SYLVANIA

engineering data service

MECHANICAL DATA

Bulb	T-3
Base	E8-10, Subminiature Button Flexible Leads
Outline	JETEC 3-1
Basing	8DC
Cathode	Coated Unipotential
Mounting Position	Any

RATINGS[1] (Absolute Maximum)

Impact Acceleration	450 G
Uniform Acceleration	1000 G
Fatigue (Vibrational Acceleration for Extended Periods)	2.5 G
Bulb Temperature	220° C
Altitude[2]	80000 Ft.

ELECTRICAL DATA

HEATER CHARACTERISTICS

	Min.	Bogey	Max.
Heater Voltage[3]	25.2	26.5	27.8 V
Heater Current		45	mA

DIRECT INTERELECTRODE CAPACITANCES (Shielded[4])

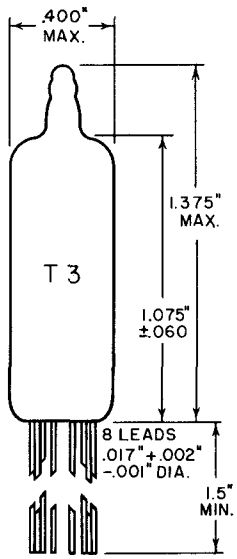
Grid No. 1 to Plate	0.020 μμf	Max.
Grid No. 3 to Plate	1.10 μμf	Max.
Grid No. 1 to All Other Electrodes	4.00 μμf	
Grid No. 3 to All Other Electrodes	4.00 μμf	
Plate to All Other Electrodes	3.40 μμf	
Grid No. 1 to Grid No. 3	0.15 μμf	Max.

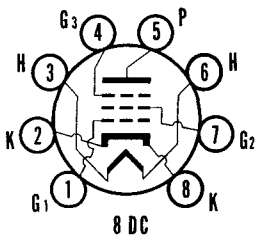
RATINGS[1 & 5] (Absolute Maximum)

Plate Voltage	165 Vdc
Grid No. 2 Voltage	155 Vdc
DC Grid No. 3 Voltage	
Positive Value	30 Vdc
Negative Value	55 Vdc
DC Grid No. 1 Voltage	
Positive Value	0 Vdc
Negative Value	55 Vdc
Plate Dissipation	1.1 W
Grid No. 2 Dissipation	0.7 W
Plate Current	11 mAdc
Grid No. 3 Current	2 mAdc
Grid No. 2 Current	7 mAdc
Grid No. 1 Current	2 mAdc
Heater-Cathode Voltage	
Heater Positive with Respect to Cathode	200 v
Heater Negative with Respect to Cathode	200 v
Grid No. 1 Circuit Resistance	1.1 Meg

QUICK REFERENCE DATA

The Premium Subminiature Type 5916 is a sharp cutoff, dual control pentode intended for use as a gated amplifier or mixer at frequencies up to 400 mc. Except for heater characteristics the Type 5916 is identical to the Type 5636. The Type 5916 employs a 26.5 volt, 45 ma heater. The Type 5916 is designed for operation under conditions of severe shock, vibration, high temperature, and high altitude, and is manufactured and inspected to meet the applicable MIL-E-1 specification for reliable operation.





SYLVANIA ELECTRIC PRODUCTS INC.

RADIO TUBE DIVISION
EMPORIUM, PA.

Prepared and Released By The
TECHNICAL PUBLICATIONS SECTION
EMPORIUM, PENNSYLVANIA
AUGUST, 1957

CHARACTERISTICS

	Dual Control Amplifier		Mixer	
Plate Voltage	100	100	100 Vdc	
Grid No. 2 Voltage	100	100	100 Vdc	
Grid No. 3 Voltage	-1	Note 6	0 Vdc 15 Vac	
Cathode Resistor	150	150	150 Ohms	
Plate Current	4.0	5.3	3.5 mAdc	
Grid No. 2 Current	5.8	3.6	5.7 mAdc	
Grid No. 1 Transconductance	1950	3200	— μmhos	
Grid No. 3 Transconductance	950	500	— μmhos	
Plate Resistance	50000	110000	32000 Ohms	
Grid No. 1 Voltage for Ib = 100 μAdc	—	-7.5	— Vdc	Max.
Grid No. 3 Voltage for Ib = 100 μAdc	-8	—	— Vdc	Max.
Conversion Transconductance Direct Transformer Input	—	—	1400 μmhos	

NOTES:

1. *Limitations beyond which normal tube performance and tube life may be impaired.*
2. *If altitude rating is exceeded reduction of instantaneous voltage (Ef excluded) may be required.*
3. *Tube life and reliability of performance are directly related to the degree of regulation of the heater voltage to its center rated value of 26.5 volts.*
4. *External shield of 0.405 inch diameter connected to cathode.*
5. *Values shown are as registered with RETMA.*
6. *Grid No. 3 connected to cathode.*

ACCEPTANCE CRITERIA

Test Conditions

Heater Voltage	26.5 V
Plate Voltage	100 Vdc
Grid No. 1 Voltage	0 Vdc
Grid No. 2 Voltage	100 Vdc
Grid No. 3 Voltage (Tie to Cathode) Note 1	0 Vdc
Heater-Cathode Voltage... Note 1	0 Vdc
Cathode Resistor	150 Ohms

For the purposes of inspection, use applicable reliable paragraphs of MIL-E-1 and Inspection Instructions for Electron Tubes.

MIL-E-1 Ref.	Tests	Limits Min.	Bogey	Max.	Units
Production Tests					
4.10.8	Heater Current:	40	45	50	mAdc
4.10.6.1	Grid No. 1 Current:	0	—	-0.3	μAdc
4.10.4.3	Grid No. 2 Current:	2.8	3.6	5.4	mAdc
4.10.4.1	Plate Current (1):	3.7	5.3	6.9	mAdc
4.10.9	Transconductance (1): Smg1p	2700	3350	4000	μmhos

ACCEPTANCE CRITERIA (Continued)

MIL-E-1 Ref.	Tests	Limits Min.	Limits Bogey	Limits Max.	Units
Special Design Tests					
4.9.5.3	Subminiature Lead Fatigue	4	—	—	arcs
4.9.19.2	Vibration F = 40 cps; G = 15; Ck = 1000 μf; Rp = 10,000 Ohms	—	—	60	mVac
4.10.15	Heater-Cathode Leakage: Ehk = +100 Vdc	0	—	7	μAdc
	Ehk = −100 Vdc	0	—	7	μAdc
4.8	Insulation of Electrodes: Eg1 to all = −100 Vdc; Ef = 26.5 V	100	—	—	Meg
4.10.4.1	Plate Current (3): Note 3 Ec3 = −8.0 Vdc	0	—	100	μAdc
4.10.3.2	AF Noise: Esig = 70 mVac; Rg1 = 0.1 Meg; Rp = 0.2 Meg; Rg2 = 1000 Ohms; Ecc2 = 19 Vdc; Ebb = 100 Vdc; Ck = 1000 μf	—	—	17	VU
Design Tests					
4.10.4.1	Plate Current (2): Ec1 = −7.5 Vdc	0	—	100	μAdc
4.10.9	Transconductance (2): Smg1p Ef = 24.0 V	2450	—	—	μmhos
4.10.9	Transconductance (3): Note 3 Smg3p Ec3 = −1.0 Vdc	500	950	1800	μmhos
4.10.14	Capacitance: With 0.405 in. dia. shield tied to cathode.				
	Cg1p	—	—	0.020	μμf
	Cg3p	—	—	1.10	μμf
	Cg1g3	—	—	0.15	μμf
	Cg1 to all	3.5	—	4.5	μμf
	Cg3 to all	3.5	—	4.5	μμf
	Cp to all	2.9	—	3.9	μμf
Degradation Tests					
4.9.20.5	Shock: Note 2 Hammer Angle = 30°				
4.9.20.6	Fatigue: Note 2				
-----	Post Shock Test End Points: Vibration	—	—	200	mVac
-----	Post Fatigue Test End Points: Vibration	—	—	100	mVac
-----	Post Shock and Fatigue Test End Points: Heater-Cathode Leakage	0	—	20	μAdc
	Transconductance (1)	2350	—	—	μmhos
Acceptance Life Tests					
4.11.7	Heater Cycling Life Test: Ef = 29.0 V; Eb = Ec1 = Ec2 = Ec3 = O V; Rk = 0 Ohms; Ehk = 140 Vac; One min. on, four min. off	2500	—	—	Cycles
4.11.5	Intermittent Life Test (1): Note 4 Ehk = +200 Vdc; TA = 175°C; Rg1 = 1.0 Meg	500	—	—	Hours
4.11.4	Intermittent Life Test End Points (1): Transconductance (1)	2000	—	—	μmhos
	Heater-Cathode Leakage	0	—	20	μAdc
	Grid No. 1 Current	—	—	−0.9	μAdc

ACCEPTANCE CRITERIA NOTES:

1: The reference point for heater and grid No. 3 potentials shall be the positive terminal of the cathode resistor.

