



# 25CD6-GB

## BEAM POWER TUBE

TENTATIVE DATA

RCA-25CD6-GB is a high-perveance beam power tube of the glass-octal type designed especially for use as a horizontal-deflection amplifier tube in television receivers of the "transformerless" type.

The 25CD6-GB is like the 25CD6-G and 25CD6-GA, but utilizes a button-stem construction and a T-12 envelope, and features a mount design to provide high perveance and to permit operation at higher ratings.

The 25CD6-GB has a maximum peak positive-pulse plate voltage of 7000 volts, a maximum plate dissipation of 20 watts, and a maximum bulb temperature of 225°C. These features, in addition to low mu-factor, high plate current at low plate voltage, and a high operating ratio of plate current to grid-No.2 current enable a single 25CD6-GB, in suitable circuits, to deflect fully picture tubes having a deflection angle of 90 degrees.

Design features include a mount structure utilizing stem leads which provide high heat conductivity. This feature permits cool operation of grid No.1 and grid No.2 thereby minimizing grid emission. In addition, the structure provides for maximum distribution of heat to prevent hot spots on the plate.

The 25CD6-GB is designed with a 600-milliampere heater having a controlled warm-up time to insure dependable performance in television receivers employing a series-string heater arrangement.

The 25CD6-GB is a direct replacement for the 25CD6-G and 25CD6-GA.

### GENERAL DATA

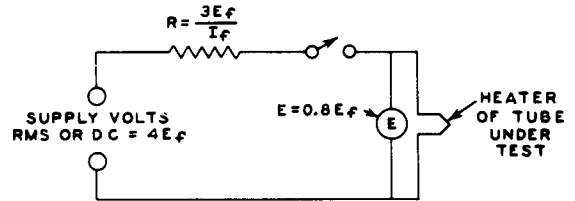
#### Electrical:

Heater, for Unipotential Cathode:			
Voltage . . . . .	25	volts	
Current . . . . .	0.6	ampere	
Warm-Up Time (Average) . . . . .	11	seconds	
Heater warm-up time is defined as the time required in the test circuit shown in Fig.1 for the voltage (E) across the heater terminals to increase from zero to 20 volts.			
Direct Interelectrode Capacitances (Approx., with no external shield):			
Grid-No.1 to plate . . . . .	1.1	$\mu\mu\text{f}$	
Grid-No.1 to cathode & grid No.3, heater and grid No.2 . . . . .	22	$\mu\mu\text{f}$	
Plate to cathode & grid No.3, heater and grid No.2 . . . . .	8.5	$\mu\mu\text{f}$	
<b>Characteristics, Class A<sub>1</sub> Amplifier:</b>			
Plate Voltage . . . . .	60	175	volts
Grid-No.2 (Screen) Voltage . . . . .	100	175	volts
Grid-No.1 (Control-Grid) Voltage . . . . .	0	-30	volts
Mu-Factor, Grid No.2 to Grid No.1 . . . . .	-	3.9	

Plate Resistance (Approx.) . . . . .	-	7200	ohms
Transconductance . . . . .	-	7700	$\mu\text{mhos}$
Grid-No.1 Voltage (Approx.) for plate current of 1 milliampere . . . . .	-	-55	volts
Plate Current . . . . .	230*	75	ma
Grid-No.2 Current . . . . .	21*	5.5	ma

#### Mechanical:

Mounting Position . . . . .	Vertical, or Horizontal with pins 2 & 7 in vertical plane
Maximum Overall Length . . . . .	5"
Seated Length . . . . .	4-1/4" $\pm$ 3/16"
Maximum Diameter . . . . .	1-9/16"
Bulb . . . . .	T-12
Cap. . . . .	Small (JETEC No.C1-1)
Base . . . . .	Short Medium-Shell Octal 8-Pin with External Barriers (JETEC No.B8-110, Style A) or Short Medium-Shell Octal 8-Pin with External Barriers (JETEC No.B8-118, Style B)



E<sub>f</sub> = RATED HEATER VOLTAGE OF TUBE UNDER TEST.  
I<sub>f</sub> = RATED HEATER CURRENT OF TUBE UNDER TEST.  
92CS-8503

Fig.1 - Test Circuit for Determining Heater Warm-Up Time.

