



THERMISTORS

Type B

Type B are indirectly heated, bead-type thermistors.

The thermistor element consists of a small bead of resistance material, about 0.02 in. diameter, which is integrally formed on two parallel platinum wires that are both carried right through the bead and, in assembly, connection is made to both ends of the wire. This gives the assembly greater rigidity and increases the reliability of the thermistor.

The heater surrounding the element is a rigid coil of special design which ensures maximum concentration of heat on the resistance bead. The resistance of the heater (which has a negligible temperature coefficient) is 100 ohms.

The thermistor sub-assembly comprises the bead, an insulating cement and the heater coil. Careful check-testing of bead and heater, both before and after assembly, maintains a high standard of reproducibility between thermistors of a type.

The assembly is sealed in a bulb, evacuated and gettered and thus provides a high vacuum thermistor.

GENERAL DATA

Resistance element: indirectly heated bead

Mounting: glass bulb, evacuated

Weight: 3 gm

Lead wire diameter: 0.016 in.

Tolerance on resistance at 20°C: $\pm 20\%$

Heater resistance: 100 ohms $\pm 5\%$

Maximum heater current: 20 mA

Heater efficiency: 90%

Total maximum power dissipation in bead and heater: 40 mW

Power sensitivity: 5°C/mW

Maximum operating ambient temperature: 150°C

Dissipation constant: 0.2 mW/°C

Average thermal time constant: 18 seconds

Maximum voltage factor: 22

Maximum voltage (heater to thermistor): 30

August 1960

B—1



Standard Telephones and Cables Limited

Registered Office: Connaught House, Aldwych, W.C.2

TRANSISTOR DIVISION, FOOTSCRAY, KENT

Tel.: Footscray 3333

THERMISTORS

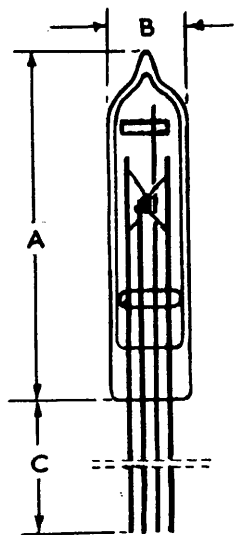


Type B

STANDARD RANGE

Resistance at 20°C (ohms)	Average Resistance with 40 mW dissipation (ohms)	Emax. 20°C (Volts)	Maximum Bead Current I _H = 0 (milliamps)	*α (Temperature Coefficient) at 20°C (%/°C)	B	Code
500 000	800	32	7	-5.6	4 800	B55
200 000	450	20	9	-5.3	4 500	B25
100 000	350	14	10	-5.1	4 400	B15
50 000	150	10	16	-4.8	4 100	B54
20 000	90	6.5	20	-4.6	3 900	B24
10 000	50	4.5	26	-4.3	3 600	B14
5 000	30	3.3	35	-4.1	3 500	B53
2 000	20	2.2	42	-3.7	3 100	B23
1 000	15	1.6	49	-3.5	2 900	B13
500	10	1.3	60	-3.4	2 800	B52

$$* \alpha = \frac{-B}{T^2}$$



TYPE B

Dim.	Millimetres	Inches
A	44.5 max.	1 ³ / ₄ max.
B	9.5 app.	³ / ₈ app.
C	38.1 min.	1 ¹ / ₂ min.

Applications of Type B thermistors include automatic gain control, remotely controlled variable resistors, power measurement, etc.