2: Acceptance sampling procedure shall be in accordance with the shock test sampling procedure of the Inspection Instructions for Electron Tubes.

3: Reference pointer for grid No. 3 on this test shall be the negative terminal of the cathode resistor.

4: At the conclusion of the five hundred hour life test, the average life of the life test sample shall be not less than four hundred fifty hours. Life test sample size shall be ten tubes. Provision for release of tubes prior to completion of life test on a reduced basis as specified in Par. 4.3.1.3 of the Inspection Instructions for Electron Tubes shall not apply.

APPLICATION DATA

The Premium Subminiature Type 5916 is a sharp cutoff, dual control pentode employing a 26.5 volt, 45 ma heater. This type is otherwise identical to the Type 5636.

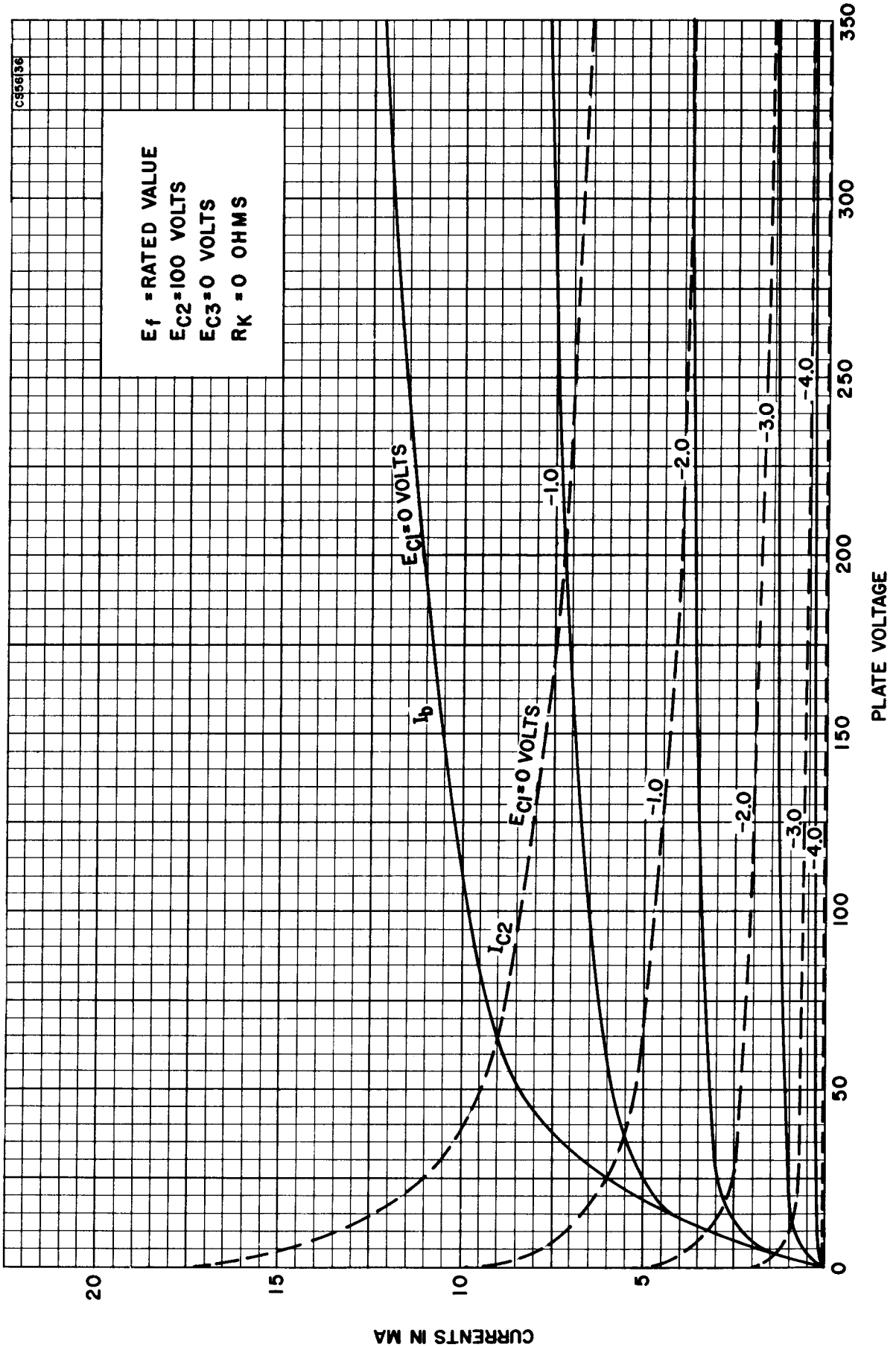
Both No. 1 and No. 3 grids have sharp cutoff characteristics and are intended for control purposes thus making the 5916 particularly useful in a variety of gated amplifier applications. This type is also useful as a mixer at frequencies up to 400 mc. The oscillator voltage is injected into grid No. 3.

The 5916 is manufactured and inspected to meet the applicable MIL-E-1 specification for reliability. Life expectance is described by the life tests, specified on the attached pages and/or individual MIL-E-1 specifications. The actual life expectancy of the tubes in an operating circuit is affected by both the operating and environmental conditions involved. Likewise, the life tests specified indicate performance under certain operating criteria to a set of specified end points. Performance at conditions other than those specified can usually be estimated only roughly as giving better or poorer life expectancy.

