7059

MEDIUM-MU TRIODE— SHARP-CUTOFF PENTODE

9-PIN MINIATURE TYPE

For use in mobile communications equipment operating from 6-cell storage-battery systems

GENERAL DATA

Electrical:

Heater, for Unipotential Cathodes:

Voltage range	12 to 15	ac or dc volts
Current (Approx.) at 13.5 volts	0.195	amp

Direct Interelectrode Capacitances:

	Without External Shield	*With External Shield°*	
Triode Unit:			
Grid to plate	1.7	1.7	μμf
Grid to cathode and heater	2.7	2.7	μμf
Plate to cathode and heater	0.4	1	μμf
Pentode Unit:			
Grid No.1 to plate	0.01 max.	0.006 max.	μμf
Grid No.1 to all other electrodes except plate	5	5	μμf
Plate to all other electrodes except grid No.1	2.5	3.4	μμf
Heater to cathode (Each unit)	3	3•	μμf

Characteristics, Class A_1 Amplifier:

	Triode Unit	*Pentode Unit*	
Heater Voltage	13.5	13.5	volts
Plate-Supply Voltage	150	250	volts
Grid-No.2 (Screen-Grid) Supply Voltage	–	110	volts
Cathode Resistor	56	68	ohms
Amplification Factor	40	–	
Plate Resistance (Approx.)	4700	400000	ohms
Transconductance	8500	5200	μmhos
Plate Current	18	10	ma
Grid-No.2 Current	–	3.5	ma
Grid-No.1 Voltage (Approx.) for plate μa = 10	−12	−10	volts

Mechanical:

Operating 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" ± 3/32"
Diameter	0.750" to 0.875"
Dimensional Outline	*See General Section*

°, •: See next page.

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7059

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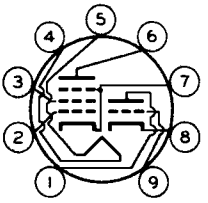
Bulb. T6-1/2
Base. . . . . .Small-Button Noval 9-Pin (JETEC No.E9-1)
Basing Designation for BOTTOM VIEW. 9AE

Pin 1 – Triode Plate
Pin 2 – Pentode Grid No.1
Pin 3 – Pentode Grid No.2
Pin 4 – Heater
Pin 5 – Heater
Pin 6 – Pentode Plate
Pin 7 – Pentode Cathode, Pentode Grid No.3, Internal Shield
Pin 8 – Triode Cathode
Pin 9 – Triode Grid



AMPLIFIER — Class A_1

Maximum Ratings, *Absolute Values:*

	Triode Unit	*Pentode Unit*	
PLATE VOLTAGE	300 max.	300 max.	volts
GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE.	–	300 max.	volts
GRID-No.2 VOLTAGE	–	*See Grid-No.2 Input Rating Chart at front of Receiving Tube Section*	
GRID-No.1 (CONTROL-GRID) VOLTAGE: Positive-bias value	0 max.	0 max.	volts
GRID-No.2 INPUT: For grid-No.2 voltages up to 150 volts	–	0.5 max.	watt
For grid-No.2 voltages between 150 and 300 volts .	–	*See Grid-No.2 Input Rating Chart at front of Receiving Tube Section*	
PLATE DISSIPATION	2.5 max.	2.8 max.	watts
PEAK HEATER-CATHODE VOLTAGE: Heater negative with respect to cathode.	120 max.	120 max.	volts
Heater positive with respect to cathode.	120 max.	120 max.	volts

Maximum Circuit Values:

	Triode Unit	*Pentode Unit*	
Grid-No.1-Circuit Resistance: For fixed-bias operation. . .	0.5 max.	0.5 max.	megohm
For cathode-bias operation. .	1 max.	1 max.	megohm

° With external shield JETEC No.315 connected to cathode of unit under test except as noted.

● With external shield JETEC No.315 connected to ground.

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7059
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CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Heater Current	1	0.179	0.211	amp
Transconductance (Triode unit)	1,2	6800	10200	μmhos
Plate Current (Triode unit)	1,3	12.7	23.3	ma
Transconductance (Pentode unit)	1,4	3900	6500	μmhos
Plate Current (Pentode unit)	1,5	7.5	12.5	ma
Grid-No.2 Current (Pentode unit)	1,5	2.2	4.8	ma
Reverse Grid-No.1 Current (Total—both units)	1,6	–	-1.5	μa
Heater-Cathode Leakage Current (Each unit):				
Heater negative with respect to cathode	1,7	–	5	μa
Heater positive with respect to cathode	1,7	–	5	μa
Leakage Resistance (Each unit):				
Between grid No.1 and all other electrodes of both units tied together	1,8	50	–	megohms
Between plate and all other electrodes of both units tied together	1,9	50	–	megohms

Note 1: With ac or dc heater volts = 13.5.

