ADVANCE DATA

The Sylvania Type 6943 is a subminiature sharp cutoff pentode designed for radio frequency amplifier service. This type is characterized by extraordinary freedom from interelement short circuits of short term duration, by high resistance to interelement leakage, and by stable performance. In addition, vibrational output when the tube is subjected to wide band (White Noise) vibration is held to a very low value. It is suitable for service at high altitudes and where severe conditions of mechanical shock, vibration and high temperature are encountered. These characteristics give the type special value in guided missile applications.

MECHANICAL DATA

Bulb	T-3
Base	E8-10 Subminiature Button
Outline	3-11
Basing	8DC
Cathode	Coated Unipotential
Mounting Position	Any

RATINGS[1]

Bulb Temperature (At Hottest Point)	250	°C	Max.
Operational Altitude	80,000	Ft	Max.

DURABILITY CHARACTERISTICS[2]

Impact Acceleration[3]	100	G
Vibrational Acceleration for an Extended Period[4]	10	G
On-Off Heater Cycles[5]	2000	

ELECTRICAL DATA

HEATER CHARACTERISTICS

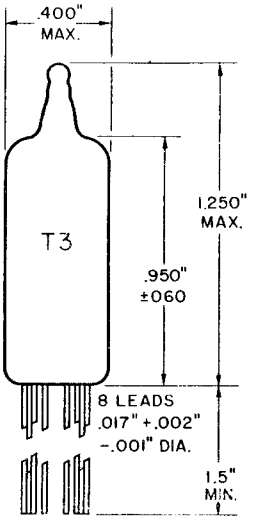
Heater Voltage	6.3	V	
Heater Current	175	mA	
Heater-Cathode Voltage (Absolute Values)	200	v	Max.

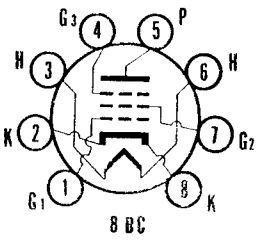
CONTROLLED DETRIMENTS

Interelectrode Insulation[6]	250	Meg	Min.
Total Grid Current[7]	-0.1	μAdc	Max.
Grid Emission[8]	-0.5	μAdc	Max.
Hum Output[9]	15	mv pk-pk	Max.
White Noise Vibration Output[10]	350	mv pk-pk	Max.
	50	mV rms	
Heater-Cathode Leakage[11]	5.0	μAdc	Max.

QUICK REFERENCE DATA

The Sylvania Type 6943 is a subminiature sharp cutoff RF pentode designed specifically for guided missile service.





SYLVANIA ELECTRIC PRODUCTS INC.

RADIO TUBE DIVISION
EMPORIUM, PA.

Prepared and Released By The TECHNICAL PUBLICATIONS SECTION EMPORIUM, PENNSYLVANIA

May 6, 1957

DIRECT INTERELECTRODE CAPACITANCES[12]

Grid No. 1 to Plate	0.015	μμf	Max.
Input: g1 to (h+k+g2+g3+i.s.+e.s.)	3.0	μμf	
Output: p to (h+k+g2+g3+i.s.+e.s.)	3.0	μμf	

RATINGS[1] (Absolute Values)

Heater Voltage Variation	6.3 ± 10%	V	Max.
Instantaneous Plate Voltage	360	v	Max.
Plate Voltage	250	Vdc	Max.
Grid No. 2 Voltage	150	Vdc	Max.
Plate Dissipation	1.0	W	Max.
Grid No. 2 Dissipation	0.33	W	Max.
Positive Grid No. 1 Voltage	0	Vdc	Max.
Negative Grid No. 1 Voltage	55	Vdc	Max.
External Grid No. 1 Circuit Resistance	1.0	Meg	Max.
Average Cathode Current	15	mAdc	Max.