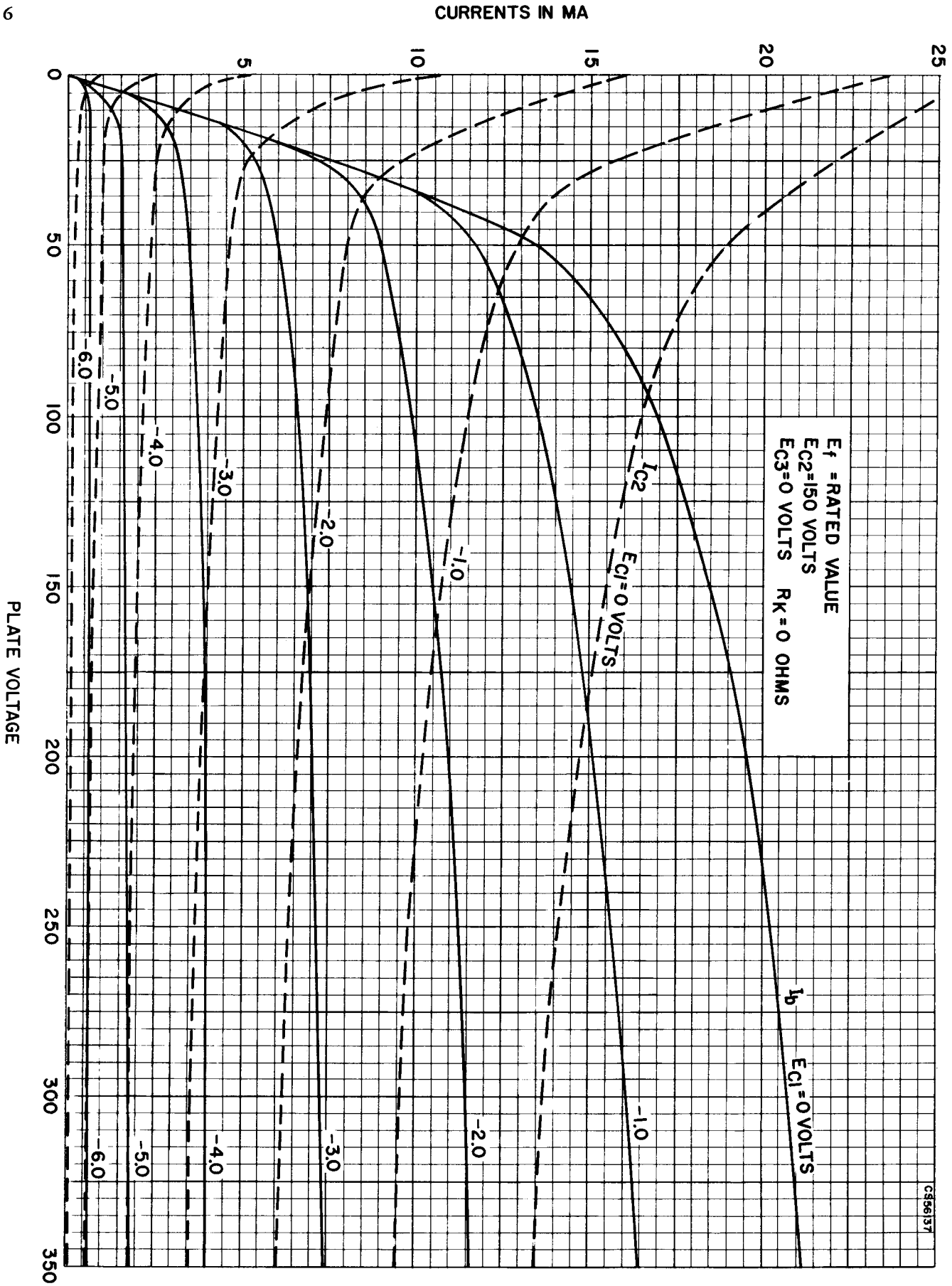
When operated under conditions common to on-off control applications the tube exhibits freedom from the development of interface resistance. The heater-cathode construction is designed to withstand intermittent operation.

The information presented on this data sheet is furnished without assuming any obligation.

AVERAGE PLATE CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS



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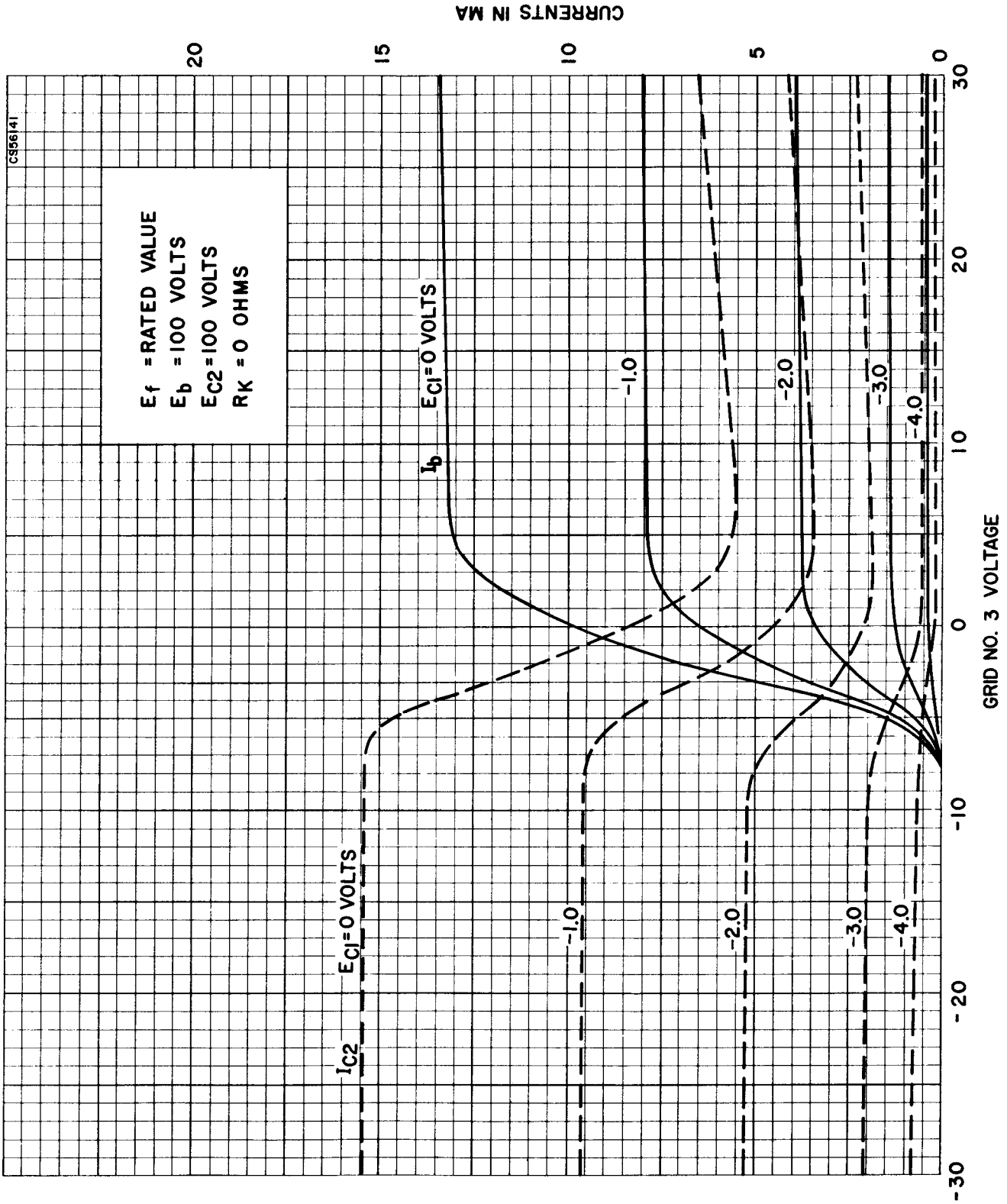

