# 7056

# SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE

*For use in mobile communications equipment operating from 6-cell storage-battery systems. Useful as if or rf amplifier at frequencies up to 45 Mc.*

## GENERAL DATA

### Electrical:

Heater, for Unipotential Cathode:
Voltage range . . . . . 12 to 15 . . . . . ac or dc volts
Current (Approx.) at
13.5 volts . . . . . 0.15 . . . . . amp

Direct Interelectrode Capacitances:

| | *Without External Shield* | *With External Shield°* | |
|---|---|---|---|
| Grid No.1 to plate . . . . . | 0.02 max. | 0.01 max. | μμf |
| Grid No.1 to all other electrodes except plate. . . | 6.5 | 6.5 | μμf |
| Plate to all other electrodes except grid No.1 . . . . . | 2 | 3 | μμf |

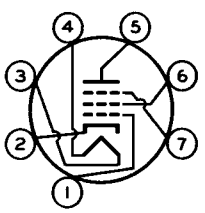
### Characteristics, Class $A_1$ Amplifier:

| | | |
|---|---|---|
| Heater Voltage . . . . . | 13.5 | volts |
| Plate-Supply Voltage . . . . . | 200 | volts |
| Grid No.3 (Suppressor Grid). . | *Connected to cathode at socket* | |
| Grid-No.2 (Screen-Grid) Supply Voltage . . | 150 | volts |
| Cathode Resistor . . . . . | 180 | ohms |
| Plate Resistance (Approx.) . . . . . | 0.6 | megohm |
| Transconductance . . . . . | 6200 | μmhos |
| Plate Current. . . . . | 9.5 | ma |
| Grid-No.2 Current. . . . . | 2.8 | ma |
| Grid-No.1 (Control-Grid) Voltage (Approx.) for plate μa = 100 . . . . . | -7 | volts |

### Mechanical:

Operating Position . . . . . Any
Maximum Overall Length . . . . . 2-1/8"
Maximum Seated Length. . . . . 1-7/8"
Length, Base Seat to Bulb Top (Excluding tip) . . 1-1/2" ± 3/32"
Diameter . . . . . 0.650" to 0.750"
Dimensional Outline. . . . . *See General Section*
Bulb . . . . . T5-1/2
Base . . . . . Small-Button Miniature 7-Pin (JETEC No.E7-1)
Basing Designation for BOTTOM VIEW . . . . . 7CM

Pin 1 - Grid No.1
Pin 2 - Cathode
Pin 3 - Heater
Pin 4 - Heater
Pin 5 - Plate




Pin 6 - Grid No.2
Pin 7 - Grid No.3, Internal Shield

° With external shield JETEC No.316 connected to cathode.



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## AMPLIFIER — Class $A_1$

**Maximum Ratings,** *Absolute Values:*

| | | |
|---|---|---|
| PLATE VOLTAGE | 330 max. | volts |
| GRID-No.2 (SCREEN-GRID) SUPPLY VOLTAGE | 330 max. | volts |
| GRID-No.2 VOLTAGE | *See Grid-No.2 Input Rating Chart at front of Receiving Tube Section* | |
| GRID-No.2 INPUT: | | |
| For grid-No.2 voltages up to 165 volts | 0.5 max. | watt |
| For grid-No.2 voltages between 165 volts and 330 volts | *See Grid-No.2 Input Rating Chart at front of Receiving Tube Section* | |
| PLATE DISSIPATION | 2 max. | watts |
| PEAK HEATER-CATHODE VOLTAGE: | | |
| Heater negative with respect to cathode | 120 max. | volts |
| Heater positive with respect to cathode | 120 max. | volts |

## CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

| | *Note* | *Min.* | *Max.* | |
|---|---|---|---|---|
| Heater Current | 1 | 0.138 | 0.164 | amp |
| Transconductance | 1,2 | 5000 | 7400 | μmhos |
| Plate Current | 1,3 | 6.5 | 12.5 | ma |
| Grid-No.2 Current | 1,3 | 1.6 | 4 | ma |
| Reverse Grid-No.1 Current | 1,4 | – | −1 | μa |
| Heater-Cathode Leakage Current: | | | | |
| Heater negative with respect to cathode | 1,5 | – | 20 | μa |
| Heater positive with respect to cathode | 1,5 | – | 20 | μa |
| Leakage Resistance: | | | | |
| Between grid-No.1 and all other electrodes tied together | 1,6 | 50 | – | megohms |
| Between plate and all other electrodes tied together | 1,7 | 50 | – | megohms |

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

Note 2: With dc plate-supply volts = 200, grid-No.2 supply volts = 150, grid No.3 connected to cathode at socket, cathode resistor (ohms) = 180, and cathode-bypass capacitor (μf) = 1000.

