MFR – Electronic Components Pvt. Ltd.

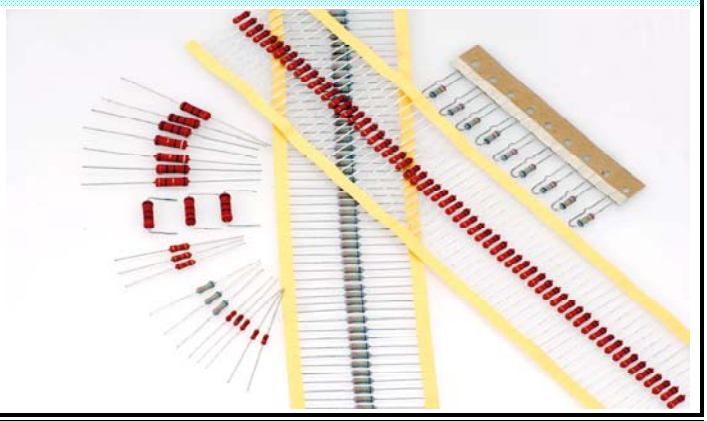
POWER METAL FILM RESISTORS

Series : MPR

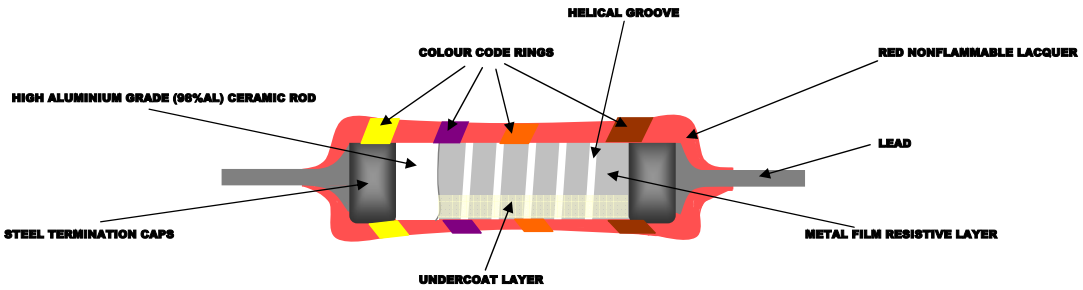
Features:

- High Power in small packages.

  Different lead materials for different applications
- Defined interruption behavior
- Lead (Pb)-free solder contacts
- Pure tin plating provides compatibility
- With lead (Pb)-free and lead containing soldering
- **RoHS** Compliant directive 2002/95/EC
- Red nonflammable lacquer



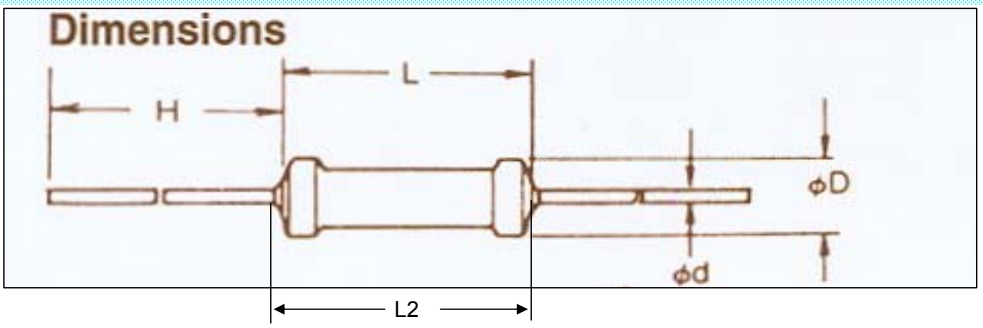
Construction :



Technical specification:

DESCRIPTION	SERIES		
	MPR01	MPR02	MPR03
Resistance range	0.22Ω ~ 1MΩ	0.33Ω ~ 1MΩ	0.68Ω ~ 1MΩ
Resistance tolerance	±1%, E24/E96 series; ±5%, E24 series		
Temperature coefficient	≤ 250 ppm/°C		
Maximum dissipation @ 70°C			
R< 1 Ohm	0.6W	1.2W	2W
1 Ohm ≤ R	1W	2W	3W
Maximum permissible voltage	350V	500V	750V
Climatic category	55/155/56		
Stability, R max.			
Load	△ R±(5.0% +0.10Ω)		
Climatic test	△ R±(3.0% +0.10Ω)		
Soldering	△ R±(1.0% +0.05Ω)		
Short time overload	△ R±(1.0% +0.05Ω)		

