

for information on tubes  
and semiconductors  
for all applications.

ask **Amperex**®



**Amperex**® electronic corp. 230 Duffy Avenue, Hicksville, L. I., N. Y.

## AMPEREX TUBE TYPE 8117

### TENTATIVE DATA

The 8117 is a dual tetrode tube designed for use as a high efficiency linear amplifier in single sideband systems. Each anode is capable of dissipating 30 watts continuously. The cathode is indirectly heated, oxide coated. Maximum ratings apply as indicated below up to 60 and 175 megacycles.

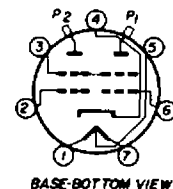
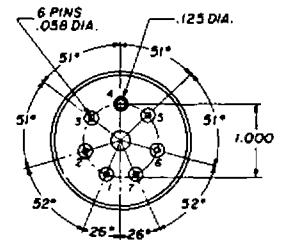
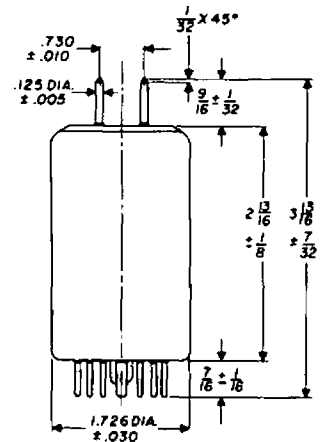
### GENERAL CHARACTERISTICS

#### MECHANICAL

|                                     |                                                                              |
|-------------------------------------|------------------------------------------------------------------------------|
| Mounting Position                   | Vertical, base up or down. Horizontal with anode pins in a horizontal plane. |
| Maximum Glass and Seal Temperatures | 250°C                                                                        |
| Accessories                         |                                                                              |
| Socket                              | Johnson 122-105 or equal                                                     |
| Net Weight, Approx.                 | 2.5 ounces                                                                   |

1. Either forced air cooling or heat sink cooling may be used when the tube is operating at or near the maximum ratings. With forced air cooling it is necessary to cool both the lateral bulb surfaces as well as the plate pin seals by directing the flow of air toward the top and sides of the bulb. In most cases approximately 20 cfm is sufficient. However, regardless of the type of cooling being used, the degree of cooling should be determined by direct temperature measurement of both the seals and the bulb.

The temperature may be measured by means of temperature sensitive compound such as Tempilaq made by the Tempil Corporation, 11 West 25th Street, New York, New York.



PIN 1 - HEATER  
PIN 2 - GRID NO. 1 OF UNIT NO. 2  
PIN 3 - GRID NO. 2  
PIN 4 - CATHODE B INTERNAL SHIELD  
PIN 5 - HEATER CENTER TAP  
PIN 6 - GRID NO. 1 OF UNIT NO. 1  
PIN 7 - HEATER  
P1 - PLATE OF UNIT NO. 1  
P2 - PLATE OF UNIT NO. 2

## ELECTRICAL

### Heater Voltage

Series 12.6 volts

Parallel 6.3 volts

### Heater Current

Series 0.9 amps

Parallel 1.8 amps

Amplification Factor 7.0

$G_1 - G_2$  Mu at  $E_b = 600$  volts

$E_{c2} = 250$  volts,  $I_b = 40$  ma

Peak Cathode Current 700 ma

### Direct Interelectrode Capacitances

|               | Per Unit |         |
|---------------|----------|---------|
|               | Min.     | Max.    |
| Grid to Plate |          | 0.09 pf |
| Input         | 9.4      | 11.8 pf |
| Output        | 2.6      | 3.7 pf  |