Note 2: With dc plate-supply volts = 150, cathode resistor (ohms) = 56, and cathode-bypass capacitor (μf) = 1000.

Note 3: With dc plate-supply volts = 150, and cathode resistor (ohms) = 56.

Note 4: With dc plate-supply volts = 250, grid-No.2 supply volts = 110, cathode resistor (ohms) = 68, and cathode-bypass capacitor (μf) = 1000.

Note 5: With dc plate-supply volts = 250, grid-No.2 supply volts = 110, and cathode resistor (ohms) = 68.

Note 6: With triode dc plate volts = 150, pentode dc plate volts = 250, grid-No.2 volts = 110, grid-No.1 volts = -1.5 on both units, and grid-No.1 resistor (megohms) = 0.5 for each unit.

Note 7: With 50 volts dc between heater and cathode.

Note 8: With grid No.1 100 volts negative with respect to all other electrodes of both units tied together.

Note 9: With plate 300 volts negative with respect to all other electrodes of both units tied together.

SPECIAL RATINGS & PERFORMANCE DATA

Heater-Cycling Life Performance:

This test is performed on a sample lot of tubes from each production run. A minimum of 2000 cycles of intermittent operation is applied under the following conditions: heater volts = 17 cycled one minute on and four minutes off, heater 135 volts negative with respect to cathode, and all other elements connected to ground. At the end of this test, tubes are checked for heater-cathode shorts and open circuits.

7059

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Low-Frequency Vibration Performance:

This test is performed on a sample lot of tubes from each production run under the following conditions:

Triode Unit:

Heater volts = 13.5, plate-supply volts = 150, grid volts = −1.5, plate load resistor (ohms) = 2000, and vibrational acceleration of 2.5 g at 25 cps. In this test, the rms output voltage must not exceed 150 millivolts.

Pentode Unit:

Heater volts = 13.5, plate-supply volts = 250, grid-No.2 volts = 110, grid-No.1 volts = −1.5, plate load resistor (ohms) = 2000, and vibrational acceleration of 2.5 g at 25 cps. In this test, the rms output voltage must not exceed 250 millivolts.

500-Hour Intermittent Life Performance:

This test is performed on a sample lot of tubes from each production run to insure high quality of the individual tube and to guard against epidemic failures. Life testing is conducted under the following conditions: heater volts = 15 and maximum-rated plate dissipation and grid-No.2 input.

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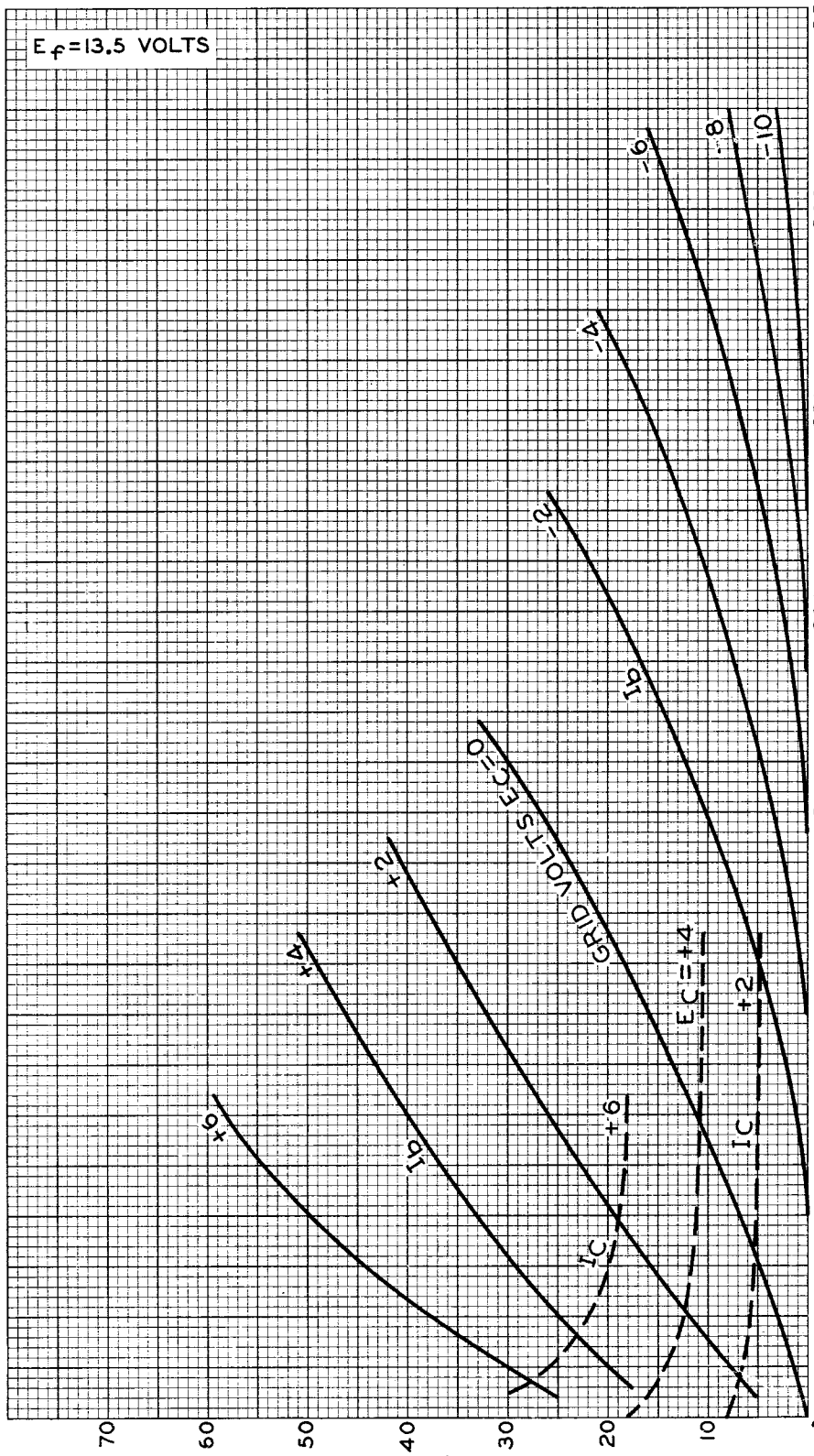
7059

