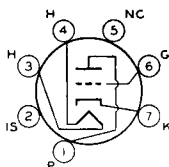


6AB4**HIGH-MU TRIODE**

Miniature type used as cathode-drive amplifier, frequency converter, or oscillator at frequencies up to 300 MHz in television and FM receivers. **Outlines section, 5C**; requires miniature 7-contact socket. **Heater:** volts (ac/dc), 6.3; amperes, 0.15. For operation as resistance-coupled amplifier, refer to **Resistance-Coupled Amplifier section**. For maximum ratings, characteristics, and curves refer to type 12AT7.

**5CE****6AB5/6N5**

Refer to chart at end of section.

6AB7

Refer to chart at end of section.

6AC5GT

Refer to chart at end of section.

6AC7

Refer to chart at end of section.

6AC7W

Refer to chart at end of section.

6AC10**8AC10, 12AC10A****HIGH-MU TRIPLE TRIODE**

Duodecar type used in matrixing (color-difference) circuits of color television receivers. **Outlines section, 8B**; requires duodecar 12-contact socket. Types 8AC10 and 12AC10A are identical with type 6AC10 except for heater ratings.

	6AC10	8AC10	12AC10A	volts ampere seconds
Heater Voltage (ac/dc)	6.3	8.4	12.5	
Heater Current	0.6	0.45	0.3	
Heater Warm-up Time (Average)	11	11	11	
Heater-Cathode Voltage:				
Peak value	±200 max	±200 max	±200 max	volts
Average value	100 max	100 max	100 max	volts

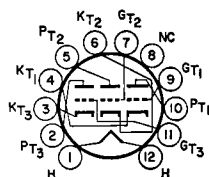
**12FE****Class A₁ Amplifier****MAXIMUM RATINGS (Design-Maximum Values)**

Plate Voltage	330	volts
Plate Dissipation	2	watts

CHARACTERISTICS

Plate Voltage	200	volts
Cathode-Bias Resistor	150	ohms
Amplification Factor	62	
Plate Resistance (Approx.)	10700	ohms
Transconductance	5800	μmhos
Plate Current	9	mA
Grid Voltage (approx.) for plate current of 100 μA	-5	volts

MAXIMUM CIRCUIT VALUE

Grid-Circuit Resistance	0.5	megohm
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6AD6G

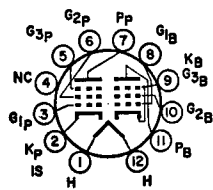
Refer to chart at end of section.

6AD7G

Refer to chart at end of section.

6AD10**BEAM POWER TUBE—
SHARP-CUTOFF PENTODE**

Duodecar type used as FM detector and audio-frequency output amplifier in color and black-and-white television receivers. **Outlines section, 8B**; requires duodecar 12-contact socket.

**12EZ**

Heater Voltage (ac/dc)	6.3	volts
Heater Current	1.05	amperes
Heater-Cathode Voltage:		
Peak value	±200 max	volts
Average value	100 max	volts
Direct Interelectrode Capacitances:		
Beam Power Unit:		
Grid No.1 to Plate	0.26	pF
Grid No.1 to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield	11	pF
Plate to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield	11	pF
Pentode Unit:		
Grid No.1 to Plate	0.024	pF
Grid No.3 to Plate	3.4	pF
Grid No.1 to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield	8	pF
Grid No.3 to Cathode, Heater, Grid No.1, Grid No.2, Plate, and Internal Shield	9.5	pF
Grid No.1 to Grid No.3	0.12	pF
Plate of Beam Power Unit to Plate of Pentode Unit	0.34	pF

Beam Power Unit as Class A₁ Amplifier

MAXIMUM RATINGS (Design-Maximum Values)

Plate Voltage	275	volts
Grid-No.2 (Screen-Grid) Voltage	275	volts
Plate Dissipation	10	watts
Grid-No.2 Input	2	watts

