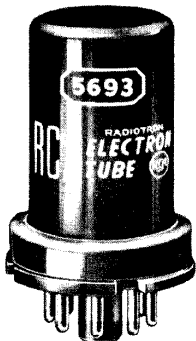




• RCA - 5693 •

SHARP-CUTOFF PENTODE

RCA-5693 is a sharp-cutoff pentode designed and manufactured for critical industrial applications. In such service, it is particularly useful as a high-gain resistance-coupled amplifier.



This tube can be operated with a grid-No.1 resistor having a value as high as 40 megohms depending on the operating conditions as given on page 7.

The electrical characteristics of the 5693 are similar to those of the 6SJ7. The 5693 is recommended as a replacement for the 6SJ7 only where the operating conditions are within the ratings of the 5693, and only where long life, rigid construction, extreme uniformity and exceptional stability are needed. If the 5693 is operated at the higher maximum ratings of the 6SJ7, the full advantages of the 5693 will not be obtained.

GENERAL DATA

Electrical:

Heater, Pure Tungsten, for Unipotential Cathodes:

Voltage (AC or DC)..... 6.3 ± 5%* Volts
Current..... 0.3 Amp

Direct Interelectrode Capacitances:°

	Min.	Av.	Max.
Grid to Plate.....	—	—	0.005 μ f
Input	4.8	5.3	5.8 μ f
Output	5.6	6.2	6.8 μ f

Mechanical:

Mounting Position	Any
Maximum Overall Length.....	2-5/8"
Seated Length	1-31/32" ± 3/32"
Maximum Diameter	1-5/16"
Bulb	Metal Shell MT-8
Base	Small-Wafer Octal 8-Pin, with External Barriers, Non-Hygroscopic

Typical Operation—Resistance-Coupled Amplifier:

Plate & Grid-No. 2 Supply Voltage	90		
Plate Load Resistor.....	0.1	0.25	0.5
Grid-No. 1 Resistor.....	0.25	0.5	1
Grid-No. 2 Resistor.....	0.29	0.92	1.7
Cathode Resistor	880	1700	3800
Grid-No. 2 Bypass Capacitor•.....	0.085	0.045	0.03
Cathode Bypass Capacitor•.....	7.4	4.5	2.4
Blocking Capacitor†.....	0.016	0.005	0.002
Peak Output Voltage‡.....	23	18	22
Voltage Gain¶.....	68	93	119

°At an output voltage of 5 volts rms.

*May deviate ±10% from rated value provided such deviation occurs for less than 2% of the operating time.

•With shell connected to cathode.

••The 5693 may be operated at a grid-No.2 voltage as high as the maximum rated grid-No.2 supply voltage (330 volts) when the grid-No.2 dissipation is not exceeded for any signal conditions and when a resistor is used in series with the grid No.2 and its supply voltage.

■For resistance-coupled amplifier applications, the negative grid-No.1 bias may be as low as -0.5 volt.

INDUSTRIAL SERVICE

Includes applications such as dc and resistance-coupled amplifiers

Maximum Ratings, Absolute Values:

DC PLATE VOLTAGE.....	300 max.	Volts
DC PLATE SUPPLY VOLTAGE	330 max.	Volts
DC GRID-No. 3 (SUPPRESSOR) VOLTAGE:		
Negative bias value.....	{ 0 min. Volts	
	{ -100 max. Volts	
DC GRID-No. 2 (SCREEN) VOLTAGE.....	125** max.	Volts
DC GRID-No. 2 SUPPLY VOLTAGE.....	330 max.	Volts
GRID-No. 1 (CONTROL-GRID) VOLTAGE:		
Negative bias range.....	-1 min. to -50 max.	Volts
Negative peak value.....	-50 max.	Volts
DC CATHODE CURRENT.....	10 max.	Ma
PLATE DISSIPATION	2 max.	Watts
GRID-No. 2 DISSIPATION.....	0.3 max.	Watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.....	100 max.	Volts
Heater positive with respect to cathode.....	100 max.	Volts
AMBIENT TEMPERATURE RANGE	-55 to +90	°C

Maximum Circuit Value:

See curve on page 7 for max. values of grid-No.1 resistor.

Characteristics and Range Values:

Heater Volts, 6.3; Plate Volts, 250; Grid-No. 3 Volts, 0;
Grid-No. 2 Volts, 100; Grid-No. 1 Volts, -3

	Min.	Av.	Max.	
Heater Current	0.290	0.3	0.310	Amp
Heater - Cathode Current with heater-cathode voltage ±100 volts	—	—	5	μ a
Plate Current	2.3	3.0	3.7	Ma
Plate Cur. for grid-No.1 voltage of -7.5 volts.....	2	30	80	μ a
Plate Cur. for grid-No.3 voltage of -70 volts.....	50	275	500	μ a
Grid-No. 2 Current.....	0.60	0.85	1.10	Ma
Reverse Grid No.1 Cur.....	—	—	0.1	μ a
Plate Resistance	1.0	—	—	Meg
Transconductance	1400	1650	1900	μ mhos

