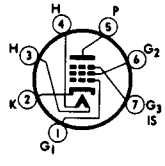
(u) subscript 1 on class of amplifier service indicates that grid current does not flow during any part of input cycle

(♦) low voltage plate knee characteristic

type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
12AW6	r-f amplifier pentode	H	12.6	0.15	as pentode class A amplifier	250	7.0	Rk=200	150	2.0	800,000(c)	5000	.....	.....	.....	5-2
					as triode(m) class A amplifier	250	5.5	Rk=825	.....	.....	11,000	3800	42	.....	.....	
12AX4-GT / **12AX4-GTA**	half-wave rectifier	H	12.6	0.6	TV damper diode	peak inverse voltage (p): 4000 volts (max) peak plate current: 600 ma (max)						d-c output current: 125 ma (max)				9-41
12AX7	high-mu twin triode	H	6.3 12.6	0.30 0.15	each unit as class A amplifier	100 250	0.5 1.2	–1.0 –2.0	....	....	80,000 62,500	1250 1600	100 100	....	....	6-2
12AY7	twin triode	H	6.3 12.6	0.30 0.15	each unit as class A amplifier	250	3.0	–4.0	.....	.....	.....	1750	40	.....	.....	6-2
12AZ7	high-frequency twin triode	H	12.6 6.3	0.225 0.45	each unit as class A amplifier	100 250	3.7 10	Rk=270 Rk=200	....	....	15,000 10,900	4000 5500	60 60	....	....	6-2
12B4-A	low-mu triode	H	12.6 6.3	0.30 0.60	class A amplifier	150	34	–17.5	.....	.....	1030	6300	6.5	.....	.....	6-3
					TV vertical deflection amplifier	peak positive pulse plate voltage (p): 1000 volts (n) d-c plate current: 30 ma					plate dissipation: 5.5 watts					
12BA6	r-f amplifier pentode	H	12.6	0.15	class A amplifier	100 250	10.8 11.0	cathode-bias	100 100	4.4 4.2	250,000 1.0(f)	4300 4400	cath.-bias resistor: 68 ohms cath.-bias resistor: 68 ohms			5-2
12BA7	pentagrid converter(h)	H	12.6	0.15	converter	100 250	3.6 3.8	–1.0 –1.0	100 100	10.2 10.0	500,000 1.0(f)	grid no. 1 resistor: 20,000 ohms conversion transconductance: 950 μmhos				6-3
12BD6	remote-cutoff pentode	H	12.6	0.15	class A amplifier	100 250	13.0 9.0	–1.0 –3.0	100 100	5.0 3.0	150,000 800,000	2550 2000	....	....	....	5-2
12BE6	pentagrid converter(h)	H	12.6	0.15	converter	100 250	2.6 2.9	–1.5 –1.5	100 100	7.0 6.8	400,000 1.0(f)	grid no. 1 resistor: 20,000 ohms conversion transconductance: 475 μmhos				5-2
12BF6	twin diode: medium-mu triode	H	12.6	0.15	triode unit as class A amplifier	250	9.5	–9	.....	.....	8500	1900	16	10,000	0.3	5-2
12BH7 / **12BH7-A**	medium-mu twin triode	H	6.3 12.6	0.6 0.3	each unit as class A amplifier	250	11.5	–10.5	.....	.....	5500	3100	17	.....	.....	6-3
					each unit as vertical deflection amplifier	peak positive-pulse plate voltage (p): 1350 volts (max) d-c cathode current: 20 ma (max)						plate dissipation: 3.5 watts (max) d-c plate voltage: 500 volts (max)				
12BK5	beam-power pentode	H	12.6	0.60	class A amplifier	250	35	–5	250	3.5	100,000	8500	.....	6500	3.5	6-3
12BL6	r-f pentode	H	12.6	0.15	class A amplifier	12.6	1.35	–0.65	12.6	0.50	500,000	1350	.....	.....	.....	5-2
12BQ6-GTA / **12BQ6-GTB**	beam-power pentode	H	12.6	0.60	TV horizontal deflection amplifier	peak positive plate voltage: 6000 volts (n) d-c plate voltage: 600 volts (max)						plate dissipation: 11 watts (max) screen dissipation: 2.5 watts (max)				9-49
12BR7	twin diode: high-mu triode	H	12.6 6.3	0.225 0.45	triode unit as class A amplifier	100 250	3.7 10	Rk=270 Rk=200	....	....	15,000 10,900	4000 5500	60 60	....	....	6-2
12BV7	video pentode	H	12.6 6.3	0.30 0.60	class A amplifier	250	27	Rk=68	150	6.0	85,000	13,000	.....	.....	.....	6-3
12BY7 / **12BY7-A**	video pentode	H	12.6 6.3	0.30 0.60	class A amplifier	250	26	Rk=100	180	5.75	93,000	11,000	.....	11,000	2.8	6-3

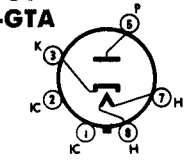
12BZ7	h-f twin triode	H	12.6 6.3	0.30 0.60	each unit as class A amplifier	250	2.5	−2.0	.....	.....	31,800	3200	100	.....	.....	6-3
12C5 **12C5/12CU5**	beam-power amplifier	H	12.6	0.60	class A amplifier	110	49	−7.5	110	4.0	10,000	7500	.....	2500	1.9	5-3
12CA5	beam-power amplifier	H	12.6	0.60	class A amplifier	110 125	32 37	−4.0 −4.5	110 125	3.5 4.0	16,000 15,000	8100 9200	....	3500 4500	1.1 1.5	5-3
12CR6	diode: pentode	H	12.6	0.15	pentode unit as class A amplifier	250	9.6	−2.0	100	2.6	800,000	2200	.....	.....	.....	5-2
12CS6	dual-control pentagrid amplifier	H	12.6	0.15	class A amplifier	100	0.8	G_1: 0 G_3: −1	30	5.5	700,000	grid three-plate transconductance: 1500 μmhos				5-2
						100	1.0	G_1: −1 G_3: 0	30	1.3	1.0(f)	grid one-plate transconductance: 1100 μmhos				
12CU6 **12CU6/12BQ6-GA**	beam-power amplifier	H	12.6	0.60	class A amplifier	250	55	−22.5	150	2.1	20,000	5500	.....	.....	.....	12-B
					TV horizontal deflection amplifier	max peak positive pulse plate voltage: 6000 volts (n) max d-c plate voltage: 600 volts						max plate dissipation: 11 watts max screen dissipation: 2.5 watts				
12D4	half-wave rectifier	H	12.6	0.60	TV damper-diode	max inverse plate voltage: 4400 volts (p) peak plate current: 700 ma						plate dissipation: 5.5 watts (max) d-c output current: 145 ma				9-11
12DF7	high-mu twin triode	H	6.3 12.6	0.30 0.15	each unit as class A amplifier	100 250	0.5 1.2	−1 −2	.....	.....	70,000 55,000	1250 1600	100 100	.....	.....	6-2
12DQ6	beam-power amplifier	H	12.6	0.60	TV horizontal deflection amplifier	max peak positive pulse plate voltage: 6000 volts (n) max d-c plate voltage: 550 volts						max plate dissipation: 15 watts max screen dissipation: 2.5 watts				12-B
12DQ6-A	beam-power amplifier	H	12.6	0.60	TV horizontal deflection amplifier	max peak positive pulse plate voltage: 6000 volts (n) max d-c plate voltage: 700 volts						max plate dissipation: 15 watts max screen dissipation: 3 watts				12-B
12DT5	beam-pentode	H	12.6	0.60	class A amplifier	250	44	−16.5	250	1.5	.....	6200	.....	.....	.....	6-3