AVERAGE CHARACTERISTICS
TRIODE UNIT

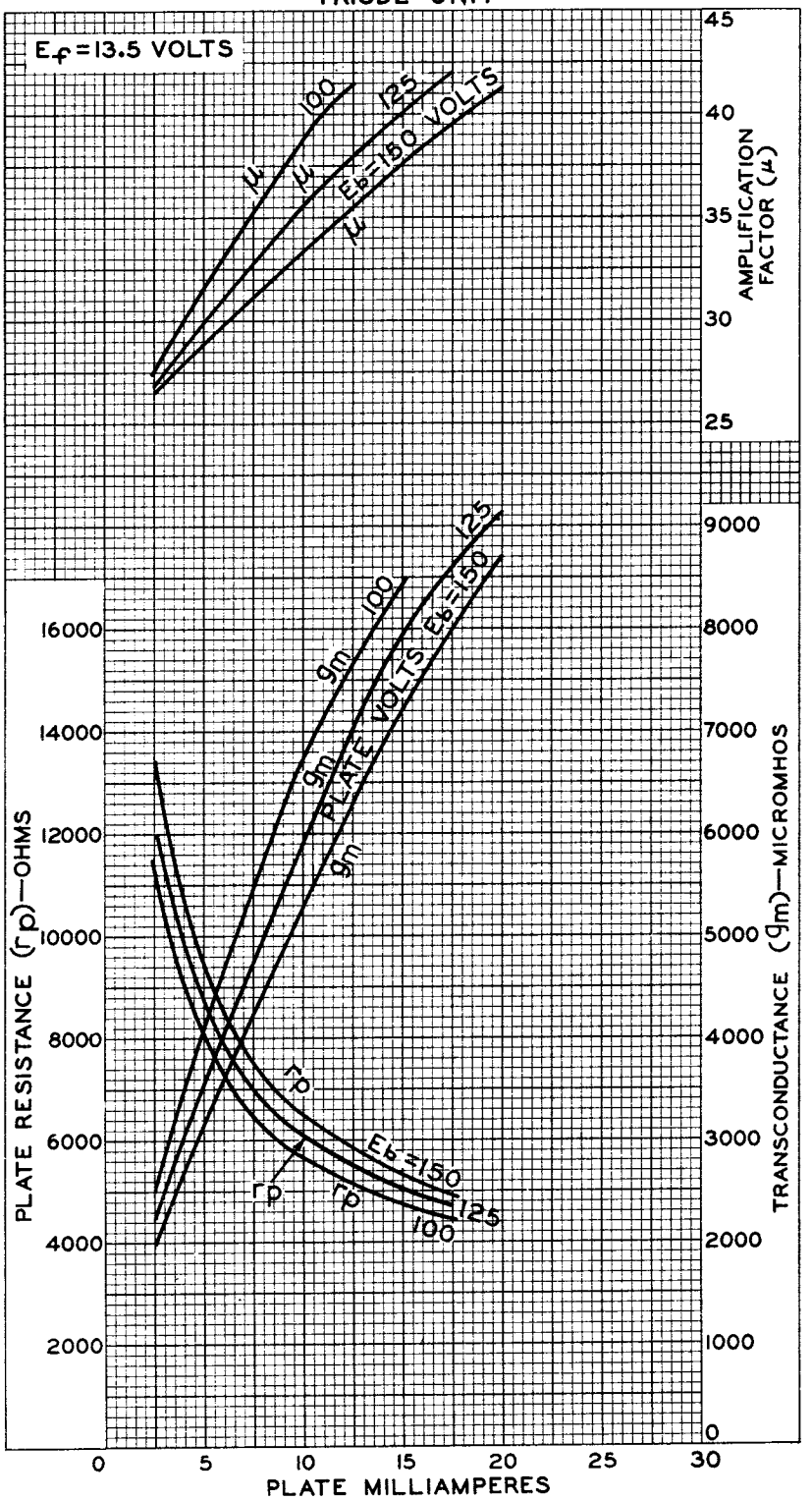


7059

7059

AVERAGE CHARACTERISTICS

TRIODE UNIT



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