

MAXIMUM CIRCUIT VALUES

Grid-Circuit Resistance 0.5 megohm
 * Rating may be as high as 300 volts under cutoff conditions, when tube is used as a cascode amplifier, the two units are connected in series, and heater is negative with respect to cathode.

6BD4
6BD4A

Refer to chart at end of section.

6BD6

Refer to chart at end of section.

6BD11

Refer to chart at end of section.

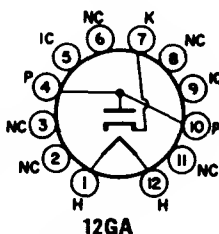
6BE3

For replacement use type 6BE3/6BZ3.

6BE3/6BZ3

12BE3,
17BE3/17BZ3

Duodecar type used as damper tube in horizontal-deflection circuits of color and black-and-white television receivers. Outlines section, 8D; requires duodecar 12-contact socket. Types 12BE3 and 17BE3/17BZ3 are identical with type 6BE3/6BZ3 except for heater ratings.

**HALF-WAVE
VACUUM RECTIFIER**

	6BE3/6BZ3	12BE3	17BE3/ 17BZ3	
Heater Voltage (ac/dc)	6.3	12.6	16.8	volts
Heater Current	1.2	0.6	0.46	ampere
Heater Warm-up Time (Average)	—	11	11	seconds
Direct Interelectrode Capacitances (Approx.):				
Plate to Cathode, and Heater			10	pF
Cathode to Heater, and Plate			8	pF
Heater to Cathode			3.4	pF

Damper Service

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

MAXIMUM RATINGS (Design-Maximum Values)

Peak Inverse Plate Voltage#	5000	volts
Peak Plate Current	1200	mA
Average Plate Current	200	mA
Plate Dissipation	6.5	watts
Heater-Cathode Voltage:		
Peak value	+300	volts
Average value	+100	volts

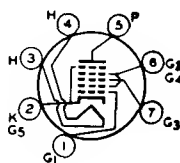
CHARACTERISTIC Instantaneous Value

Tube Voltage Drop for dc plate current of 350 mA	25	volts
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Pulse duration must not exceed 15% of a horizontal scanning cycle (10 microseconds).

6BE6**12BE6****PENTAGRID CONVERTER**

Miniature type used as converter in AM and FM receivers. Outlines section, 5C; requires miniature 7-contact socket. For general discussion of pentagrid types, see Frequency Conversion in Electron Tube Applications section. Type 12BE6 is identical with type 6BE6 except for heater ratings.

**7CH**

	6BE6	12BE6	
Heater Voltage (ac/dc)	6.3	12.6	volts
Heater Current	0.3	0.15	ampere

Heater-Cathode Voltage:

Peak value	±200 max	±200 max	volts
Average value	100 max	100 max	volts

Direct Interelectrode Capacitances:

	Unshielded	Shielded*	
Grid No.3 to Plate	0.30 max	0.25 max	pF
Grid No.3 to Grid No.1	0.15 max	0.15 max	pF
Grid No.1 to Plate	0.10 max	0.05 max	pF
Grid No.3 to All Other Electrodes	7	7	pF
Grid No.1 to All Other Electrodes	5.5	5.5	pF
Plate to All Other Electrodes	8.0	13.0	pF
Grid No.1 to Cathode and Grid No.5	3	3	pF
Cathode and Grid No.5 to All Other Electrodes except Grid No.1	15	20	pF

* With external shield connected to cathode and grid No.5.

Converter**MAXIMUM RATINGS (Design-Maximum Values)**

Plate Voltage	330	volts
Grids-No.2-and-No.4 (Screen-Grid) Voltage	110	volts
Grids-No.2-and-No.4 Supply Voltage	330	volts
Cathode Current	15.5	mA
Plate Dissipation	1.1	watts
Grids-No.2-and-No.4 Input	1.1	watts
Grid-No.3 Voltage:		
Negative-bias value	55	volts
Positive-bias value	0	volts
Heater-Cathode Voltage:		
Peak value	200	volts
Average value	100	volts

TYPICAL OPERATION (Separate Excitation)*

Plate Voltage	100	250	volts
Grids-No.2-and-No.4 (Screen-Grid) Voltage	100	100	volts
Grid-No.1 (Oscillator-Grid) Voltage (rms)	10	10	volts
Grid-No.3 (Control-Grid) Voltage	-1.5	-1.5	volts
Grid-No.1 (Oscillator-Grid) Resistor	20000	20000	ohms
Plate Resistance (Approx.)	0.4	1	megohm
Conversion Transconductance	455	475	μmhos
Plate Current	2.6	2.9	mA
Grids-No.2-and-No.4 Current	7.0	6.8	mA
Grid-No.1 Current	0.5	0.5	mA
Cathode Current	10.1	10.2	mA
Grid-No.3 Voltage for conversion transconductance of 10 μmhos	-30	-30	volts

NOTE: The transconductance between grid No.1 and grids No.2 and No.4 connected to plate (not oscillating) is approximately 7250 μmhos under the following conditions: grids No.1 and No.3 at 0 volts; grids No.2 and No.4 and plate at 100 volts. Under the same conditions, the cathode current is 25 mA, and the amplification factor is 20. Grid-No.1 voltage (Approx.) for plate current of 10 μA is -11 volts.

* The characteristics shown with separate excitation correspond very closely with those obtained in a self-excited circuit operating with zero bias.

Installation and Application

Because of the special structural arrangement of the 6BE6, a change in signal-grid voltage produces little change in cathode current. Consequently, an rf voltage on the signal grid produces little modulation of the electron current flowing in the cathode circuit. This feature is important because it is desirable that the impedance in the cathode circuit should produce little degeneration or regeneration of the signal-frequency input and intermediate-frequency output. Another important feature is that, because signal-grid voltage has very little effect on the space charge near the cathode, changes in avc bias produce little change in oscillator transconductance and in the input capacitance of grid No.1. There is, therefore, little detuning of the oscillator by avc bias.

A typical self-excited oscillator circuit employing the 6BE6 is given in the Circuits section.

In the 6BE6 operation characteristics curves with self-excitation, E_k is the voltage across the oscillator-coil section between cathode and ground; E_g is the oscillator voltage between cathode and grid.