12AW6



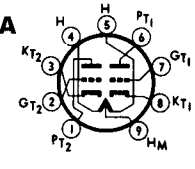
miniature

12AX4-GT
12AX4-GTA
12D4



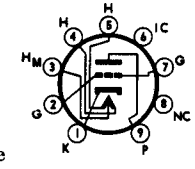
glass

12AX7
12AY7
12AZ7
12BH7
12BH7-A
12BZ7
12DF7



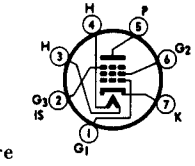
miniature

12B4-A



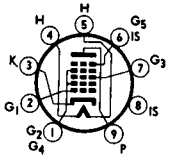
miniature

12BA6
12BD6
12BL6



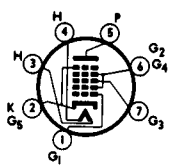
miniature

12BA7



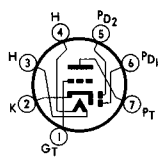
miniature

12BE6
12CS6



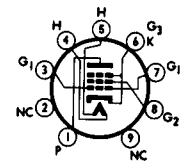
miniature

12BF6



miniature

12BK5

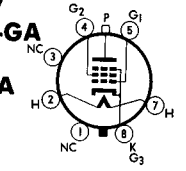


miniature

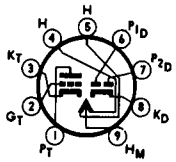
12BQ6-GTA
12BQ6-GTB
12CU6

glass

12CU6/
12BQ6-GA
12DQ6
12DQ6A

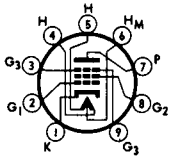


12BR7



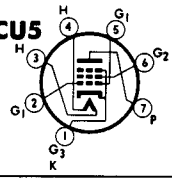
miniature

12BV7
12BY7
12BY7-A



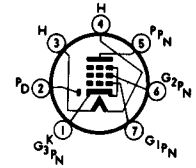
miniature

12C5
12C5/12CU5
12CA5



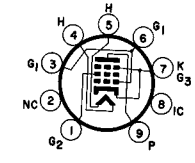
miniature

12CR6



miniature

12DT5



miniature

The underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(c) approximate

(f) megohms

(h) grids no. 2 and no. 4 are screen; grid no. 3 is signal input control grid

(m) grid no. 2 tied to plate

(n) absolute maximum rating

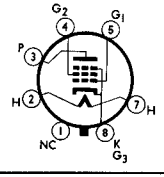
(p) the duration of the pulse voltage must not exceed 15% of one scanning cycle

type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
12EN6	beam-power pentode	H	12.6	0.60	class A amplifier	200	50	–9.5	110	2.2	28,000	8000	.....	.....	.....	9-41
12F8	double diode: pentode	H	12.6	0.15	pentode section as class A amplifier	12.6	1.0	0	12.6	0.38	330,000	1000	.....	.....	.....	6-2
12H6	twin diode	H	12.6	0.15	voltage doubler	a-c voltage per plate (rms): 150 volts (max) d-c output current: 8 ma (max)					total effective plate-supply impedance per plate: half-wave, 30 ohms (min); full-wave, 15 ohms (min)					8-5
					half-wave rectifier	a-c plate voltage (rms): 150 volts (max) d-c output current per plate: 8 ma (max)					total effective plate-supply impedance: up to 117 volts: 15 ohms; at 150 volts, 40 ohms					
12J5	medium-mu triode	H	12.6	0.15	class A amplifier	90	10.0	0	.....	.....	6700	3000	20	.....	.....	8-1
12J5-GT						250	9.0	–8.0	.....	.....	7700	2600	20	.....	.....	9-12
12J7-GT	sharp-cutoff pentode	H	12.6	0.15	as pentode class A r-f amplifier	100	2.0	–3.0	100	0.5	1.0(f)	1185	.....	.....	.....	9-18
						250	2.0	–3.0	100	0.5	1.0+(f)	1225	.....	.....	.....	
					as triode (x) class A amplifier	180	5.3	–5.3	.....	.....	11,000	1800	20	.....	.....	
						250	6.5	–8.0	.....	.....	10,500	1900	20	.....	.....	
12K5	tetrode driver for transistor output	H	12.6	0.45	class A amplifier	12.6	8.0	grid 1 (space charge grid) voltage: 12.6 volts grid 1 current: 85 ma. Grid 2 (control grid) voltage: 2 volts						800	0.035	5-3
12K7-GT	remote-cutoff pentode	H	12.6	0.15	class A amplifier	100	9.5	–1.0	100	2.7	150,000	1650	.....	.....	.....	9-18
						250	10.5	–3.0	125	2.6	600,000	1650	.....	.....	.....	
12K8	triode: hexode converter	H	12.6	0.15	triode unit as oscillator	100	3.8	triode-grid resistor: 50,000 ohms				triode-grid and hexode-grid current: 0.15 ma				8-2
					hexode unit as mixer	250	2.5	–3.0	100	6.0	600,000	conversion transconductance: 350 μmhos				
12L6-GT	beam-pentode	H	12.6	0.60	class A amplifier	110	49	–7.5	110	4.0	13,000	8000	.....	2000	2.1	9-11
						200	46	Rk=180	125	2.2	28,000	8000	.....	4000	3.8	
12Q7-GT	duplex-diode: high-mu triode	H	12.6	0.15	triode unit as class A amplifier	100	0.8	–1.0	.....	.....	58,000	1200	70	.....	.....	9-18
						250	1.1	–3.0	.....	.....	58,000	1200	70	.....	.....	
12SA7	pentagrid converter(h)	H	12.6	0.15	mixer	100	3.3	–2.0	100	8.5	500,000	grid no. 1 resistor: 20,000 ohms				8-1
12SA7-GT						250	3.5	–2.0	100	8.5	1.0(f)	conversion transconductance: 450 μmhos				9-11
12SC7	twin-triode amplifier	H	12.6	0.15	each unit as class A amplifier	250	2.0	–2.0	.....	.....	53,000	1325	70	.....	.....	8-1
12SF5	high-mu triode	H	12.6	0.15	class A amplifier	100	0.4	–1.0	.....	.....	85,000	1150	100	.....	.....	8-1
						250	0.9	–2.0	.....	.....	66,000	1500	100	.....	.....	
12SF7	diode: remote-cutoff pentode	H	12.6	0.15	pentode unit as amplifier	100	12.0	–1.0	100	3.4	200,000	1975	.....	.....	.....	8-1
						250	12.4	–1.0	100	3.3	700,000	2050	.....	.....	.....	
12SG7	semi-remote-cutoff pentode	H	12.6	0.15	class A amplifier	100	8.2	–1.0	100	3.2	250,000	4100	.....	.....	.....	8-1
						250	11.8	–1.0	125	4.4	900,000	4700	.....	.....	.....	
						250	9.2	–2.5	150	3.4	1.0+(f)	4000	.....	.....	.....	
12SH7	sharp-cutoff pentode	H	12.6	0.15	class A amplifier	100	5.3	–1.0	100	2.1	350,000	4000	.....	.....	.....	8-1
						250	10.8	–1.0	150	4.1	900,000	4900	.....	.....	.....	
12SJ7	sharp-cutoff pentodes	H	12.6	0.15	pentode connection class A amplifier	100	2.9	–3.0	100	0.9	700,000	1575	.....	.....	.....	8-1
						250	3.0	–3.0	100	0.8	1.0(f)	1650	.....	.....	.....	
12SJ7-GT					triode connection class A amplifier(x)	180	6.0	–6.0	.....	.....	8200	2300	19	.....	.....	9-12
						250	9.2	–8.5	.....	.....	7600	2500	19	.....	.....	

