

SINLOON®

模壓精密金屬膜電阻

HPMD Series

Moldings Precision Metal Film Resistor

Precision tolerance tight to $\pm 0.02\%$

Scope

This specification is available for Moulding Precision Metal Film Resistor manufactured by Mayloon. The resistor is manufactured highly quality-controlled process and guaranteed high reliability.

Features

- ◆ Power Rating :0.25W ~ 0.5W.
- ◆ Precision tolerance tight to A2(± 0.02).
- ◆ Precision metal film, good stability and reliability.
- ◆ Superior electrical TCR performances narrowed to ± 5 ppm/ $^{\circ}\text{C}$.
- ◆ Lead (Pb)-free and RoHS compliant, Covers all general type resistors.

Applications

- ◆ Medical electronics.
- ◆ Measuring and calibration equipment.
- ◆ High gain feedback applications.
- ◆ Precision Instruments, Avionics.
- ◆ Telecom.

ORDERING

Example: HPMD0727V100A2ST (1/4W 10R $\pm 0.05\%$ ± 5 ppm)

Type	Power	Resistance	Tolerance	T.C.R/ $^{\circ}\text{C}$	Package	Figure
HPMD0727	V = 1/4W	100 = 10 Ω	A2 = $\pm 0.02\%$	S = ± 5 ppm	B = Bulk	Fig-1
HPMD1040	U = 1/2W	101 = 100 Ω	A5 = $\pm 0.05\%$	B = ± 10 ppm	T = Tape Box	
		102 = 1K Ω	B = $\pm 0.1\%$	N = ± 15 ppm		
		103 = 10K Ω	C = $\pm 0.25\%$	C = ± 25 ppm		
		104 = 100K Ω		D = ± 50 ppm		

Fig-1



EXTERNAL DIMENSIONS

Type	Din Size	Dimensions (mm)			
		L	ΦD	Φd	H
HPMD 1/4W	0727	7.5 ± 0.5	2.7 ± 0.3	0.6 ± 0.05	26 ± 3.0
HPMD 1/2W	1040	10.5 ± 1.0	4.2 ± 0.5	0.6 ± 0.05	25 ± 3.0

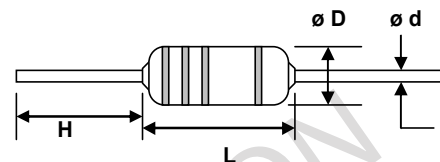


Fig-2

* The type designation shall be in the following form and as specified.

RATED STANDARD POWER

Type	Power	Max. Operating Vol.		Precision Tolerance			T.C.R $^{\circ}\text{C}$
		Working	Overload	$\pm 0.02\%$	$\pm 0.05\%$	$\pm 0.1\%$	
HPMD0727	1/4W	250V	500V	10~1M Ω	10~1M Ω	10~1M Ω	± 5 ppm
							± 10 ppm
							± 15 ppm
							± 25 ppm
HPMD1040	1/2W	300V	600V	10~1M Ω	10~1M Ω	10~1M Ω	± 5 ppm
							± 10 ppm
							± 15 ppm
							± 25 ppm
Operating Temperature Range:		-55 ~ +125 $^{\circ}\text{C}$					

* Rated power is maximum power which can continuously loaded at specified ambient temperature 70°C , however when the ambient temperature exceeds 70°C , rated power should be determined from the rating curve of Fig-3.

