



6197

POWER PENTODE

For "On-Off" Control Applications Involving
Long Periods of Operation Under Cutoff Conditions

TENTATIVE DATA

RCA-6197 is a sharp-cutoff power pentode of the 9-pin miniature type having very high trans-conductance (11000 micromhos). It is especially designed for frequency-divider and pulse amplifier circuits in electronic computers, and other "on-off" control applications requiring long periods of operation under cutoff conditions.



Actual Size

In such control service, the 6197 maintains its emission capabilities even after long periods of operation under cutoff conditions, and will supply a high minimum value of plate current during its "on" periods. In addition, consistency of cutoff bias is maintained because of the stable cutoff characteristic of the tube as well as its freedom from grid-No.1 emission.

Featured in the design of the 6197 are the use of radiating fins on grid No.2 to increase its dissipation capabilities, a getter shield to minimize interelectrode leakage, and a pure-tungsten heater to give long life under conditions of frequent "on-off" switching.

Furthermore, the use of production controls correlated with typical electronic computer conditions, and rigorous tests for shorts and leakage, insure long and dependable performance from the 6197.

GENERAL DATA

Electrical:

Heater, Pure Tungsten, for Unipotential Cathode:

Voltage (AC or DC)	6.3 ±5%	volts
Current at 6.3 volts	0.65	amp
Direct Interelectrode Capacitances (Approx. with no external shield):		
Grid No.1 to Plate	0.125	μmf
Grid No.1 to Cathode and Heater	11.5	μmf
Plate to Cathode and Heater	5.0	μmf
Heater to Cathode	8.5	μmf

Characteristics, Class A₁ Amplifier:

Heater Voltage	6.3	volts
Plate Voltage	250	volts
Grid No.3	Connected to cathode at Socket	
Grid-No.2 Voltage	150	volts
Grid-No.1 Voltage	-3	volts
Mu-Factor, Grid No.2 to Grid No.1	22	
Plate Resistance	90000	ohms
Transconductance	11000	μmhos
Plate Current	30	ma
Grid-No.2 Current	7	ma
Maximum Plate Current for grid-No.1 voltage of -12 volts	100	μamp

Mechanical:

Mounting Position	Vertical; Horizontal operation permitted if pins No.3 and No.8 are in a vertical plane
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length from Base Seat to Bulb Top (Excluding tip) 2" ±3/32"	
Maximum Diameter	7/8"
Bulb	T-6-1/2
Base	Small-Button Noval 9-Pin (JETEC No.E9-1)

FREQUENCY DIVIDER IN COMPUTER SERVICE and "ON-OFF" CONTROL SERVICE

Maximum Ratings, Absolute Values:

PLATE VOLTAGE	300 max.	volts
GRID-NO.3 (SUPPRESSOR) VOLTAGE	0 max.	volts
GRID-NO.2 (SCREEN) VOLTAGE	250 max.	volts
GRID-NO.1 (CONTROL-GRID) VOLTAGE	-50 max.	volts
PLATE DISSIPATION	7.5 max.	watts
GRID-NO.2 INPUT	2.5 max.	watts
CATHODE CURRENT	50 max.	ma
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	180 [°] max.	volts
Heater positive with respect to cathode	180 [°] max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	200 max.	°C

Maximum Circuit Values:

Grid-No.1-Circuit Resistance:		
For fixed-bias operation	0.1 max.	megohm
For cathode-bias operation	0.5 max.	megohm

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Heater Current	1	0.61	0.69	amp
Mu-Factor, Grid No.2 to Grid No.1	1,2	19	25	
Plate Current (1)	1,3	26	46	ma
Plate Current (2)	1,4	20	40	ma
Plate Current (3)	1,5	-	100	μamp
Grid-No.2 Current	1,4	5	9	ma
Reverse Grid-No.1 Current	1,6	-	2	μamp



CHARACTERISTICS RANGE VALUES (Cont'd):

	Note	Min.	Max.	
Heater-Cathode Leakage Current:				
Heater negative with respect to cathode	1,7	-	40	μ amp
Heater positive with respect to cathode	1,7	-	40	μ amp
Transconductance	1,4	9000	13000	μ mhos