### HORIZONTAL DEFLECTION AMPLIFIER

Maximum Ratings, Design-Center Values Except as Noted:  
For operation in a 525-line, 30-frame system\*

<b>PLATE VOLTAGE:</b>			
DC (including boost) . . . . .	700	max.	volts
Peak positive-pulse <sup>Ⓢ</sup> (Absolute max.) . . . . .	7000 <sup>□</sup>	max.	volts
Peak negative-pulse <sup>Ⓢ</sup> . . . . .	1500	max.	volts
DC GRID-NO.2 (SCREEN) VOLTAGE . . . . .	175	max.	volts
<b>GRID-NO.1 (CONTROL-GRID) VOLTAGE:</b>			
DC . . . . .	-50	max.	volts
Peak negative-pulse . . . . .	200	max.	volts
<b>CATHODE CURRENT:</b>			
DC . . . . .	200	max.	ma
Peak . . . . .	700	max.	ma
GRID-NO.2 INPUT . . . . .	3	max.	watts
PLATE DISSIPATION† . . . . .	20	max.	watts
<b>PEAK HEATER-CATHODE VOLTAGE:</b>			
Heater negative with respect to cathode . . . . .	200	max.	volts
Heater positive with respect to cathode . . . . .	200 <sup>#</sup>	max.	volts
<b>BULB TEMPERATURE (At hottest point on bulb surface) . . . . .</b>			
	225	max.	°C
<b>Maximum Circuit Values:</b>			
Grid-No.1-Circuit Resistance:			
For grid-resistor-bias operation† . . . . .	0.47	max.	megohm



- \* These values can be measured by a method involving a recurrent waveform such that the plate dissipation and grid-No.2 input will be kept within ratings in order to prevent damage to the tube.
- As described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations", Federal Communications Commission.
- ⊕ This rating is applicable where the duration of the voltage pulse does not exceed 15 per cent of one horizontal scanning cycle. In a 525-line, 30-frame system, 15 per cent of one horizontal scanning cycle is 10 microseconds.
- Under no circumstances should this absolute value be exceeded.
- † It is essential that the plate dissipation be limited in the event of loss of grid signal. For this purpose, some protective means such as a cathode resistor of suitable value should be employed.
- # The dc component must not exceed 100 volts.

### OPERATING CONSIDERATIONS

The *maximum ratings* shown in the tabulated data for the 25CD6-GB, except the rating for peak positive-pulse plate voltage, are working design-center maximums established according to the standard design-center system of rating electron tubes. Tubes so rated will give satisfactory performance in equipment designed so that these

maximum ratings will not be exceeded when the equipment is operated from ac or dc power-line supplies whose normal voltage, including normal variations, falls within  $\pm 10$  per cent of line-center voltage value of 117 volts.

The *maximum rating* shown in the tabulated data for peak positive-pulse plate voltage is a limiting value above which the serviceability of the 25CD6-GB may be impaired from the viewpoint of life and satisfactory performance. Therefore, in order not to exceed this absolute rating, the equipment designer has the responsibility of determining an average design value for this rating below the absolute value of this rating by an amount such that the absolute value will never be exceeded under any usual conditions of supply-voltage variation, load variation, or manufacturing variation in the equipment itself.

In television receivers employing series-heater strings the use of a resistor in series with the string of tubes will minimize voltage surges across any individual tube during starting. The resistor should preferably have a negative temperature characteristic.

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.

