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5725 PREMIUM TYPE

SHARP-CUTOFF PENTODE

7-PIN MINIATURE TYPE

Intended for applications where dependable performance under shock and vibration is paramount. This "premium" type is similar to the 6AS6.

GENERAL DATA

Electrical:

Heater, Pure Tungsten, for Unipotential Cathode:		
Voltage	6.3 ± 10%	ac or dc volts
Current	0.175	amp
Direct Interelectrode Capacitances:[o]		
Grid No.1 to plate	0.02 max.	μμf
Grid No.1 to cathode & internal shield, grid No.3, grid No.2, and heater	3.9	μμf
Plate to cathode & internal shield, grid No.3, grid No.2, and heater	3	μμf
Grid No.1 to grid No.3	0.15 max.	μμf

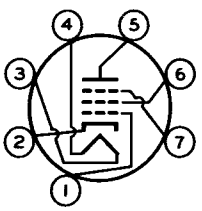
Characteristics, Class A_1 Amplifier:

Plate Voltage	120	volts
Grid-No.3 (Suppressor-Grid) Voltage	0	volts
Grid-No.2 (Screen-Grid) Voltage	120	volts
Grid-No.1 (Control-Grid) Voltage	-2	volts
Transconductance:		
Grid No.1 to plate	3200	μmhos
Grid No.3 to plate	470	μmhos
Plate Current	5.2	ma
Grid-No.2 Current	3.5	ma

Mechanical:

Mounting Position	Any
Maximum Overall Length	1-3/4"
Maximum Seated Length	1-1/2"
Length, Base Seat to Bulb Top (Excluding tip)	1-1/8" ± 3/32"
Maximum Diameter	3/4"
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, Internal Shield
Pin 3 - Heater



Pin 4 - Heater
Pin 5 - Plate
Pin 6 - Grid No.2
Pin 7 - Grid No.3

AMPLIFIER - Class A_1

Maximum Ratings, *Absolute Values:*

PLATE VOLTAGE	200 max.	volts

[o] With external shield JETEC No.316 connected to cathode.

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GRID-No.3 (SUPPRESSOR-GRID VOLTAGE):		
Positive bias value	30 max.	volts
Negative bias value	55 max.	volts
GRID-No.2 (SCREEN-GRID) VOLTAGE	155 max.	volts
GRID-No.1 (CONTROL-GRID) VOLTAGE:		
Positive bias value	0 max.	volts
Negative bias value	55 max.	volts
GRID-No.3 CURRENT	0.2 max.	ma
CATHODE CURRENT	20 max.	ma
GRID-No.2 INPUT	0.55 max.	watt
PLATE DISSIPATION	1.65 max.	watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	100 max.	volts
Heater positive with respect to cathode	100 max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	165 max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	0.1 max.	megohm

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN•

Values are Initial, Unless Otherwise Specified

	Note	Min.	Max.	
Heater Current	1	160	190	ma
Direct Interelectrode Capacitances:				
Grid No.1 to cathode & internal shield, grid No.3, grid No.2, and heater	2	3.5	4.5	μμf
Plate to cathode & internal shield, grid No.3, grid No.2, and heater	2	2.6	3.4	μμf
Plate Current (1)	1,3	2.5	9	ma
Plate Current (2)	1,4	–	200	μa
Plate Current (3)	1,5	5	–	μa
Plate Current (4)	1,6	–	200	μa
Plate Current (5)	1,7	5	–	μa
Grid-No.2 Current	1,3	1.5	5.5	ma
Transconductance (1), Grid No.1 to Plate	1,3	2500	4500	μmhos
Transconductance (1), at 500 hours	1,3	2200	4500	μmhos
Transconductance (2), Grid No.1 to Plate	1,8	700	1700	μmhos
Transconductance (3), Grid No.3 to Plate	1,9	400	1150	μmhos
Transconductance Change	10	–	15	%

• Each tube is stabilized before characteristics testing by continuous operation for at least 45 hours at room temperature and with dissipation values equivalent to life test conditions.

Notes 1 to 10: See next page.

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	Note	Min.	Max.	
Transconductance Change at 500 hours.	10	–	15	%
Reverse Grid Current.	1,11	–	0.1	μa
Reverse Grid Current at 500 hours.	1,11	0	0.1	μa
Grid Emission Current	12	–	1	μa
Heater–Cathode Leakage Current:				
Heater 100 volts negative with respect to cathode . .	1	–	10	μa
Heater 100 volts positive with respect to cathode . .	1	–	10	μa
Heater–Cathode Leakage Current at 500 hours:				
Heater 100 volts negative with respect to cathode . .	1	–	10	μa
Heater 100 volts positive with respect to cathode . .	1	–	10	μa
Leakage Resistance:				
Between grid No.1 and all other electrodes tied together.	1,13	100	–	megohms
Between grid No.3 and all other electrodes tied together.	1,14	100	–	megohms
Between plate and all other electrodes tied together.	1,15	100	–	megohms
Leakage Resistance at 500 hours:				
Between grid No.1 and all other electrodes tied together.	1,13	50	–	megohms
Between grid No.3 and all other electrodes tied together.	1,14	50	–	megohms
Between plate and all other electrodes tied together.	1,15	50	–	megohms

Note 1: With 6.3 volts ac or dc on heater.

Note 2: With external shield JETEC No.316 connected to cathode.

Note 3: With plate volts = 120, grid-No.3 volts = 0, grid-No.2 volts = 120, and grid-No.1 volts = -2.

Note 4: With plate volts = 120, grid-No.3 volts = -10, grid-No.2 volts = 120, and grid-No.1 volts = -3.

Note 5: With plate volts = 120, grid-No.3 volts = -6, grid-No.2 volts = 120, and grid-No.1 volts = -3.