- Note 1: With 6.3 volts ac or dc on heater.
- Note 2: With grid No.3 tied to cathode, grid No.2 tied to plate, plate voltage of 150 volts, grid-No.2 voltage of 150 volts, and grid-No.1 voltage of -3 volts.
- Note 3: With plate voltage of 50 volts, grid No.3 tied to cathode, grid No.2 voltage of 100 volts, and grid No.1 voltage of 0 volts.
- Note 4: With plate voltage of 250 volts, grid No.3 connected to cathode, grid-No.2 voltage of 150 volts, and grid-No.1 voltage of -3 volts.
- Note 5: With plate voltage of 250 volts, grid No.3 connected to cathode, grid-No.2 voltage of 150 volts, and grid-No.1 voltage of -12 volts.
- Note 6: With plate voltage of 250 volts, grid No.3 connected to cathode, grid-No.2 voltage of 150 volts, grid-No.1 supply voltage of -3 volts, and grid-No.1 resistor of 0.25 megohm.
- Note 7: With 90 volts dc between heater and cathode.

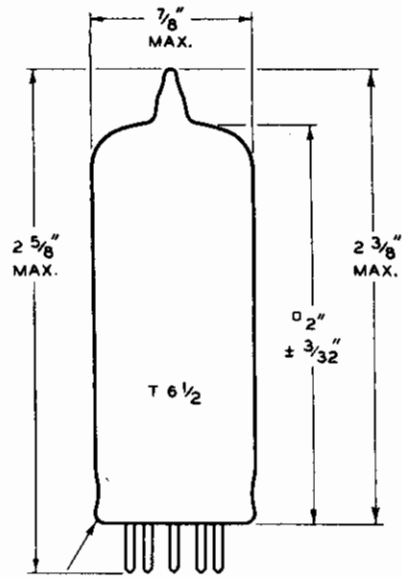
• DC component must not exceed 90 volts.

OPERATING NOTES

The *maximum ratings* in the tabulated data are limiting values above which the serviceability of the 6197 may be impaired from the viewpoint of life and satisfactory performance. Therefore, in order not to exceed these absolute ratings, the equipment designer has the responsibility of determining an average design value for each rating below the absolute value of that rating by an amount such that the absolute values will never be exceeded under any usual condition of supply-voltage variation, load variation, or manufacturing variation in the equipment itself.

The *base pins* of the 6197 fit the noval socket which should preferably be mounted to hold the tube in a vertical position. Horizontal operation is permitted if pins No.3 and No.8 are in a vertical plane.

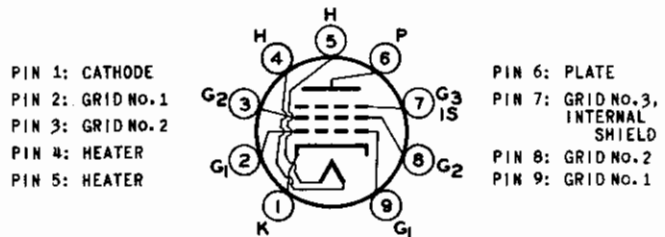
DIMENSIONAL OUTLINE



SMALL-BUTTON NOVAL
9-PIN BASE
JETEC No. E9-1

□ MEASURED FROM BASE SEAT TO BULB-TOP LINE AS DETERMINED BY RING GAUGE OF 7/16" I.D.