12SK7	remote-cutoff pentode	H	12.6	0.15	class A amplifier	100	13.0	−1.0	100	4.0	120,000	2350	.....	.....	.....	8-1
12SK7-GT						250	9.2	−3.0	100	2.6	800,000	2000	.....	.....	.....	9-12
12SL7-GT	high-mu twin triode	H	12.6	0.15	each unit as class A amplifier	250	2.3	−2.0	.....	.....	44,000	1600	70	.....	.....	9-11
12SN7-GT	medium-mu twin triode	H	12.6	0.3	class A amplifier per section	90	10.0	0	.....	.....	6700	3000	20	.....	.....	9-11
12SN7-GTA						250	9.0	−8.0	.....	.....	7700	2600	20	.....	.....	
12SQ7	duplex-diode: high-mu triode	H	12.6	0.15	triode unit as class A amplifier	100	0.5	−1.0	.....	.....	110,000	925	100	.....	.....	8-1
12SQ7-GT						250	1.1	−2.0	.....	.....	85,000	1175	100	.....	.....	9-12
12SR7	duplex-diode: triode	H	12.6	0.15	triode unit as class A amplifier	250	9.5	−9.0	.....	.....	8500	1900	16	10,000	0.3	8-1
12V6-GT	beam-power amplifier	H	12.6	0.225	single-tube class A amplifier	180	29.0	−8.5	180	3.0	58,000	3700	.....	5500	2.0	9-41
						250	45.0	−12.5	250	4.5	52,000	4100	.....	5000	4.5	
						315	34.0	−13.0	225	2.2	77,000	3750	.....	8500	5.5	
					push-pull class A amplifier	250	70.0(g)	−15.0	250	5.0(g)	60,000	3750	.....	10,000	10.0(j)	
						285	70.0(g)	−19.0	285	4.0(g)	70,000	3600	.....	9000	14.0(j)	
12W6-GT	beam-power amplifier	H	12.6	0.60	class A amplifier	110	49	−7.5	110	4.0	13,000	8000	.....	2000	2.1	9-11
						200	46	Rk = 180	125	2.2	28,000	8000	.....	4000	3.8	

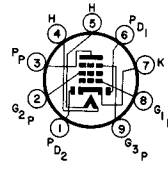
12EN6
12L6-GT
12V6-GT
12W6-GT

glass



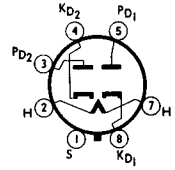
12F8

miniature



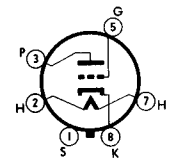
12H6

metal



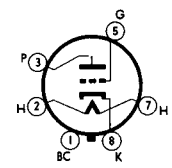
12J5

metal



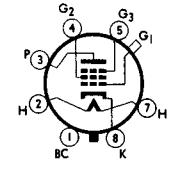
12J5-GT

glass



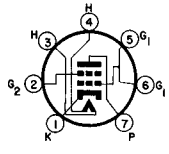
12J7-GT
12K7-GT

glass



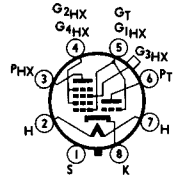
12K5

miniature



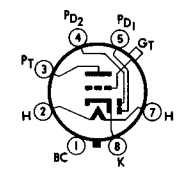
12K8

metal



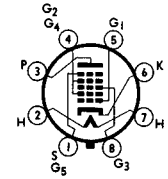
12Q7-GT

glass



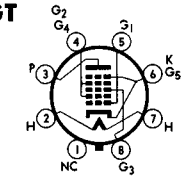
12SA7

metal



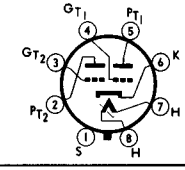
12SA7-GT

glass



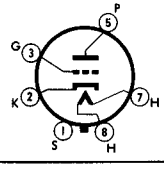
12SC7

metal



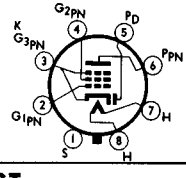
12SF5

metal



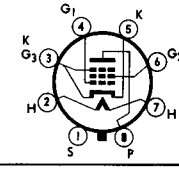
12SF7

metal



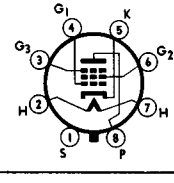
12SG7
12SH7

metal



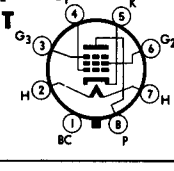
12SJ7
12SK7

metal



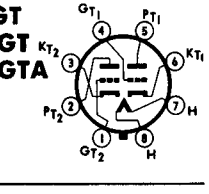
12SJ7-GT
12SK7-GT

glass



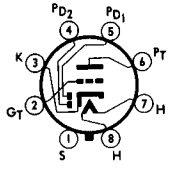
12SL7-GT
12SN7-GT
12SN7-GTA

glass



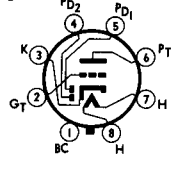
12SQ7
12SR7

metal



12SQ7-GT

glass



The underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(f) megohms

(g) zero signal

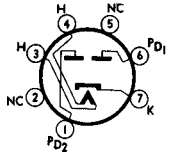
(j) power output is for two tubes at stated plate-to-plate load