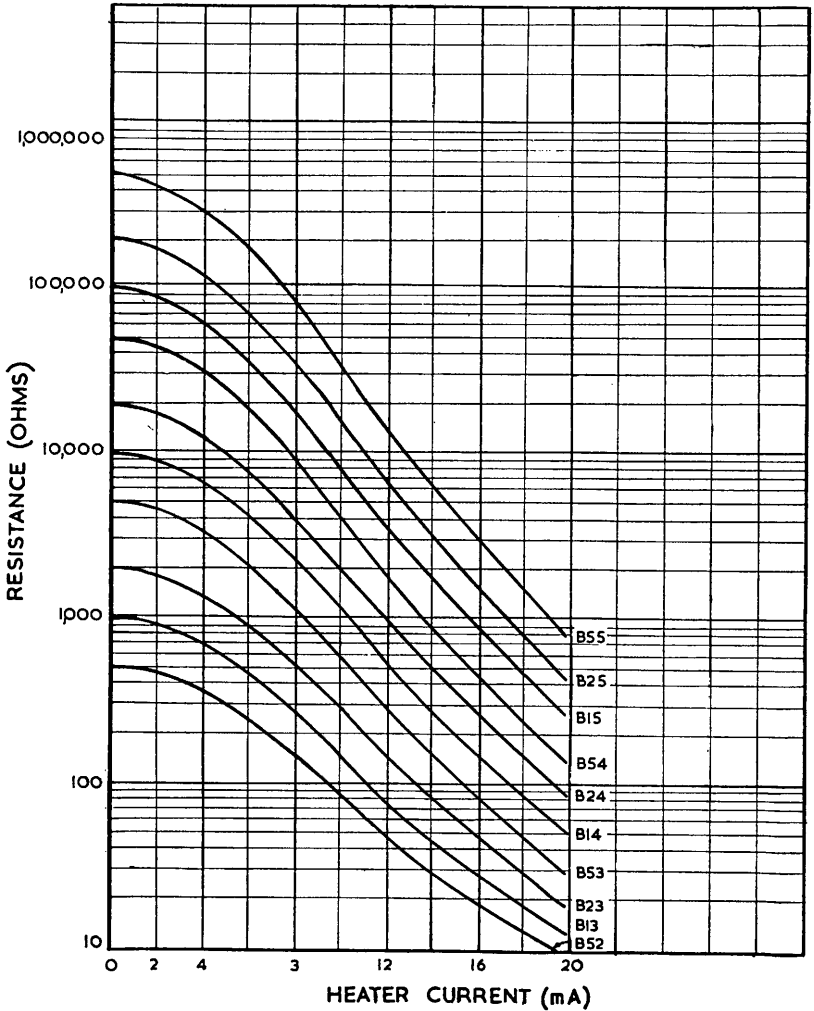
See overleaf for details of characteristics.