**RF Power Amplifier and Oscillator  
Class C Telegraphy**

**Maximum Ratings, Absolute Values**

|                         | CCS              |
|-------------------------|------------------|
| Frequency               | 60 mc max        |
| D.C. Plate Voltage      | 850 volts max    |
| D.C. Grid No. 2 Voltage | 300 volts max    |
| D.C. Grid No. 1 Voltage | -175 volts max   |
| D.C. Plate Current      | 2 x 110 ma max   |
| D.C. Grid No. 1 Current | 2 x 5 ma max     |
| Plate Input             | 2 x 90 watts max |
| Grid No. 2 Input        | 7 watts max      |
| Plate Dissipation       | 2 x 30 watts max |
| Heater-Cathode Voltage  | 100 volts max    |

**RF Power Amplifier and Oscillator  
Class C Telegraphy**

**Maximum Ratings, Absolute Values**

|                         | CCS              |
|-------------------------|------------------|
| Frequency               | 175 mc max       |
| D.C. Plate Voltage      | 750 volts max    |
| D.C. Grid No. 2 Voltage | 300 volts max    |
| D.C. Grid No. 1 Voltage | -175 volts max   |
| D.C. Plate Current      | 2 x 110 ma max   |
| D.C. Grid No. 1 Current | 2 x 5 ma max     |
| Plate Input             | 2 x 75 watts max |
| Grid No. 2 Input        | 7 watts max      |
| Plate Dissipation       | 2 x 30 watts max |
| Heater-Cathode Voltage  | 100 volts max    |

# Class AB<sub>1</sub> Grounded Cathode Linear RF Amplifier Single Sideband

## Suppressed Carrier Operations

Maximum Ratings. Absolute Values  
Parallel Operation (Frequencies Up to 60 mc)

|                         | CCS  | ICAS           |
|-------------------------|------|----------------|
| D.C. Plate Voltage      | 1000 | 1000 volts max |
| D.C. Grid No. 2 Voltage | 360  | 360 volts max  |
| D.C. Grid No. 1 Voltage | -175 | -175 volts max |
| D.C. Plate Current      | 220  | 220 ma max     |
| D.C. Grid No. 1 Current | 10   | 10 ma max      |
| Plate Input             | 200  | 220 watts max  |
| Grid No. 2 Dissipation  | 7    | 8 watts max    |
| Plate Dissipation       | 2x30 | 67.5 watts max |

## Typical Operation Single Tone and or Two Tone Operation

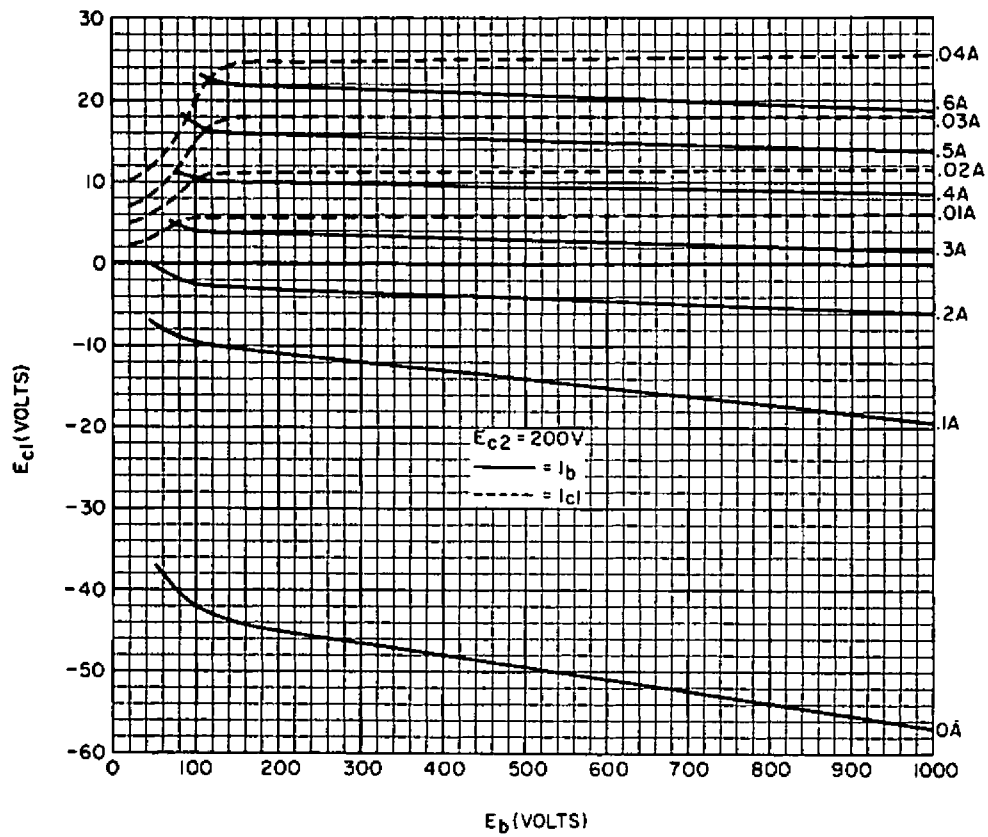
|                                     | CCS  | CCS  | CCS   | ICAS       |
|-------------------------------------|------|------|-------|------------|
| Frequency                           | 7    | 7    | 7     | 7 mc       |
| D.C. Plate Voltage                  | 1000 | 800  | 600   | 1000 volts |
| D.C. Grid No. 2 Voltage             | 250  | 250  | 250   | 270 volts  |
| D.C. Grid No. 1 Voltage             | -34  | -34  | -32.5 | -36 volts  |
| Zero Signal D.C. Plate Current      | 50   | 50   | 60    | 55 ma      |
| Zero Signal D.C. Grid No. 2 Current | 1.2  | 1.2  | 1.9   | 1 ma       |
| Effective RF Load Resistance        | 3100 | 2300 | 1410  | 3000 ohms  |

