Standard Metal Film Resistor .40 Watt 1% and 5%

5043E Series (2322 188/181....)

FEATURES

- Low Cost
- Low Noise

DESCRIPTION

A homogeneous film of metal alloy is deposited on a high grade ceramic body. After a helical groove has been cut in the resistive layer; solder plated, copper leads are welded onto the end caps. The resistors are coated with a light green lacquer which provides electrical, mechanical, and climatic protection. The encapsulation is resistant to all cleaning solvents in accordance with MIL-STD-202E, Method 215 and IEC 68-2-45.

MASS: 25 g per 100 units

MOUNTING:

The resistors are suitable for processing on automatic insertion equipment in addition to cutting and bending machines. The minimum bending for this series is 10.2 mm (.400"). Figure 5 shows the temperature rise at the soldering point.

QUICK REFERENCE DATA

Resistance Range	1Ω to 10 MΩ; E24 Series 1Ω to 1 MΩ; E24/E96 Series "0 Ω", Jumper	
Resistance Tolerance	± 5% (E24) ± 1% (E24/E96)	
Temperature Coefficient R ≤ 1 MΩ R > 1 MΩ	5% ≤ ± 100 ppm/°C ≤ ± 250 ppm/°C	1% ≤ ± 100 ppm/°C
Abs. Max. Dissipation at T_{amb} = 70°C	0.40 W	
Thermal Resistance, R_{th}	200 °C/W	
Max. Continuous Operating Voltage	250 V (DC or RMS)	
Noise R ≤ 1 MΩ R > 1 MΩ	 max. 0.1 μV/V max. 1.5 μV/V	
Operating Temperature Range	-55°C to +155°C	
Basic Specification	IEC 115-1 and 115-2	
Stability (ΔR/R max) after: Load Climatic Tests Resistance to Soldering Heat Short Time Overload, 500 V max.	R ≤ 1 MΩ ±1.0% +0.05 Ω ±1.0% +0.05 Ω ±0.25% + 0.05 Ω ±0.25% + 0.05 Ω	R > 1 MΩ ±2% +0.05 Ω ±2% +0.05 Ω ±0.25% + 0.05 Ω ±1% +0.05 Ω

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MARKING

The nominal resistance and tolerance are marked on the resistors with a four band color code for 5% tolerance resistors and five band color code for 1% tolerance as described in "General Introduction - Leaded Resistors".The packing is also marked and includes resistance value, tolerance, TCR, catalogue number, quantity, production period, batch number, and source code.

ELECTRICAL DATA

Standard values of nominal resistance are taken from the E24 series for resistors with a tolerance of ±5% and E96 for resistors with a tolerance of ±1%. A decade chart is located inside the back cover.

The maximum continuous working voltage, or limiting voltage, (DC or RMS) is 250 V. This is the maximum voltage that may be continuously applied to the resistor element.

DISSIPATION

Maximum power dissipation as a function of ambient temperature is shown in Figure 2.

The 0 Ω, jumper has a maximum resistance R_{max} = 10 mΩ and a rated current I_R = 5 A.

PERFORMANCE NOMOGRAM

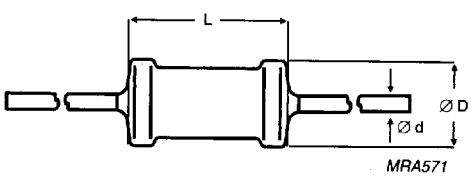

Fig. 1 Outlines.

Table I Component Dimensions

TYPE	D_{MAX} (mm)	L_{MAX} (mm)	d (mm)
5043E	.098" (2.5)	.256" (6.5)	.024" ± .002 (0.60 ± .05)

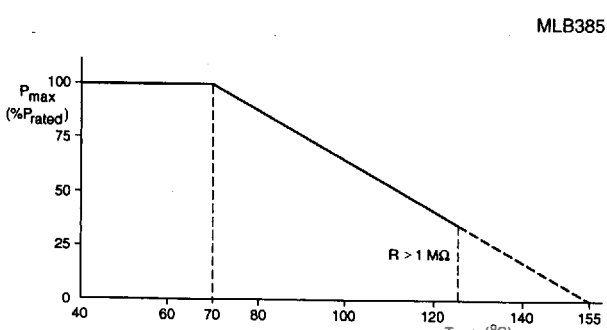

Fig. 2 Maximum dissipation (P_{max}) as a function of ambient temperature (T_{amb}).

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PERFORMANCE NOMOGRAM

Figure 3 gives a performance nomogram showing the relationship between the power dissipation (P), ambient temperature (T_{amb}), hot-spot temperature (T_m), resistance value (R), and maximum resistance drift ($\Delta R/R$) after 1000 hours of operation. The maximum hot-spot temperature is 155° C. Figure 4 gives the Hot-Spot Temperature Rise (ΔT) as a function of dissipated power. Figure 5 gives the temperature at the solder point as a function of dissipated power.