TYPICAL OPERATION

Plate Voltage	250	volts
Grid-No.2 Voltage	250	volts
Grid-No.1 (Control-Grid) Voltage	-8	volts
Peak AF Grid-No.1 Voltage	8	volts
Zero-Signal Plate Current	35	mA
Maximum-Signal Plate Current	39	mA
Zero-Signal Grid-No.2 Current	2.5	mA
Maximum-Signal Grid-No.2 Current	7	mA
Plate Resistance (Approx.)	0.1	megohm
Transconductance	6500	μmhos
Load Resistance	5000	ohms
Total Harmonic Distortion	10	per cent
Maximum-Signal Power Output	4.2	watts

MAXIMUM CIRCUIT VALUES

Grid-No.1-Circuit Resistance:		
For fixed-bias operation	0.25	megohm
For cathode-bias operation	0.5	megohm

Pentode Unit as Class A₁ Amplifier

CHARACTERISTICS

Plate Supply Voltage	150	volts
Grid No.3 (Control Grid)	Connected to negative end of cathode resistor	
Grid-No.2 (Screen-Grid) Voltage	100	volts
Grid No.1 (Control Grid)	Connected to negative end of cathode resistor	
Cathode-Bias Resistor	180	ohms
Plate Resistance (Approx.)	0.11	megohm
Transconductance, Grid No.1 to Plate	3400	μmhos
Transconductance, Grid No.3 to Plate	600	μmhos
Plate Current	3.2	mA
Grid-No.2 Current	3.2	mA
Grid-No.1 Voltage (Approx.) for plate current of 20 μA	-4.5	volts
Grid-No.3 Voltage (Approx.) for plate current of 20 μA	-7	volts

Pentode Unit as FM Sound Detector

MAXIMUM RATINGS (Design-Maximum Values)

Plate Voltage	300	volts
Grid-No.3 Voltage:		
Negative-bias value	100	volts
Positive-bias value	25	volts
Grid-No.2 Supply Voltage	300	volts
Grid-No.2 Voltage		
Grid-No.1 Voltage:	See curve page 300	
Negative-bias value	-50	volts
Positive-bias value	0	volts
Plate Dissipation	1.7	watts
Grid-No.3 Input	0.1	watt
Grid-No.2 Input:		
For grid-No.2 voltages up to 150 volts	1	watt
For grid-No.2 voltages between 150 and 300 volts	See curve page 300	

MAXIMUM CIRCUIT VALUES

Grid-No.3-Circuit Resistance	0.68	megohm
Grid-No.1-Circuit Resistance:		
For fixed-bias operation	0.22	megohm
For cathode-bias operation	0.47	megohm

6AE5GT

Refer to chart at end of section.

6AE6G

Refer to chart at end of section.

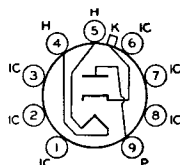
6AE7GT

Refer to chart at end of section.

6AF3

12AF3,
12AF3/12BR3/12RK19

Miniature type used as a damper tube in horizontal-deflection circuits of television receivers. Outlines section, 7C; requires miniature 9-contact socket. Socket terminals 1, 2, 3, 6, 7, and 8 should not be used as tie points. It is especially important that this tube, like other power-handling tubes, be adequately ventilated. Types 12AF3 and 12AF3/12BR3/12RK19 are identical with type 6AF3 except for heater ratings.

**HALF-WAVE
VACUUM RECTIFIER****9CB**

	6AF3	12AF3	
		12AF3/12BR3/12RK19	
Heater Voltage (ac/dc)	6.3	12.6	volts
Heater Current	1.2	0.6	amperes
Heater Warm-up Time (Average)	—	11	seconds

Damper Service

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

MAXIMUM RATINGS (Design-Maximum Values)

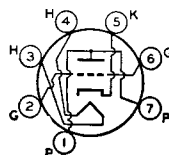
Peak Inverse Plate Voltage#	4500	volts
Peak Plate Current	750	mA
Average Plate Current	185	mA
Bulb Temperature (At hottest point)	210	°C
Heater-Cathode Voltage:		
Peak value	+300 —4500	volts
Average value	+100 —1000	volts

Pulse duration must not exceed 15% of a horizontal scanning cycle (10 microseconds).

