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# MEDIUM-MU TWIN TRIODE

9-PIN MINIATURE TYPE

For "on-off" control applications involving long periods of operation under cutoff conditions

## GENERAL DATA

### Electrical:

Heater, Pure Tungsten, for Unipotential Cathodes:

Heater arrangement	Series	Parallel	
Voltage . . . . .	12.6 ± 5%	6.3 ± 5%	ac or dc volts
Current . . . . .	0.3	0.6	. . . . . amp

Direct Interelectrode Capacitances:<sup>o</sup>

Grid to plate (Each unit) . . . . .	3.2	μμf
Grid to cathode and heater (Each unit) . . . . .	3.6	μμf
Plate to cathode and heater (Each unit) . . . . .	0.6	μμf
Heater to cathode (Each unit) . . . . .	4.6	μμf
Grid to grid . . . . .	0.042 max.	μμf
Plate to plate . . . . .	1 max.	μμf

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

Plate Voltage . . . . .	150	volts
Grid Voltage . . . . .	-5	volts
Amplification Factor . . . . .	18	
Plate Resistance (Approx.) . . . . .	3900	ohms
Transconductance . . . . .	4600	μmhos
Plate Current . . . . .	11	ma
Grid Voltage (Approx.) for plate voltage of 150 volts and plate current of 100 μa . . . . .	-11	volts
Grid Voltage (Approx.) for plate voltage of 200 volts and plate current of 1 ma . . . . .	-12	volts

### Mechanical:

Operating Position . . . . Any, but for the utmost in service, tube should be Vertical with base up or down, or Horizontal with pins 6 and 9 in vertical plane

Maximum Overall Length . . . . . 2-5/8"

Maximum Seated Length . . . . . 2-3/8"

Length, Base Seat to Bulb Top (Excluding tip) . . . . 2" ± 3/32"

Maximum Diameter . . . . . 7/8"

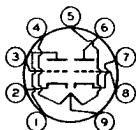
Dimensional Outline . . . . . See General Section

Bulb . . . . . T6-1/2

Base . . . . . Small-Button Noval 9-Pin (JETEC No.E9-1)

Basing Designation for BOTTOM VIEW . . . . . 9CZ

- |                                  |                              |
|----------------------------------|------------------------------|
| Pin 1 - Plate of Unit No.2       | Pin 6 - Plate of Unit No.1   |
| Pin 2 - Cathode of Unit No.2     | Pin 7 - Cathode of Unit No.1 |
| Pin 3 - Grid of Unit No.2        | Pin 8 - Grid 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 |                              |



<sup>o</sup> without external shield.



## MEDIUM-MU TWIN TRIODE

### COMPUTER SERVICE and "ON-OFF" CONTROL SERVICE

Unless Otherwise Specified, Values are for Each Unit

#### Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE . . . . .	330	max.	volts
PEAK POSITIVE-PULSE PLATE VOLTAGE* . . . . .	1000	max.	volts
DC GRID VOLTAGE:			
Negative bias value. . . . .	80	max.	volts
Positive bias value. . . . .	4	max.	volts
PEAK NEGATIVE-PULSE GRID VOLTAGE* . . . . .	440	max.	volts
PEAK POSITIVE-PULSE GRID VOLTAGE* . . . . .	14	max.	volts
DC GRID CURRENT . . . . .	5.5	max.	ma
PEAK GRID CURRENT* . . . . .	110	max.	ma
DC CATHODE CURRENT . . . . .	45	max.	ma
PEAK CATHODE CURRENT* . . . . .	350	max.	ma
PLATE DISSIPATION:			
Either plate . . . . .	4	max.	watts
Both plates (Both units operating) . . . . .	7	max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode . . . . .	220	max.	volts
Heater positive with respect to cathode . . . . .	220 <sup>▲</sup>	max.	volts
BULB TEMPERATURE (At hottest point on bulb surface) . . . . .			
	120	max.	°C

#### Maximum Circuit Values:

##### Grid-Circuit Resistance:

For fixed-bias operation . . . . .	0.1	max.	megohm
For cathode-bias operation . . . . .	0.5	max.	megohm

### CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

Unless Otherwise Specified, Values are for Each Unit

	Note	Min.	Max.	
Heater Current . . . . .	1	0.275	0.325	amp
Plate Current (1). . . . .	1,2	6	16	ma
Plate Current (2). . . . .	1,3	-	1	ma
Plate Current (3). . . . .	1,4	-	100	μa
Transconductance . . . . .	1,2	3200	6000	μmhos
Amplification Factor . . . . .	1,2	15	21	
Reverse Grid Current (Units in parallel) . . . . .	1,5	-	2.5	μa
Heater-Cathode Leakage Cur- rent:				
Heater negative with respect to cathode . . . . .	1,6	-	15	μa
Heater positive with respect to cathode . . . . .	1,6	-	15	μa

\* Under the following conditions: rectangular pulse; pulse duration, 0.08 microsecond; pulse-repetition rate,  $1 \times 10^6$  pps; and duty factor, 0.08.

▲ The dc component must not exceed 110 volts.

Notes 1 to 6: See next page.