SOCKET CONNECTIONS Bottom View



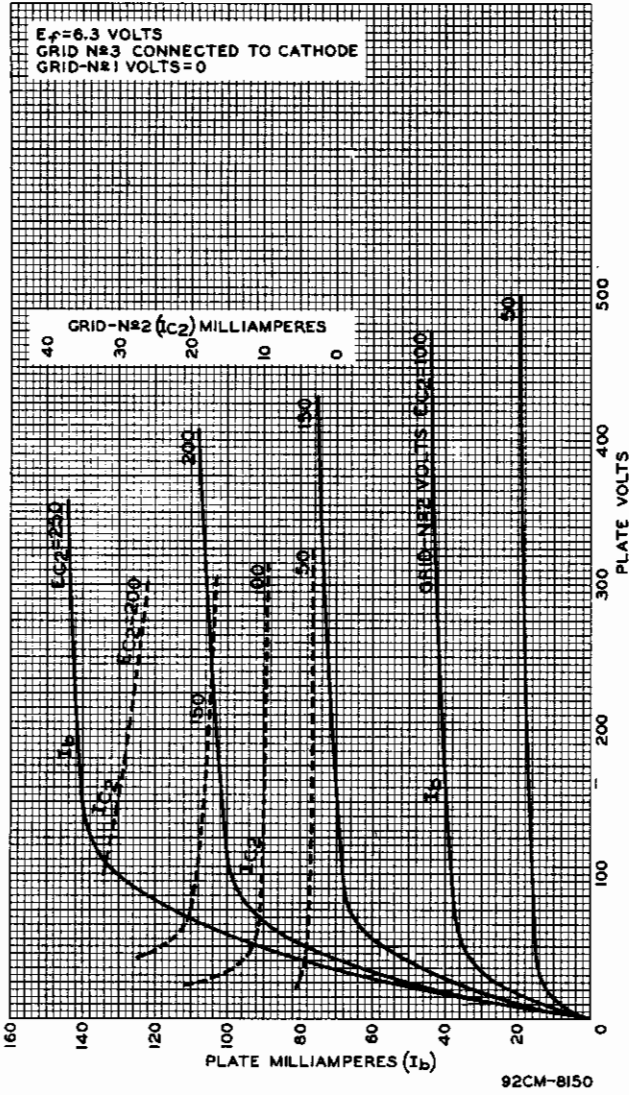


Fig. 1 - Average Plate Characteristics of Type 6197 with E_{c2} as Variable.

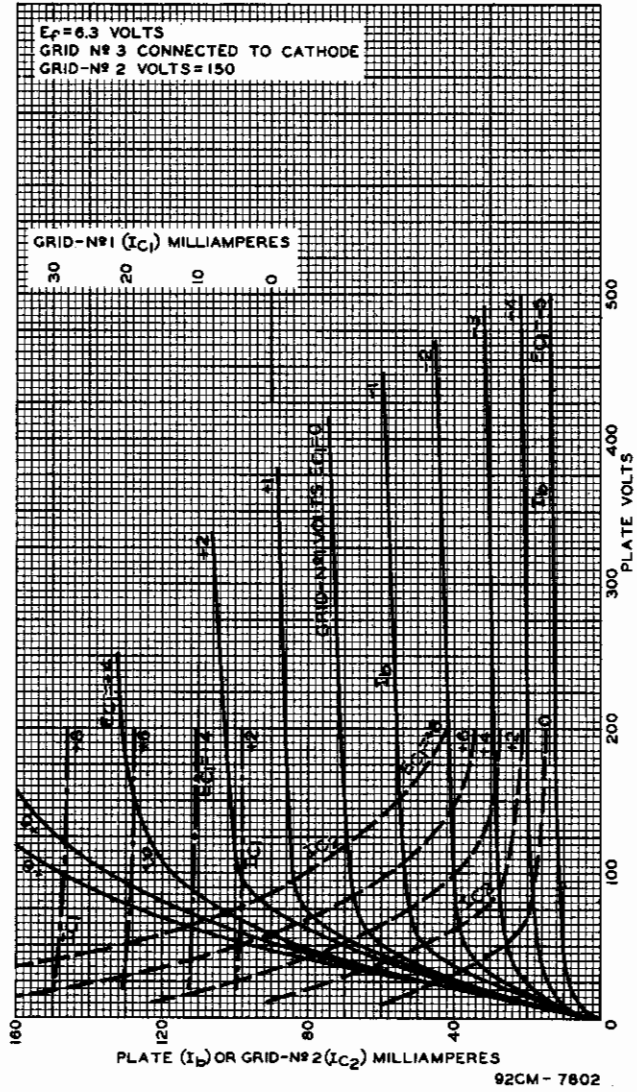


Fig. 2 - Average Plate Characteristics of Type 6197 with E_{c1} as Variable.

