



# 12V6-GT

## BEAM POWER AMPLIFIER

TENTATIVE DATA

RCA-12V6-GT is a beam power tube of the heater-cathode type intended primarily for use in the output amplifier of automobile radio receivers operating from a 12-volt storage battery.

The application of directed electron beam principles in the design of this tube makes it capable of producing relatively high power output with high power sensitivity. For example, a single 12V6-GT operated with a plate and grid-No.2 voltage of 250 volts can deliver a maximum-signal power output of 4.5 watts with a driving voltage of only about 12 volts. These features together with relatively low plate-current drain make the 12V6-GT especially suitable for use in the output stage of automobile receivers.

### GENERAL DATA

#### Electrical:

|                                                                             |       |               |  |
|-----------------------------------------------------------------------------|-------|---------------|--|
| Heater, for unipotential Cathode:                                           |       |               |  |
| Voltage (AC or DC) . . . . .                                                | 12.6  | volts         |  |
| Current . . . . .                                                           | 0.225 | ampere        |  |
| Direct Interelectrode Capacitances<br>(Approx. without external<br>shield): |       |               |  |
| Grid No.1 to Plate . . . . .                                                | 0.7   | $\mu\text{M}$ |  |
| Input . . . . .                                                             | 9.0   | $\mu\text{M}$ |  |
| Output . . . . .                                                            | 7.5   | $\mu\text{M}$ |  |

#### Mechanical:

|                                  |                                                |  |  |
|----------------------------------|------------------------------------------------|--|--|
| Mounting Position . . . . .      | Any                                            |  |  |
| Maximum Overall Length . . . . . | 3-5/16"                                        |  |  |
| Maximum Seated Length . . . . .  | 2-3/4"                                         |  |  |
| Maximum Diameter . . . . .       | 1-9/32"                                        |  |  |
| Bulb . . . . .                   | T-9                                            |  |  |
| Base . . . . .                   | Intermediate-Shell Octal 7-Pin (JETEC No.B7-7) |  |  |

### SINGLE-TUBE CLASS A<sub>1</sub> AMPLIFIER

#### Maximum Ratings, Design-Center Values:

|                                                   |                  |       |  |
|---------------------------------------------------|------------------|-------|--|
| PLATE VOLTAGE . . . . .                           | 315 max.         | volts |  |
| GRID-NO.2 (SCREEN) SUPPLY VOLTAGE . . . . .       | 315 max.         | volts |  |
| GRID-NO.2 VOLTAGE . . . . .                       | See Rating Chart |       |  |
| PLATE DISSIPATION . . . . .                       | 12 max.          | watts |  |
| GRID-NO.2 INPUT . . . . .                         | 2 max.           | watts |  |
| PEAK HEATER-CATHODE VOLTAGE:                      |                  |       |  |
| Heater negative with respect to cathode . . . . . | 90 max.          | volts |  |
| Heater positive with respect to cathode . . . . . | 90 max.          | volts |  |

#### Typical Operation:

|                                                   |       |       |       |                  |  |
|---------------------------------------------------|-------|-------|-------|------------------|--|
| Plate Voltage . . . . .                           | 180   | 250   | 315   | volts            |  |
| Grid-No.2 Voltage . . . . .                       | 180   | 250   | 225   | volts            |  |
| Grid-No.1 Voltage . . . . .                       | -8.5  | -12.5 | -13   | volts            |  |
| Peak AF Grid-No.1 Voltage . . . . .               | 8.5   | 12.5  | 13    | volts            |  |
| Zero-Signal Plate Current . . . . .               | 29    | 45    | 34    | ma               |  |
| Max-Signal Plate Current . . . . .                | 30    | 47    | 35    | ma               |  |
| Zero-Signal Grid-No.2 Current (Approx.) . . . . . | 3     | 4.5   | 2.2   | ma               |  |
| Max.-Signal Grid-No.2 Current (Approx.) . . . . . | 4     | 7     | 6     | ma               |  |
| Plate Resistance (Approx.) . . . . .              | 50000 | 50000 | 80000 | ohms             |  |
| Transconductance . . . . .                        | 3700  | 4100  | 3750  | $\mu\text{mhos}$ |  |
| Load Resistance . . . . .                         | 5500  | 5000  | 8500  | ohms             |  |
| Total Harmonic Distortion . . . . .               | 8     | 8     | 12    | per cent         |  |
| Max.-Signal Power Output . . . . .                | 2     | 4.5   | 5.5   | watts            |  |