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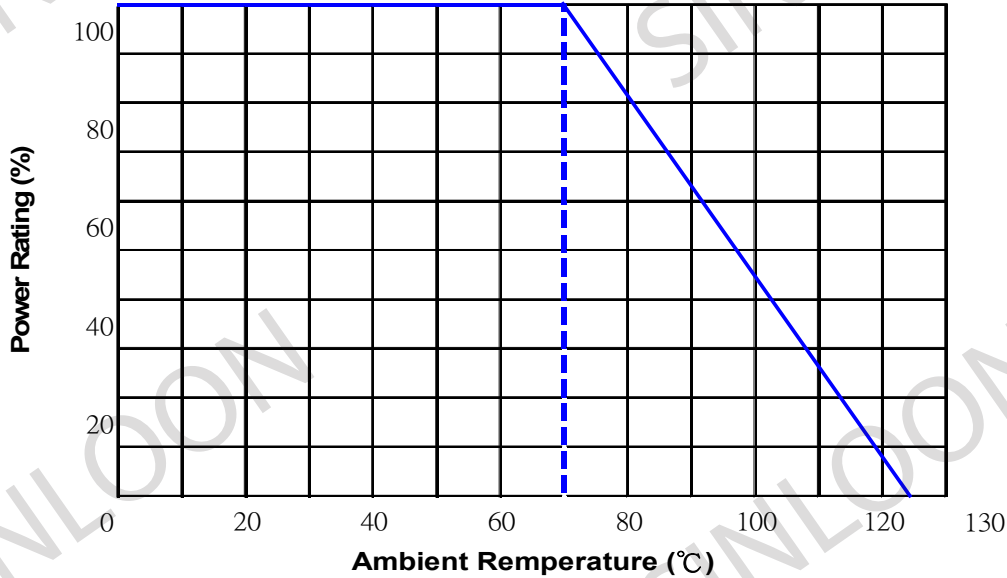
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□ POWER DERATING CURVE Fig-3



□ ENVIRONMENTAL CHARACTERISTICS

Item	Test Method	Requirement
Temperature Coefficient of Resistance (T.C.R)	Resistance value at room temperature and room temperature+60°C	As Spec.
Short Time Overload	RCWV*2.5 or Max.overload voltage for 5 seconds	±(0.15%+0.05Ω)
Insulation Resistance	Apply 500Vdc for 1 minute	> 1,000MΩ
Endurance	70±2°C, Max. working voltage for 1000 with 1.5hrs "ON" and 0.5 hrs "OFF"	±(0.5%+0.05Ω)
Damp Heat with Load	40±2°C, 90~95%R.H.Max. working voltage for 1000 with 1.5hrs "ON" and 0.5 hrs "OFF"	±(0.5%+0.05Ω)
Solderability	245±5°C for 5 seconds	95%min. Coverage
Resistance to Soldering Heat	350±10°C for 3 seconds after leat leave for 3 hours	±(0.1%+0.01Ω)
Terminal Strength	Tensile strength:for 10 sec.	Tensile: ≥ 2.5g
	Torsional strength:Rotated through 360°,5 rotations.	
Pulse Overload	4 times RCWV for 10000 cycles with 1 second "ON" and 25 seconds"OFF"	±(0.1%+0.01Ω)
Temperature Cycle	Low side : -55°C/30min.,Room temp. : 10 to 15 min.	±(0.5%+0.05Ω)
	High side : 85°C/30min.,Room temp. : 10 to 15 min.	
	5 cycles	
Resistance to Solvent	Trichoethane for 3 min. with ultrasonic	No deterioration of coatings and

■ Rated continuous Working Voltage (RCWV) $\sqrt{POWER \text{ RATING} \cdot RESISTANCE \text{ VALUE}}$

* Standard Test: MIL-STD-202, JIS-C 5201-1

* Control Room: 25±3°C Humidity: <80%RH

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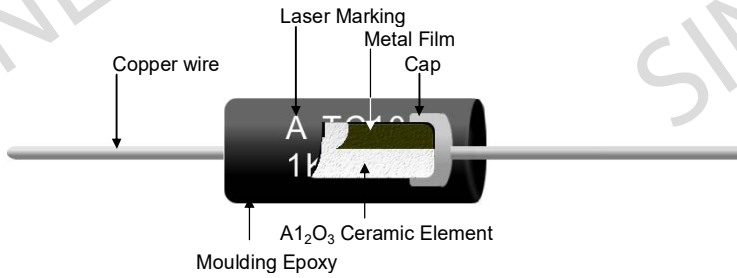
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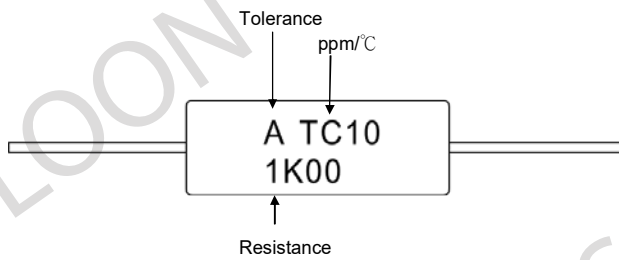
□ Structure Diagram