THERMISTORS

Type B

Typical Resistance v. Heater Current Characteristics

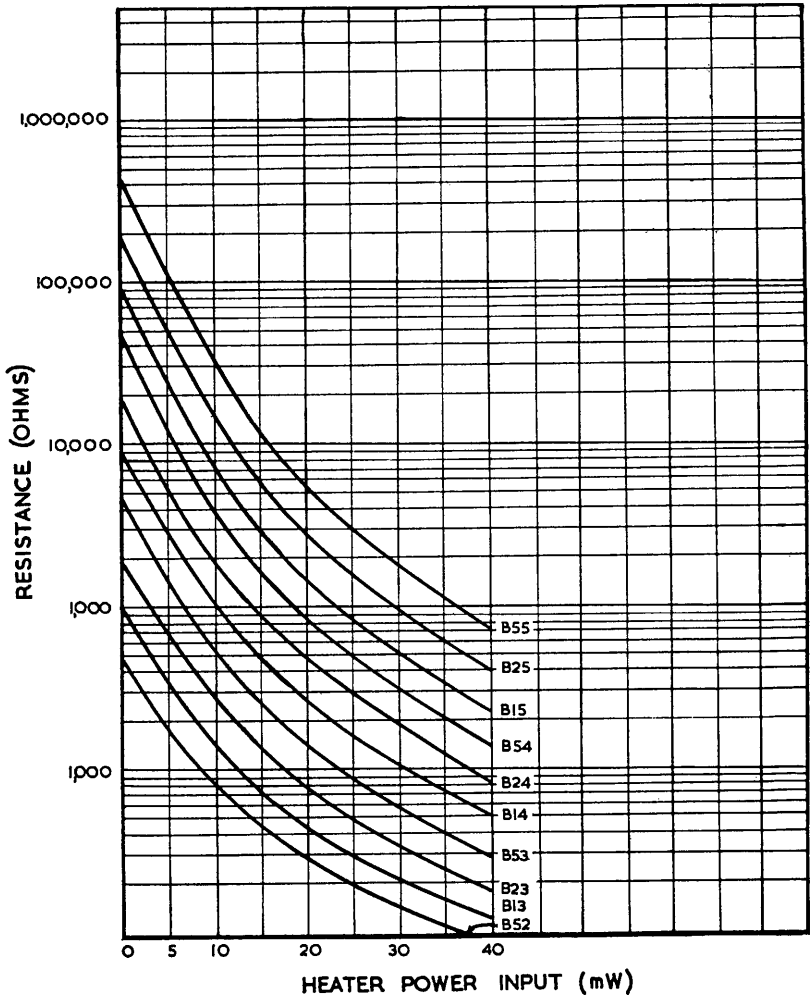


THERMISTORS



Type B

Typical Resistance v. Heater Power Unit Characteristics

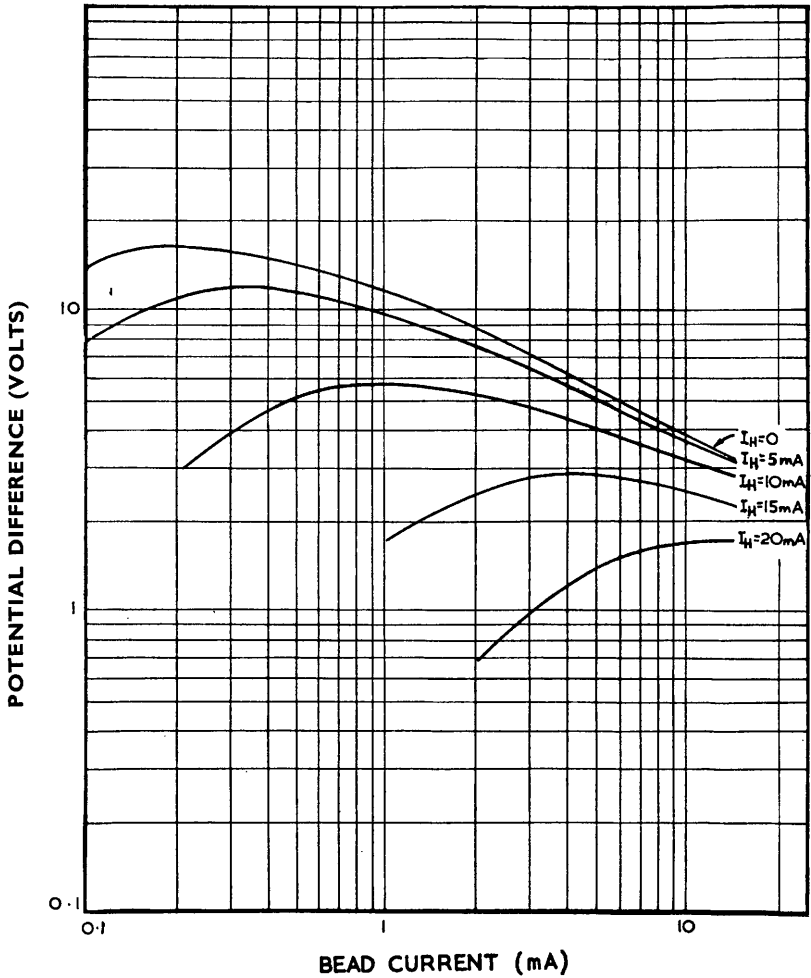




THERMISTORS

Type B

Voltage v. Current Characteristics



THERMISTORS



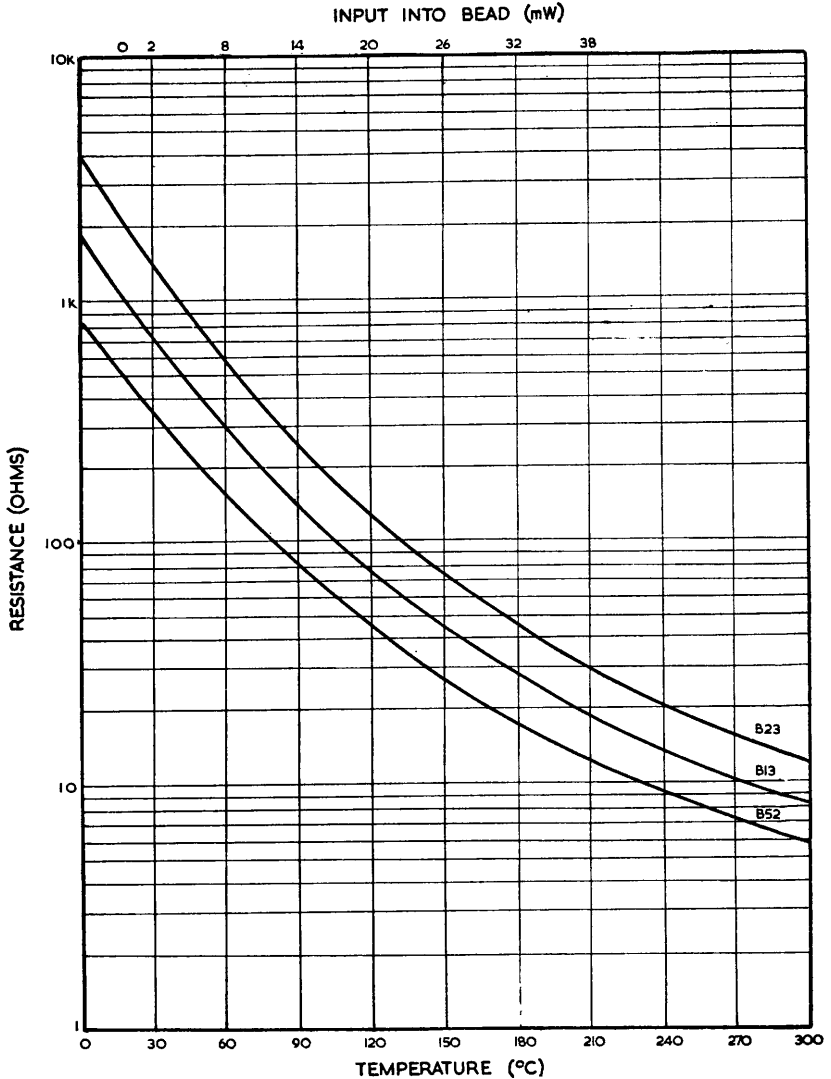
