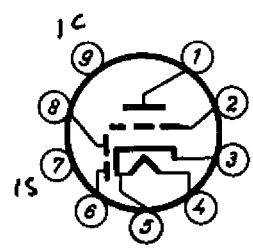
Type 6BD7

Double Diode-Triode for A.F. Amplification, Detection and A.G.C.

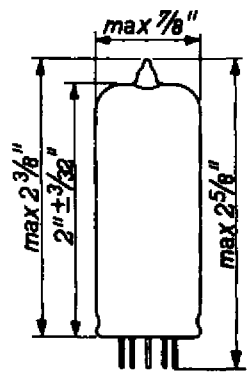
Physical Specifications

Cathode	Coated unipotential
Base	Small button noval 9-pin
Bulb	T 6½
Maximum overall length	2-5/8 inches
Maximum seated height	2-3/8 inches
Bulb length excluding tip	2±3/32 inches
Maximum diameter	7/8 inches
Mounting position	any
Basing connections - JETEC basing designation	9Z-0-7

Pin 1 - Plate
Pin 2 - Grid
Pin 3 - Cathode
Pin 4 - Heater
Pin 5 - Heater
Pin 6 - Diode No. 1
Pin 7 - Internal shield
Pin 8 - Diode No. 2
Pin 9 - Internal connection



9Z-0-7



General Electrical Data

Heater voltage	6.3 volts
Heater current	0.23 amperes

Direct interelectrode capacitances

Triode plate to cathode	1.3	μμF
Grid to cathode	2.4	μμF
Triode plate to grid	1.3	μμF
Grid to heater	max. 0.05	μμF
Diode No.1 to cathode	0.8	μμF
Diode No.2 to cathode	0.75	μμF
Diode No.1 to heater	max. 0.3	μμF
Diode No.2 to heater	max. 0.05	μμF
Diode No.1 to diode No.2	max. 0.05	μμF

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from RMA release #837, March 15, 1950

Direct interelectrode capacitances (continued)

Diode No.1 to grid	max. 0.01	μμF
Diode No.2 to grid	max. 0.01	μμF
Diode No.1 to triode plate	max. 0.005	μμF
Diode No.2 to triode plate	max. 0.015	μμF

Maximum Ratings

Triode section

Plate voltage (without current)	550 volts
Plate voltage	300 volts
Plate dissipation	0.5 watts
Cathode current	5 milli-amps
Grid voltage at grid current = +0.3 μa	-1.3 volts
External resistance between grid and cathode	3 megohms[1])
External resistance between heater and cathode	20,000 ohms
Voltage between heater and cathode	100 volts

Diode section

Plate voltage (peak value)	200 volts
Plate current	0.8 milli-amps
Plate voltage at plate current = +0.3 μa	-1.3 volts
External resistance between heater and cathode	20,000 ohms
Voltage between heater and cathode	100 volts

TYPICAL CHARACTERISTICS OF THE TRIODE SECTION

Plate voltage	250 volts
Grid voltage	-3 volts
Plate current	1.0 milli-amps
Transconductance	1200 micromhos
Gain factor	70
Plate resistance	58,000 ohms

[1]) The maximum value of this resistance is 22 megohms when the grid bias is only obtained by the voltage drop across the grid leak.

OPERATING CONDITIONS OF THE TRIODE SECTION

Supply voltage = 250 volts

Plate resistor	0.22	0.1	0.22	0.1 megohms
Cathode resistor	1800	1200	0	0 ohms
Grid leak	1	1	10	10 megohms
Grid leak of the output tube	0.68	0.33	0.68	0.33 megohms
Plate current	0.70	1.15	0.76	1.40 milli-amps
Gain	51	43	52	44
Distortion at an output voltage of 5 $volts_{rms}$	0.55	0.6	0.5	0.7 per cent
Distortion at an output voltage of 10 $volts_{rms}$	0.9	1.1	0.75	0.9 per cent

In circuits with a 5 % speaker this tube may be used without special precautions against microphonic effect, if the input voltage for an output of 50 milliwatts of the output tube exceeds 10 milli-volts.