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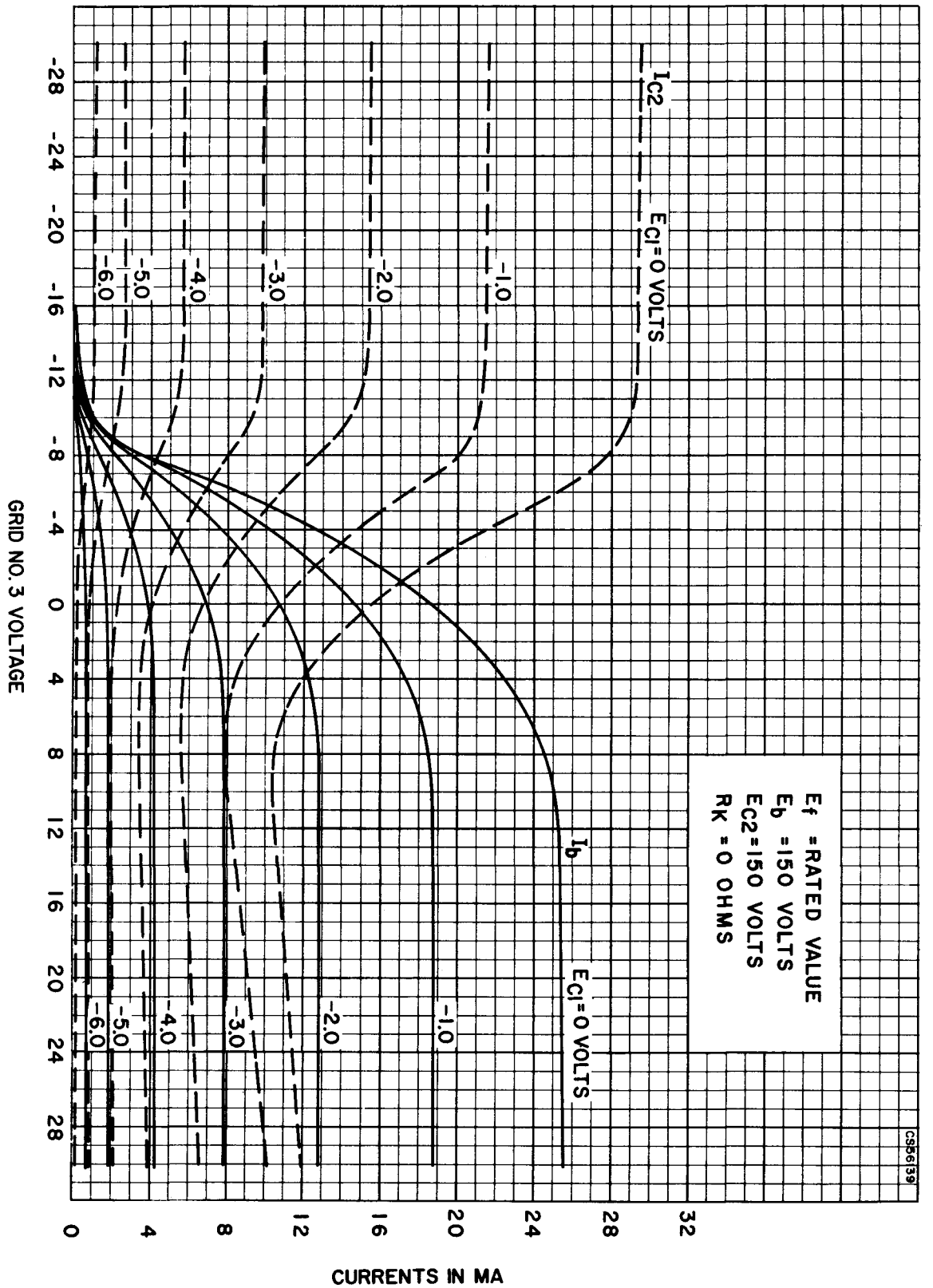

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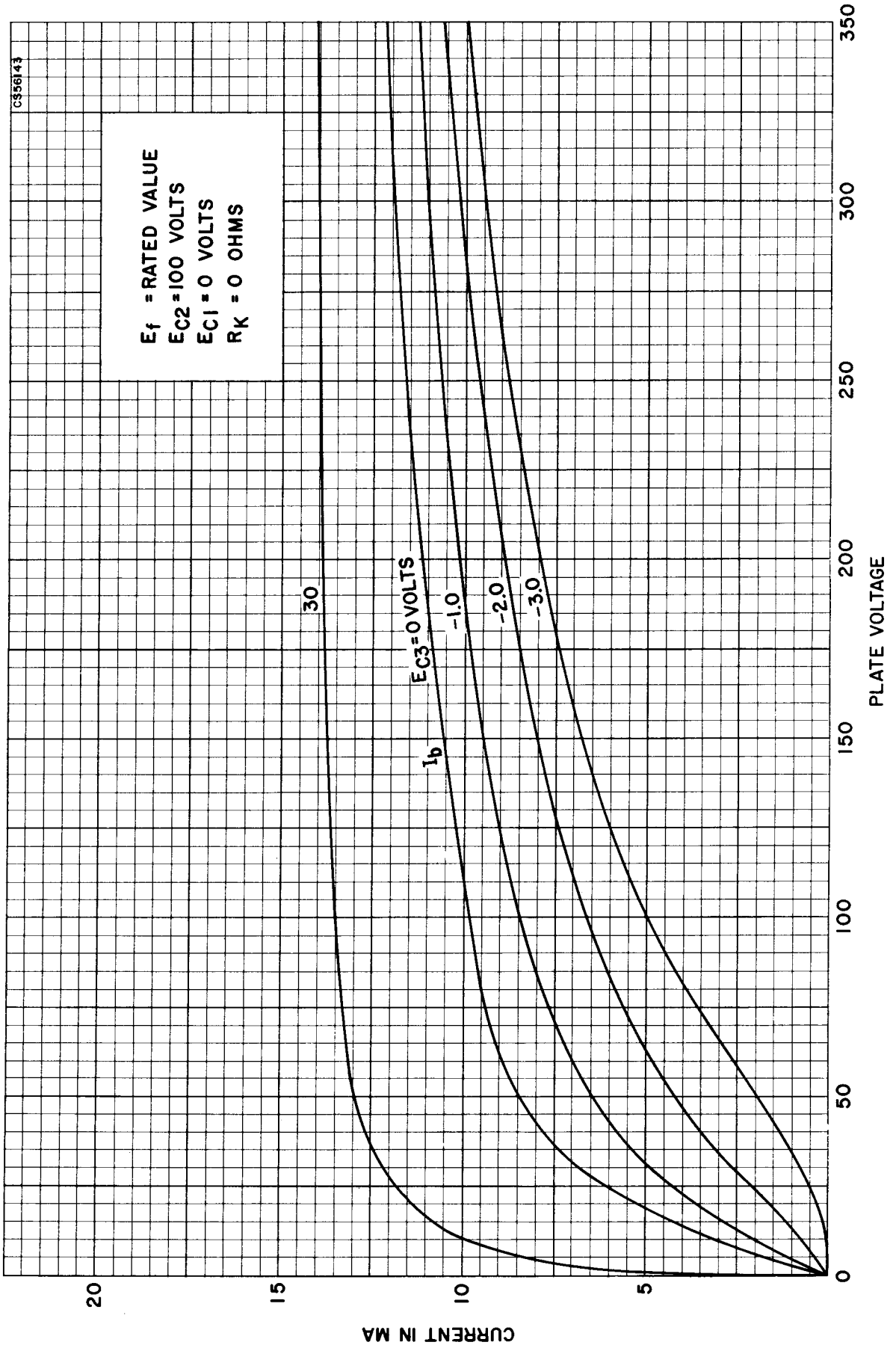

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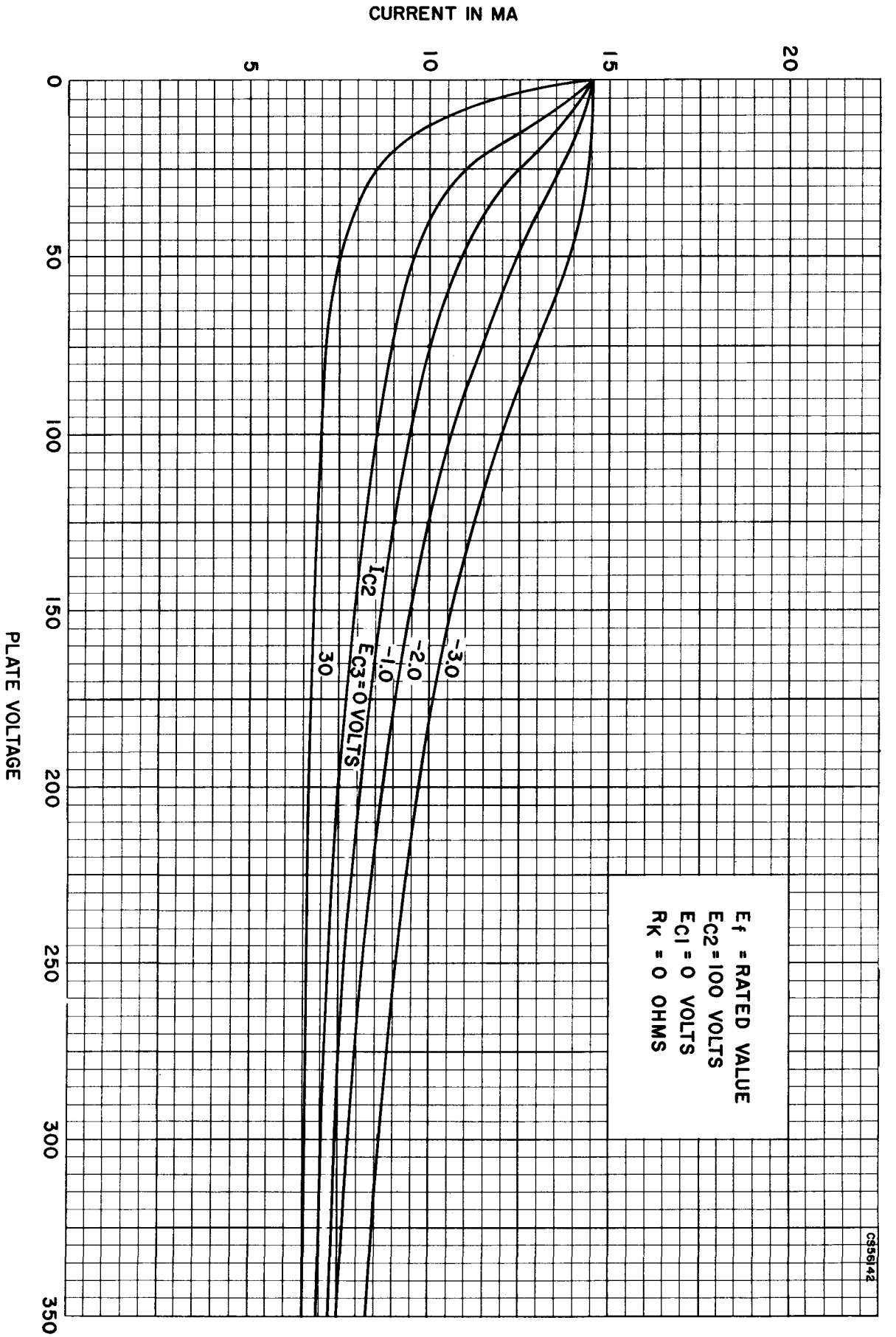