Type B

Resistance v. Temperature Characteristics
and

Resistance v. Power Input into Bead

$1\Omega - 10k\Omega$

$T_{amb} = 20^\circ C$

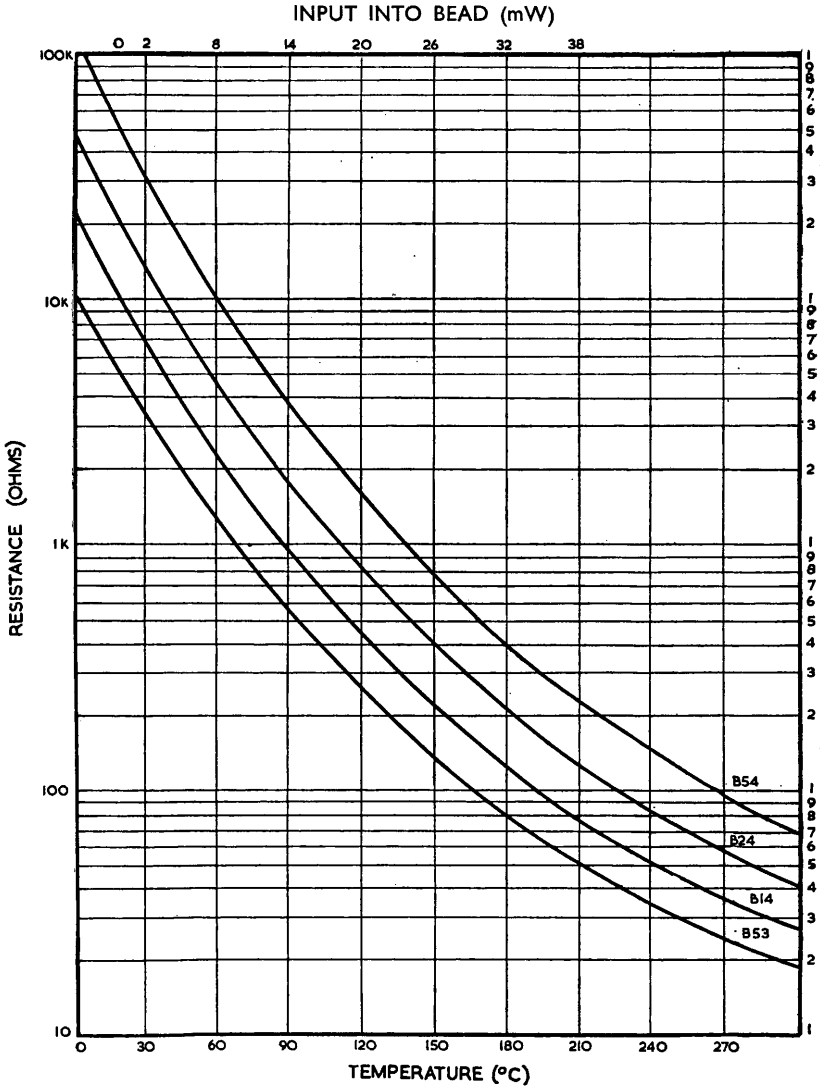




THERMISTORS

Type B

Resistance v. Temperature Characteristics
 and
 Resistance v. Power Input into Bead
 $10\Omega - 100k\Omega$
 $T_{amb} = 20^\circ C$