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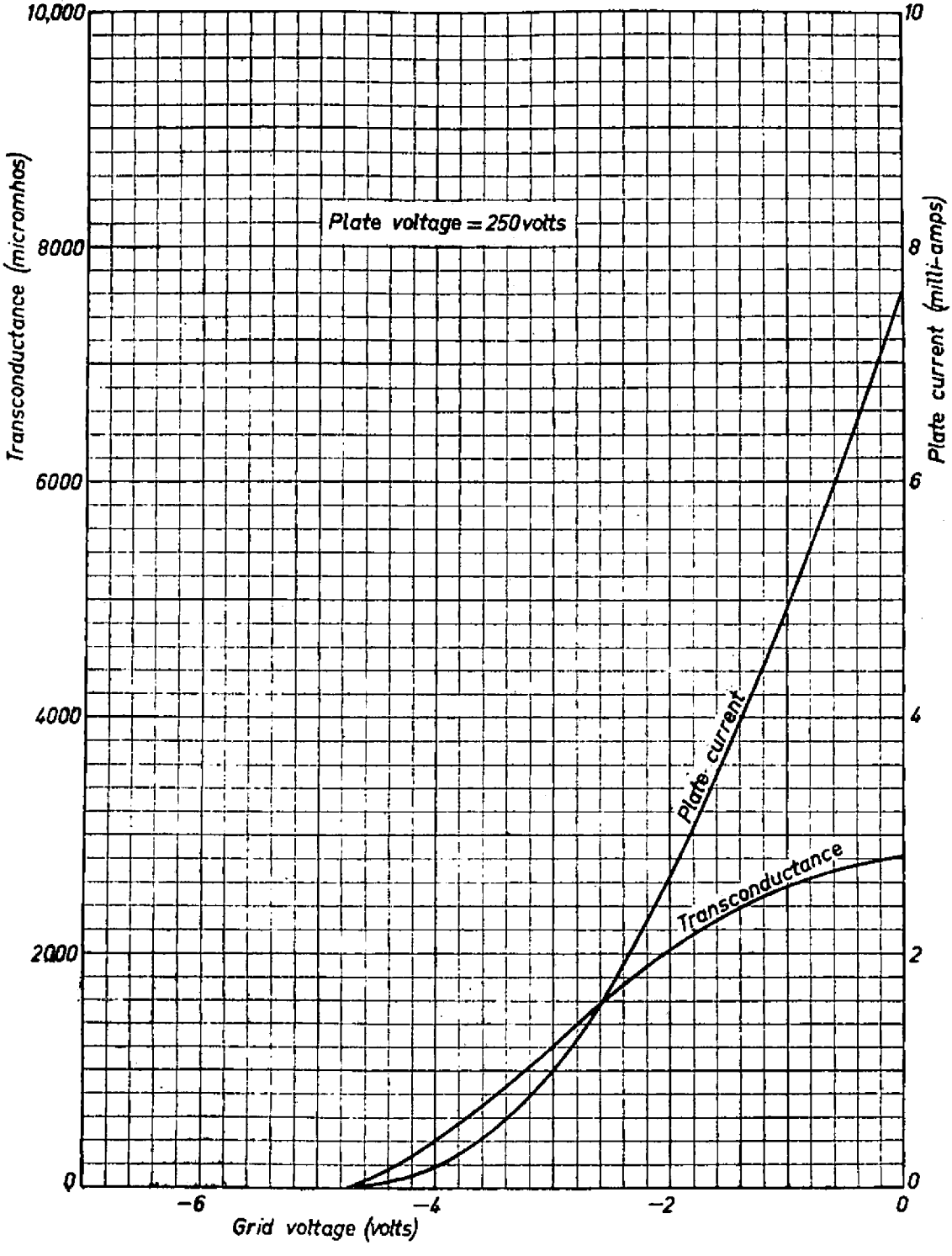
10,000
8000
6000
4000
2000
0
Transconductance (micromhos)
10
8
6
4
2
0
Plate current (milli-amps)
Plate voltage = 250 volts
Plate current
Transconductance
−6
−4
−2
0
Grid voltage (volts)