Note 6: With plate volts = 120, grid-No.3 volts = 0, grid-No.2 volts = 120, and grid-No.1 volts = -8.

Note 7: With plate volts = 120, grid-No.3 volts = 0, grid-No.2 volts = 120, and grid-No.1 volts = -6.

Notes 8 to 15: See next page.

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Note 8: With plate volts = 120, grid-No.3 volts = -5, grid-No.2 volts = 120, and grid-No.1 volts = -2.

Note 9: With plate volts = 120, grid-No.3 volts = -3, grid-No.2 volts = 120, and grid-No.1 volts = -2.

Note 10: With 5.7 volts ac or dc on heater, plate volts = 120, grid-No.3 volts = 0, grid-No.2 volts = 120, and grid-No.1 volts = -2.

Note 11: With plate volts = 120, grid-No.3 volts = 0, grid-No.2 volts = 120, grid-No.1 volts = -2, and grid-No.1-circuit resistance (megohms) = 0.1.

Note 12: With 7.5 volts ac or dc on heater, plate volts = 120, grid-No.3 volts = 0, grid-No.2 volts = 120, grid-No.1 volts = -10, and grid-No.1-circuit resistance (megohms) = 0.1.

Note 13: With grid-No.1 volts = -100, and all other electrodes connected to ground.

Note 14: With grid-No.3 volts = -100, and all other electrodes connected to ground.

Note 15: With plate volts = -300, and all other electrodes connected to ground.

SPECIAL RATINGS AND PERFORMANCE DATA

Shock Rating:

Impact Acceleration . . . . . 450 max. g

This test is performed on a sample lot of tubes from each production run. Tubes are held rigid and are tested in four different positions. At the end of this test, tubes will not show permanent or temporary shorts or open circuits, and are required to meet established limits for low-frequency vibration, heater-cathode leakage current, and transconductance.

Fatigue Rating:

Vibrational Acceleration . . . . . 2.5 max. g

This test is performed on a sample lot of tubes from each production run. Tubes are rigidly mounted and subjected in each of three positions to 2.5 g vibrational acceleration at 60 cycles per second for 32 hours. At the end of this test, tubes will not show permanent or temporary shorts or open circuits, and are required to meet established limits for reverse grid current, low-frequency vibration, heater-cathode leakage current, and transconductance.

Low-Frequency Vibration Performance:

RMS Output Voltage . . . . . 150 max. mv

This test is performed on a sample lot of tubes from each production run under the following conditions: heater voltage of 6.3 volts ac or dc, plate volts = 120, grid-No. 3 volts = 0, grid-No.2 volts = 120, grid-No.1 volts = -2, plate load resistance (ohms) = 10,000, and vibrational acceleration of 2.5 g at 25 cycles per second.

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Heater-Cycling Life Performance:

Cycles of Intermittent Operation. . . . 2000 min. cycles

Under the following conditions: heater voltage of 7.5 volts cycled one minute on and one minute off, heater 135 volts positive with respect to cathode, and all other electrodes connected to ground.

Audio-Frequency Noise and Microphonic Performance:

RMS Output Voltage. . . . . 175 max. mv

This test is performed on a sample lot of tubes from each production run under the following conditions: heater voltage of 6.3 volts ac or dc, plate-supply volts = 200, grid-No.3 supply volts = 0, grid-No.2 supply volts = 200, grid-No.1 volts = 0, plate load resistance (megohms) = 0.1, grid-No.2-circuit resistance (megohms) = 0.5, cathode resistor (ohms) = 1000, grid-No.2 bypass capacitor (μf) = 2, and cathode bypass capacitor (μf) = 1000. The output voltage of a tube, when tapped, will not cause a reading on a VU output meter greater than that produced when a calibrating signal of 175 millivolts RMS is applied to the plate of the tube.

Shorts and Continuity Test:

This test is performed on a sample lot of tubes from each production run. In this test, a tube is considered inoperative if it shows a permanent or temporary short or open circuit, or a value of reverse grid current in excess of 1 microampere under the conditions specified in the CHARACTERISTICS RANGE VALUES for reverse grid current.

1-Hour Stability Life Performance:

This test is performed on a sample lot of tubes from each production run to insure that the tubes have been properly stabilized. Tubes are checked for transconductance under conditions of maximum rated plate dissipation. At the end of 1 hour, the value of transconductance is read. The variation in transconductance from the 0-hour reading will not exceed 10 per cent.

100-Hour Survival Life Performance:

This test is performed on a sample lot of tubes from each production run under conditions of maximum rated plate dissipation to insure a low percentage of early inoperatives. At the end of 100 hours, a tube is considered inoperative it it shows a permanent or temporary short or open circuit, a value of reverse grid current in excess of 1 microampere, or a transconductance (1) value of less than 2200 micromhos under the conditions specified in CHARACTERISTICS RANGE VALUES.

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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 of any of the characteristics indicated below. Life testing is conducted under the following conditions: heater voltage of 6.3 volts ac or dc, plate-supply volts = 180, grid-No.3 supply volts = 0, grid-No.2 supply volts = 125, grid-No.1 volts = 0, grid-No.1-circuit resistance (megohms) = 0.1, cathode resistor (ohms) = 130, heater 135 volts positive with respect to cathode, and bulb temperature (^{o}C) = 165. At the end of 500 hours, tubes will not show permanent shorts or open circuits and will be criticized for the total number of defects in the sample lot and for the number of tubes failing to pass the established initial limits for heater current, reverse grid current and heater-cathode leakage current, and 500-hour limits for transconductance (1), transconductance change, and leakage resistance as shown under CHARACTERISTICS RANGE VALUES.

Curves shown under Type 6AS6 also apply to the 5725

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