THERMISTORS

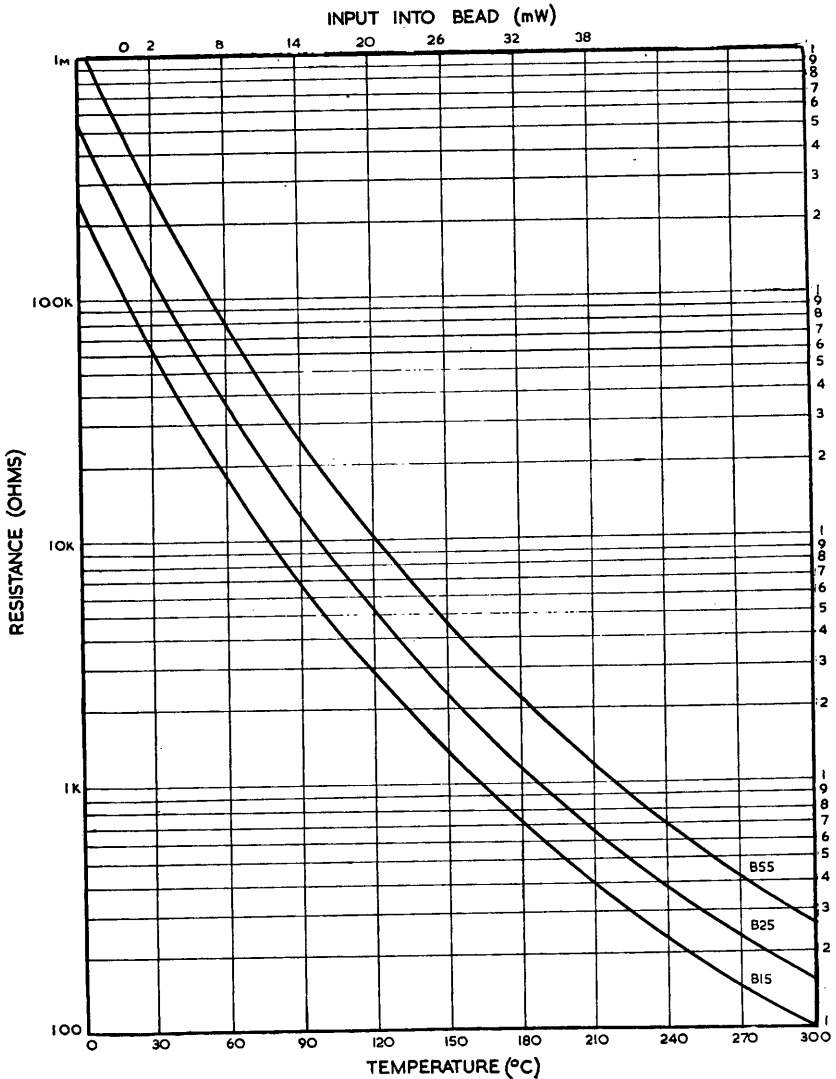


Type B

Resistance v. Temperature Characteristics
and

Resistance v. Power Input into Bead
100Ω - 1MΩ

$T_{amb} = 20^{\circ}\text{C}$





THERMISTORS

Type R

Type R are directly heated bead-type thermistors. The thermistor element consists of a very small bead, about 0.01 in. diameter which is integrally formed on two parallel platinum alloy wires. The platinum alloy leads are welded to cuplike leads and the assembly is sealed in an evacuated glass bulb.

Type R thermistors have been designed for operation at very low power levels and are particularly suitable for use in transistor circuits.