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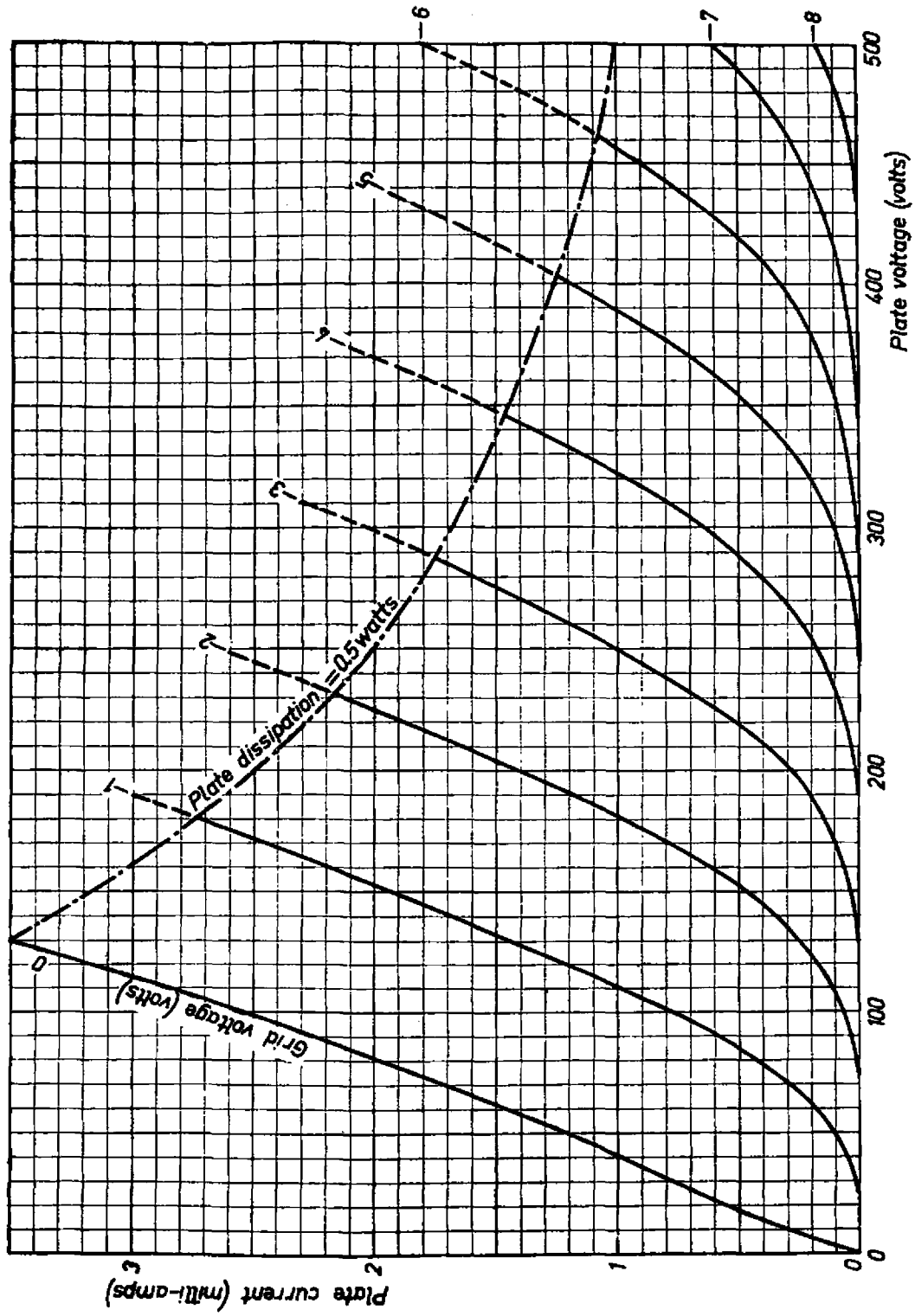
Plate current (milli-amps)
Plate voltage (volts)
Grid voltage (volts)
Plate dissipation = 0.5 watts
0
1
2
3
4
5
6
7
8
9
0
100
200
300
400
500