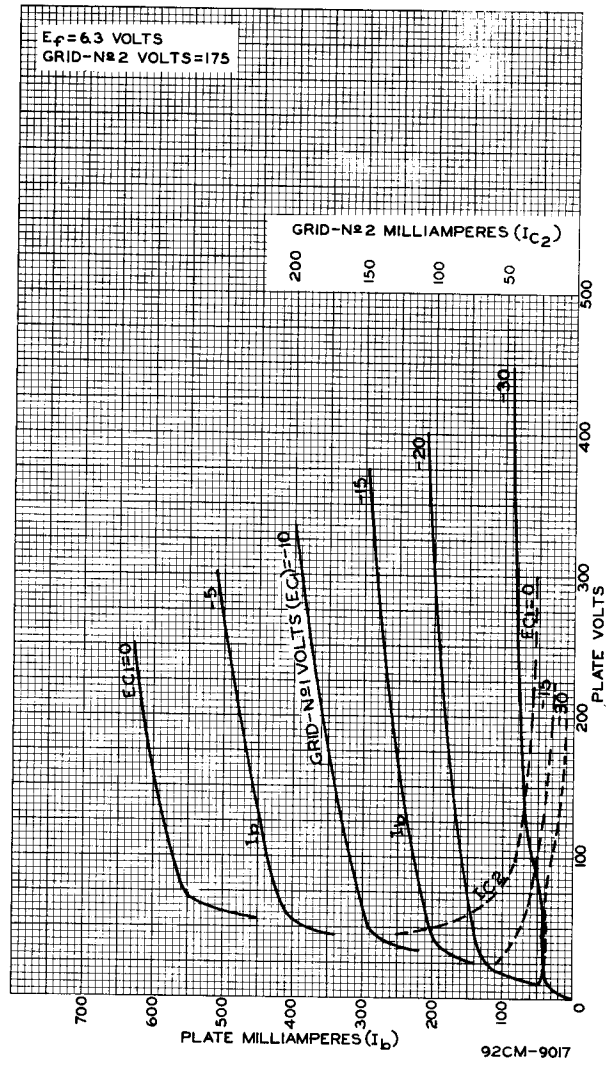
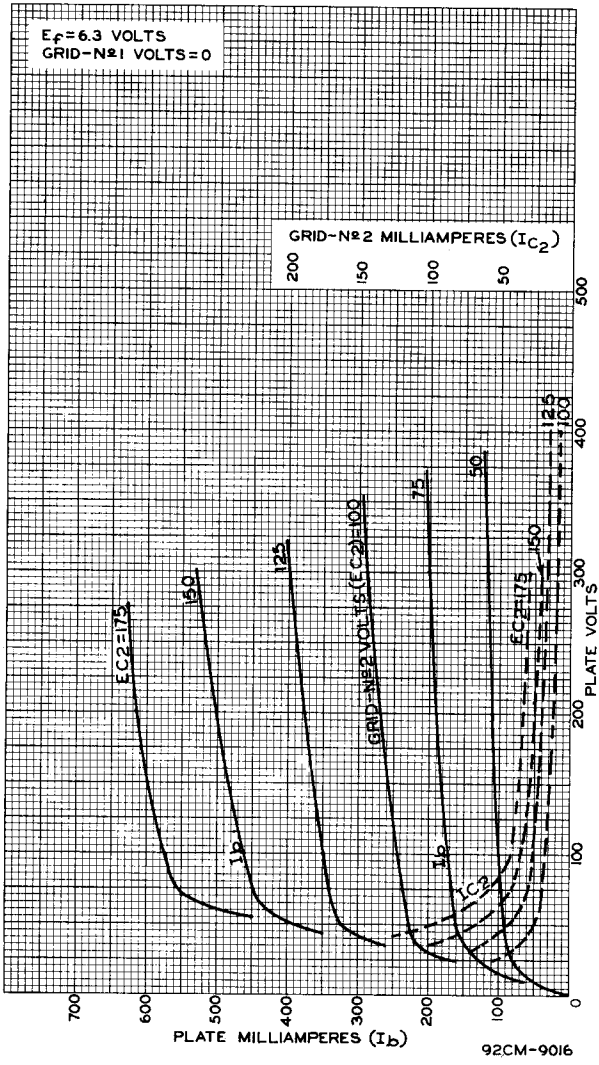
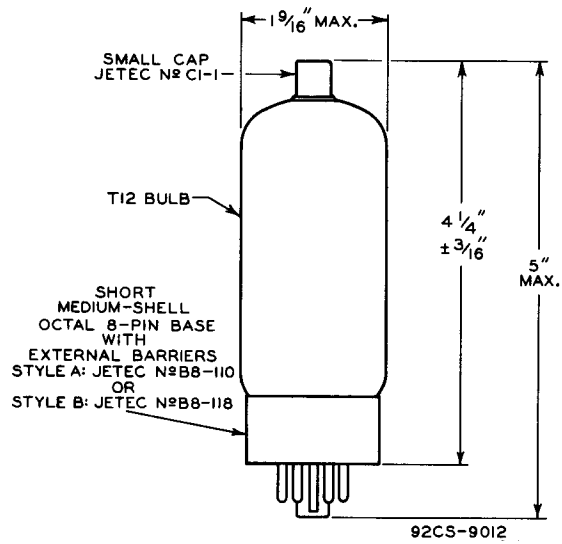


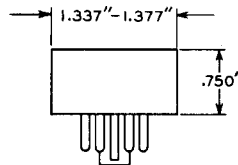
Fig. 2 - Average Characteristics for Type 25CD6-GB. Fig. 3 - Average Characteristics for Type 25CD6-GB.



### DIMENSIONAL OUTLINE



SHORT  
MEDIUM-SHELL  
OCTAL 8-PIN BASE  
WITH  
EXTERNAL BARRIERS  
STYLE A: JETEC N° B8-110



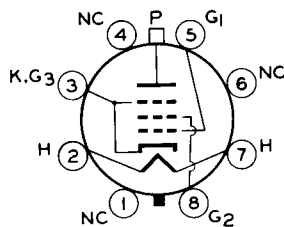
SHORT  
MEDIUM-SHELL  
OCTAL 8-PIN BASE  
WITH  
EXTERNAL BARRIERS  
STYLE B: JETEC N° B8-118

Style B is same as Style A  
except shell height is 0.700".

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### SOCKET CONNECTIONS

#### Bottom View



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- PIN 1: NO CONNECTION
- PIN 2: HEATER
- PIN 3: CATHODE, GRID No.3
- PIN 4: NO CONNECTION
- PIN 5: GRID No.1
- PIN 6: NO CONNECTION
- PIN 7: HEATER
- PIN 8: GRID No.2
- CAP: PLATE