(x) grids no. 2 and no. 3 tied to plate

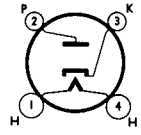
type number	name	cathode			typical use	plate		grid bias*	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg—47
12X4	full-wave rectifier	H	12.6	0.30	rectifier	maximum inverse plate voltage: 1250 volts maximum peak plate current: 245 ma							d-c output current: 90 ma			5-3
12Z3	half-wave rectifier	H	12.6	0.3	with capacitive-input filter	a-c plate voltage (rms): 235 volts (max) d-c output current: 55 ma (max)					total effective plate-supply impedance (min): up to 117 volts, 0 ohms; at 150 volts, 30 ohms; at 235 volts, 75 ohms					12-5
14A7	remote-cutoff pentode	H	12.6	0.15	class A amplifier	100 250	13.0 9.2	−1.0 −3.0	100 100	4.0 2.6	120,000 800,000	2350 2000	....	....	....	9-30
14B6	duplex-diode: high-mu triode	H	12.6	0.15	triode unit as class A amplifier	250	0.9	−2.0	.....	.....	91,000(c)	1100	100	.....	.....	9-30
14C7	sharp-cutoff pentode	H	12.6	0.15	class A amplifier	250	2.2	−3.0	100	0.7	1.0(f)	1575	.....	.....	.....	9-30
14F7	twin-triode amplifier	H	12.6	0.15	each unit as class A amplifier	250	2.3	−2.0	.....	.....	44,000(c)	1600	70	.....	.....	9-30
14F8	medium-mu twin triode	H	12.6	0.15	each unit as class A amplifier	250	6.0	cathode-bias resistor: 500 ohms			.....	3300	48	.....	.....	9-32
14H7	remote-cutoff pentode	H	12.6	0.15	class A amplifier	100 250	7.5 10.0	−1.5 cath.-bias	100 150	2.6 3.2	350,000 800,000	4000 4000	..... cath.-bias resistor: 180 ohms	.....	.....	9-30
14Q7	pentagrid converter(h)	H	12.6	0.15	converter	100 250	3.3 3.5	−2.0 −2.0	100 100	8.5 8.5	500,000 1.0(f)	grid no. 1 resistor: 20,000 ohms conversion transconductance: 525 μmhos				9-30
14R7	duplex-diode: pentode	H	12.6	0.15	pentode unit as class A amplifier	100 250	5.5 6.2	−1.0 −1.0	100 100	5.2 1.6	350,000 1.0(f)	3000 3400	....	....	....	9-30
17AX4-GT	half-wave rectifier	H	16.8	0.45	TV damper diode	peak inverse voltage (p): 4400 volts (max) peak plate current: 600 ma (max)							d-c output current: 125 ma (max)			9-41
17D4	half-wave rectifier	H	16.8	0.45	TV damper diode	peak inverse voltage: 4400 volts (p) (max) peak plate current: 700 ma (max)							d-c output current: 145 ma (max)			9-41
17DQ6-A	beam-power pentode	H	16.8	0.45	TV horizontal deflection amplifier	max peak positive pulse plate voltage: 6000 volts (n) max d-c plate voltage: 700 volts							max plate dissipation: 15 watts max screen dissipation: 3 watts			12-B
17H3	half-wave rectifier	H	17.5	0.30	TV damper diode	max peak inverse voltage: 2000(p) max peak plate current: 450 ma							max d-c output current: 75 ma max plate dissipation: 3 watts			6-3
18A5	beam-power amplifier	H	18.5	0.30	TV horizontal deflection amplifier	max d-c plate voltage: 350 volts max d-c cathode current: 90 ma							max plate dissipation: 9 watts max screen dissipation: 2.5 watts			9-15
19AU4-GTA	half-wave rectifier	H	18.9	0.60	TV damper diode	peak inverse plate voltage: 4500 volts (n) maximum peak plate current: 1150 ma							maximum plate dissipation: 6 watts d-c output current: 190 ma			9-44
19BG6-G	beam power amplifier	H	18.9	0.30	horizontal deflection amplifier	d-c plate voltage: 500 volts (max) d-c plate current: 100 ma (max)						screen input: 3.2 watts (max) peak positive-pulse plate voltage (p): 6000 volts (max) plate dissipation: 20 watts (max)				16-5
19BG6-GA	beam-power amplifier	H	18.9	0.30	TV horizontal deflection amplifier	max d-c plate voltage: 700 volts max plate dissipation: 20 watts							max d-c cathode current: 110 ma max screen dissipation: 3.2 watts			12-E
19J6	medium-mu twin triode	H	18.9	0.15	each unit as class A amplifier	100	8.5	cathode-bias resistor: 50 ohms (s)			7100	5300	38	.....	.....	5-2
19T8	triple-diode: high-mu triode	H	18.9	0.15	triode unit as class A amplifier	100 250	0.8 1.0	−1.0 −3.0	.....	.....	54,000 58,000	1300 1200	70 70	.....	.....	6-2
24-A	r-f amplifier tetrode	H	2.5	1.75	screen-grid r-f amplifier	180 250	4.0 4.0	−3.0 −3.0	90 90	1.7 (max)	400,000 600,000	1000 1050	.....	.....	.....	14-2
25AV5-GA	beam power amplifier	H	25.0	0.3	horizontal deflection amplifier	d-c plate voltage: 550 volts (max) d-c plate current: 100 ma (max)						screen input: 2.5 watts (max) peak positive-pulse plate voltage (p): 5500 volts (max) plate dissipation: 11 watts (max)				9-11
25AV5-GT																9-41

25AX4-GT	half-wave rectifier	H	25.0	0.30	TV damper-diode	peak inverse plate voltage: 4000 volts (p) peak plate current: 600 ma							maximum plate dissipation: 4.8 watts d-c output current: 125 ma			*9-41*
25BK5	beam-power pentode	H	25.0	0.30	class A amplifier	250	35	–5	250	3.5	100,000	8500	.....	6500	3.5	*6-3*
25BQ6-GT	beam power amplifier	H	25.0	0.3	horizontal deflection amplifier	250(v)	55.0	–22.5	150	2.1	.....	5500	.....	.....	.....	*9-50*
						d-c plate current: 100 ma (max) screen input: 2.25 watts (max)					peak positive-pulse plate voltage (p): 5500 volts (n) plate dissipation: 10 watts (max)					
25BQ6-GTB/25CU6	beam power amplifier	H	25.0	0.30	class A amplifier	250	65	–22.5	150	2.1	18,000	6000	.....	.....	.....	*9-50*
					TV horizontal deflection amplifier	peak positive pulse plate voltage: 6000 volts (p) maximum d-c plate voltage: 600 volts maximum d-c plate current: 100 ma							maximum plate dissipation: 11 watts maximum screen input: 2.5 watts			
25C5	beam-power pentode	H	25.0	0.30	class A amplifier	120	49	–8	110	4.0	10,000	7500	.....	2500	2.3	*5-3*
25CA5	beam pentode	H	25.0	0.30	class A amplifier	110 125	32 37	–4.0 –4.5	110 125	3.5 4.0	16,000 15,000	8100 9200	....	3500 4500	1.1 1.5	*5-3*
25CD6-GA	beam power amplifier	H	25.0	0.60	TV horizontal deflection amplifier	maximum plate dissipation: 15 watts										*16-5*
						500	92	Rk = 300	170	15.5	maximum screen input: 3 watts					
25CD6-GB	beam-power pentode	H	25.0	0.60	TV horizontal deflection amplifier	peak positive plate voltage: 7000 volts (n) d-c plate voltage: 700 volts (max)							plate dissipation: 20 watts (max) screen dissipation: 3 watts (max)			*12-21*

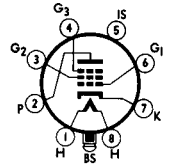
12X4 — miniature



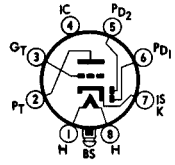
12Z3 — glass



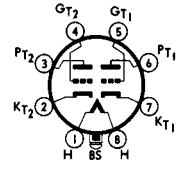
14A7
14C7
14H7 — lock-in



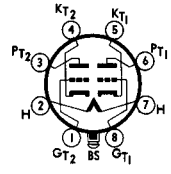
14B6 — lock-in



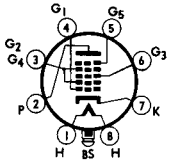
14F7 — lock-in



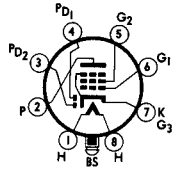
14F8 — lock-in



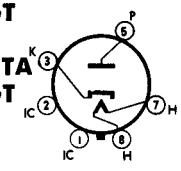
14Q7 — lock-in



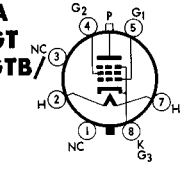
14R7 — lock-in



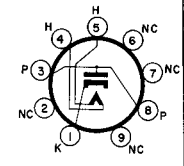
17AX4-GT
17D4
19AU4-GTA
25AX4-GT — glass



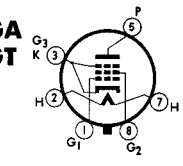
17DQ6-A
25BQ6-GT
25BQ6-GTB/25CU6 — glass



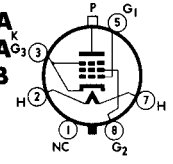
17H3 — miniature



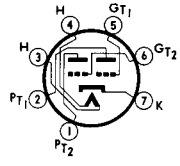
18A5
25AV5-GA
25AV5-GT — glass



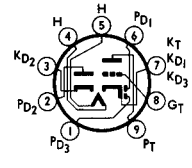
19BG6-G
19BG6-GA
25CD6-GA
25CD6-GB — glass