GENERAL DATA

Resistance element	directly heated bead
Mounting	glass bulb evacuated
Weight	2.5 g
Lead wire diameter	0.016 in.
Tolerance on resistance at 20°C	±20%
Safe power dissipation	3mW average
Maximum power dissipation for accurate temperature measurement	0.3mW
Power sensitivity	50°C/mW
Dissipation constant	0.02mW/°C
Maximum voltage factor	80
Thermal time constant	4.4 sec

STANDARD RANGE

Resistance at 20°C Ω	Minimum Operating Resistance Ω	Average current for minimum operating resistance mA	*α (Temperature Coefficient) at 20°C (%/°C)	B	Code
1 000 000	6 000	0.707	-6.0	5 200	R16
500 000	3 500	0.93	-5.6	4 800	R55
200 000	2 000	1.23	-4.9	4 200	R25
100 000	1 000	1.73	-4.3	3 700	R15
50 000	600	2.24	-4.1	3 500	R54
20 000	350	2.93	-3.9	3 300	R24
10 000	200	3.87	-3.7	3 100	R14
5 000	100	5.48	-3.5	3 000	R53
2 000	60	7.07	-3.0	2 600	R23
1 000	35	9.26	-3.0	2 500	R13
500	—	—	—	—	R52

$$* \alpha = \frac{-B}{T^2}$$

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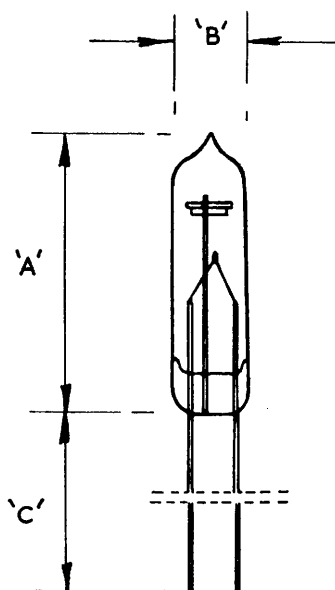
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Tel.: Footscray 3333

THERMISTORS



Type R



Dim.	Millimetres	Inches
A	30.18	1½ max.
B	9.52	$\frac{3}{8}$
C	38.10	1½ min.