AVERAGE CHARACTERISTICS

Conditions:		
Heater Voltage	6.3	V
Plate Voltage	100	Vdc
Grid No. 2 Voltage	100	Vdc
Grid No. 3 Voltage	0	
Cathode Bias Resistor	150	Ohms
Plate Current	8.0	mAdc
Grid No. 2 Current	2.3	mAdc
Transconductance	3600	μmhos
Plate Resistance	300,000	Ohms
Grid No. 1 Voltage for Ib = 10 μA	-7.5	Vdc
Grid No. 1 Voltage for Ib = 200 μA	-5.5	Vdc
Operation Time[13] (maximum)	20	secs

NOTES:

1. Limiting values beyond which normal tube life and normal tube performance may be impaired.

2. Tests performed as a measure of the mechanical durability of the tube structure.

3. Force as applied in any direction by the Navy Type High Impact (Flyweight) Shock Machine for Electronic Devices. Shock duration = 4 milliseconds.

4. Vibrational forces applied in any direction for a period of six hours repeatedly sweeping the range from 30 cps to 3000 cps and back, with the period of the sweep cycle being three minutes.

NOTES: (Cont'd)

5. One cycle consists of the application of Ef = 7.0 V for one minute and interruption of the filament voltage for four minutes. A voltage of Ehk = 140 Vac is applied continuously.

6. Measured with Ef = 6.3 V, Ep-all = -300 Vdc; Eg2-all = -200 Vdc; Eg1-all = -100 Vdc; cathode is positive so that no cathode emission occurs.

7. Measured with Ef = 6.3 V; Eb = Ec2 = 100 Vdc; Rk = 150 Ohms; Rg1 = 1.0 Meg.

8. Preheated for five minutes with Ef = 7.5 V; Eb = 250 Vdc; Ec2 = 150 Vdc; Rk = 1000 Ohms; Rg1 = 1.0 Meg; then tested with Ef = 7.5 V; Eb = Ec2 = 100 Vdc; Ec1 = -7.5 Vdc; Rg1 = 1.0 Meg. This is a destructive test and therefore must be conducted on a sample basis.

9. Test with Ef = 6.3 V (400 cps), Eb = Ec2 = 100 Vdc; Rk = 150 Ohms; Rg2 = 30,000 Ohms; RL = 10,000 Ohms; measure the hum output across R1 in the frequency band from 20 cps to 5000 cps.