### Single Tone Modulation

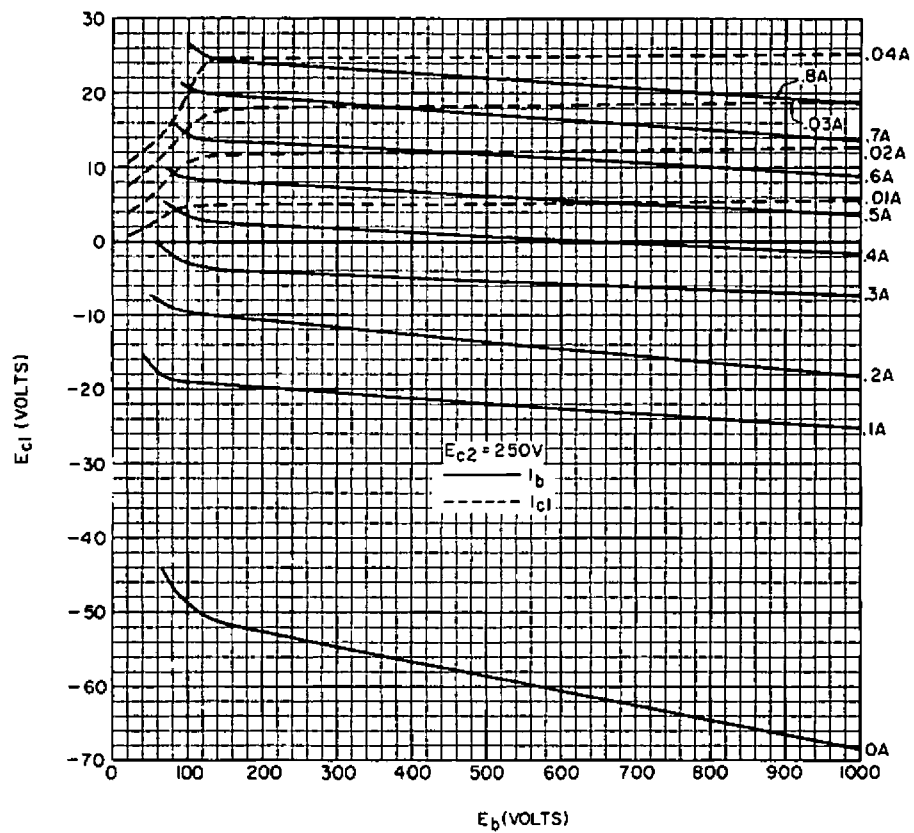
|                                     | CCS | CCS | CCS  | ICAS      |
|-------------------------------------|-----|-----|------|-----------|
| Frequency                           | 7   | 7   | 7    | 7 mc      |
| Max. Signal D.C. Plate Current      | 195 | 197 | 212  | 216 ma    |
| Max. Signal D.C. Grid No. 2 Current | 26  | 26  | 25   | 25 ma     |
| Max. Signal D.C. Grid No. 1 Current | .01 | .01 | .008 | .05 ma    |
| Max. Signal Peak RF Grid Voltage    | 34  | 34  | 32.5 | 36 volts  |
| Max. Signal Plate Power Output      | 141 | 112 | 76   | 158 watts |