### PUSH-PULL CLASS AB<sub>1</sub> AMPLIFIER

Values are for two tubes

#### Maximum Ratings, Design-Center Values:

|                                                   |                  |       |  |
|---------------------------------------------------|------------------|-------|--|
| PLATE VOLTAGE . . . . .                           | 315 max.         | volts |  |
| GRID-NO.2 (SCREEN) SUPPLY VOLTAGE . . . . .       | 315 max.         | volts |  |
| GRID-NO.2 VOLTAGE . . . . .                       | See Rating Chart |       |  |
| PLATE DISSIPATION . . . . .                       | 12 max.          | watts |  |
| GRID-NO.2 INPUT . . . . .                         | 2 max.           | watts |  |
| PEAK HEATER-CATHODE VOLTAGE:                      |                  |       |  |
| Heater negative with respect to cathode . . . . . | 90 max.          | volts |  |
| Heater positive with respect to cathode . . . . . | 90 max.          | volts |  |

#### Typical Operation:

|                                                   |       |       |                  |  |
|---------------------------------------------------|-------|-------|------------------|--|
| Plate Voltage . . . . .                           | 250   | 285   | volts            |  |
| Grid-No.2 Voltage . . . . .                       | 250   | 285   | volts            |  |
| Grid-No.1 Voltage . . . . .                       | -15   | -19   | volts            |  |
| Peak AF Grid-No.1-to-Grid-No.1 Voltage . . . . .  | 30    | 38    | volts            |  |
| Zero-Signal Plate Current . . . . .               | 70    | 70    | ma               |  |
| Max.-Signal Plate Current . . . . .               | 79    | 92    | ma               |  |
| Zero-Signal Grid-No.2 Current (Approx.) . . . . . | 5     | 4     | ma               |  |
| Max.-Signal Grid-No.2 Current (Approx.) . . . . . | 13    | 13.5  | ma               |  |
| Plate Resistance (Approx.) . . . . .              | 60000 | 70000 | ohms             |  |
| Transconductance . . . . .                        | 3750  | 3600  | $\mu\text{mhos}$ |  |
| Effective Load Resistance . . . . .               | 10000 | 8000  | ohms             |  |
| Total Harmonic Distortion . . . . .               | 5     | 3.5   | per cent         |  |
| Max.-Signal Power Output . . . . .                | 10    | 14    | watts            |  |

#### Maximum Circuit Values:

|                                      |          |        |  |
|--------------------------------------|----------|--------|--|
| Grid-No.1-Circuit Resistance:        |          |        |  |
| For fixed-bias operation . . . . .   | 0.1 max. | megohm |  |
| For cathode-bias operation . . . . . | 0.5 max. | megohm |  |

▲ The type of input coupling used should not introduce too much resistance in the grid-No.1 circuit. Transformer- or impedance-coupling devices are recommended.

### OPERATING CONSIDERATIONS

The maximum ratings in the tabulated data for the 12V6-GT are working design-center maximums established according to the standard design-center system of rating electron tubes. Tubes so rated will give satisfactory performance in storage-battery-operated equipment provided the following stipulations are observed:

When storage-battery equipment is operated without a charger, it should be designed so that the published maximum values of plate voltages, grid-No.2 supply voltages, dissipations, and rectified output currents are never exceeded for a terminal potential at the battery source of 2.0 volts per cell. When storage-battery equipment is operated with a charger, it should be designed so that 90 per cent of the same maximum values is never exceeded for a terminal potential at the battery source of 2.2 volts.