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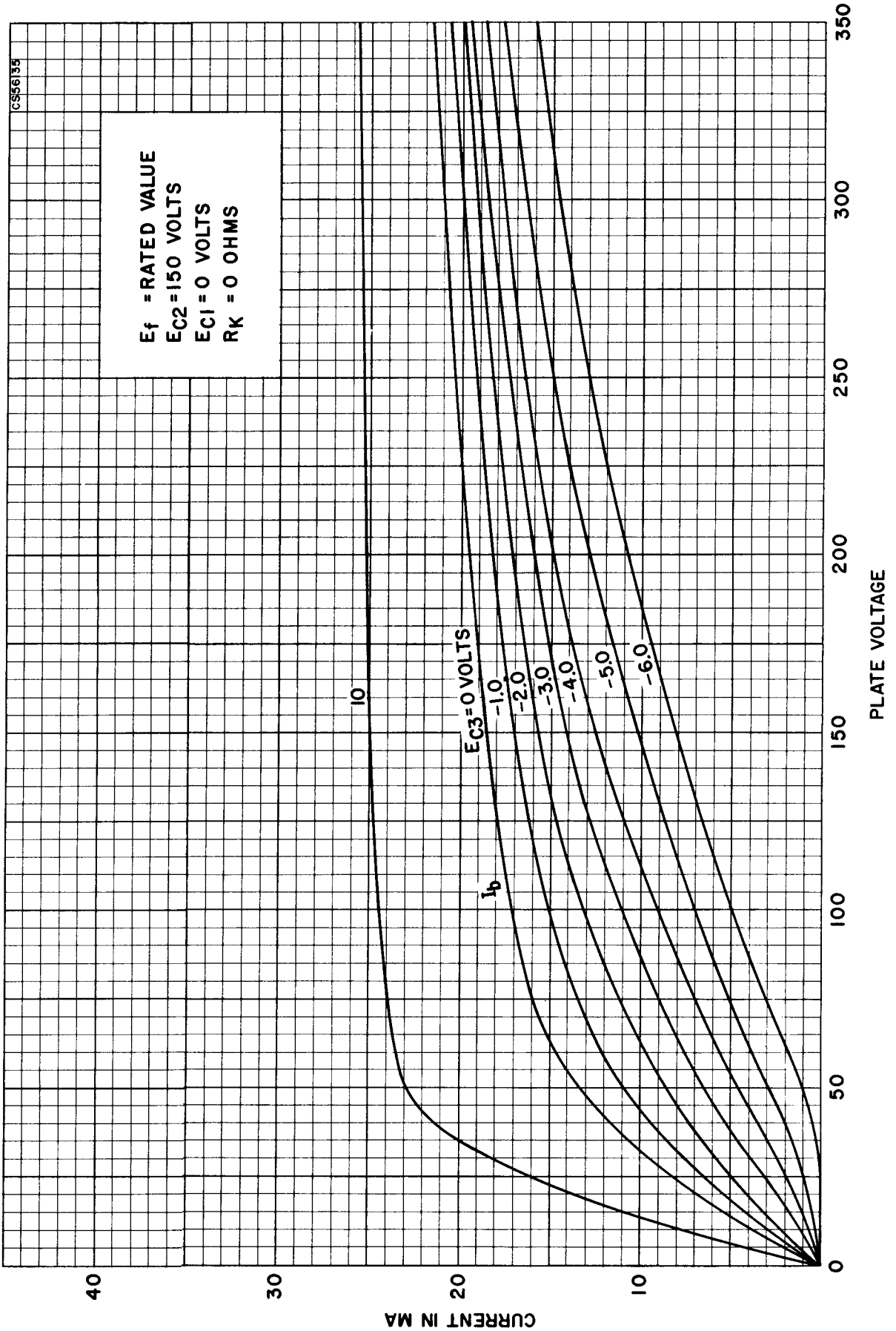

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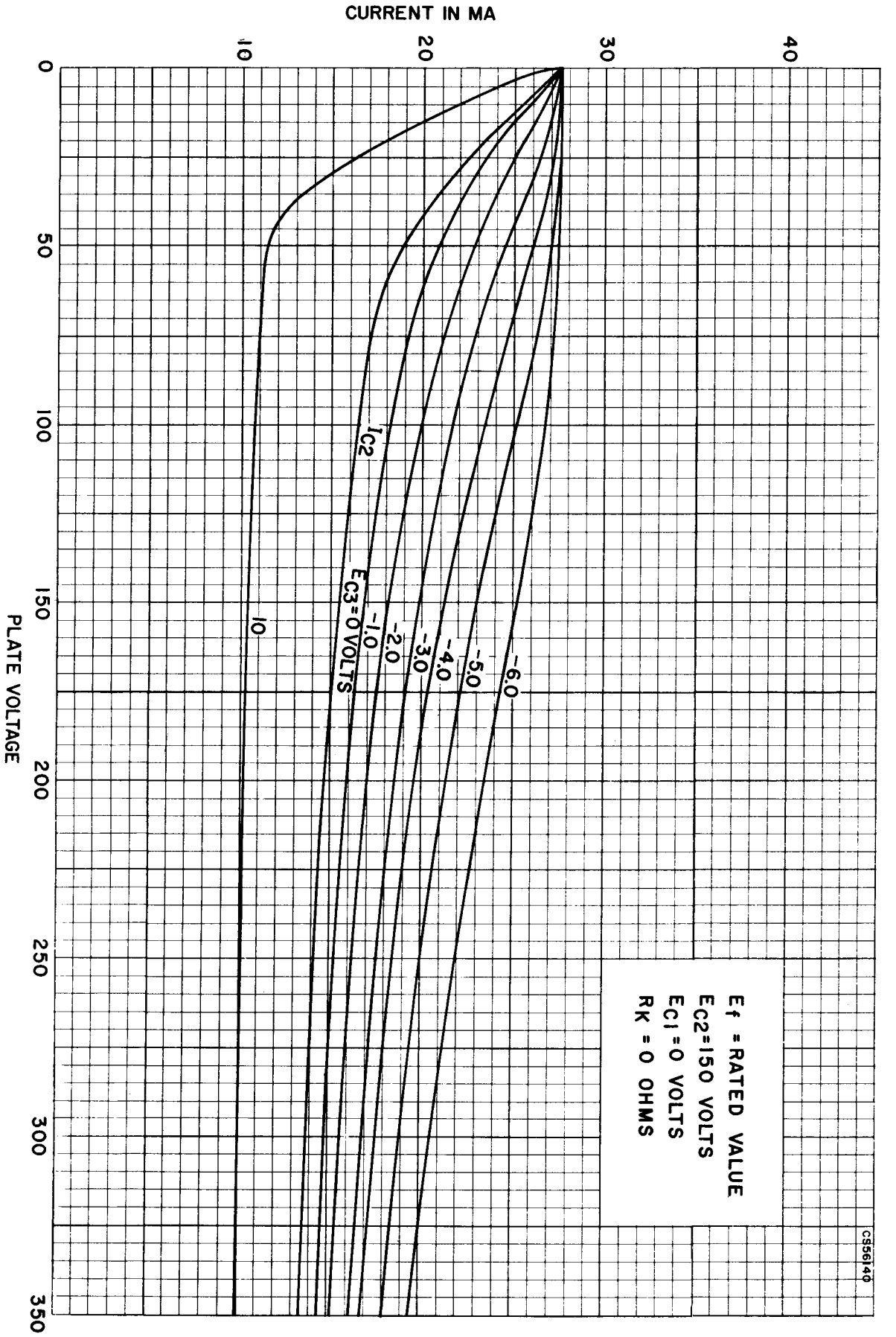