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	<i>Note</i>	<i>Min.</i>	<i>Max.</i>	
Grid-Voltage Difference				
Between Units, . . . . .	1,7	-	2.5	volts
Leakage Resistance:				
Between grid and all other electrodes tied together . . . . .	1,8	100	-	megohms
Between plate and all other electrodes tied together . . . . .	1,9	100	-	megohms

- Note 1: With 12.6 volts ac or dc on heater (series arrangement).
- Note 2: With plate volts = 150 and grid volts = -5. Each unit tested separately. Unit not under test connected to ground.
- Note 3: With plate volts = 200 and grid volts = -15. Each unit tested separately. Unit not under test connected to ground.
- Note 4: With plate volts = 150 and grid volts = -15. Each unit tested separately. Unit not under test connected to ground.
- Note 5: With plate volts = 180, grid volts = -5, and grid-circuit resistance (megohms) = 0.1.
- Note 6: With 100 volts dc between heater and cathode.
- Note 7: With plate volts = 200 and grid voltage adjusted for plate current of 1 milliamperes.
- Note 8: With grid 100 volts negative with respect to all other electrodes tied together.
- Note 9: With plate 300 volts negative with respect to all other electrodes tied together.

**SPECIAL RATINGS & PERFORMANCE DATA****Heater-Cycling Life Performance:**

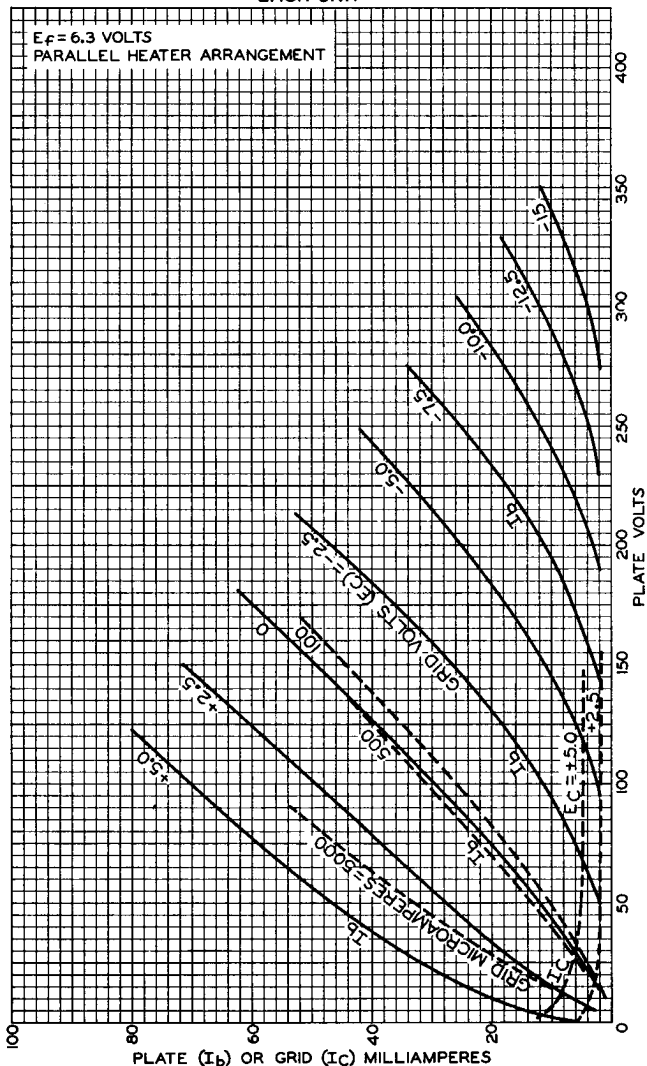
Cycles of Intermittent Operation . . . . 2000 min. cycles  
 Under the following conditions: heater volts = 7.5 cycled one minute on and four minutes off, heater 180 volts positive with respect to cathode, and all other elements connected to ground.

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# AVERAGE CHARACTERISTICS EACH UNIT



ELECTRON TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

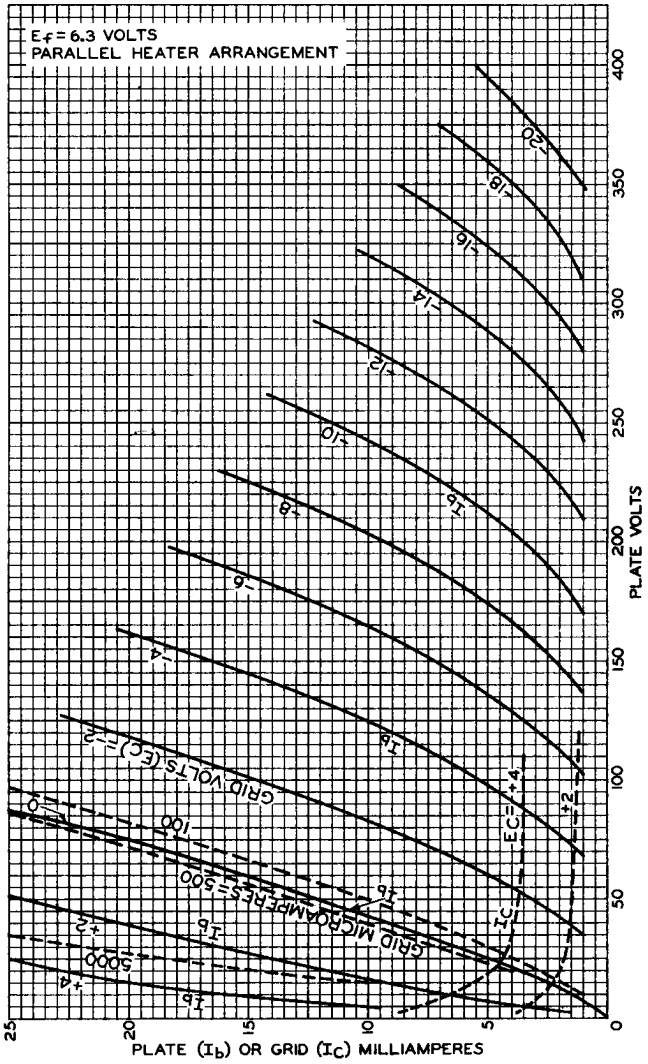
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