



# 12AZ7

## HIGH-MU TWIN TRIODE

9-Pin Miniature Type

TENTATIVE DATA

RCA-12AZ7 is a general-purpose high-mu twin triode of the 9-pin miniature type intended for a wide variety of applications in vhf television receivers including its use as a cathode-drive amplifier and frequency converter.

This tube has separate pin terminals for each cathode to provide flexibility of circuit arrangement, and an amid-tapped heater to permit operation from a 12.6-volt/0.225-ampere or 6.3-volt/0.45-ampere supply.

Grid Voltage (Approx.) for plate current of 10  $\mu$ a . . . . . -5 -12 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)

### GENERAL DATA

#### Electrical:

Heater, for Unipotential Cathodes:

| Heater arrangement           | Series | Parallel |       |
|------------------------------|--------|----------|-------|
| Voltage (AC or DC) . . . . . | 12.6   | 6.3      | volts |
| Current . . . . .            | 0.225  | 0.450    | amp   |

Direct Interelectrode Capacitances (Approx.):

|                                                      | Without<br>External<br>Shield | With<br>External<br>Shield <sup>o</sup> |         |
|------------------------------------------------------|-------------------------------|-----------------------------------------|---------|
| <b>Grid-Drive Operation:</b>                         |                               |                                         |         |
| Grid to plate (Each unit) . . . . .                  | 1.9                           | 1.9                                     | $\mu$ f |
| Grid to heater and cathode<br>(Each unit) . . . . .  | 3.1                           | 3.2                                     | $\mu$ f |
| Plate to heater and<br>cathode (Unit No.1) . . . . . | 0.5                           | 1.3                                     | $\mu$ f |
| Plate to heater and<br>cathode (Unit No.2) . . . . . | 0.4                           | 1.6                                     | $\mu$ f |
| Heater to cathode<br>(Each unit) . . . . .           | 3.8                           | 4                                       | $\mu$ f |
| <b>Cathode-Drive Operation:</b>                      |                               |                                         |         |
| Plate to cathode<br>(Each unit) . . . . .            | 0.24                          | 0.23                                    | $\mu$ f |
| Cathode to grid and<br>heater (Each unit) . . . . .  | 6.9                           | 7                                       | $\mu$ f |
| Plate to grid and heater<br>(Unit No.1) . . . . .    | 2                             | 2.8                                     | $\mu$ f |
| Plate to grid and heater<br>(Unit No.2) . . . . .    | 2                             | 3.2                                     | $\mu$ f |

Cathode-Drive Operation:

|                                                     |      |      |         |
|-----------------------------------------------------|------|------|---------|
| Plate to cathode<br>(Each unit) . . . . .           | 0.24 | 0.23 | $\mu$ f |
| Cathode to grid and<br>heater (Each unit) . . . . . | 6.9  | 7    | $\mu$ f |
| Plate to grid and heater<br>(Unit No.1) . . . . .   | 2    | 2.8  | $\mu$ f |
| Plate to grid and heater<br>(Unit No.2) . . . . .   | 2    | 3.2  | $\mu$ f |

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

|                                      |       |       |            |
|--------------------------------------|-------|-------|------------|
| Plate-Supply Voltage . . . . .       | 100   | 250   | volts      |
| Cathode-Bias Resistor . . . . .      | 270   | 200   | ohms       |
| Amplification Factor . . . . .       | 60    | 60    |            |
| Plate Resistance (Approx.) . . . . . | 15000 | 10900 | ohms       |
| Transconductance . . . . .           | 4000  | 5500  | $\mu$ mhos |
| Plate Current . . . . .              | 3.7   | 10    | ma         |

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

Values are for Each Unit

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

|                                                      |                       |       |
|------------------------------------------------------|-----------------------|-------|
| PLATE VOLTAGE . . . . .                              | 300 max.              | volts |
| GRID VOLTAGE:                                        |                       |       |
| Negative bias value . . . . .                        | 50 max.               | volts |
| PLATE DISSIPATION . . . . .                          | 2.5 max.              | watts |
| PEAK HEATER-CATHODE VOLTAGE:                         |                       |       |
| Heater negative with respect<br>to cathode . . . . . | 200 max.              | volts |
| Heater positive with respect<br>to cathode . . . . . | 200 <sup>•</sup> max. | volts |

#### Maximum Circuit Values:

|                                      |                  |
|--------------------------------------|------------------|
| Grid-No.1-Circuit Resistance:        |                  |
| For fixed-bias operation . . . . .   | 0.25 max. megohm |
| For cathode-bias operation . . . . . | 1 max. megohm    |

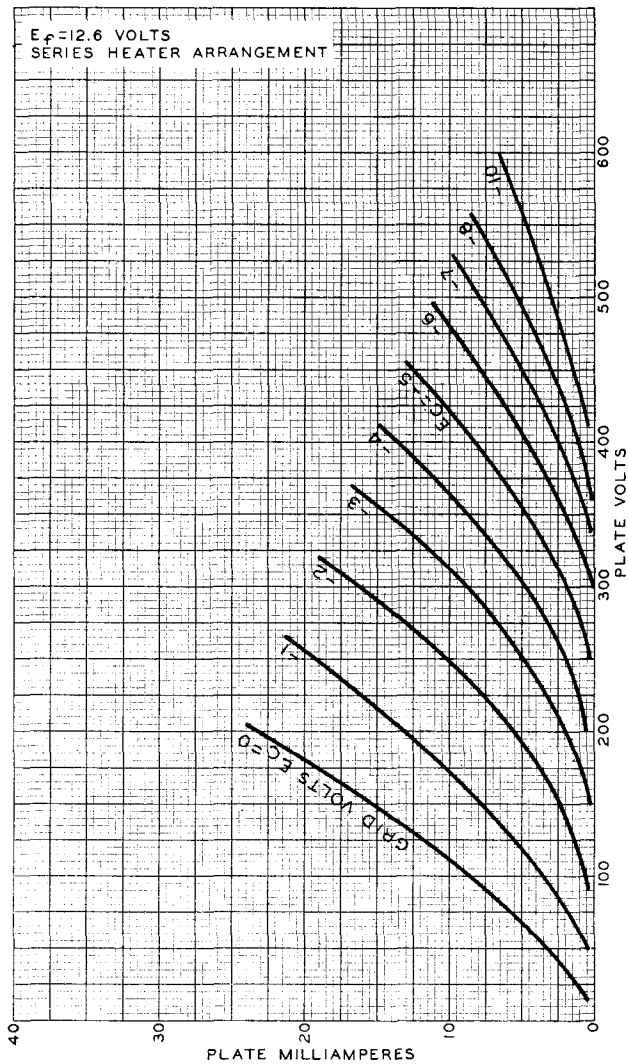
<sup>o</sup> With external shield JETEC No.315 connected to cathode of unit under test.