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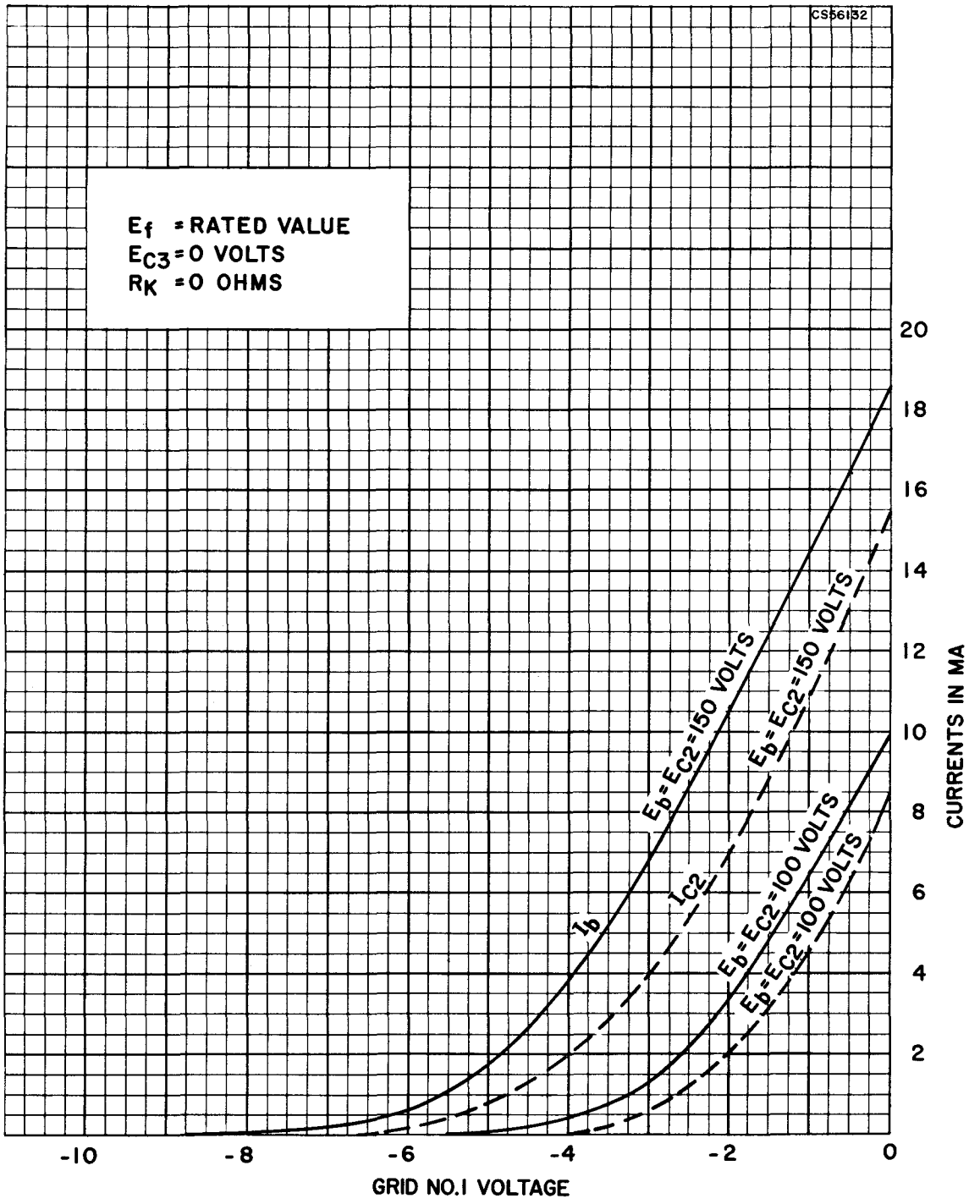

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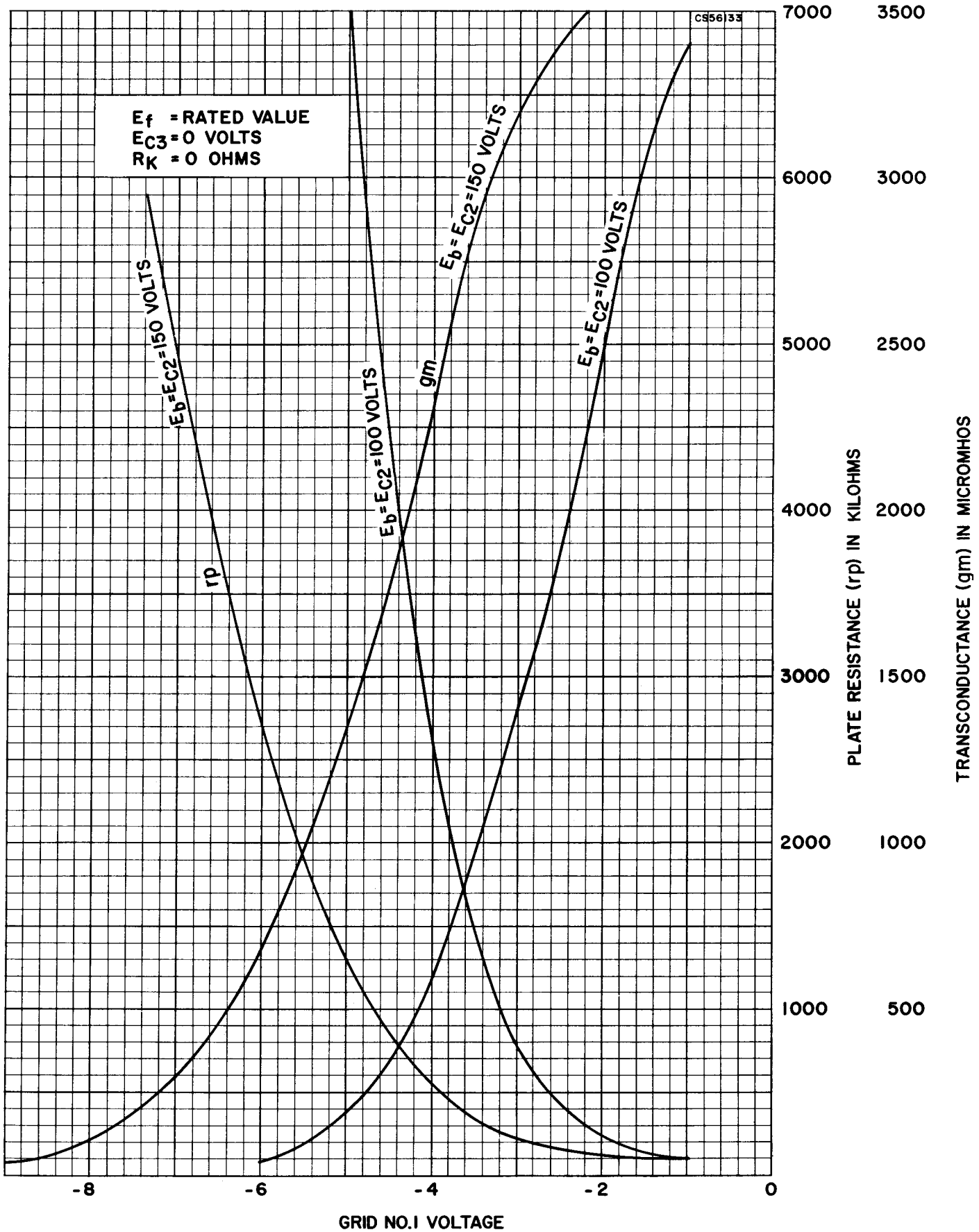