### Two Tone Modulation

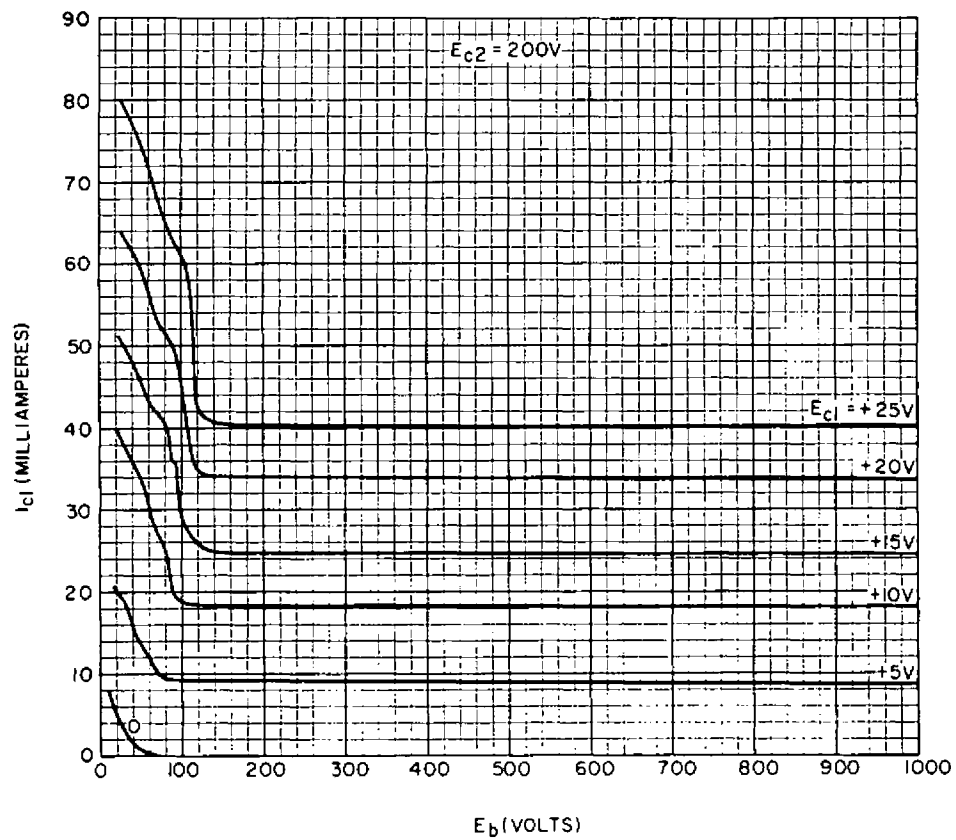
|                                      | CCS  | CCS  | CCS  | ICAS      |
|--------------------------------------|------|------|------|-----------|
| Frequency                            | 7    | 7    | 7    | 7 mc      |
| Average D.C. Plate Current           | 131  | 130  | 144  | 144 ma    |
| Average D.C. Grid No. 2 Current      | 11.5 | 12.5 | 13.5 | 13 ma     |
| Average D.C. Grid No. 1 Current      | -    | -    | -    | .014 ma   |
| Max. Resultant Peak RF Grid Voltage  | 34   | 34   | 32.5 | 36 volts  |
| Average Plate Power Output           | 70.5 | 56   | 38   | 79 watts  |
| Peak Envelope Plate Power Output     | 141  | 112  | 76   | 158 watts |
| 3rd Order Intermodulation Distortion | -30  | -30  | -30  | -30 db    |
| 5th Order Intermodulation Distortion | -    | -    | -    | -40 db    |