6AF4**6AF4A**

2AF4B/2DZ4,
3AF4A/3DZ4

Miniature types used as local oscillators in uhf television receivers covering the frequency range of 470 to 890 MHz. Outlines section, 5C and 5B, respectively; requires miniature 7-contact socket. Types 2AF4B/2DZ4 and 3AF4A/3DZ4 are identical with type 6AF4A except for heater and heater-cathode ratings.

MEDIUM-MU TRIODE**7DK**

	2AF4B/2DZ4	3AF4A/3DZ4	6AF4	
			6AF4A	
Heater Voltage (ac/dc)	2.35	3.15	6.3	volts
Heater Current	0.6	0.45	0.225	ampere
Heater Warm-up Time (Average)	11	11	—	seconds
Heater-Cathode Voltage:				
Peak value	±180 max	±50 max	±50 max	volts
Average value	100 max	25 max	25 max	volts
Direct Interelectrode Capacitances:*				
Grid to Plate			1.9	pF
Grid to Cathode and Heater			2.2	pF
Plate to Cathode and Heater			1.4	pF
Heater to Cathode (External Shield connected to plate)			2.2	pF

* With external shield connected to cathode, except as noted.

Class A₁ Amplifier

CHARACTERISTICS

Plate Supply Voltage	80	volts
Cathode-Bias Resistor	150	ohms
Amplification Factor	13.5	
Plate Resistance (Approx.)	2100	ohms
Transconductance	6500	μmhos
Plate Current	17.5	mA

UHF Oscillator

MAXIMUM RATINGS (Design-Maximum Values)

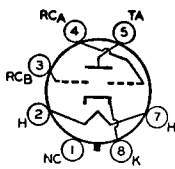
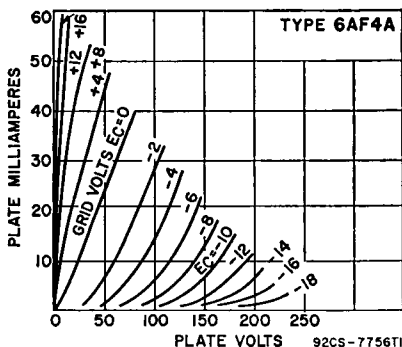
Plate Voltage	150	volts
Grid Voltage, Negative-bias value	50	volts
Grid Current	2	mA
Plate Dissipation	2.5	watts
Average Cathode Current	24	mA

TYPICAL OPERATION AS OSCILLATOR AT 1000 MHZ

Plate Supply Voltage	100	volts
Plate Resistor	220	ohms
Grid Resistor	10000	ohms
Plate Current	17	mA
Grid Current (Approx.)	750	μA

MAXIMUM CIRCUIT VALUES

Grid-Circuit Resistance:		
For fixed-bias operation		Not recommended
For cathode-bias operation	0.5	megohm



7AG

socket. **Heater:** volts (ac/dc), 6.3; amperes, 0.15. **Maximum ratings in indicator service:** fluorescent-target volts, 250 max, 125 min; ray-control-electrode supply volts, 250 max; peak heater-cathode volts, 90 max. **Typical operation:** fluorescent-target volts, 250; fluorescent-target mA, 3.75; ray-contact-electrode volts (approx. for 0° shadow angle), 155; ray-control-electrode volts (approx. for 100° shadow angle), 0.

ELECTRON-RAY TUBE

6AF6G

Glass octal type used to indicate visually, by means of two shadows on the fluorescent target, the effects of changes in the controlling voltages. It is a twin-indicator type and is used as a convenient means of indicating accurate radio-receiver tuning. This type may be supplied with pin No. 1 omitted. Tube requires octal