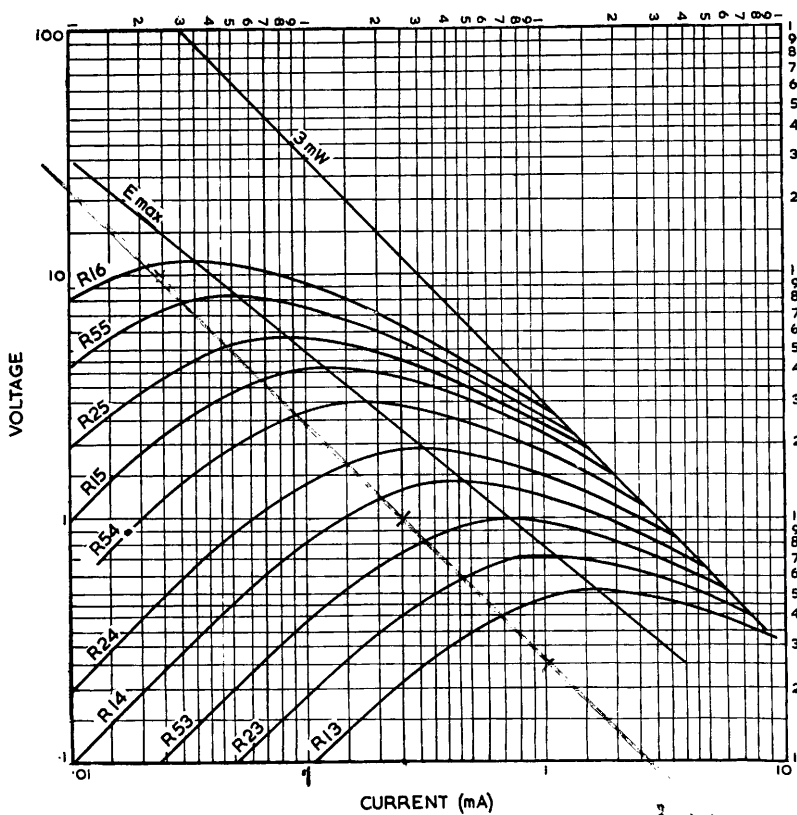


THERMISTORS

Type R

Voltage v. Current Characteristics

$$T_{\text{amb}} = 20^{\circ}\text{C}$$



THERMISTORS

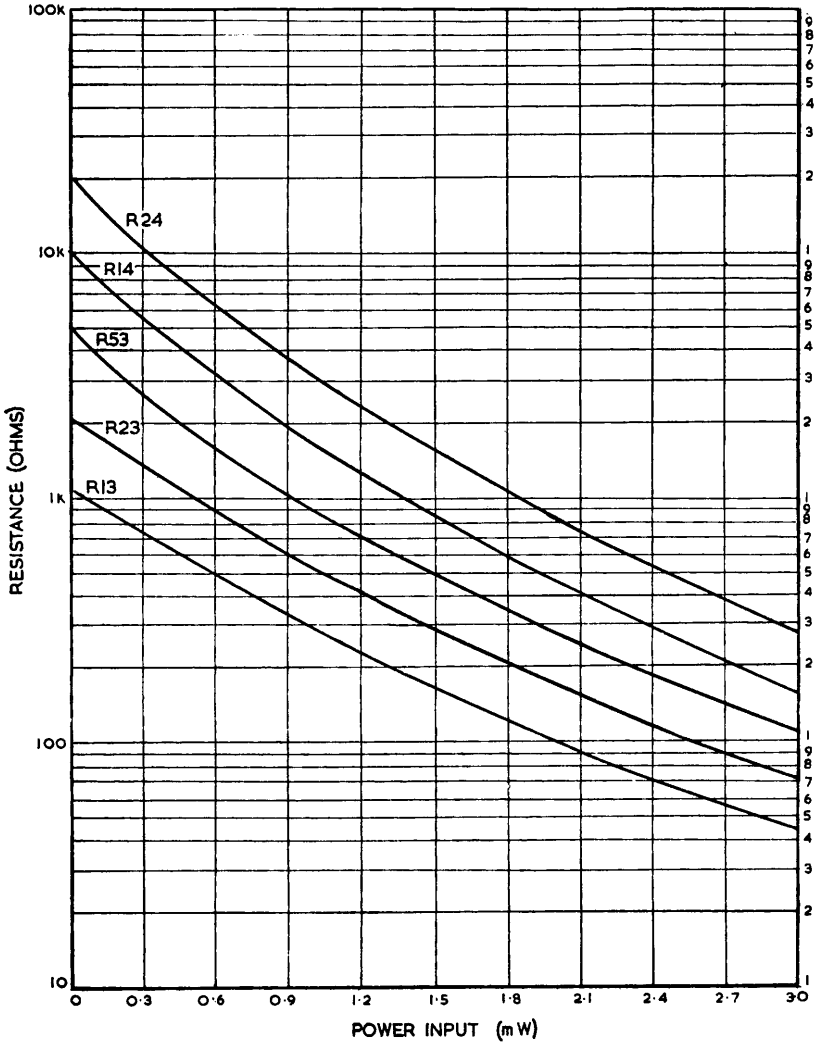


Type R

Resistance v. Power Input Characteristics

$10\Omega - 100k\Omega$

$T_{amb} = 20^\circ C$





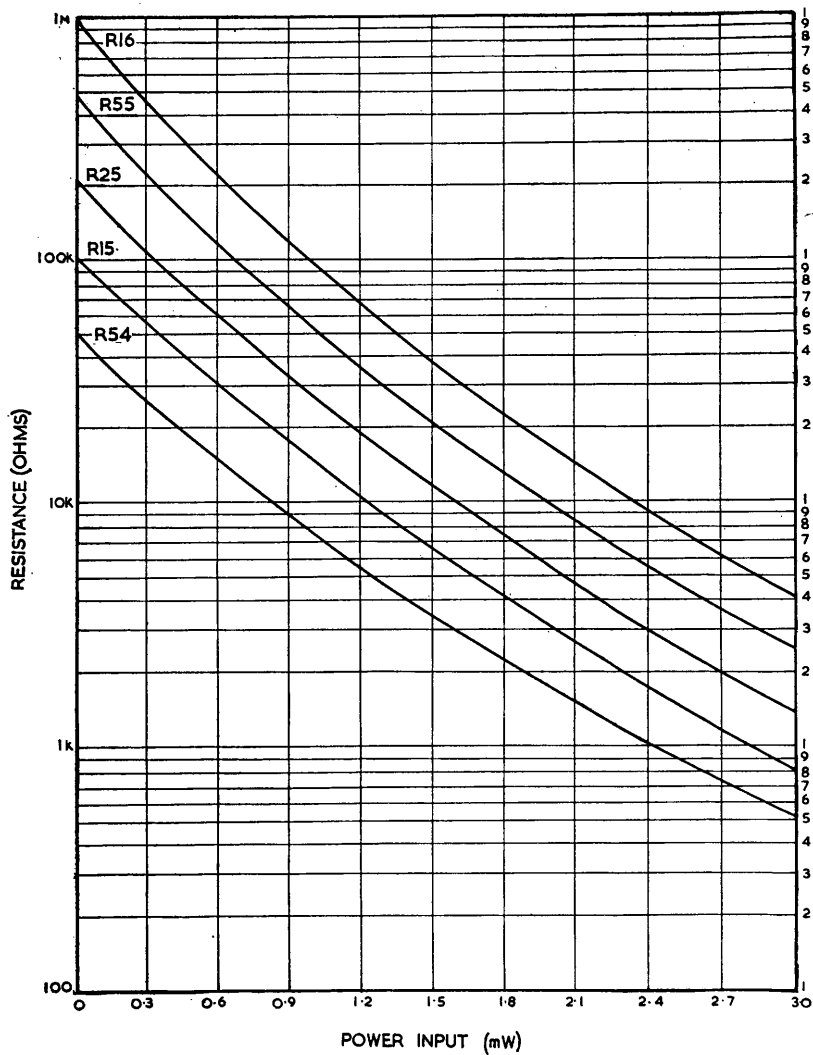