Fig-4



□ Resistance Body Marking

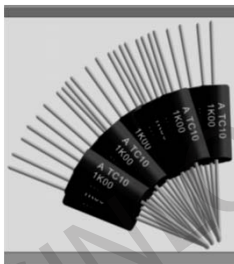
Fig-5



□ PACKAGE:

Type	Power	Form	Package Quantity		
			Plastic	Inner Box	Carton
HPMD0727	V = 1/4W	Axial	100 pcs	1000 pcs	100Kpcs
HPMD1040	U = 1/2W	Axial	50 pcs	500 ppcs	50K pcs

Plastic bag



Inner Box



Carton Package



※ 美隆公司產品規格及其特性參數的改變或更新恕不另行通知。

※ Mayloon characteristic parameters of electronic product specification changes or updates without notice to improve .

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□ Standard Resistor Color Code (4 band code)

Precision Metal	Black	Brown	Red	Orange	Yellow	Green	Blue	Violet	Gray	White	Gold	Silver
Quality-controlled	0	1	2	3	4	5	6	7	8	9		
2nd digit	0	1	2	3	4	5	6	7	8	9		
Multiplier	$\times 10^0$	$\times 10^1$	$\times 10^2$	$\times 10^3$	$\times 10^4$	$\times 10^5$	$\times 10^6$	$\times 10^7$	$\times 10^8$	$\times 10^9$		
Tolerance		$\pm 1\%$ (F)	$\pm 2\%$ (G)			$\pm 0.5\%$ (D)	$\pm 0.25\%$ (C)	$\pm 0.1\%$ (B)			$\pm 5\%$ (J)	$\pm 10\%$ (K)

□ Examples:

Fig-7 (E24) Resistor 560R 5%

Green, Blue, brown, silver tolerance band:
 $56 \times 10 = 560$ ohms (560 ohms), with a tolerance of 5%

Fig-8 (E24) Resistor 5.6K 10%

Green, blue, red, with silver tolerance band:
 $56 \times 100 = 5.6$ kohms, with a tolerance of 10%

□ Standard EIA Decade Resistor Value E24 series: (5% tolerance)
10, 11, 12, 13, 15, 16, 18, 20, 22, 24, 27, 30, 33, 36, 39, 43, 47, 51, 56, 62, 68, 75, 82, 91

□ Standard Resistor Color Code (5 band code)

Color	Black	Brown	Red	Orange	Yellow	Green	Blue	Violet	Gray	White	Gold	Silver
1st digit	0	1	2	3	4	5	6	7	8	9		
2nd digit	0	1	2	3	4	5	6	7	8	9		
3rd digit	0	1	2	3	4	5	6	7	8	9		
Multiplier	$\times 10^0$	$\times 10^1$	$\times 10^2$	$\times 10^3$	$\times 10^4$	$\times 10^5$	$\times 10^6$	$\times 10^7$	$\times 10^8$	$\times 10^9$		
Tolerance		$\pm 1\%$ (F)	$\pm 2\%$ (G)			$\pm 0.5\%$ (D)	$\pm 0.25\%$ (C)	$\pm 0.1\%$ (B)			$\pm 5\%$ (J)	$\pm 10\%$ (K)

□ Examples:

Fig-9 (E96) Resistor 280R $\pm 1\%$

$280 \times 1 = 280$ ohms (280 ohms), with a tolerance of 1%

Fig-10 (E96) Resistor 39.1K $\pm 5\%$

Orange, White, Brown, Red, Gold tolerance band:
 $390 \times 100 = 39.1$ K ohms (39.1K ohms), with a tolerance of 5%

E96 series: (1% tolerance)
100, 102, 105, 107, 110, 113, 115, 118, 121, 124, 127, 130, 133, 137, 140, 143, 147, 150, 154, 158, 162, 165, 169, 174, 178, 182, 187, 191, 196, 200, 205, 210, 215, 221, 226, 232, 237, 243, 249, 255, 261, 267, 274, 280, 287, 294, 301, 309, 316, 324, 332, 340, 348, 357, 365, 374, 383, 392, 402, 412, 422, 432, 442, 453, 464, 475, 487, 491, 511, 523, 536, 549, 562, 576, 590, 604, 619, 634, 649, 665, 681, 698, 715, 732, 750, 768, 787, 806, 825, 845, 866, 887, 909, 931, 959, 976