Note 3: With dc plate-supply volts = 200, grid-No.2 supply volts = 150, grid No.3 connected to cathode at socket, and cathode resistor (ohms) = 180.

Note 4: With dc plate volts = 200, grid-No.2 volts = 150, grid No.3 connected to cathode at socket, and grid-No.1 volts = −1.5.

Note 5: With 100 volts dc between heater and cathode.

Note 6: With grid-No.1 100 volts negative with respect to all other electrodes tied together.

Note 7: With plate 300 volts negative with respect to all other electrodes tied together.



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## SPECIAL TESTS & 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.

**Low-Frequency Vibration Performance:**

This test is performed on a sample lot of tubes from each production run under the following conditions: heater volts = 13.5, plate-supply volts = 200, grid No.3 connected to cathode, grid-No.2 volts = 150, grid-No.1 volts = -2, 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 made 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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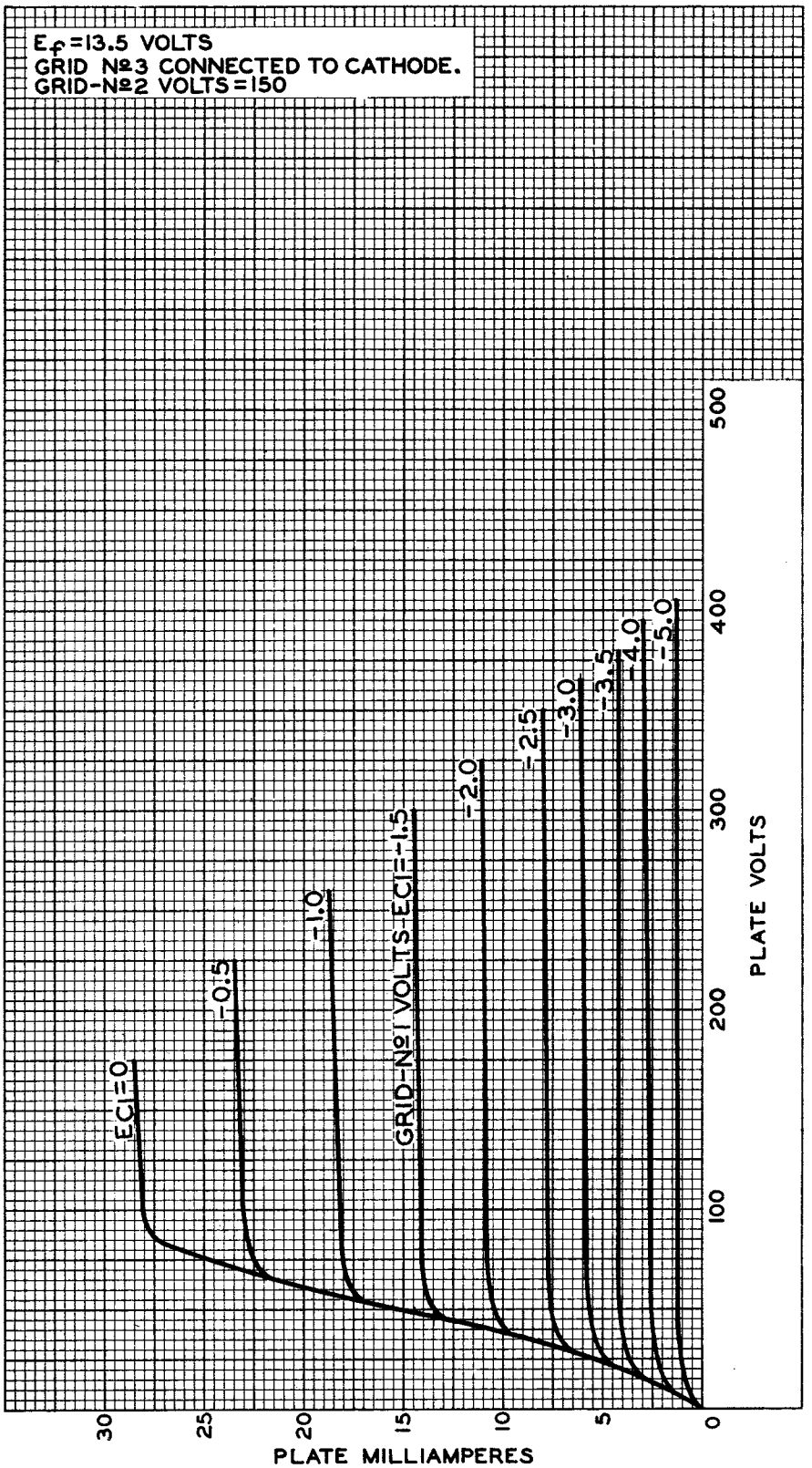
## AVERAGE PLATE CHARACTERISTICS





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## AVERAGE CHARACTERISTICS