Dimensions :



Physical Data:

1.0 GENERAL SERIES SPECIFICATION :

TYPE	WATT. @ 70°C	TOL.	TCR PPM/°C	DIMENSIONS (mm) L	L2	D	d ± 0.05	H	RESISTANCE RANGE	MAX. WORKING VOLTAGE	MAX. OVERLOAD VOLTAGE
MPR01	1W	±1%, ±5%	≤250	6.5 ±0.5	8.5 MAX.	2.5 ±0.5	0.6	28 min	0.22Ω ~ 1MΩ	500V	1000 V
MPR02	2W	±1%, ±5%	≤250	10 ±0.5	12.0 MAX.	3.9 ±0.5	0.8	25 min	0.33Ω ~ 1MΩ	500V	1000 V
MPR03	3W	±1%, ±5%	≤250	15 ±1	17.0 MAX.	5.2 ±0.5	0.8	25 min	0.68Ω ~ 1MΩ	500V	1000 V

Note : Working voltage is $\sqrt{P \times R}$ where P is power & R is resistance in Ohms

Mass Per 100 Units :

TYPE	MASS (g)
MPR01 Cu 0.6mm	**21.2 g**
MPR02 Cu 0.8mm	**50.4 g**
MPR03 Cu 0.8mm	**119.2 g**

Marking:

The MPR series / type, the nominal resistance & tolerance are marked on the resistor body using four or five coloured bands in accordance with IEC publication 60062 "color codes for fixed resistors"

Material Specifications:

Element : Vacuum-deposited nickel-chrome alloy

Core : Fire cleaned high purity ceramic

End caps : Steel caps

Coating : Red nonflammable lacquer

Standard Terminals : Solderable - tinplated copper

Part Numbering Information:

Part Number : Type number, power rating, resistance value, tolerance, tcr.

MPR01	1W	220 KOhm	±1%	100 ppm/°C
Type	Power rating	Resistance value	Tolerance	TCR

Examples: PART NO. : MPR01, 1W, 220 KOhm, ±1%, 100ppm/°C

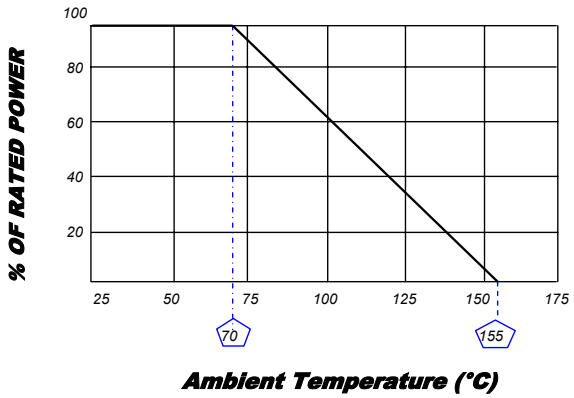
Packing Information:

TYPE	Pcs Per Poly Bag/ Blue box	Pcs Per Brown Box
MPRO1	1,000	5,000
MPRO2	500	1,500
MPRO3	---	1,000

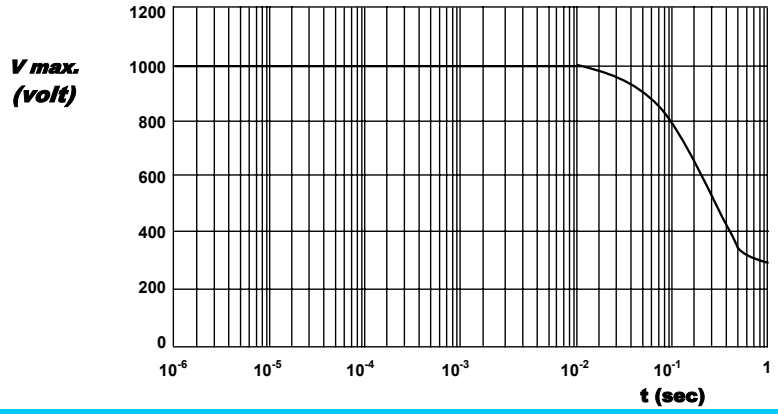
Performance Data (Procedure & Requirements):