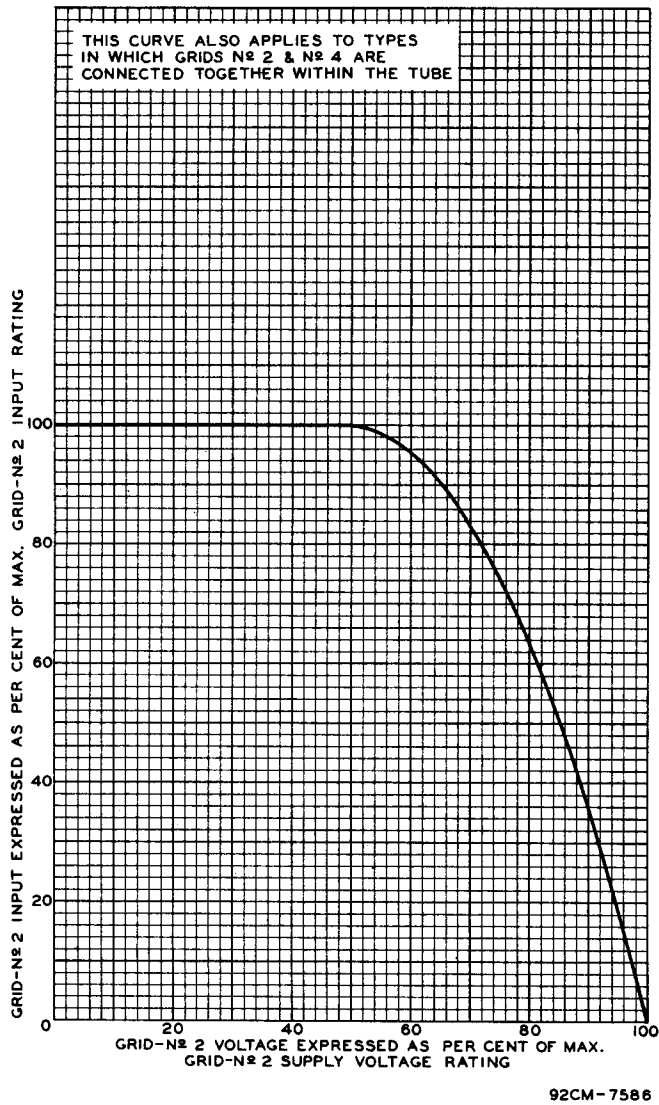


Fig. 1 - Grid-No. 2 Input Rating Curve

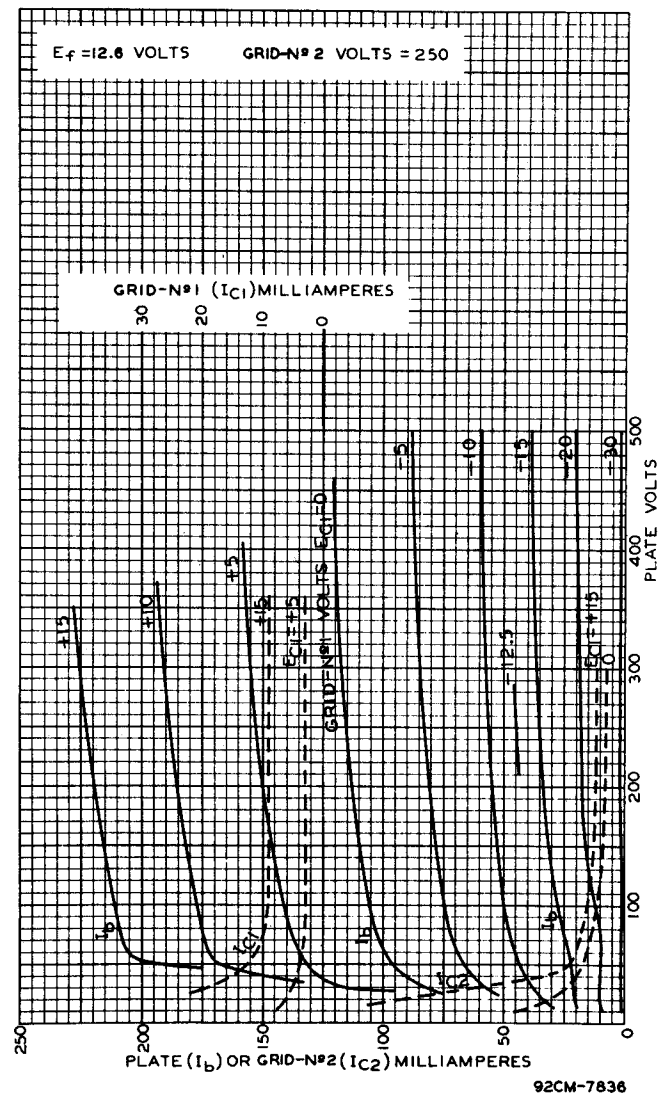


Fig. 2 - Average Plate Characteristics of  
Type 12V6-GT

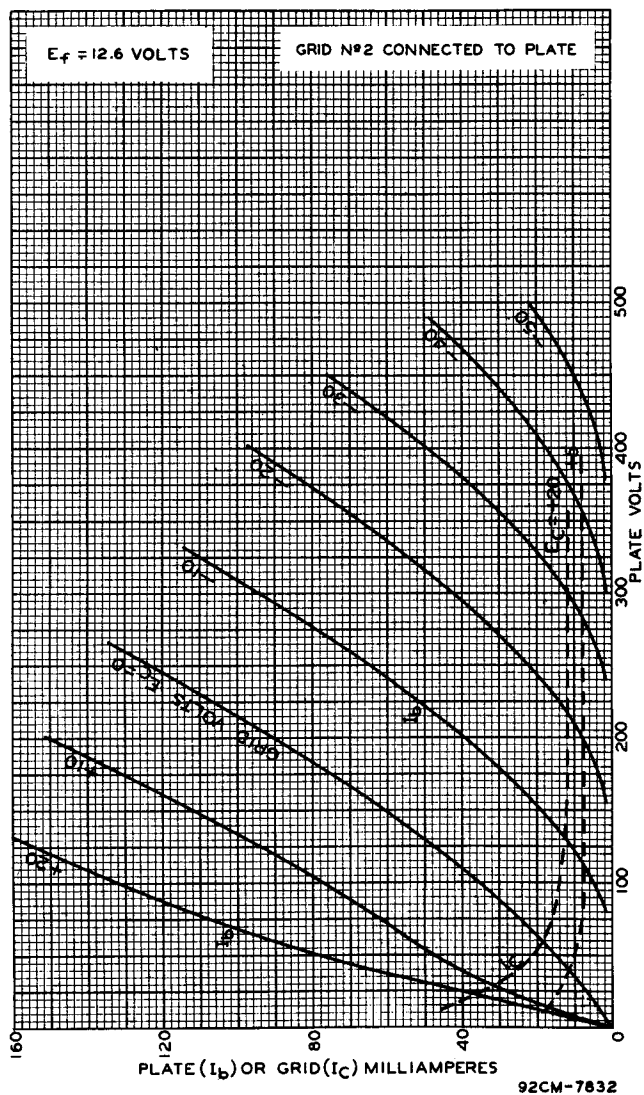


Fig. 3 - Average Plate Characteristics of Type 12V6-GT connected as Triode

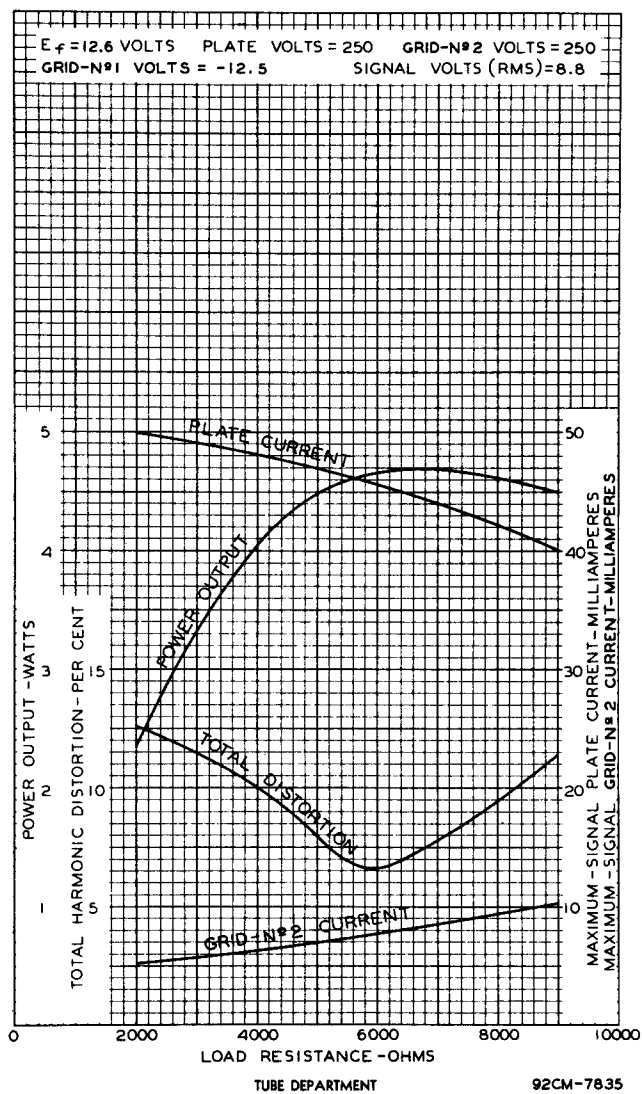