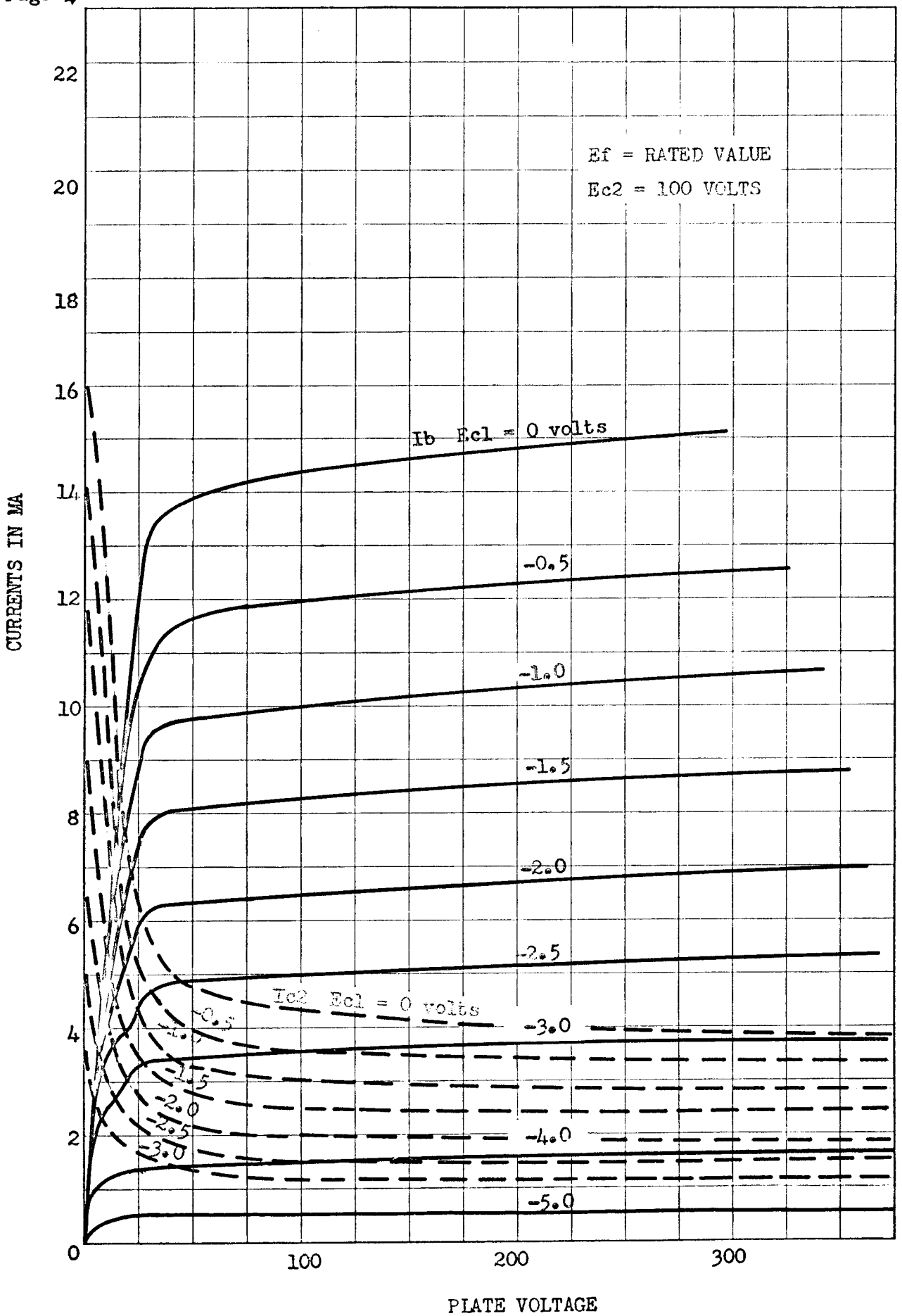
10. Test with Ef = 6.3 V; Eb = Ec2 = 100 Vdc; Rk = 150 Ohms; Rp = 10,000 Ohms. The White Noise voltage across Rp is filtered to roll off approximately 35 db between 10,000 cps and 13,000 cps and is then measured with both a peak to peak meter and an rms reading meter. The vibrational force applied to the tube under test is such that the instantaneous values of acceleration form a White Noise spectrum from 100 cps to 5000 cps. Energy within this spectrum is distributed such that each octave of bandwidth delivers 2.3 G's rms acceleration. The degree of clipping is such that peak values of acceleration exceed 15 G's.

