Class A_1 Amplifier (Each Unit)

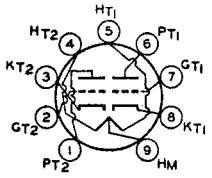
MAXIMUM RATINGS (Design-Maximum Values)		
Plate Voltage	330	volts
Grid Voltage:		
Negative-bias value	55	volts
Positive-bias value	0	volts
Plate Dissipation	1.2	watts
EQUIVALENT-NOISE AND HUM VOLTAGE (References To Grid, Each Unit)•		
Average Value	1.8	μV rms

• Measured in "true rms" units under the following conditions: Heater voltage (parallel connection), 6.3 volts ac; center tap of heater transformer grounded; plate supply voltage, 250 volts dc; plate load resistor, 100000 ohms; cathode resistor, 2700 ohms bypassed by 100-μF capacitor; grid resistor, 0 ohms; and amplifier covering frequency range between 25 and 10000 Hz.

Refer to chart at end of section. **12AY3**

Refer to type 6AY3B. **12AY3A**

MEDIUM-MU TWIN TRIODE **12AY7**



9A

Miniature type used in the first stages of high-gain audio-frequency amplifiers. **Outlines section,** 6B; requires miniature 9-contact socket. Each triode unit is independent of the other except for the common heater. Use of the 12.6-volt connection with an ac heater supply is not recommended for applications involving low hum. For typical operation as a resistance-coupled amplifier, refer to **Resistance-Coupled Amplifier** section.

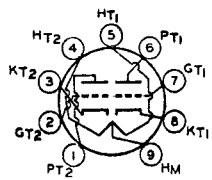
	Series	Parallel	
Heater Arrangement:			
Heater Voltage (ac/dc)	12.6	6.3	volts
Heater Current	0.15	0.3	ampere
Peak Heater-Cathode Voltage		±90 max	volts
Direct Interelectrode Capacitances (Approx., Each Unit)			
Grid to Plate		1.3	pF
Grid to Cathode and Heater		1.3	pF
Plate to Cathode and Heater		0.6	pF

Class A_1 Amplifier (Each Unit)

MAXIMUM RATINGS (Design-Center Values)		
Plate Voltage	300	volts
Grid Voltage:		
Negative-bias value	50	volts
Positive-bias value	0	volts
Cathode Current	10	mA
Plate Dissipation	1.5	watts
CHARACTERISTICS		
Plate Voltage	250	volts
Grid Voltage	—4	volts
Amplification Factor	40	
Plate Resistance	22800	ohms
Transconductance	1750	μmhos
Plate Current	3	mA
Grid Voltage (Approx.) for plate current of 10 mA	—11	volts

Refer to chart at end of section. **12AZ7**

HIGH-MU TWIN TRIODE **12AZ7A**



9A

Miniature type used in direct-coupled cathode-drive rf amplifier circuits of vhf color and black-and-white television tuners. **Outlines section,** 6B; requires miniature 9-contact socket. For characteristics as class A_1 amplifier, refer to miniature type 12AT7.

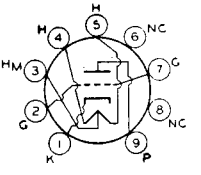
Heater Voltage (ac/dc):			
Series		12.6	volts
Parallel		6.3	volts
Heater Current:			
Series		0.225	ampere
Parallel		0.45	ampere
Heater Warm-up Time (Average)		11	seconds
Heater-Cathode Voltage:			
Peak value		±200 max	volts
Average value		100 max	volts
Direct Interelectrode Capacitance (Approx.):	Unshielded	Shielded[A]	
Grid to Plate (Each unit)	2	1.9	pF
Grid to Cathode and Heater (Each unit)	2.6	2.8	pF
Plate to Cathode and Heater:			
Unit No.1	0.44	1.4	pF
Unit No.2	0.36	1.6	pF

[A] With external shield connected to cathode of unit under test.

Class A_1 Amplifier (Each Unit)

MAXIMUM RATINGS (Design-Maximum Values)		
Plate Voltage	330	volts
Grid Voltage, Negative-bias value	55	volts
Plate Dissipation	2.5	watts
MAXIMUM CIRCUIT VALUES (Each Unit)		
Grid-Circuit Resistance:		
For fixed-bias operation	0.25	megohm
For cathode-bias operation	1	megohm

12B4A LOW-MU TRIODE



9AG

Miniature type used as vertical-deflection amplifier in television receivers. **Outlines section,** 6E; requires miniature 9-contact socket.

	Series	Parallel	
Heater Voltage	12.6	6.3	volts
Heater Current	0.3	0.6	ampere
Heater Warm-up Time	—	11	seconds
Heater-Cathode Voltage:			
Peak value		±200 max	volts
Average value		100 max	volts
Direct Interelectrode Capacitances:			
Grid to Plate		4.8	pF
Grid to Cathode and Heater		5	pF
Plate to Cathode and Heater		1.5	pF

Class A_1 Amplifier

MAXIMUM RATINGS (Design-Center Values)		
Plate Voltage	550	volts
Grid Voltage, Negative-bias value	50	volts
Plate Dissipation	5.5	watts
CHARACTERISTICS		
Plate Voltage	150	volts
Grid Voltage	−17.5	volts
Amplification Factor	6.5	
Plate Resistance (Approx.)	1030	ohms
Transconductance	6300	μmhos
Plate Current	34	mA
Plate Current for grid voltage of −23 volts	9.6	mA
Grid Voltage (Approx.) for plate current of 200 μA	−32	volts
MAXIMUM CIRCUIT VALUES		
Grid-Circuit Resistance:		
For fixed-bias operation	0.47	megohm
For cathode-bias operation	2.2	megohms

Vertical-Deflection Amplifier

For operation in a 525-line, 30-frame system

MAXIMUM RATINGS (Design-Center Values)		
DC Plate Voltage	550	volts
Peak Positive-Pulse Plate Voltage# (Absolute Maximum)	1000†	volts