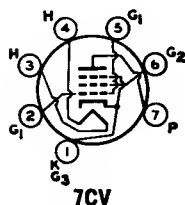


Refer to chart at end of section.

12FV7



## 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.

|                                                        |          |          |         |
|--------------------------------------------------------|----------|----------|---------|
| 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<sub>1</sub> 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.

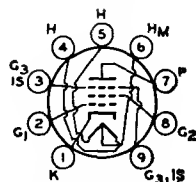
12GJ5A

Refer to chart at end of section.

12GN7

## 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,  $\pm 200$  peak, 100 average.



9BF

### Class A<sub>1</sub> 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 | $\mu$ mhos |
| Plate Current                                                | 70* | 28    | mA         |
| Grid-No.2 Current                                            | 24* | 6.5   | mA         |
| Grid-No.1 Voltage (Approx.) for plate current of 100 $\mu$ A | —   | —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.

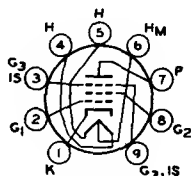
## 12HG7

## 12HG7/

## 12GN7A

### SHARP-CUTOFF PENTODE

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



9BF