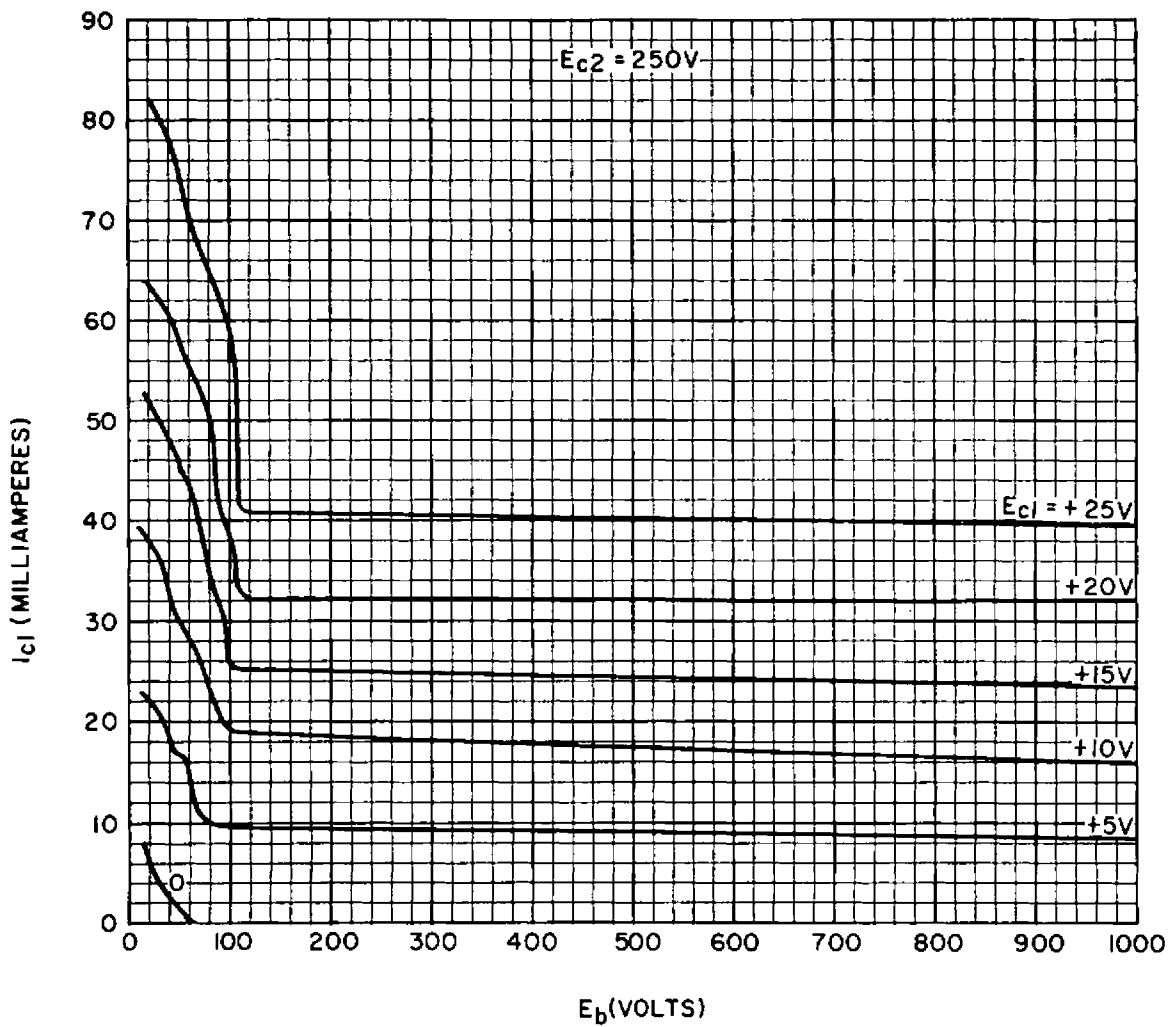
CONSTANT CURRENT CHARACTERISTICS

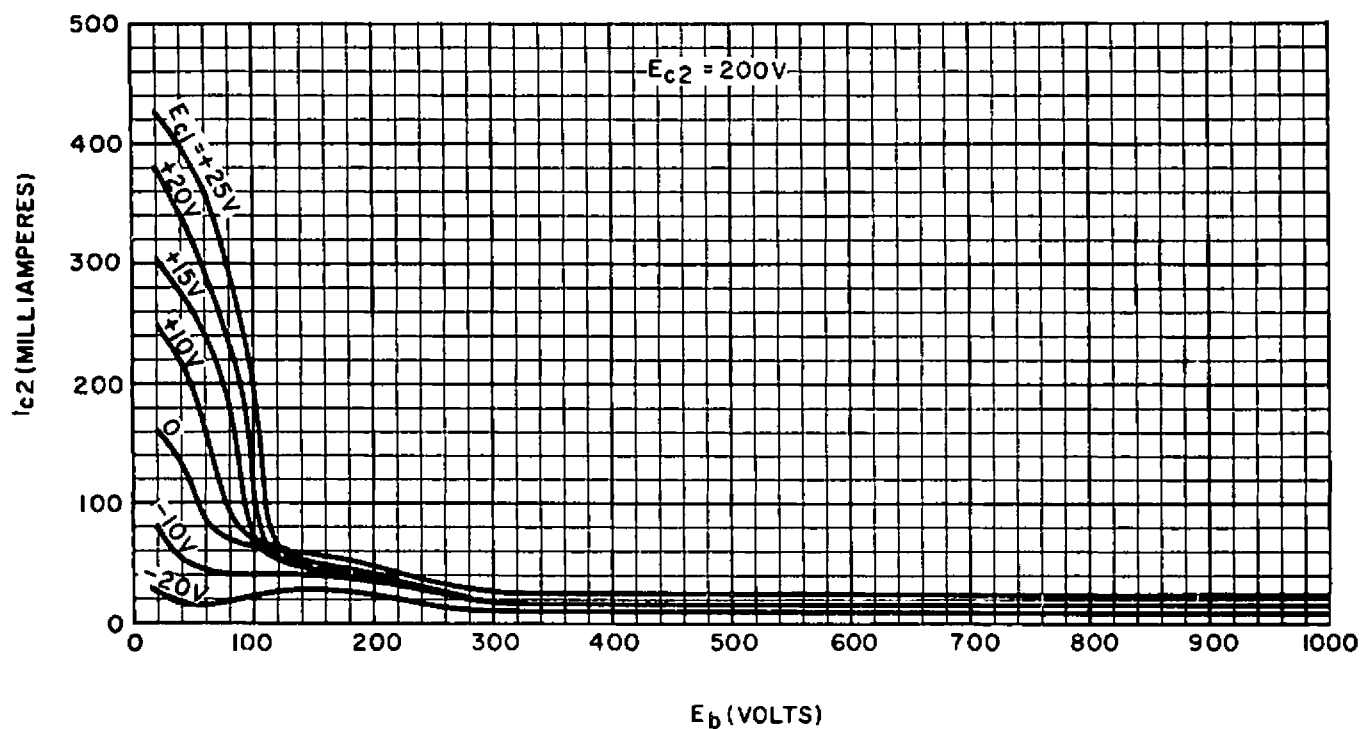