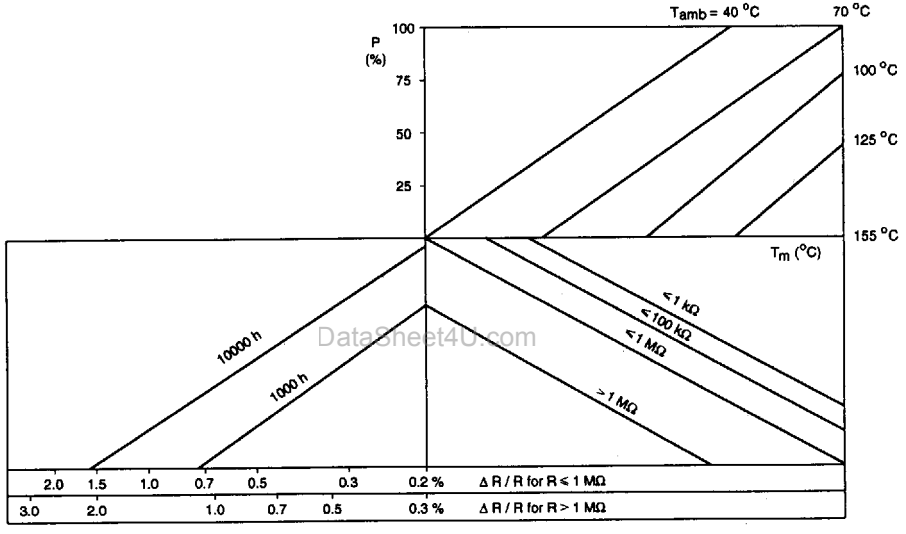

Fig. 3 Drift nomogram.

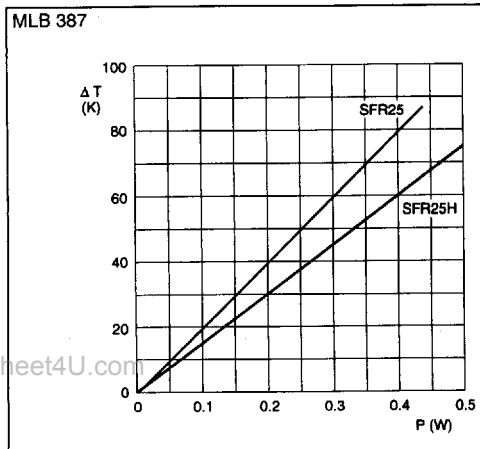

Fig. 4 Hot-spot temperature rise (ΔT) as a function of dissipated power.

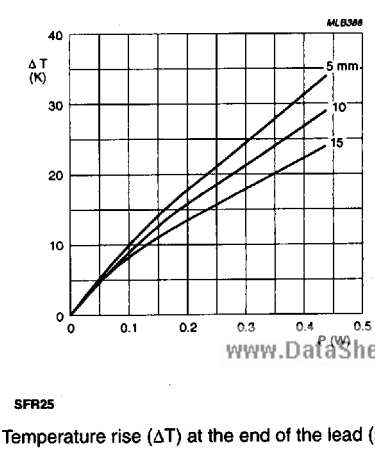

Fig. 5 Temperature rise (ΔT) at the end of the lead (soldering point) as a function of dissipated power at various lead lengths after mounting.

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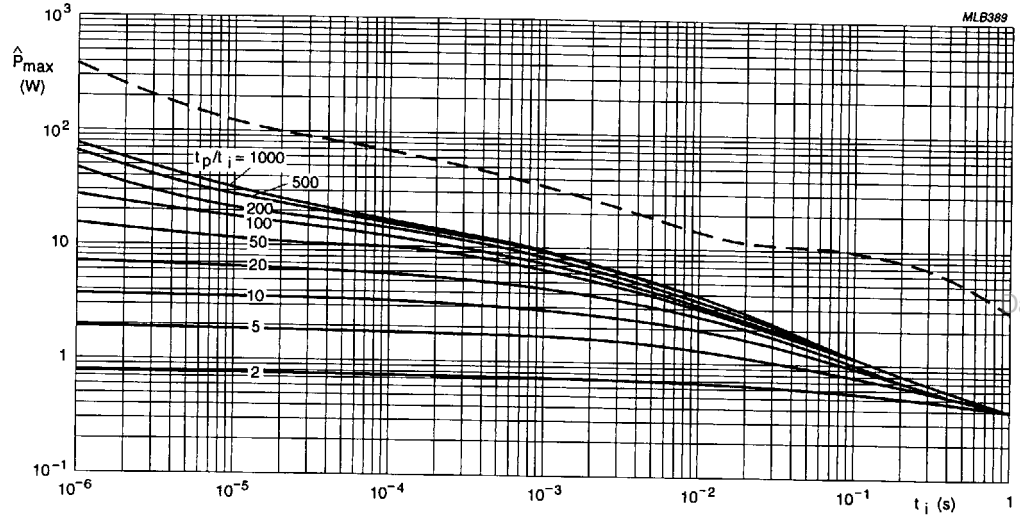

Fig. 6 Maximum permissible peak pulse power ($\hat{P}_{max}$) as a function of pulse duration (t_i).