<sup>•</sup> DC component must not exceed 100 volts.

### OPERATING CONSIDERATIONS

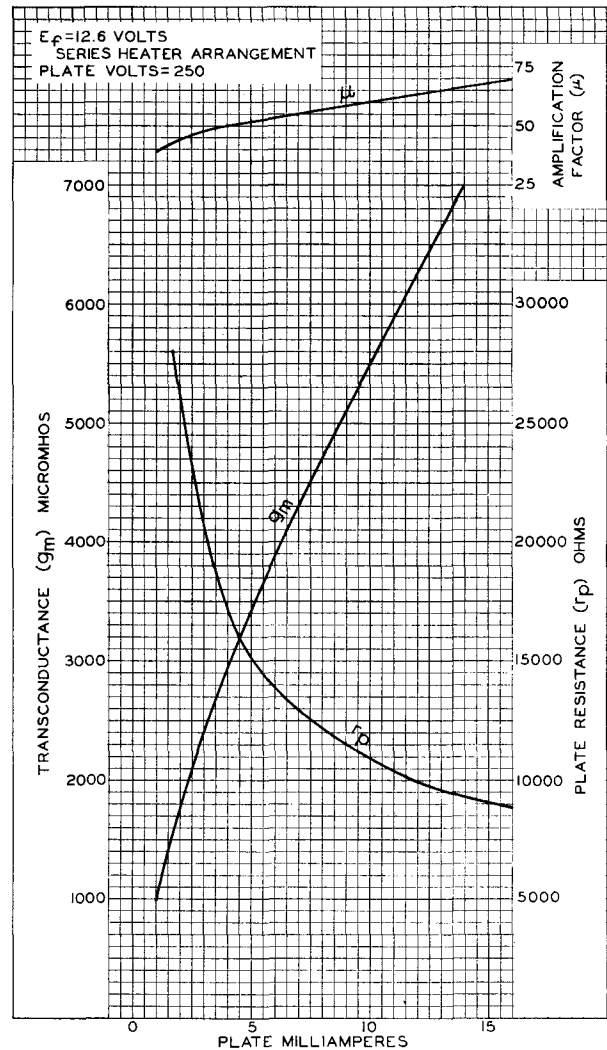
The maximum ratings in the tabulated data for the 12AZ7 are working design-center maximums established according to the standard design-center system of rating electron tubes. Tubes so rated will give satisfactory performance in equipment designed so that these maximum ratings will not be exceeded when the equipment is operated from ac or dc power-line supplies whose normal voltage, including normal variations, falls within  $\pm$  10 per cent of line-center voltage value of 117 volts.

Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.



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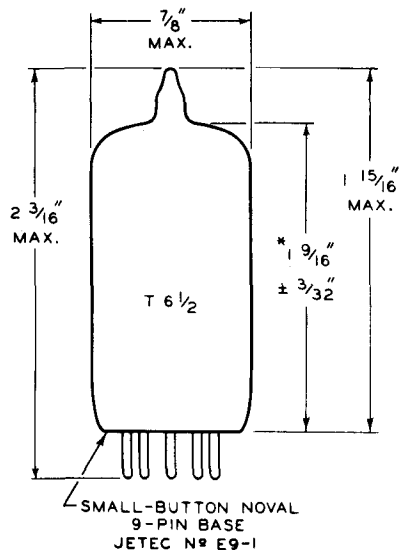
Fig.1 - Average Plate Characteristics of Type 12AZ7.



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Fig.2 - Average Characteristics of Type 12AZ7.

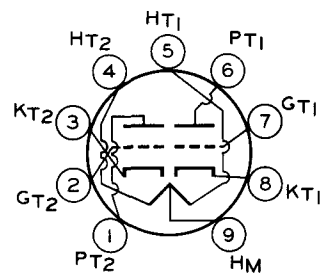
#### DIMENSIONAL OUTLINE



\* MEASURED FROM BASE SEAT TO BULB-TOP LINE  
AS DETERMINED BY RING GAUGE OF  $7/16''$  I.D.

#### SOCKET CONNECTIONS

##### Bottom View



9A

- PIN 1: PLATE OF TRIODE UNIT No.2
- PIN 2: GRID OF TRIODE UNIT No.2
- PIN 3: CATHODE OF TRIODE UNIT No.2
- PINS 4 & 9: HEATER OF TRIODE UNIT No.2
- PINS 5 & 9: HEATER OF TRIODE UNIT No.1
- PIN 6: PLATE OF TRIODE UNIT No.1
- PIN 7: GRID OF TRIODE UNIT No.1
- PIN 8: CATHODE OF TRIODE UNIT No.1
- PIN 9: HEATER MID-TAP