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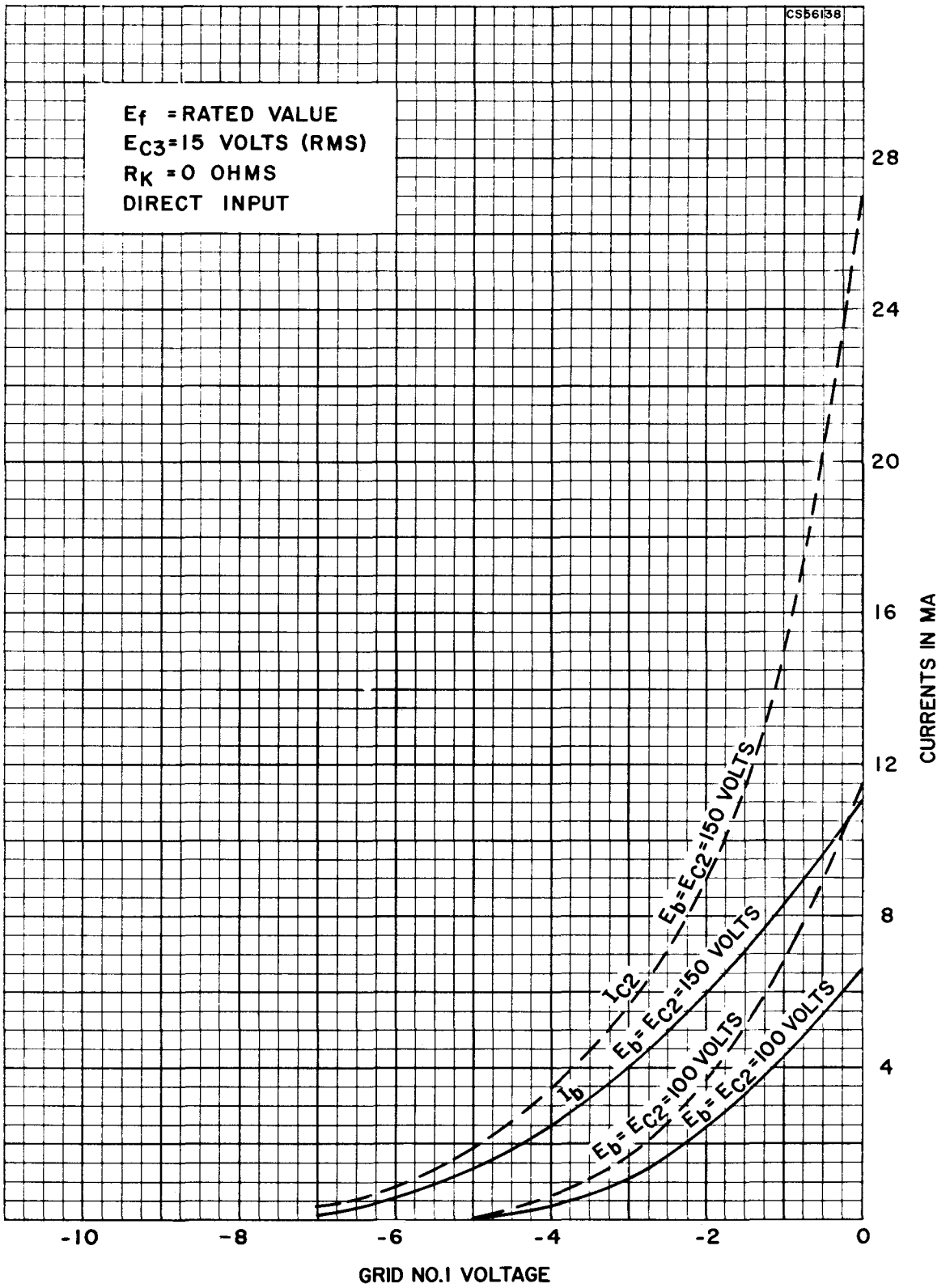

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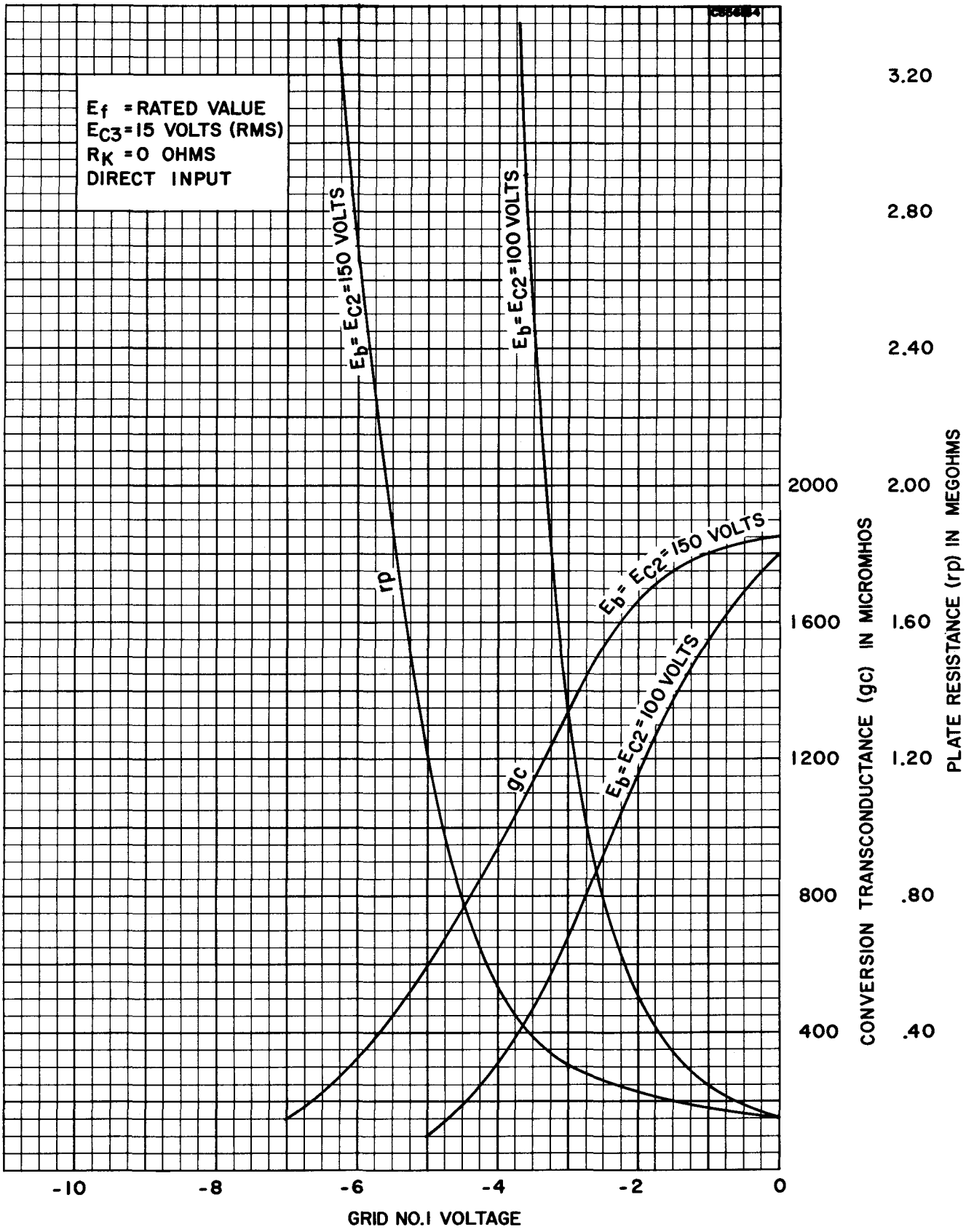