TEST	PROCEDURE	REQUIREMENTS
Robustness Of Termination		
1. Tensile Test	Load 10 N for 10 sec.	No visual damage
2. Bend Test	Load 5 N 90° , 180°, 90°	No visual damage
3. Torsion Test	3 X 360° in opposite directions	No visual damage △R/R max.: ±(0.50% +0.05 Ω)
Solderability Test	16 hrs steam or 16 hrs. at 155°C 2 sec. ±0.5 sec. in solder at 235° ±5°C Using flux	>95% coverage covered (good tinning) & no damage
Resistance To Soldering Heat	at 260°C for 3 sec., 2.5mm from the body	△R/R max.: ±(1.0% +0.05 Ω)
Temperature Cycling	30 minutes at -55°C & 30 minutes at 150°C Total 5 number of cycles.	No visual damage △R/R max.: ±(1.0% +0.05 Ω)
Dry Heat Test	16 hrs at 150°C	△R/R max.: ±(1.0% +0.05 Ω)
Cold Test	2 hrs at -55°C	△R/R max.: ±(0.50% +0.05 Ω)
Short Time Overload	2.5 X Rated voltage for 5 sec. @ 25°C	△R/R max.: ±(1.0 +0.05 Ω)
Endurance @ 70°C	2000 hrs. load with Pn (power nominal) 1.5 hr. ON & 0.5 hr. OFF	No visual damage △R/R max.: ±(5.0% +0.1 Ω)
Endurance @ Upper Category Temperature	1000 hrs. at 150°C with no load	No visual damage △R/R max.: ±(5.0% +0.05 Ω)
Temperature Rise Test	Horizontally mounted, loaded with Pn	Hot spot temperature less than maximum body temperature
Damp Heat Steady State	56 days, 40°C; 90 to 95% Rh; dissipation ≤ 0.01Pn	No visual damage △R/R max.: ±(3.0% +0.05 Ω)
Temperature Coefficient	At 25/-55/25 °C & 25/150/25 °C	Within specified limits
Insulation Resistance	V- Block method for 1 minute duration At 500 V dc	> 10^3 MΩ
Voltage Proof Test	V- Block method for 1 minute duration At 500 V	No flash over or break down should observed
Pulse Load	---	See pulse load capabilities graphs

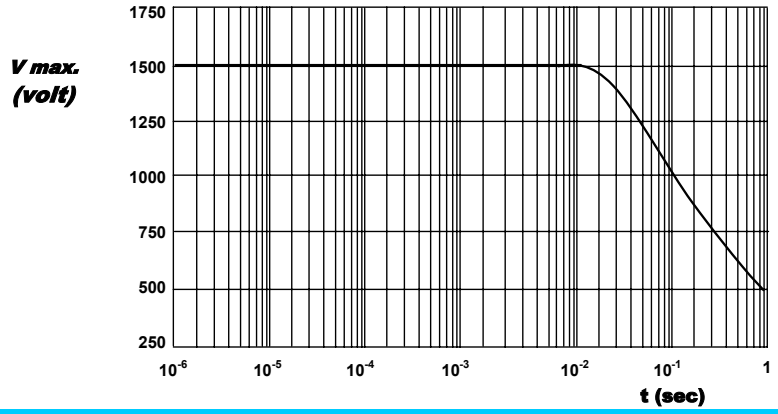
Derating Curve:



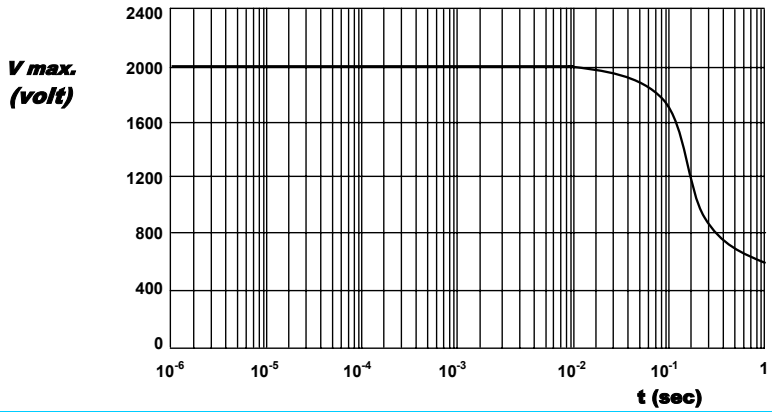
Pulse load capabilities:



MPRO1 ***Pulse on a regular basis: maximum permissible peak pulse voltage (V max.) as a function of pulse duration (t)***



MPRO2 ***Pulse on a regular basis: maximum permissible peak pulse voltage (V max.) as a function of pulse duration (t)***



MPRO3 ***Pulse on a regular basis: maximum permissible peak pulse voltage (V max.) as a function of pulse duration (t)***