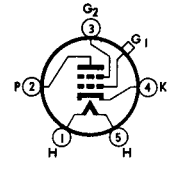
19J6 — miniature



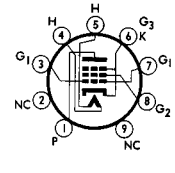
19T8 — miniature



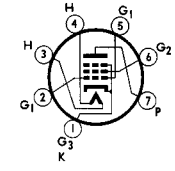
24-A — glass



25BK5 — miniature



25C5
25CA5 — miniature



The underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(c) approximate

(f) megohms

(h) grids no. 2 and no. 4 are screen; grid no. 3 is signal input control grid

(n) absolute maximum rating

(p) the duration of the pulse voltage must not exceed 15% of one scanning cycle

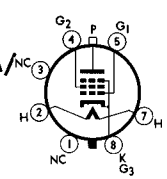
(s) value is for both units operating at the specified conditions

(v) maximum plate-supply: 550 volts

type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
25CU6-GB																
25CU6/ 25BQ6-GA/ 25BQ6-GT	beam-power amplifier	H	25.0	0.30	TV horizontal deflection amplifier	max peak positive pulse plate voltage: 6000(n) volts max d-c plate voltage: 600 volts						max plate dissipation: 15 watts max screen dissipation: 2.5 watts				12-B
25DN6	beam-power amplifier	H	25.0	0.60	TV horizontal deflection amplifier	max d-c plate voltage: 700 volts max d-c cathode current: 200 ma						max plate dissipation: 15 watts max screen dissipation: 3 watts				12-E
25DQ6	beam-power amplifier	H	25.0	0.30	TV horizontal deflection amplifier	max peak positive pulse plate voltage: 6000 volts (n) max d-c plate voltage: 550 volts						max plate dissipation: 15 watts max screen dissipation: 2.5 watts				12-B
25F5	beam-power amplifier	H	25.0	0.15	class A amplifier	110	36	–7.5	110	3.0	16,000	5800	.....	2500	1.2	5-3
25L6-GT	beam power amplifier	H	25.0	0.3	amplifier	110 200	49.0 46.0	–7.5 Rk = 180	110 125	4.0 2.2	13,000 28,000	8000 8000	....	2000 4000	2.1 3.8	9-11
25W4-GT	half-wave rectifier	H	25.0	0.3	half-wave rectifier	peak inverse voltage: 1250 volts (max) a-c plate voltage (rms): 350 volts (max)						d-c output current: 125 ma (max) peak plate current: 600 ma (max)		impedance: 145 ohms (△)		9-11
					TV damper service	peak inverse voltage (p): 3500 volts (max) d-c output current: 125 ma (max)						peak plate current: 600 ma (max)				
25W6-GT	beam-power pentode	H	25.0	0.30	class A amplifier	110 200	49 46	–7.5 Rk = 180	110 125	4.0 2.2	13,000 28,000	8000 8000	....	2000 4000	2.1 3.8	9-11
25Z5	rectifier-doublers	H	25.0	0.3	voltage doubler	a-c voltage per plate (rms): 117 volts (max) d-c output current: 75 ma (max)						impedance (‡): half-wave: 30 ohms; full-wave, 15 ohms				12-5
25Z6					half-wave rectifier	a-c voltage per plate (rms): 235 volts (max) d-c output current per plate: 75 ma (max)						impedance (△): up to 117 volts, 15 ohms; at 150 volts, 40 ohms; at 235 volts, 100 ohms				8-6
25Z6-GT																9-11
26	amplifier triode	F	1.5	1.05	class A amplifier	90 180	2.9 6.2	–7.0 –14.5	....	....	8900 7300	935 1150	8.3 8.3	....	....	14-1
27	detector(t) amplifier triode	H	2.5	1.75	class A amplifier	135 250	4.5 5.2	–9.0 –21.0	....	....	9000 9250	1000 975	9.0 9.0	....	....	12-5
30	medium-mu triode	F(d-c)	2.0	0.06	class A amplifier	90 180	2.5 3.1	–4.5 –13.5	....	....	11,000 10,300	850 900	9.3 9.3	....	....	12-5
32L7-GT	rectifier-beam power amplifier	H	32.5	0.3	amplifier unit as class A amplifier	90 90	38.0 27.0	–5.0 –7.0	90 90	3.0 2.0	15,000 17,000	6000 4800	....	2600 2600	0.8 1.0	9-11
					half-wave rectifier	a-c plate voltage (rms): 125 volts (max)						d-c output current: 60 ma (max)				
35A5	beam power amplifier	H	35.0	0.15	single-tube class A amplifier	110 200	40.0 43.0	–7.5 Rk = 180	110 125	3.0 2.0	14,000 34,000	5800 6100	....	2500 5000	1.5 3.3	9-31
35B5	beam power amplifier	H	35.0	0.15	class A amplifier	110	40.0	–7.5	110	3.0	13,000	5800	.....	2500	1.5	5-3
35C5	beam power amplifier	H	35.0	0.15	class A amplifier	110	40.0	–7.5	110	3.0	13,000	5800	.....	2500	1.5	5-3
35L6-GT	beam power amplifier	H	35.0	0.15	class A amplifier	110 200	40.0 43.0	–7.5 Rk = 180	110 125	3.0 2.0	14,000 34,000	5800 6100	....	2500 5000	1.5 3.3	9-11
35W4	half-wave rectifier	H	35.0	0.15	with capacitive input filter	a-c plate voltage (rms): 117 volts (max) peak inverse plate voltage: 330 volts (max)						peak plate current: 600 ma (max) d-c output current (max): □				5-3
35Y4																9-31

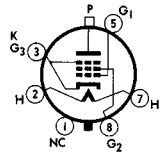
35Z3	half-wave rectifier	H	35.0	0.15	with capacitive input filter	a-c plate voltage (rms): 235 volts (max) peak inverse plate voltage: 700 volts (max) peak plate current: 600 ma (max)							d-c output current: 100 ma (max) impedance (‡): up to 117 volts, 15 ohms; at 235 volts, 100 ohms				9-31
35Z4-GT	half-wave rectifier	H	35.0	0.15	with capacitive input filter	a-c plate voltage (rms): 235 volts (max) peak inverse plate voltage: 700 volts (max) peak plate current: 600 ma (max)							d-c output current: 100 ma (max) impedance (‡): up to 117 volts, 15 ohms; at 235 volts, 100 ohms				9-11
35Z5-GT	half-wave rectifier (heater tap for pilot)	H	35.0	0.15	with capacitive input filter	a-c plate voltage (rms): 235 volts (max) peak inverse plate voltage: 700 volts (max) peak plate current: 600 ma (max)							d-c output current (max) (□) impedance (‡): up to 117 volts, 15 ohms; at 235 volts, 100 ohms				9-11
36	r-f amplifier tetrode	H	6.3	0.3	screen-grid r-f amplifier	100 250	1.8 3.2	−1.5 −3.0	55 90	1.7 (max)	550,000 550,000	850 1080	....	....	....	12-6
41	power amplifier pentode	H	6.3	0.4	single-tube class A amplifier	250 315	32.0 25.0	−18.0 −21.0	250 250	5.5 4.0	90,000 110,000	2300 2100	....	7600 9000	3.40 4.50	12-5
					for further data see type 6K6-GT											
42	power amplifier pentode	H	6.3	0.7	pentode class A amplifier	250 285	34.0 38.0	−16.5 −20.0	250 285	6.5 7.0	80,000 78,000	2500 2550	....	7000 7000	3.20 4.80	14-1
					for further data see type 6F6-G											
43	power amplifier pentode	H	25.0	0.3	class A amplifier	95 160	20.0(g) 33.0(g)	−15.0 −18.0	95 120	4.0(g) 6.5(g)	45,000 42,000	2000 2375	....	4500 5000	0.9 2.2	14-1

