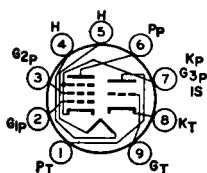


Refer to type 6CN7.  
 Refer to type 6CS7.  
 Refer to type 6CW5/EL86.  
 Refer to type 6CW5.  
 Refer to type 6CX8.  
 Refer to type 6EB8.  
 Refer to type 6EM5.  
 Refer to type 6ET7.  
 Refer to chart at end of section.  
 Refer to type 6FQ7/6CG7.  
 Refer to chart at end of section.  
 Refer to type 6GJ7/ECF801.  
 Refer to type 6GN8.  
 Refer to type 6GU7.  
 Refer to type 6JU8A.  
 Refer to type 6JV8.  
 Refer to type 6KA8.  
 Refer to type 6LC8.  
 Refer to type 6LT8.  
 Refer to chart at end of section.

8CN7  
 8CS7  
 8CW5/XL86  
 8CW5  
 8CX8  
 8EB8  
 8EM5  
 8ET7  
 8FQ7  
 8FQ7/8CG7  
 8GJ7  
 8GJ7/PCP801  
 8GN8  
 8GU7  
 8JU8A  
 8JV8  
 8KA8  
 8LC8  
 8LT8  
 9A8



# MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

# 9A8/ PCF80

**9DC** Miniature type used as combined oscillator and mixer tubes in vhf color and black-and-white television receivers. Outlines section, 6B; requires miniature 9-contact socket. Heater: volts (ac/dc), 9; amperes, 0.3; maximum heater-cathode volts, +100, -200 peak; -120 average.

## Class A<sub>1</sub> Amplifier

| MAXIMUM RATINGS (Design-Center Values) |             |              |        |
|----------------------------------------|-------------|--------------|--------|
|                                        | Triode Unit | Pentode Unit |        |
| Plate Supply Voltage                   | 550         | 550          | volts  |
| Plate Voltage                          | 250         | 250          | volts  |
| Grid-No.2 (Screen-Grid) Voltage        | —           | 175          | volts  |
| Cathode Current                        | 14          | 14           | mA     |
| Plate Dissipation                      | 1.5         | 1.7          | watts  |
| Grid-No.2 Input                        | —           | 0.5          | watt   |
| CHARACTERISTICS                        |             |              |        |
| Plate Voltage                          | 100         | 170          | volts  |
| Grid-No.2 Voltage                      | —           | 170          | volts  |
| Grid-No.1 Voltage                      | -2          | -2           | volts  |
| Amplification Factor                   | 20          | 47*          |        |
| Plate Resistance (Approx.)             | —           | 0.4          | megohm |
| Transconductance                       | 5000        | 6200         | μmhos  |
| Plate Current                          | 14          | 10           | mA     |
| Grid-No.2 Current                      | —           | 2.8          | mA     |

**MAXIMUM CIRCUIT VALUES****Grid-No.1-Circuit Resistance:**

|                                  |     |     |        |
|----------------------------------|-----|-----|--------|
| For fixed-bias operation .....   | 0.5 | 0.5 | megohm |
| For cathode-bias operation ..... | 0.5 | 1   | megohm |

\* Grid No.2 to Grid No.1.

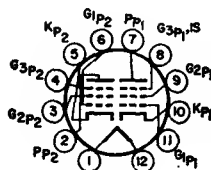
**9AU7**

Refer to type 12AU7A.

**9BJ11****BEAM POWER TUBE—  
SHARP-CUTOFF PENTODE**

Duodecar type used in two-stage video-if-amplifier in television receivers. Pentode unit is used as the input stage and beam power unit as the output stage. Outlines section, 8B; requires duodecar 12-contact socket.

|                                                                                                             |          |         |
|-------------------------------------------------------------------------------------------------------------|----------|---------|
| Heater Voltage (ac/dc) .....                                                                                | 9.6      | volts   |
| Heater Current .....                                                                                        | 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 Capacitances:                                                                         |          |         |
| Pentode Unit:                                                                                               |          |         |
| Grid No.1 to Plate .....                                                                                    | 0.008    | pF      |
| Grid No.1 to Cathode, Heater, Grid No.2, Grid No.3, Grid No.3 of Beam Power Unit, and Internal Shield ..... | 9.5      | pF      |
| Plate to Cathode, Heater, Grid No.2, Grid No.3, Grid No.3 of Beam Power Unit, and Internal Shield .....     | 3.4      | pF      |
| Beam Power Unit:                                                                                            |          |         |
| Grid No.1 to Plate .....                                                                                    | 0.016    | pF      |
| Grid No.1 to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield .....                               | 8.5      | pF      |
| Plate to Cathode, Heater, Grid No.2, Grid No.3, and Internal Shield .....                                   | 3        | pF      |

**12FU****Class A<sub>1</sub> Amplifier****MAXIMUM RATINGS (Design-Maximum Values)**

|                                                             | Pentode Unit | Beam Power Unit |       |
|-------------------------------------------------------------|--------------|-----------------|-------|
| Plate Voltage .....                                         | 160          | 160             | volts |
| Grid-No.3 (Suppressor-Grid) Voltage:                        |              |                 |       |
| Positive-bias value .....                                   | 10           | 0               | volts |
| Negative-bias value .....                                   | 50           | —               | volts |
| Grid-No.2 (Screen-Grid) Voltage .....                       | 160          | 160             | volts |
| Grid-No.1 (Control-Grid) Voltage, Positive-bias value ..... | 0            | 0               | volts |
| Plate Dissipation .....                                     | 2.8          | 2.2             | watts |
| Grid-No.2 Input .....                                       | 1.25         | 0.55            | watts |

**CHARACTERISTICS**

|                                                              |                                |       |        |
|--------------------------------------------------------------|--------------------------------|-------|--------|
| Plate Supply Voltage .....                                   | 110                            | 125   | volts  |
| Grid No.3 .....                                              | Connected to cathode at socket |       |        |
| Grid-No.2 Voltage .....                                      | 110                            | 125   | volts  |
| Grid-No.1 Resistor .....                                     | 0.1                            | —     | megohm |
| Cathode-Bias Resistor .....                                  | —                              | 120   | ohms   |
| Plate Resistance (Approx.) .....                             | 40000                          | 40000 | ohms   |
| Transconductance .....                                       | 7500                           | 9600  | μmhos  |
| Plate Current .....                                          | 5.8                            | 8.5   | mA     |
| Grid-No.2 Input .....                                        | 6.8                            | 2.5   | mA     |
| Grid-No.1 Voltage (Approx.) for plate current of 20 μA ..... | —3                             | —4.5  | volts  |

**MAXIMUM CIRCUIT VALUES**

|                                    |     |   |        |
|------------------------------------|-----|---|--------|
| Grid-No.1-Circuit Resistance ..... | 0.1 | — | megohm |
| Grid-No.3-Circuit Resistance ..... | 1.5 | — | megohm |

**9BR7**

Refer to chart at end of section.

**9CL8**

Refer to chart at end of section.

**9EA8**

Refer to type 6EA8.

**9GV8**

Refer to chart at end of section.

**9GV8/XCL85**

Refer to type 6GV8/EL500.