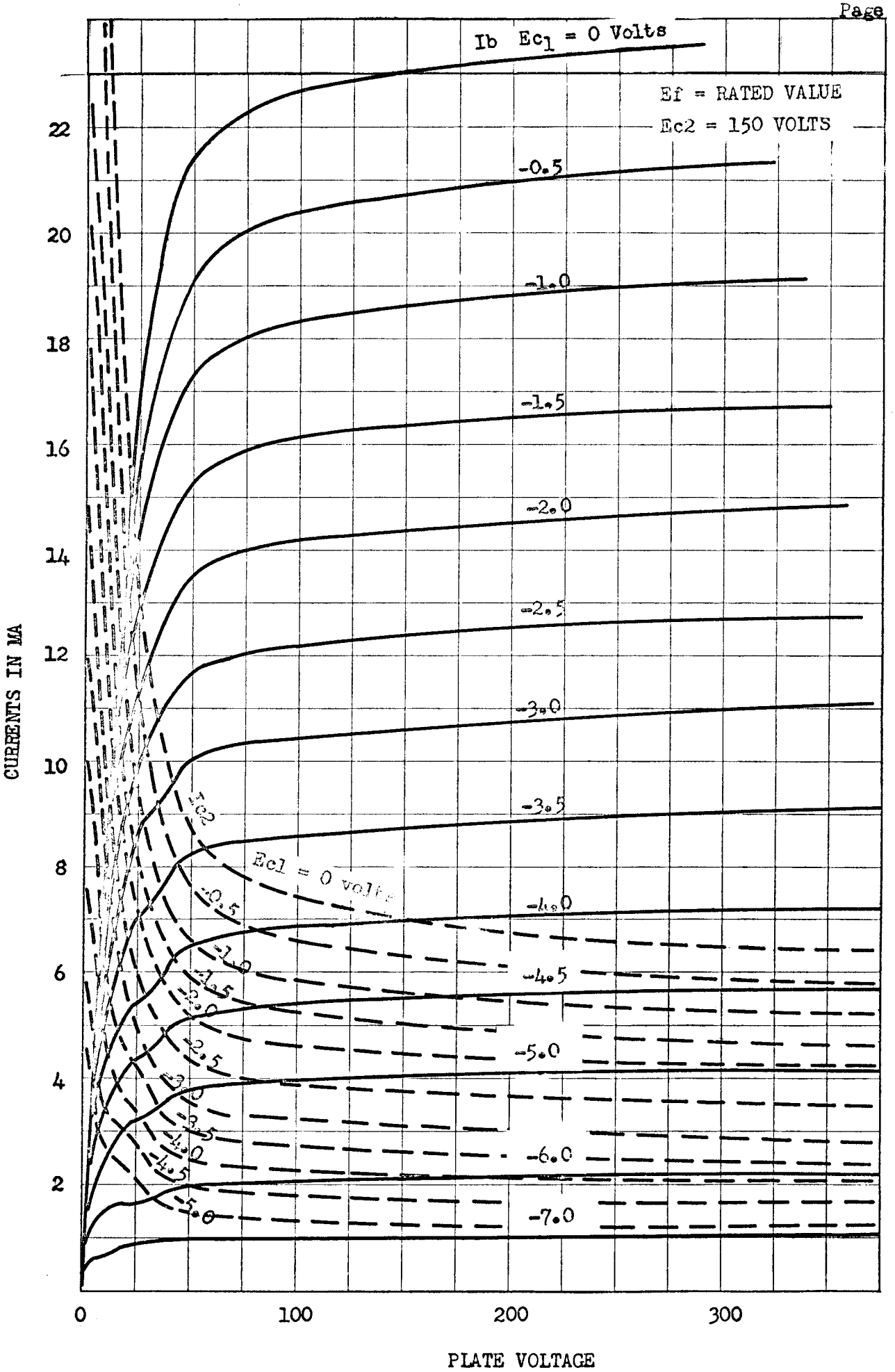
11. Measured with Ef = 6.3 V; Ehk = ±100 Vdc.