25CU6-GB
25CU6/
25BQ6-GA/
25BQ6-GT
25DQ6



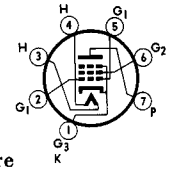
glass

25DN6



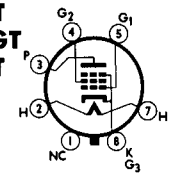
glass

25F5
35C5



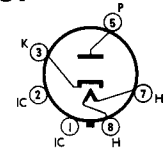
miniature

25L6-GT
25W6-GT
35L6-GT



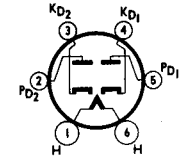
glass

25W4-GT



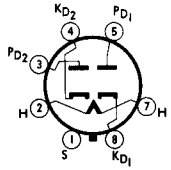
glass

25Z5



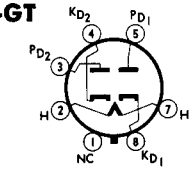
glass

25Z6



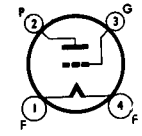
metal

25Z6-GT



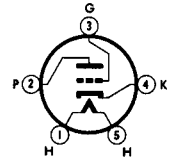
glass

26
30



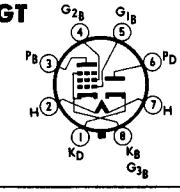
glass

27



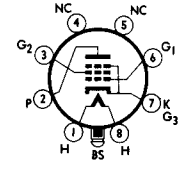
glass

32L7-GT



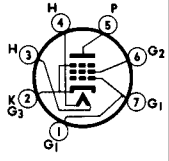
glass

35A5



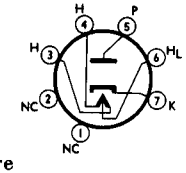
lock-in

35B5



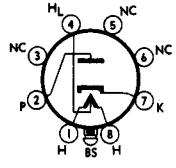
miniature

35W4



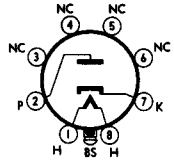
miniature

35Y4



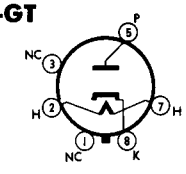
lock-in

35Z3



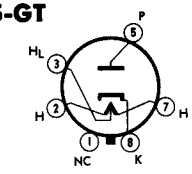
lock-in

35Z4-GT



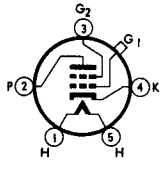
glass

35Z5-GT



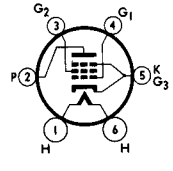
glass

36



glass

41
42
43



glass

The underlined tube types feature a heater having controlled warm-up time and are designed for series string operation. See page 3

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage

(g) zero signal

(n) absolute maximum rating

(t) for grid leak detection: plate volts 45, grid return to filament or cathode

(△) total effective plate-supply impedance per plate (min)

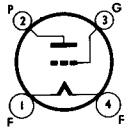
(‡) total effective plate-supply impedance (min)

(□) with pilot and no shunt resistor, 60 ma; with pilot and shunt resistor, 90 ma; without pilot, 100 ma

type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
45	power amplifier triode	F	2.5	1.5	class A amplifier	180 275	31.0 36.0	–31.5 –56.0	....	....	1650 1700	2125 2050	3.5 3.5	2700 4600	0.82 2.00	*14-1*
45Z5-GT	half-wave rectifier (heater tap for pilot)	H	45.0	0.15	with capacitive-input filter	(characteristics are same as type 35Z5-GT above)										*9-11*
47	power amplifier pentode	F	2.5	1.75	class A amplifier	250	31.0	–16.5	250	6.0	60,000	2500	.....	7000	2.7	*16-1*
50A5	beam power amplifier	H	50.0	0.15	class A amplifier	110 200	49.0 46.0	–7.5 Rk = 180	110 125	4.0 2.2	13,000 28,000	8000 8000	....	2000 4000	2.1 3.8	*9-31*
50B5 **50C5**	beam power amplifier	H	50.0	0.15	class A amplifier	110	49.0	–7.5	110	4.0	10,000	7500	.....	2500	1.9	*5-3*
50C6-G	beam power amplifier	H	50.0	0.15	single-tube class A amplifier	135 200	58.0 61.0	–13.5 –14.0	135 135	3.5 2.2	9300 18,300	7000 7100	....	2000 2600	3.6 6.0	*14-3*
50EH5	power pentode	H	50.0	0.15	class A amplifier	110	42	Rk = 62	115	11.5	11,000	14,600	.....	3000	1.4	*5-3*
50L6-GT	beam power amplifier	H	50.0	0.15	single-tube class A amplifier	110 200	49.0 46.0	–7.5 Rk = 180	110 125	4.0 2.2	13,000 28,000	8000 8000	....	2000 4000	2.1 3.8	*9-11*
50X6	rectifier-doubler	H	50.0	0.15	rectifier-doubler (▲)	a-c voltage per plate (rms): 117 volts (max) d-c output current: 75 ma (max)						impedance (‡): half-wave, 30 ohms; full-wave, 15 ohms				*9-31*
50Y6-GT					half-wave rectifier	a-c voltage per plate (rms): 235 volts (max) d-c output current per plate: 75 ma (max)						impedance (△): up to 117 volts, 15 ohms; at 150 volts, 40 ohms; at 235 volts, 100 ohms				*9-11*
50Y7-GT	rectifier-doubler (heater tap for pilot)(z)	H	50.0	0.15	voltage doubler	a-c voltage per plate (rms): 117 volts (max) d-c output current: 65 ma (max)						impedance (△): 15 ohms				*9-41*
					half-wave rectifier	a-c voltage per plate (rms): 235 volts (max) d-c output current per plate: 65 ma (max)						impedance (△): up to 117 volts, 15 ohms; at 150 volts, 40 ohms; at 235 volts, 100 ohms				
53	twin-triode amplifier	H	2.5	2.0	class A amplifier (as driver)(k)	250 294	6.0 7.0	–5.0 –6.0	....	....	11,300 11,000	3100 3200	35 35	20,000 or more	exceeds 0.4	*14-1*
					class B amplifier	(power output is for one tube at stated plate-to-plate load)								8000	10.0	
56	medium-mu triode(t)	H	2.5	1.0	class A amplifier	250	5.0	–13.5	.....	.....	9500	1450	13.8	.....	.....	*12-5*
57	sharp-cutoff pentode	H	2.5	1.0	pentode connection	250	2.0	–3.0	100	0.5	1.0(f)	1225	.....	.....	.....	*12-2*
					triode connection	250	6.5	–8.0	.....	.....	10,500	1900	20	.....	.....	
58	remote-cutoff pentode	H	2.5	1.0	class A amplifier	250	8.2	–3.0	100	2.0	800,000(c)	1600	.....	.....	.....	*12-2*
70L7-GT	rectifier-beam power amplifier	H	70.0	0.15	amplifier unit as class A amplifier	110	40.0	–7.5	110	3.0	15,000	7500	.....	2000	1.8	*9-11*
					half-wave rectifier	a-c plate voltage (rms): 117 volts (max) peak inverse voltage: 350 volts (max)						d-c output current: 70 ma (max) peak plate current: 420 ma (max)		impedance (‡): 15 ohms		
71-A	power amplifier triode	F	5.0	0.25	class A amplifier	90 180	10.0 20.0	–16.5 –40.5	....	....	2170 1750	1400 1700	3.0 3.0	3000 4800	0.125 0.790	*14-1*
75	duplex-diode: high-mu triode	H	6.3	0.3	triode unit as class A amplifier	100 250	0.5 1.1	–1.0 –2.0	....	....	110,000 85,000	925 1175	100 100	....	....	*12-6*
76	detector amplifier triode(t)	H	6.3	0.3	class A amplifier	250	5.0	–13.5	.....	.....	9500	1450	13.8	.....	.....	*12-5*
77	triple-grid detector amplifier	H	6.3	0.3	class A amplifier	100 250	1.7 2.3	–1.5 –3.0	60 100	0.4 0.5	600,000 1.0+(f)	1100 1250	....	....	....	*12-6*