	180			300			
Plate Load Resistor.....	0.1	0.25	0.5	0.1	0.25	0.5	Megohm
Grid-No. 1 Resistor.....	0.25	0.5	1	0.25	0.5	1	Megohm
Grid-No. 2 Resistor.....	0.31	0.94	2.2	0.37	1.10	2.2	Megohms
Cathode Resistor	800	1060	2180	530	860	1410	Ohms
Grid-No. 2 Bypass Capacitor•.....	0.09	0.06	0.04	0.09	0.06	0.05	μ f
Cathode Bypass Capacitor•.....	8	6.6	3.8	10.9	7.4	5.8	μ f
Blocking Capacitor†.....	0.015	0.004	0.002	0.016	0.004	0.002	μ f
Peak Output Voltage‡.....	60	47	44	96	88	79	Volts
Voltage Gain¶.....	82	131	192	98	167	238	

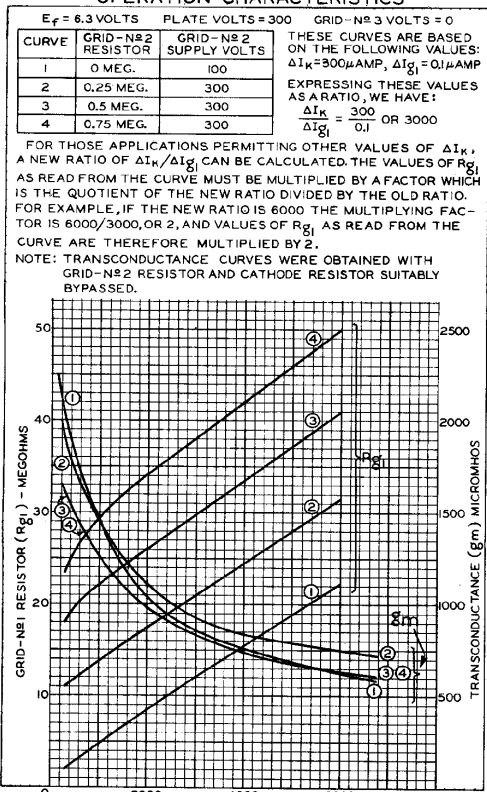
*The cathode and grid-No.2 bypass capacitors and blocking capacitors have been chosen to give output voltages at 100 cps (f₁) which are equal to 0.7 of the mid-frequency value. For any other value of (f₁), multiply the values of cathode bypass, grid-No.2 bypass, and blocking capacitors by 100/f₁.

†This peak output voltage is obtained across the grid resistor of the following stage at any frequency within the flat region of the output vs frequency curve, and is for the condition where the signal level is adequate to swing the grid of the resistance-coupled amplifier tube to the point where its grid starts to draw current.



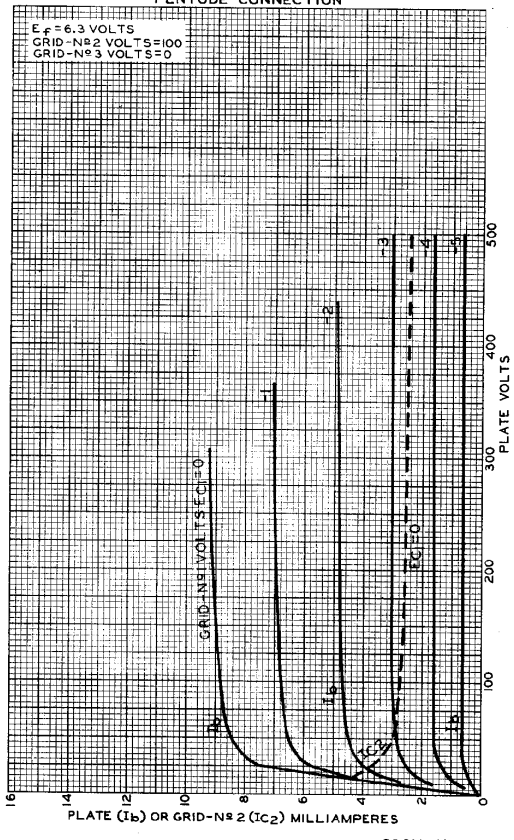
5693

OPERATION CHARACTERISTICS



92CM-6920R1

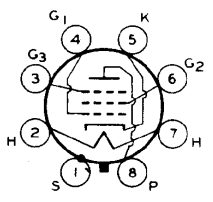
AVERAGE PLATE CHARACTERISTICS
PENTODE CONNECTION



92CM-4939R1

SOCKET CONNECTIONS

Bottom View



8N

- Pin 1: Shell
- Pin 2: Heater
- Pin 3: Grid No. 3
- Pin 4: Grid No. 1
- Pin 5: Cathode
- Pin 6: Grid No. 2
- Pin 7: Heater
- Pin 8: Plate

DIMENSIONAL OUTLINE