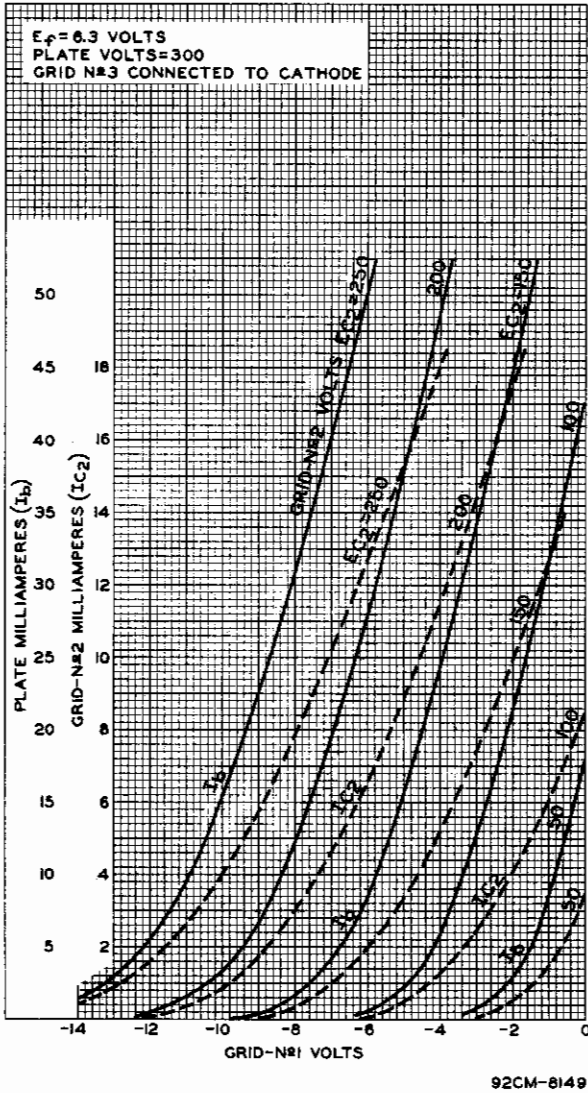


Fig. 3 - Average Characteristics of Type 6197.

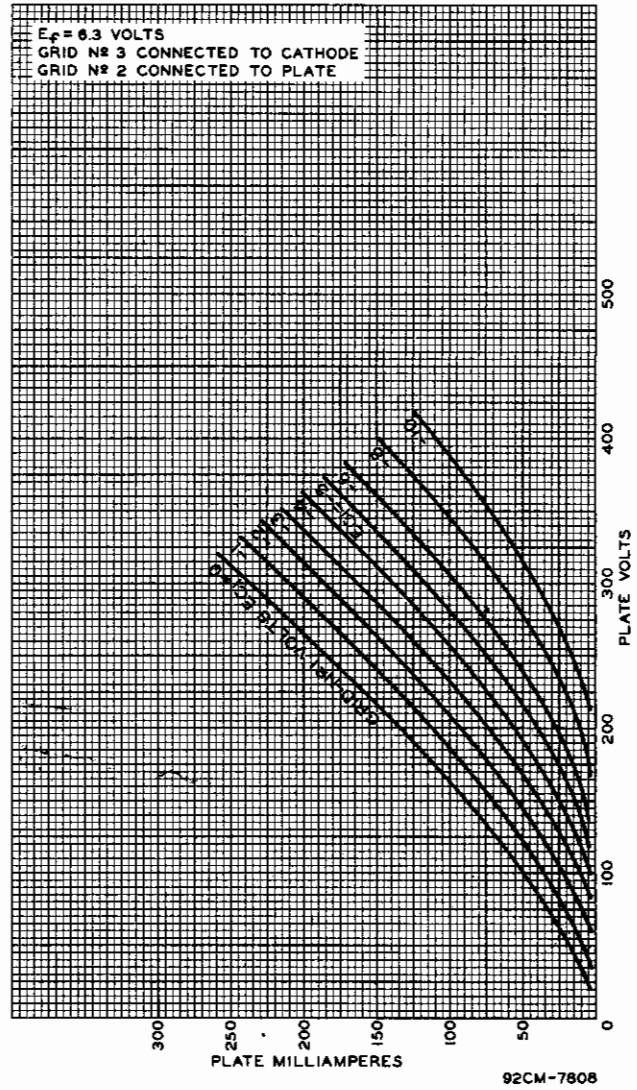


Fig. 4 - Average Plate Characteristics of Type 6197 Connected as Triode.

Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.