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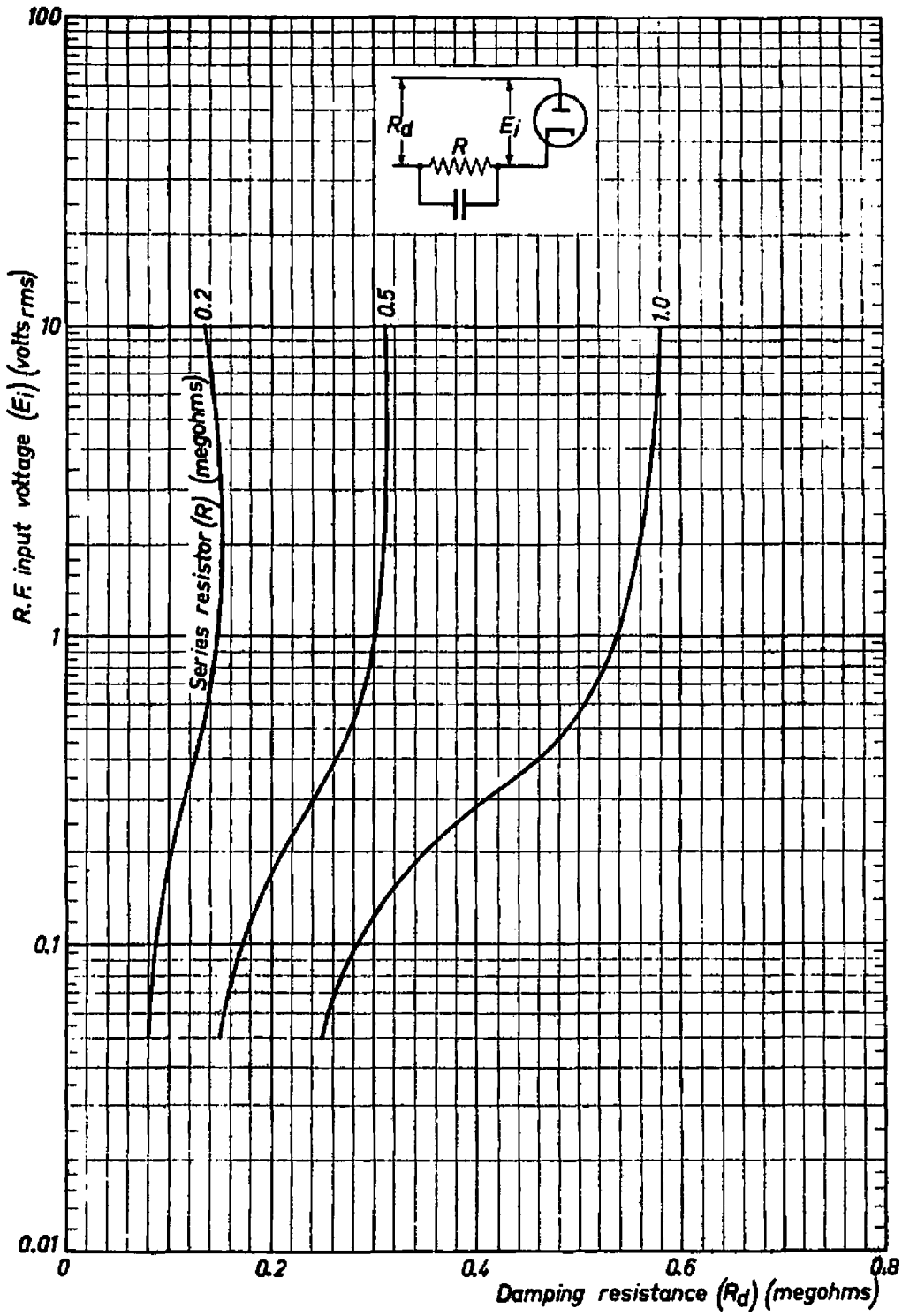
100
10
1
0.1
0.01
0
0.2
0.4
0.6
0.8
R.F. input voltage (Ei) (volts rms)
Damping resistance (Rd) (megohms)
Series resistor (R) (megohms)
0.2
0.5
1.0
Rd
R
Ei