THERMISTORS

Type R

Resistance v. Power Input Characteristics

$100\Omega - 1M\Omega$

$T_{amb} = 20^{\circ}C$



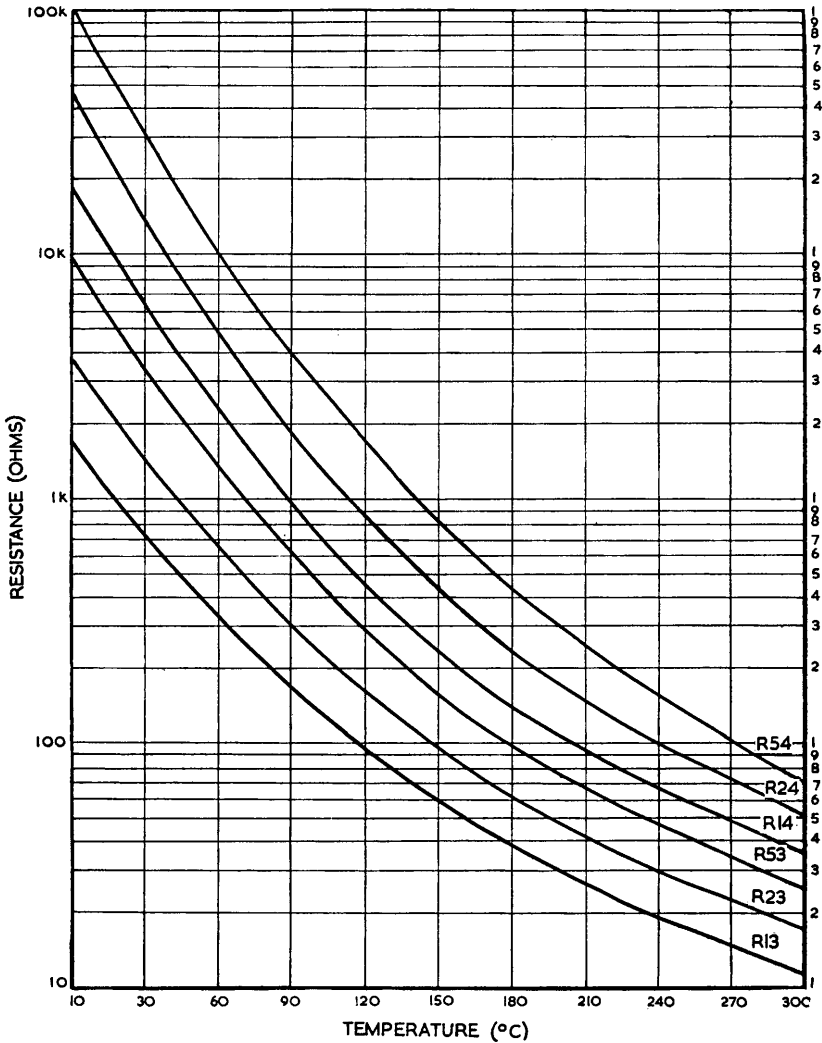
THERMISTORS



Type R

Resistance v. Temperature Characteristics

10 Ω - 100k Ω





THERMISTORS

Type R

Resistance v. Temperature Characteristics

100Ω - 1MΩ