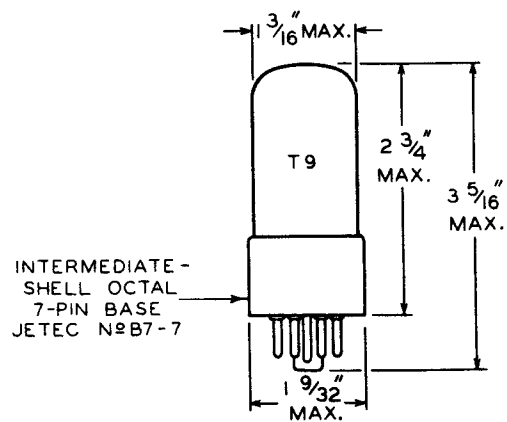


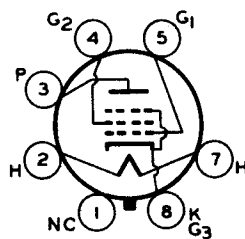
Fig. 4 - Operation Characteristics of Type 12V6-GT



## DIMENSIONAL OUTLINE



## SOCKET CONNECTIONS Bottom View



## 7AC

- PIN 1: NO CONNECTION
- PIN 2: HEATER
- PIN 3: PLATE
- PIN 4: GRID No. 2
- PIN 5: GRID No. 1
- PIN 7: HEATER
- PIN 8: CATHODE, GRID No. 3