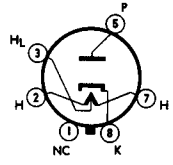
78	remote-cutoff pentode	H	6.3	0.3	class A amplifier	100 250	9.5 10.5	−1.0 −3.0	100 125	2.7 2.6	150,000(c) 600,000(c)	1650 1650	....	....	....	*12-6*
80	full-wave rectifier	F	5.0	2.0	with capacitive input filter	a-c voltage per plate (rms): 350 volts (max) peak inverse voltage: 1400 volts (max)					d-c output current: 125 ma (max) peak plate current: 400 ma (max)			impedance (△): 50 ohms		*14-1*
					with inductive-input filter	a-c voltage per plate (rms): 500 volts (max) peak inverse voltage: 1400 volts (max)					d-c output current: 125 ma (max) peak plate current: 400 ma (max)			input choke value: 10 henries (min)		
83	full-wave rectifier (mercury-vapor type)	F	5.0	3.0	with capacitive-input filter	a-c voltage per plate (rms): 450 volts (max) peak inverse voltage: 1550 volts (max)					d-c output current: 225 ma (max) peak plate current: 1000 ma (max)			impedance (△): 50 ohms		*16-1*
					with inductive-input filter	a-c voltage per plate (rms): 550 volts (max) peak inverse voltage: 1550 volts (max)					d-c output current: 225 ma (max) peak plate current: 1000 ma (max)			input choke value: 3 henries (min)		
84/6Z4	full-wave rectifier	H	6.3	0.5	with capacitive-input filter	a-c voltage per plate (rms): 325 volts (max) peak inverse voltage: 1250 volts (max)					peak plate current: 60 ma (max) peak plate current: 180 ma (max)			impedance (△): 150 ohms		*12-5*
					with inductive-input filter	a-c voltage per plate (rms): 450 volts (max) peak inverse voltage: 1250 volts (max)					peak plate current: 60 ma (max) peak plate current: 180 ma (max)			input choke value: 10 henries (min)		
85	duplex-diode: triode	H	6.3	0.3	triode unit as class A amplifier	135 250	3.7 8.0	−10.5 −20.0	....	....	11,000 7500	750 1100	8.3 8.3	25,000 20,000	0.075 0.350	*12-6*
117L7/ M7-GT	rectifier-beam power amplifier	H	117	0.09	amplifier unit as class A amplifier	105	43.0	−5.2	105	4.0	17,000	5300	.....	4000	0.85	*9-15*
					half-wave rectifier	a-c plate voltage (rms): 117 volts (max) peak inverse voltage: 350 volts (max)					d-c output current: 75 ma (max) peak plate current: 450 ma (max)			impedance (‡): 15 ohms		

45
71-A



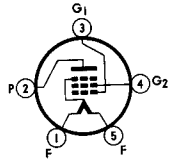
glass

45Z5-GT



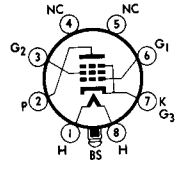
glass

47



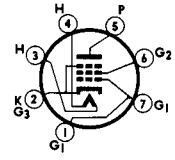
glass

50A5



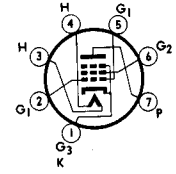
lock-in

50B5



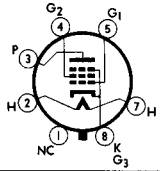
miniature

50C5
50EH5



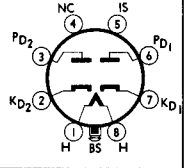
miniature

50C6-G
50L6-GT



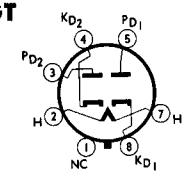
glass

50X6



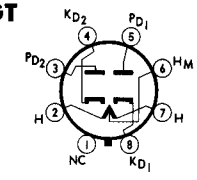
lock-in

50Y6-GT



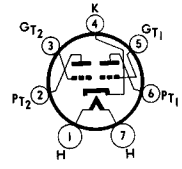
glass

50Y7-GT



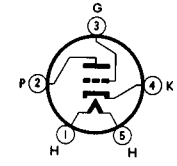
glass

53



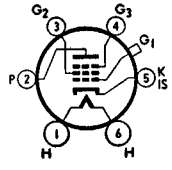
glass

56
76



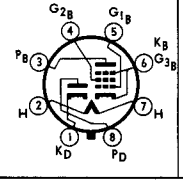
glass

57
58
77
78



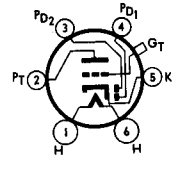
glass

70L7-GT



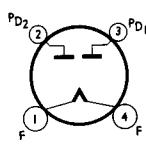
glass

75
85



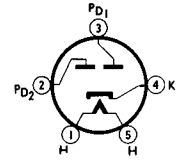
glass

80
83



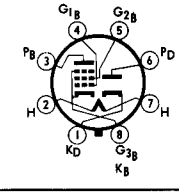
glass

84/6Z4



glass

117L7/ M7-GT

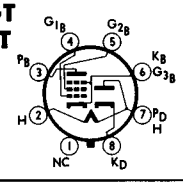


glass

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage
(c) approximate
(f) megohms
(k) both grids connected together; likewise, both plates
(t) for grid leak detection: plate volts 45, grid return to filament or cathode
(z) panel lamp section is between pins no. 6 and no. 7
(▲) voltage doubler for type 50Y6-GT
(‡) total effective plate-supply impedance (min)
(△) total effective plate-supply impedance per plate (min)