12. Capacitances are measured with an external shield of 0.405" i.d.

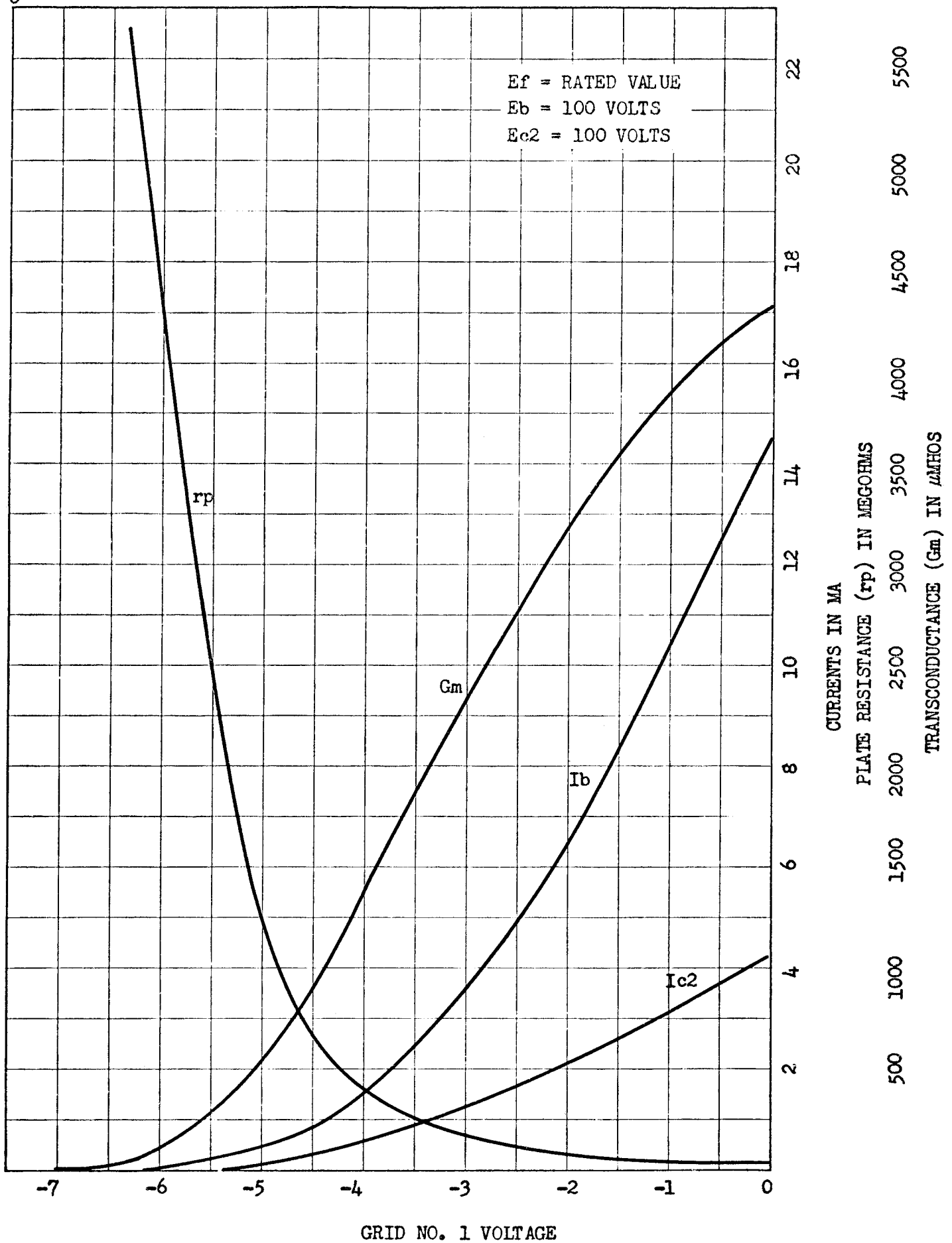
13. Operation time is the time required for a tube to reach a value of plate current equal to 85% of that value attained after three minutes.

AVERAGE PLATE CHARACTERISTICS




Ib Ec1 = 0 Volts
Ef = RATED VALUE
Ec2 = 150 VOLTS
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
-4.5
-5.0
-6.0
-7.0
Ec2
Ec1 = 0 volts
-0.5
-1.0
-1.5
-2.0
-2.5
-3.0
-3.5
-4.0
-4.5
-5.0
22
20
18
16
14
12
10
8
6
4
2
0
100
200
300
CURRENTS IN MA
PLATE VOLTAGE

AVERAGE TRANSFER CHARACTERISTICS



AVERAGE TRANSFER CHARACTERISTICS