



12AU7

# MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

12AU7

## GENERAL DATA

### Electrical:

Heater, for Unipotential Cathodes:

| Heater arrangement | Series | Parallel |                |
|--------------------|--------|----------|----------------|
| Voltage . . . . .  | 12.6   | 6.3      | ac or dc volts |
| Current . . . . .  | 0.15   | 0.3      | amp            |

Direct Interelectrode Capacitances (Approx.):

Unit No.1    Unit No.2

*Without external shield:*

|                                       |     |      |               |
|---------------------------------------|-----|------|---------------|
| Grid to plate . . . . .               | 1.5 | 1.5  | $\mu\text{f}$ |
| Grid to cathode and heater. . . . .   | 1.6 | 1.6  | $\mu\text{f}$ |
| Plate to cathode and heater . . . . . | 0.4 | 0.32 | $\mu\text{f}$ |

*With external shield, JETEC No.315, connected to cathode:*

|                                       |     |     |               |
|---------------------------------------|-----|-----|---------------|
| Grid to plate . . . . .               | 1.5 | 1.5 | $\mu\text{f}$ |
| Grid to cathode and heater. . . . .   | 1.8 | 1.8 | $\mu\text{f}$ |
| Plate to cathode and heater . . . . . | 2   | 2   | $\mu\text{f}$ |

### Characteristics, Class A<sub>1</sub> Amplifier (Each Unit):

|   |      |      |                  |
|---|------|------|------------------|
| Plate Voltage . . . . .   | 100  | 250  | volts            |
| Grid Voltage . . . . .  | 0    | -8.5 | volts            |
| Amplification Factor. . . . .   | 20   | 17   |                  |
| Plate Resistance (Approx.) . . . . .  | 6500 | 7700 | ohms             |
| Transconductance. . . . .   | 3100 | 2200 | $\mu\text{mhos}$ |
| Plate Current . . . . .   | 11.8 | 10.5 | ma               |
| Grid Voltage (Approx.) for<br>plate current of 10 $\mu\text{amp}$ . . . . . | -    | -24  | volts            |

### Mechanical:

|  |  |
|--|--|
| Mounting Position . . . . .                            | Any                                      |
| Maximum Overall Length. . . . .                        | 2-3/16"                                  |
| Maximum Seated Length . . . . .                        | 1-15/16"                                 |
| Length, Base Seat to Bulb Top (Excluding tip). . . . . | 1-9/16" $\pm$ 3/32"                      |
| Maximum Diameter. . . . .                              | 7/8"                                     |
| Bulb. . . . .  | T-6-1/2                                  |
| Base. . . . .  | Small-Button Noval 9-Pin (JETEC No.E9-1) |
| Basing Designation for BOTTOM VIEW. . . . .            | 9A                                       |

|                                  |                              |
|----------------------------------|------------------------------|
| Pin 1 - Plate of Unit No.2       | Pin 6 - Plate of Unit No.1   |
| Pin 2 - Grid of Unit No.2        | Pin 7 - Grid of Unit No.1    |
| Pin 3 - Cathode of Unit No.2     | Pin 8 - Cathode of Unit No.1 |
| Pins 4 & 9 - Heater of Unit No.2 | Pin 9 - Heater Mid-Tap       |
| Pins 5 & 9 - Heater of Unit No.1 |                              |



← Indicates a change.

MAR. 1, 1955

TUBE DIVISION  
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

DATA 1

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### MEDIUM-MU TWIN TRIODE

#### AMPLIFIER - Class A<sub>1</sub>

Values are for Each Unit

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

|   |                       |       |
|---|-----------------------|-------|
| PLATE VOLTAGE . . . . .                   | 300 max.              | volts |
| CATHODE CURRENT . . . . .                 | 20 max.               | ma    |
| PLATE DISSIPATION . . . . .               | 2.75 max.             | watts |
| PEAK HEATER-CATHODE VOLTAGE:              |                       |       |
| Heater negative with respect to cathode . | 200 max.              | volts |
| Heater positive with respect to cathode . | 200 <sup>▲</sup> max. | volts |

##### Maximum Circuit Values:

|                                     |           |        |
|-------------------------------------|-----------|--------|
| Grid-Circuit Resistance:            |           |        |
| For fixed-bias operation. . . . .   | 0.25 max. | megohm |
| For cathode-bias operation. . . . . | 1.0 max.  | megohm |

##### Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART No.10  
at front of this Section