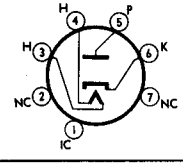
type number	name	cathode			typical use	plate		grid bias■	screen		a-c plate resistance	trans-conductance (grid plate)	amplification factor	load for stated power output	power output	tube dimen.
		type	volts	amp		volts	ma	volts	volts	ma	ohms	μmhos		ohms	watts	index pg–47
117N7-GT	rectifier-beam power amplifier	H	117	0.09	amplifier unit as class A amplifier	100	51.0	–6.0	100	5.0	16,000	7000	.....	3000	1.2	9-15
					half-wave rectifier	a-c plate voltage (rms): 117 volts (max) peak inverse voltage: 350 volts (max)					d-c output current: 75 ma (max) peak plate current: 450 ma (max)			impedance(‡): 15 ohms		
117P7-GT	(same as type 117L7/M7-GT above)															9-15
117Z3	half-wave rectifier	H	117	0.04	with capacitive-input filter	a-c plate voltage (rms): 117 volts (max) peak inverse voltage: 330 volts (max)					d-c output current: 90 ma (max) peak plate current: 540 ma (max)			impedance (‡): 20 ohms		5-3
117Z6-GT	rectifier-doubler	H	117	0.075	voltage doubler	a-c voltage per plate (rms): 117 volts (max) peak inverse voltage: 700 volts (max)					d-c output current: 60 ma (max) peak current plate: 360 ma (max)			impedance (△): half-wave, 30 ohms; full-wave, 15 ohms		9-11
					half-wave rectifier	a-c voltage per plate (rms): 235 volts (max) peak inverse voltage: 700 volts (max)					d-c output current plate: 60 ma (max) peak current plate: 360 ma (max)			impedance (△): (#)		
7025	high-mu, low noise twin triode	H	6.3	0.30	each unit as class A amplifier	100	0.5	–1	.....	.....	80,000	1250	100	.....	.....	6-2
			12.6	0.15		250	1.2	–2	.....	.....	62,500	1600	100	.....	.....	
7408	beam-pentode	H	6.3	0.45	class A amplifier	250	45	–12.5	250	4.5	50,000	4100	.....	5000	4.5	9-11
EZ81	full-wave rectifier	H	6.3	1.0	rectifier with capacitor-input filter	max rms a-c voltage per plate: 350 volts max peak plate current: 450 ma					max d-c output current: 150 ma			max peak inverse voltage: 1000 volts max input capacitor: 50μf		6-4
UCL82	high-mu triode power pentode	H	50.0	0.10	triode unit as class A amplifier	100	3.5	0	.....	.....	.....	2500	70	.....	.....	6-4
					pentode unit as class A amplifier	100	26	–6	100	5	15,000	6800	.....	3900	1.05	
						170	41	–11.5	170	8	16,000	7500	.....	3900	3.3	
						200	35	–12.5	170	6.5	20,500	6800	.....	5600	3.4	
						200	35	–16	200	7	20,000	6400	.....	5600	3.5	

117N7-GT
117P7-GT



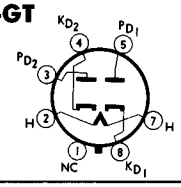
glass

117Z3



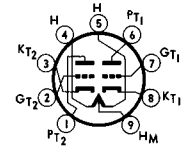
miniature

117Z6-GT



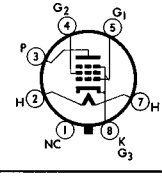
glass

7025



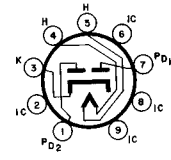
miniature

7408



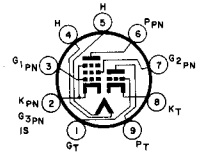
glass

EZ81



miniature

UCL82



miniature

■ either a-c or d-c may be used on filament or heater, except as specifically noted; for use of d-c on a-c filament types, decrease stated grid volts by ½ (approx) of filament voltage
(△) total effective plate-supply impedance per plate (min)
(‡) total effective plate-supply impedance (min)
(#) up to 117 volts, 15 ohms; at 150 volts, 40 ohms; at 235 volts, 100 ohms

index to dimensions

JETEC outline number	bulb style	maximum diameter	maximum seated height	maximum overall length	cap size
		inches	inches	inches	
2X3–A*	T2X3	0.385	1½	⊕	none
5–1	T5½	¾	1½	1¾	none
5–2	T5½	¾	1⅞	2⅛	none
5–3	T5½	¾	2⅜	2⅝	none
6–1	T6½	⅞	1½	1¾	none
6–2	T6½	⅞	1 15/16	2 3/16	none
6–3	T6½	⅞	2⅜	2⅝	none
6–4	T6½	⅞	2 13/16	3 1/16	none
6–7	T6½	⅞	2 5/16	2 27/32	miniature
6–B*	T6½	⅞	2 13/16	3 1/16	miniature
7–A*	T7	1 1/16	2 1/16	2⅝	none
8–1	MT8	1 5/16	2 1/16	2⅝	none
8–2	MT8	1 5/16	2 5/16	3⅛	miniature
8–3	MTT8	1 5/16	2 1/16	2⅝	none
8–4	MTT8	1 5/16	2 5/16	3⅛	miniature
8–5	MT8	1 5/16	1 3/16	1¾	none
8–6	MT8	1 5/16	2 11/16	3¼	none
9–1	T9	1 9/32	1¾	2 5/16	none
9–5	T9	1 9/32	2 7/16	3	none
9–7	T9	1 9/32	2½	3 1/16	none
9–11	T9	1 9/32	2¾	3 5/16	none
9–12	T9	1 5/16	2¾	3 5/16	none
9–13	T9	1 9/32	2 13/16	3⅝	none
9–15	T9	1 9/32	2⅞	3 7/16	none
9–17	T9	1 9/32	2¾	3 5/16	miniature
9–18	T9	1 5/16	2¾	3 5/16	miniature
9–24	T9	1 5/16	3	3 9/16	miniature
9–26	T9	1 3/16	3 9/16	4 3/16	none
9–30	T9	1 3/16	2¼	2 25/32	none
9–31	T9	1 3/16	2⅝	3 5/32	none
9–32	T9	1 3/16	1¾	2 9/32	none
9–41	T9	1 9/32	2¾	3 5/16	none
9–44	T9	1 9/32	3¼	3 13/16	none
9–49	T9	1 9/32	3 5/16	3⅞	miniature
9–50	T9	1 9/32	3 5/16	3⅞	miniature
9–A*	T9	1 9/32	3½	4 1/16	small
9–B*	T9	1 9/32	3	3 9/16	small
10–1	MT10	1⅝	3¾	4 5/16	none
11–A*	T11	1 7/16	3 7/16	4	none
11–B*	T11	1 7/16	4 3/16	4¾	none
12–2	ST12	1 9/16	4 5/16	4 15/16	small
12–4	ST12	1 9/16	4 5/16	4⅞	miniature
12–5	ST12	1 9/16	3 9/16	4 3/16	none
12–6	ST12	1 9/16	3 29/32	4 17/32	small
12–7	ST12	1 9/16	3 9/16	4⅛	none
12–8	ST12	1 9/16	3 29/32	4 15/32	miniature
12–15	T12	1 9/16	3 11/16	4¼	none
12–16	T12	1 23/32	4 1/16	4⅝	none
12–21	T12	1 9/16	4 7/16	5	small
12–A*	T12	1 9/16	3 5/16	3⅞	none
12–B*	T12	1 9/16	3 11/16	4¼	miniature
12–C*	T12	1 9/16	3 13/16	4⅜	none
12–D*	T12	1 23/32	4 3/16	4¾	none
12–F*	T12	1 9/16	4⅝	5 3/16	none
12–G*	T12	1 23/32	4 11/16	5 1/32	small
12–H*	T12	1 9/16	4⅜	4 15/16	none
14–1	ST14	1 13/16	4 1/16	4 11/16	none
14–2	ST14	1 13/16	4 13/32	5 1/32	small
14–3	ST14	1 13/16	4 1/16	4⅝	none
16–1	ST16	2 1/16	4¾	5⅜	none
16–3	ST16	2 1/16	4¾	5 5/16	none
16–5	ST16	2 1/16	5⅛	5 11/16	small
16-A*	ST16	2 1/16	4 7/16	5⅛	small

*designates non-JETEC outline number

⊕tinned flexible leads 1½" min. in length