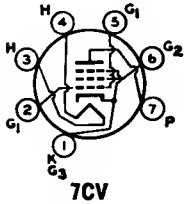
Refer to chart at end of section. **12FV7**



7CV

## POWER PENTODE **12FX5**

**60FX5**

Miniature type used in output stages of audio amplifiers. Outlines section, 5D; requires miniature 7-contact socket. Type 60FX5 is identical with type 12FX5 except for heater ratings.

| | 12FX5 | 60FX5 | |
|---|---|---|---|
| Heater Voltage (ac/dc) | 12.6 | 60 | volts |
| Heater Current | 0.45 | 0.1 | ampere |
| Heater Warm-up Time (Average) | 11 | — | seconds |
| Heater-Cathode Voltage: | | | |
| Peak value | ±200 max | ±200 max | volts |
| Average value | 100 max | 100 max | volts |
| Direct Interelectrode Capacitances (Approx.): | | | |
| Grid No.1 to Plate | | 0.65 | pF |
| Grid No 1 to Cathode, Heater, Grid No.2, and Grid No.3 | | 17 | pF |
| Plate to Cathode, Heater, Grid No.2, and Grid No.3 | | 9 | pF |

### Class $A_1$ Amplifier

| | | |
|---|---|---|
| **MAXIMUM RATINGS** (Design-Maximum Values) | | |
| Plate Voltage | 150 | volts |
| Grid-No.2 (Screen-Grid) Voltage | 130 | volts |
| Plate Dissipation | 5.5 | watts |
| Grid-No.2 Input | 2 | watts |
| Bulb Temperature (At hottest point) | 225 | °C |
| **TYPICAL OPERATION** | | |
| Plate Supply Voltage | 110 | volts |
| Grid-No.2 Supply Voltage | 115 | volts |
| Cathode-Bias Resistor | 62 | ohms |
| Peak AF Grid-No.1 Voltage | 3 | volts |
| Zero-Signal Plate Current | 36 | mA |
| Maximum-Signal Plate Current | 35 | mA |
| Zero-Signal Grid No.2 Current | 10 | mA |
| Maximum-Signal Grid No.2 Current | 12 | mA |
| Plate Resistance | 17500 | ohms |
| Transconductance | 13500 | μmhos |
| Load Resistance | 3000 | ohms |
| Total Harmonic Distortion | 8 | per cent |
| Maximum-Signal Power Output | 1.3 | watts |
| **MAXIMUM CIRCUIT VALUES** | | |
| Grid-No.1-Circuit Resistance: | | |
| For fixed-bias operation | 0.1 | megohm |
| For cathode-bias operation | 0.5 | megohm |

Refer to chart at end of section. **12FX8**
**12FX8A**

Refer to chart at end of section. **12GA6**

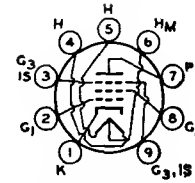
Refer to chart at end of section. **12GC6**

Refer to type 6GE5. **12GE5**

Refer to chart at end of section. **12GJ5**

Refer to type 6GJ5A. **12GJ5A**

Refer to chart at end of section. **12GN7**



9BF

## 12GN7A SHARP-CUTOFF PENTODE

Miniature type with frame grid used as video-amplifier tube in color and black-and-white television receivers. **Outlines section,** 6E; requires miniature 9-contact socket. **Heater:** volts, 6.3 (parallel), 12.6 (series); amperes, 0.6 (parallel), 0.3 (series); warm-up time (average), 11 seconds, maximum heater-cathode volts, ±200 peak, 100 average.

### Class $A_1$ Amplifier

| | | | |
|---|---|---|---|
| **MAXIMUM RATINGS** (Design-Maximum Values) | | | |
| Plate Voltage | | 400 | volts |
| Grid-No.2 (Screen-Grid) Supply Voltage | | 330 | volts |
| Grid-No.2 Voltage | | See curve page 98 | |
| Grid-No.1 (Control-Grid) Voltage, Positive-bias value | | 0 | volts |
| Plate Dissipation | | 11.5 | watts |
| Grid-No.2 Input: | | | |
| For grid-No.2 voltages up to 165 volts | | 1.5 | watts |
| For grid-No.2 voltages between 165 and 330 volts | | See curve page 98 | |
| **CHARACTERISTICS** | | | |
| Plate Supply Voltage | 50 | 250 | volts |
| Grid-No.2 Supply Voltage | 125 | 150 | volts |
| Grid-No.1 Voltage | 0 | 0 | volts |
| Cathode-Bias Resistor | — | 56 | ohms |
| Plate Resistance (Approx.) | — | 0.05 | megohm |
| Transconductance | — | 36000 | μmhos |
| Plate Current | 70* | 28 | mA |
| Grid-No.2 Current | 24* | 6.5 | mA |
| Grid-No.1 Voltage (Approx.) for plate current of 100 μA | — | —5.7 | volts |
| **MAXIMUM CIRCUIT VALUE** | | | |
| Grid-No.1-Circuit Resistance | | 0.25 | megohm |

* This value can be measured by a method involving a recurrent waveform such that the maximum ratings of the tube will not be exceeded.

**12GT5** Refer to chart at end of section.

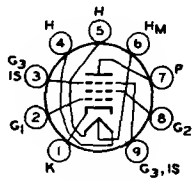
**12GT5A** Refer to chart at end of section.

**12GW6/12DQ6B** Refer to type 6GW6/6DQ6B.

**12H6** Refer to chart at end of section.

**12HE7** Refer to type 38HE7.

## 12HG7 12HG7/ 12GN7A SHARP-CUTOFF PENTODE



9BF

Neonoval types with frame grid used as video amplifier in color and black-and-white television receivers. **Outlines section,** 10C; require 9-contact neonoval socket.