#### HORIZONTAL DEFLECTION OSCILLATOR

Values are for Each Unit

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

For operation in a 525-line, 30-frame system<sup>□</sup>

|   |                       |       |
|---|-----------------------|-------|
| DC PLATE VOLTAGE. . . . .                               | 300 max.              | volts |
| PEAK NEGATIVE-PULSE GRID VOLTAGE <sup>♣</sup> . . . . . | 600 max.              | volts |
| CATHODE CURRENT:  |                       |       |
| Peak. . . . .   | 300 max.              | ma    |
| Average . . . . .                                       | 20 max.               | ma    |
| PLATE DISSIPATION . . . . .                             | 2.75 max.             | watts |
| PEAK HEATER-CATHODE VOLTAGE:                            |                       |       |
| Heater negative with respect to cathode .               | 200 max.              | volts |
| Heater positive with respect to cathode .               | 200 <sup>▲</sup> max. | volts |

##### Maximum Circuit Values:

|   |          |         |
|---|----------|---------|
| Grid-Circuit Resistance:  |          |         |
| For fixed-bias, grid-resistor bias, or<br>cathode-bias operation. . . . . | 2.2 max. | megohms |

#### VERTICAL DEFLECTION OSCILLATOR

Values are for Each Unit

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

For operation in a 525-line, 30-frame system<sup>□</sup>

|                           |          |       |
|---------------------------|----------|-------|
| DC PLATE VOLTAGE. . . . . | 300 max. | volts |
|---------------------------|----------|-------|

<sup>♣</sup> This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.

<sup>▲</sup>, <sup>□</sup>: See next page.

→ Indicates a change.



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### MEDIUM-MU TWIN TRIODE

|  |                       |       |
|--|-----------------------|-------|
| PEAK NEGATIVE-PULSE GRID VOLTAGE . . . . . | 400 max.              | volts |
| CATHODE CURRENT:                           |                       |       |
| Peak . . . . .                             | 60 max.               | ma    |
| Average . . . . .                          | 20 max.               | ma    |
| PLATE DISSIPATION . . . . .                | 2.75 max.             | watts |
| PEAK HEATER-CATHODE VOLTAGE:               |                       |       |
| Heater negative with respect to cathode.   | 200 max.              | volts |
| Heater positive with respect to cathode.   | 200 <sup>▲</sup> max. | volts |

**Maximum Circuit Values:**

|  |          |         |
|--|----------|---------|
| Grid-Circuit Resistance:   |          |         |
| For fixed-bias, grid-resistor bias, or<br>cathode-bias operation . . . . . | 2.2 max. | megohms |

### VERTICAL DEFLECTION AMPLIFIER

*Values are for Each Unit*

**Maximum Ratings, Design-Center Values Except as Noted:**

*For operation in a 525-line, 30-frame system<sup>□</sup>*

|  |                        |       |
|--|------------------------|-------|
| DC PLATE VOLTAGE . . . . .   | 300 max.               | volts |
| PEAK POSITIVE-PULSE PLATE VOLTAGE <sup>#</sup><br>(Absolute maximum) . . . . . | 1200 <sup>■</sup> max. | volts |
| PEAK NEGATIVE-PULSE GRID VOLTAGE . . . . .                                     | 250 max.               | volts |
| CATHODE CURRENT:   |                        |       |
| Peak . . . . .   | 60 max.                | ma    |
| Average . . . . .  | 20 max.                | ma    |
| PLATE DISSIPATION . . . . .  | 2.75 max.              | watts |
| PEAK HEATER-CATHODE VOLTAGE:   |                        |       |
| Heater negative with respect to cathode.                                       | 200 max.               | volts |
| Heater positive with respect to cathode.                                       | 200 <sup>▲</sup> max.  | volts |

**Maximum Circuit Values:**

|                                      |          |         |
|--------------------------------------|----------|---------|
| Grid-Circuit Resistance:             |          |         |
| For cathode-bias operation . . . . . | 2.2 max. | megohms |

- <sup>▲</sup> The dc component must not exceed 100 volts.
- <sup>□</sup> As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.
- <sup>#</sup> This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one vertical scanning cycle. In a 525-line, 30-frame system, 15 per cent of one vertical scanning cycle is 2.5 milliseconds.
- <sup>■</sup> Under no circumstances should this absolute value be exceeded.

**The curves under Type 6C4 also apply to each unit of the 12AU7**

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### AVERAGE CHARACTERISTICS EACH UNIT