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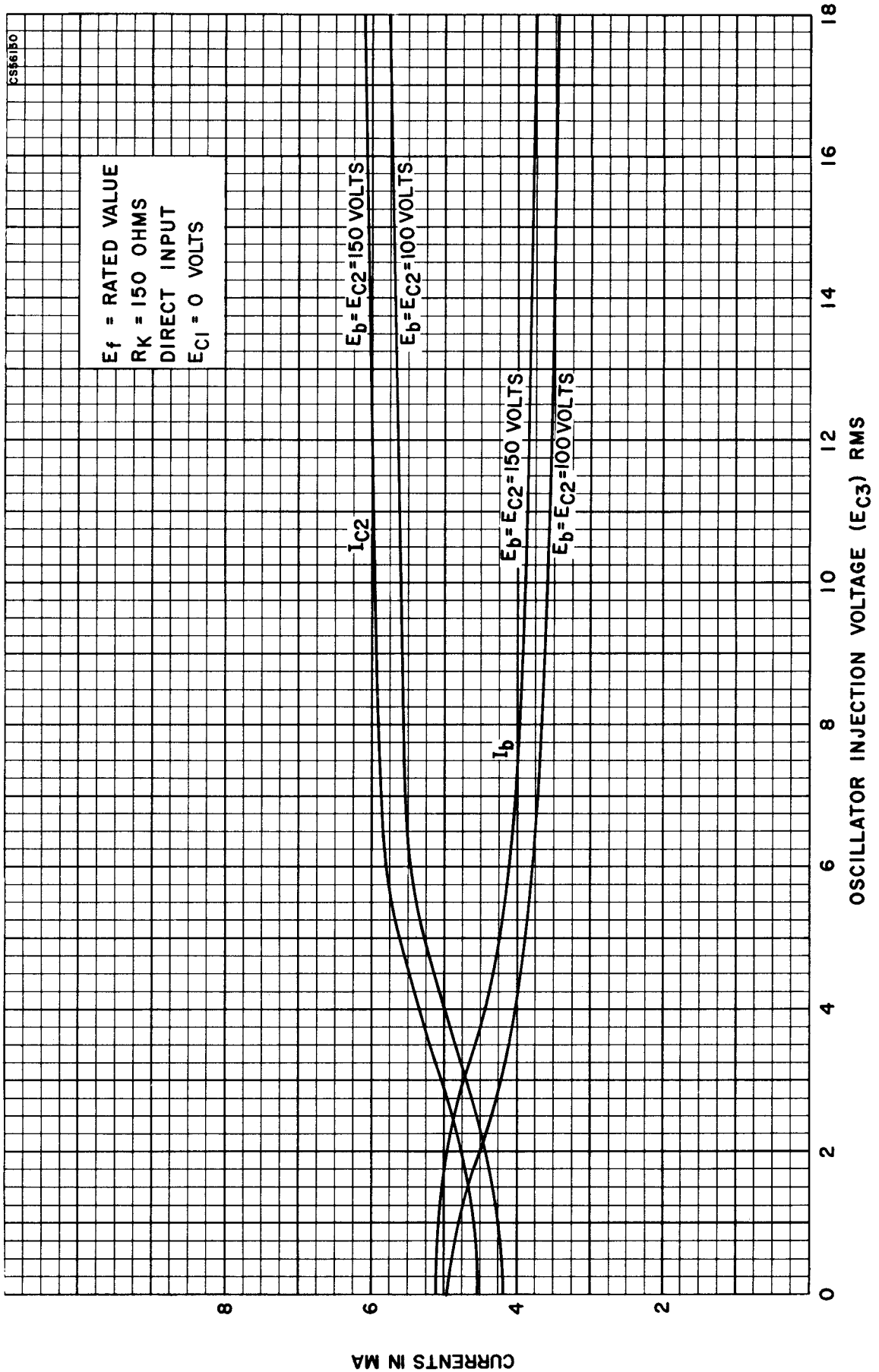
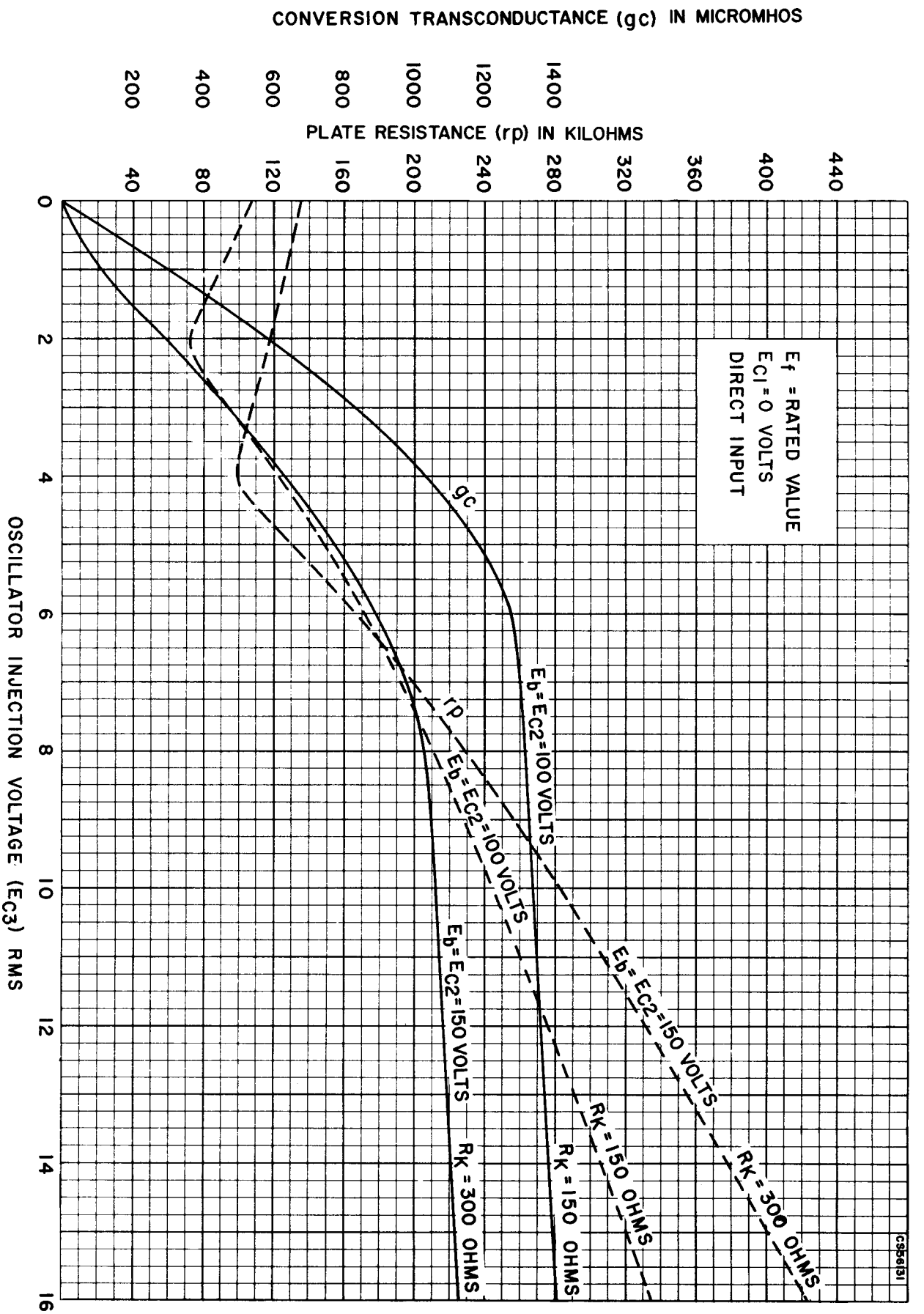
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