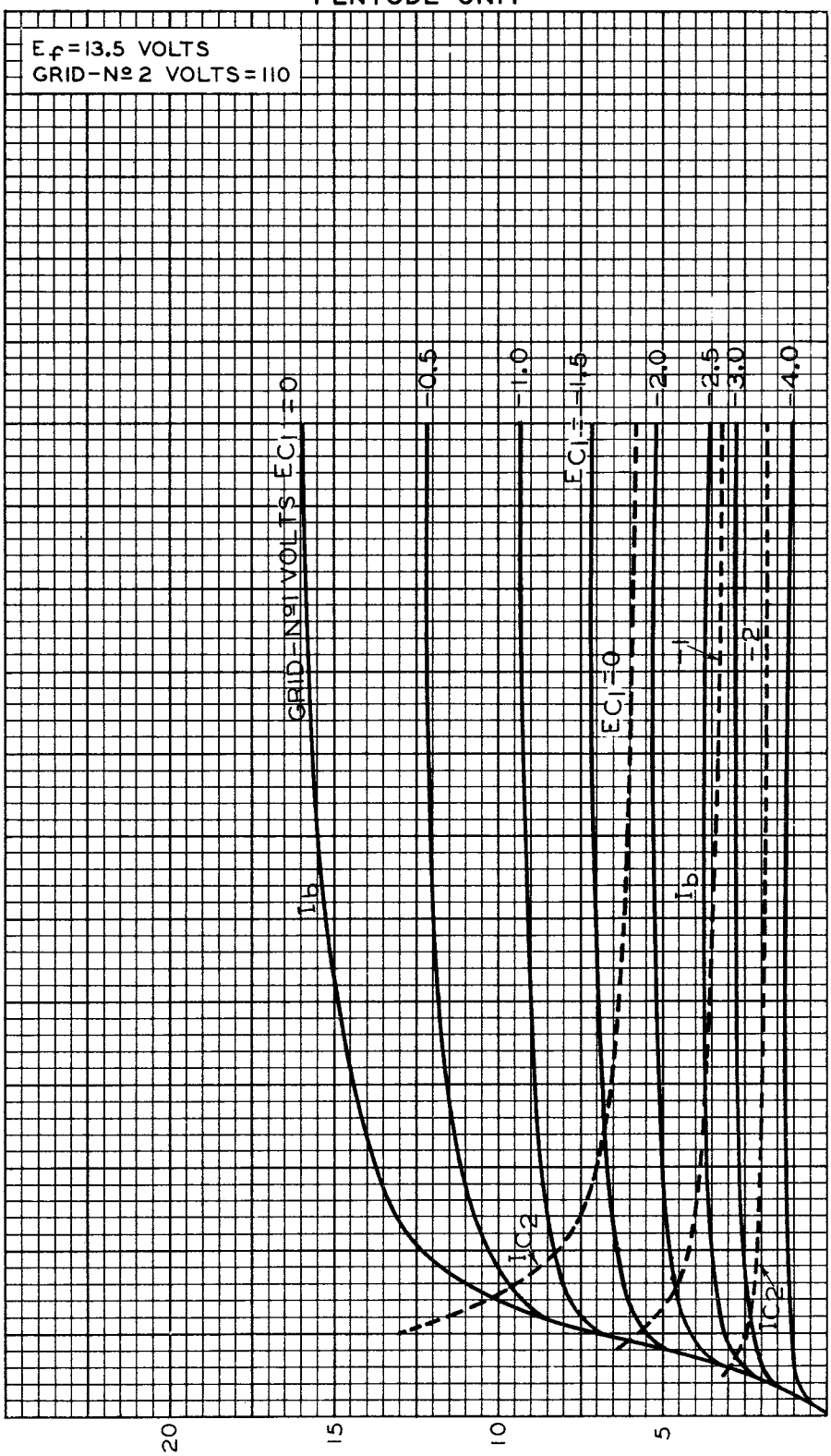
7059

AVERAGE CHARACTERISTICS

PENTODE UNIT



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