# 6BA11

## Medium-Mu Triode—
## Sharp-Cutoff Twin Pentode

**DUODECAR TYPE**

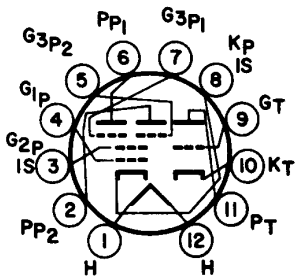
**Electrical:**

| | | |
|---|---|---|
| Heater Characteristics and Ratings: | | |
| Voltage (AC or DC) | 6.3 ± 0.6[a] | volts |
| Current at heater volts = 6.3 | 0.600[b] | amp |
| Warm-up time (Average) | 11 | sec |
| Peak heater-cathode voltage: | | |
| Heater negative with respect to cathode | 200 max. | volts |
| Heater positive with respect to cathode | 200[c] max. | volts |
| Direct Interelectrode Capacitances:[d] | | |
| *Triode Unit:* | | |
| Grid to plate | 2.0 | pf |
| Input: $G_T$ to ($K_T$,H) | 2.0 | pf |
| Output: $P_T$ to ($K_T$,IS,H) | 1.9 | pf |
| *Each Pentode Unit:* | | |
| $G3_P$ to $P_P$ | 2.0 | pf |
| $G3_P$ to all other electrodes | 3.6 | pf |
| $G1_P$ to all other electrodes | 6.0 | pf |
| $P_P$ to all other electrodes | 3.0 | pf |
| $G3_{P1}$ to $G3_{P2}$ | 0.026 max. | pf |

**Mechanical:**

| | |
|---|---|
| Operating Position | Any |
| Type of Cathodes | Coated Unipotential |
| Maximum Overall Length | 2.375" |
| Seated Length | 1.750" to 2.000" |
| Diameter | 1.062" to 1.188" |
| Dimensional Outline | See *General Section* |
| Bulb | T9 |
| Base | Small-Button Duodecar 12-Pin (JEDEC E12-70) |
| Basing Designation for BOTTOM VIEW | 12ER |

Pin 1 - Heater
Pin 2 - Plate of Pentode Unit No.2
Pin 3 - Pentodes Grid No.2, Internal Shield
Pin 4 - Pentodes Grid No.1
Pin 5 - Grid No.3 of Pentode Unit No.2
Pin 6 - Plate of Pentode Unit No.1
Pin 7 - Grid No.3 of Pentode Unit No.1
Pin 8 - Pentodes Cathode, Internal Shield
Pin 9 - Triode Grid
Pin 10 - Triode Cathode
Pin 11 - Triode Plate
Pin 12 - Heater



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**Characteristics, Class $A_1$ Amplifier:**

| | Triode Unit | Pentode Units: Each Separately[e] | | Pentode Units: Both Operating[f] | | |
|---|---|---|---|---|---|---|
| Plate Voltage | 250 | 100 | 100 | 100 | 100 | volts |
| Grid-No.3 Voltage | - | 0 | 0 | -10 | 0 | volts |
| Grid-No.2 Voltage | - | 67.5 | 67.5 | 67.5 | 67.5 | volts |
| Grid-No.1 Voltage | -11 | 0 | [g] | [g] | [g] | volts |
| Amplification Factor | 18 | - | - | - | - | |
| Grid No.3 Transconductance | - | - | 450 | - | - | μmhos |
| Grid No.1 Transconductance | 1800 | 1700 | - | - | - | μmhos |
| Plate Current | 5 | - | 2.5 | 0 | 2.5 | ma |
| Grid No.2 Current | - | - | - | 7 | 4.4 | ma |
| Grid-No.3 Voltage (Approx.) for plate μa = 100 | - | - | -3.2 | - | - | volts |
| Grid-No.1 Voltage (Approx.) for plate μa = 100 | -18 | 2.3 | - | - | - | volts |

**AMPLIFIER — Class $A_1$**

| | Triode Unit | Pentode Unit | |
|---|---|---|---|
| **Maximum Ratings,** *Design-Maximum Values:* | | | |
| Plate Voltage | 300 max. | 300 max. | volts |
| Grid-No.3 (Suppressor-Grid) Voltage: | | | |
| Peak positive value | - | 50 max. | volts |
| DC negative value | - | 50 max. | volts |
| DC positive value | - | 3 max. | volts |
| Grid-No.2 (Screen-Grid) Voltage | - | 150 max. | volts |
| Grid-No.1 (Control-Grid) Voltage: | | | |
| Negative-bias value | - | 50 max. | volts |
| Cathode Current | 20 | 12 max. | ma |
| Grid-No.2 Input | - | 0.75 max. | watts |
| Plate Dissipation (Each Plate) | 1.5 | 1.1 max. | watts |
| **Maximum Circuit Values:** | | | |
| Grid-No.3-Circuit Resistance (Each Grid) | - | 0.5 max. | megohm |
| Grid-No.1-Circuit Resistance: | | | |
| For fixed-bias operation | 0.25 max. | 0.5 max. | megohm |
| For cathode-bias operation | 1 max. | 0.5 max. | megohm |

[a] For parallel heater operation.
[b] For series heater operation current must be limited to 0.600 ± 0.040 amperes.
[c] The dc component must not exceed 100 volts.
[d] Without external shield.
[e] Plate and grid 3 of opposite unit grounded.
[f] Voltages and plate current apply to each section.
[g] Adjusted to give a dc grid-No.1 current of 100 microamperes.