CONSTANT CURRENT CHARACTERISTICS

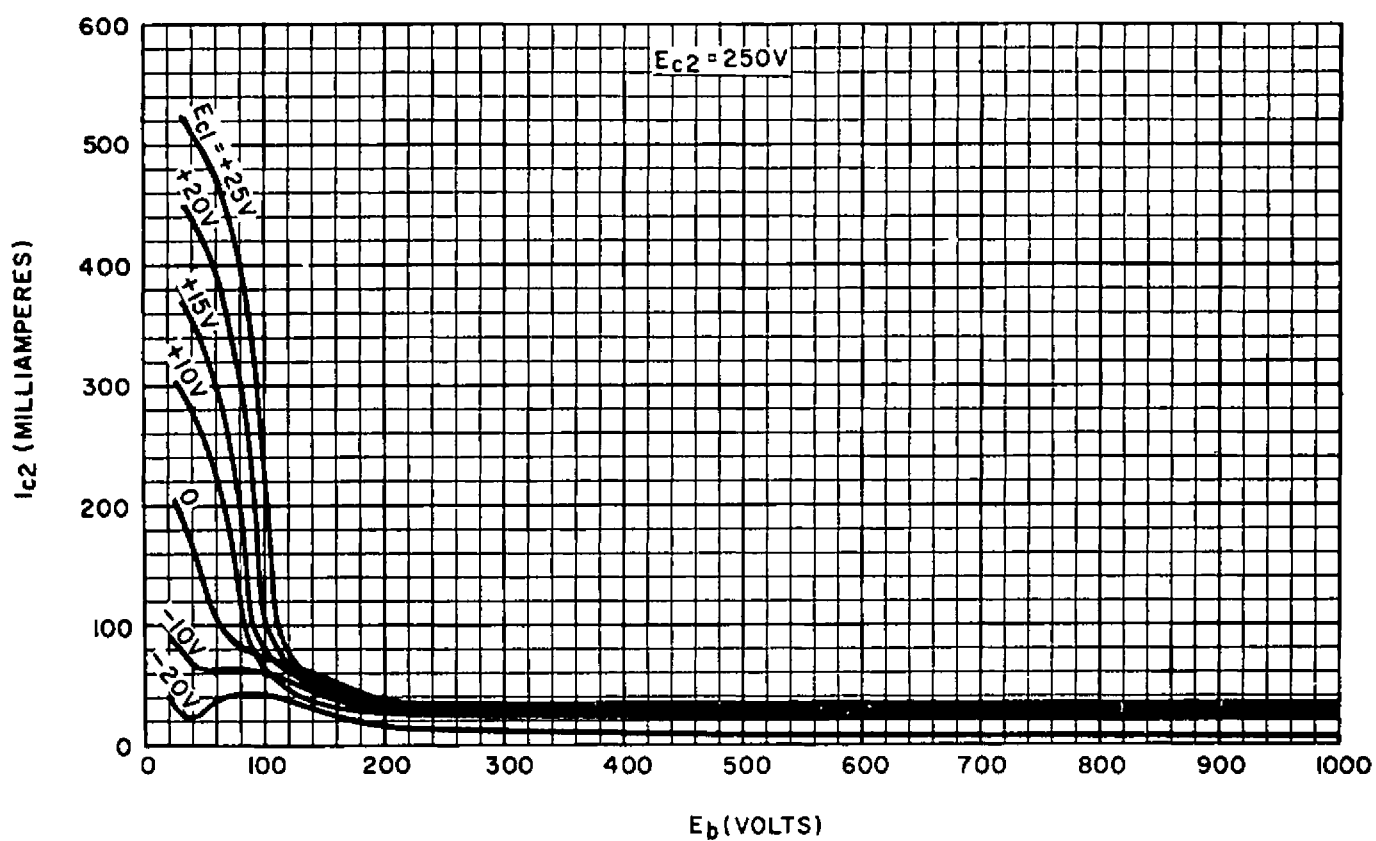


CONTROL GRID CHARACTERISTICS





SCREEN GRID CHARACTERISTICS



SCREEN GRID CHARACTERISTICS