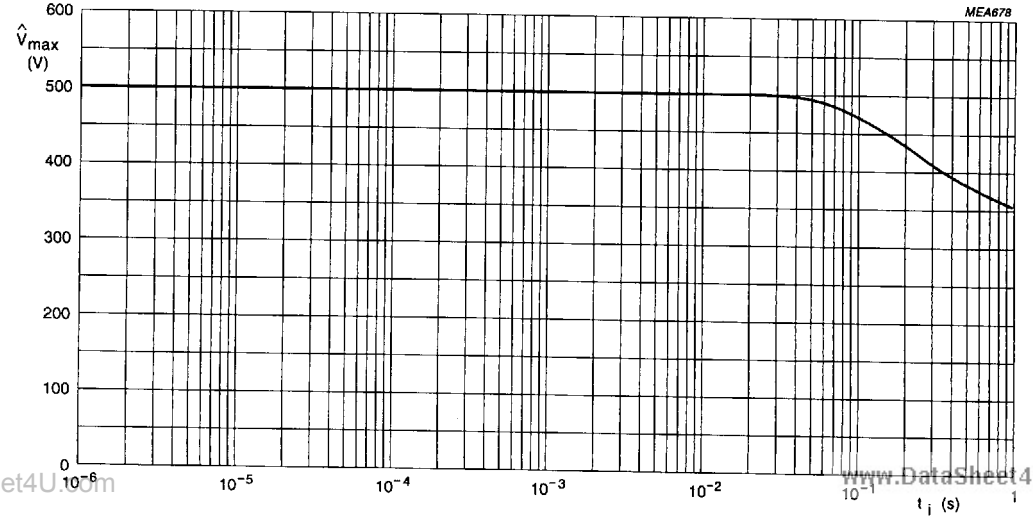

Fig. 7 Maximum permissible peak pulse voltage($\hat{V}_{max}$) as a function of pulse duration.

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PULSE LOAD BEHAVIOR

The Pulse Load Behavior is determined in accordance with the method outlined in the "General Section" for Leaded Resistors. The results are shown in Figures 6 and 7.

Table II North American Part Number by Tolerance and Range

Resistance Range	Tol. ± %	Series	Part Number 5000 Reel
1 Ω to 1 MΩ	1	E24/E96	5043ED. . . . .F
1 Ω to 10 MΩ	5	E24	5043EM. . . . .J

ORDERING INFORMATION

North American Part Number

The "....." in the part number represents the value of the resistor. The format of the value is composed of five digits. Place the significant figures, separated by a "R", "K", or "M" as the decimal place, and finish out the remainder of the five digits with "0's" if required.

Examples:

100 Ω = 100R0
51,000 Ω = 51K00
1,500,000 Ω = 1M500
4,750 Ω = 4K750
332,000 Ω = 332K0
49.9 Ω = 49R90

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International Part Number

Table III The resistor part numbers start with 2322 181 or 2322 188.
Subsequent digits indicate packaging and resistance as listed in this table and Table IV.

Resistance Range	Tol. ±%	Series	
			5000 Reel
1Ω to 1 MΩ	1	E24/96	2322 188 3....
1Ω to 10 MΩ	5	E24	2322 181 63...

Table IV To complete the part number insert the first two digits (for 1% parts, the first 3 digits) of the resistance value in ohms followed by:

Normal Resistance Range	Last Digit of Part Number
1 Ω to 9.76 Ω	8
10 Ω to 97.6 Ω	9
100 Ω to 976 Ω	1
1 KΩ to 9.76 KΩ	2
10 KΩ to 97.6 KΩ	3
100 KΩ to 976 KΩ	4
1 MΩ to 9.76 MΩ	5
10 MΩ	6

Examples:

±5%
100 Ω = 101
4,700 Ω = 472
51,000 Ω = 513
330,000 Ω = 334

±1%
100 Ω = 1001
1,210 Ω = 1212
68,100 Ω = 6813
449,000 Ω = 4494

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PACKAGING

The 5043E Series is available in tape and reel standard as well as ammo, bulk, and radial form on tape and reel as a special. For specials, contact the factory for dimensions and availability.

Table V Taping Dimensions, 5000 Reel
Values in inches (mm)

TYPE	a	A	$B_1 - B_2$ max.	S	T per 10 spacings
5043E	.236 ± .020 (6 ±0.5)	2.067±0.059 (52.5 ± 1.5)	±0.047 (± 1.2)	.200 (5)	0.039 (1)

Table VI Reel Dimension, 5000 Reel
Values in inches (mm)

TYPE	Q	R	V
5043E	12.00 (305)	3.39 (86)	2.95 (75)

Table VII Dimensions of Ammopack Box
Values in inches (mm)

TYPE	QUANTITY	M	N	P
5043E	5000	3.07 (78)	3.86 (98)	10.63 (270)