

SINLOON®

金屬膜電阻器

Resistance Range : 0.1R ~ 1MΩ

MFR Series

Metal Film Resistor

◆ ORDERING PROCEDURE:

Example: MFR050E4701FTB

Power:	Type:	T.C.R/°C	Resistance	Tolerance	Package
1/8W	MFR0125	S=±5ppm	0001=0.1Ω	F = ±1%	TB = T/Box.
1/4W	MFR025	B=±10ppm	0010=1Ω	D = ±0.5%	B = Bulk
1/2W	MFR050	N=±15ppm	0200=20Ω	C = ±0.25%	
1W	MFR100	C=±25ppm	3300=33Ω	B = ±0.1%	
2W	MFR200	D=±50ppm	4701=4.7KΩ		
		E=±100ppm	5602=56KΩ		
			1003=100KΩ		
			1004=1MΩ		

Figure



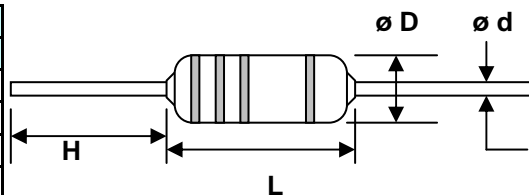
Resistor body color : Blue

◆ PRODUCT FEATURE:

- Low Noise
- Low T.C.R. 100ppm, 50ppm, 25ppm, 10ppm, 5 ppm.
- High Precision : ±1%, ±0.5%, ±0.25%, ±0.1%.
- Power : Standard Type: 1/8W ~ 2W
- Resistance Range: E96 10R ~ 1M ohm Tolerance Range: ±1%, ±0.5%
E192 100R ~ 100K ohm Tolerance Range: ±0.25% , ±0.1%.

◆ DIMENSION (mm)

Power:	STYLE	Dimension (mm)			
		L	ΦD	H	Φd
1/8W	MFR0125	3.3±0.4	1.8±0.3	29±2.0	0.45±0.03
1/4W	MFR025	6.3±0.5	2.3±0.3	29±2.0	0.55±0.03
1/2W	MFR050	9.0±0.5	3.2±0.5	26±2.0	0.65±0.03
1W	MFR100	11.5±1.0	4.5±0.5	35±2.0	0.78±0.03
2W	MFR200	15.5±1.0	5.0±0.5	32±2.0	0.78±0.03



◆ RATED POWER

Type	Power 70°C	Maximum Voltage		Dielectric withstanding Voltage (AC)	Max.intermittence Overload Voltage	Res. E96 Range(Ω)	Res. E192 Range(Ω)
		Working	Overload				
MFR0125	1/8W	200V	400V	300V	500V	0.1 ~1M	10R~100K
MFR025	1/4W	250V	500V	500V	600V		
MFR050	1/2W	350V	700V	500V	700V		
MFR100	1W	450V	1000V	1000V	1000V		
MFR200	2W	500V	1000V	1000V	1000V		
Operating temperature Range:		-55°C ~ 155°C					
Temperature Coefficient:		±15ppm/°C, ±25ppm/°C, ±50ppm/°C, ±100ppm/°C.					
Resistance Range:		E96 0.1R ~ 1M ohm Tolerance Range: ±1%, ±0.5% E192 100R ~ 100K ohm Tolerance Range: ±0.25% , ±0.1%.					

- Value Range for standard resistance, below over this resistance on request.

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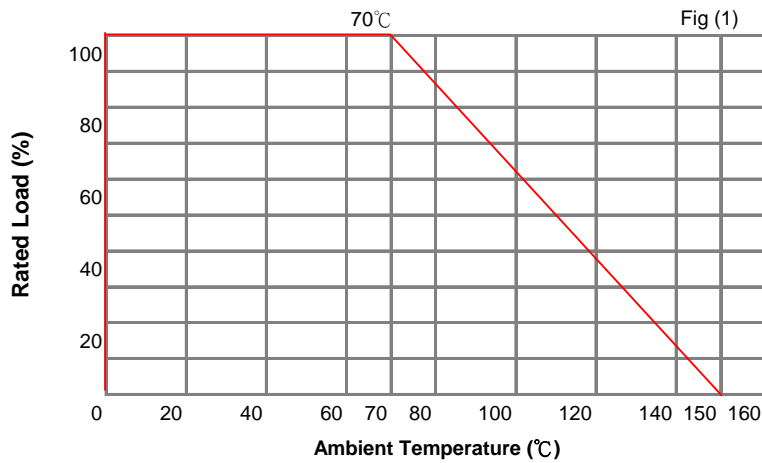


◆ ENVIRONMENTAL CHARACTERISTICS

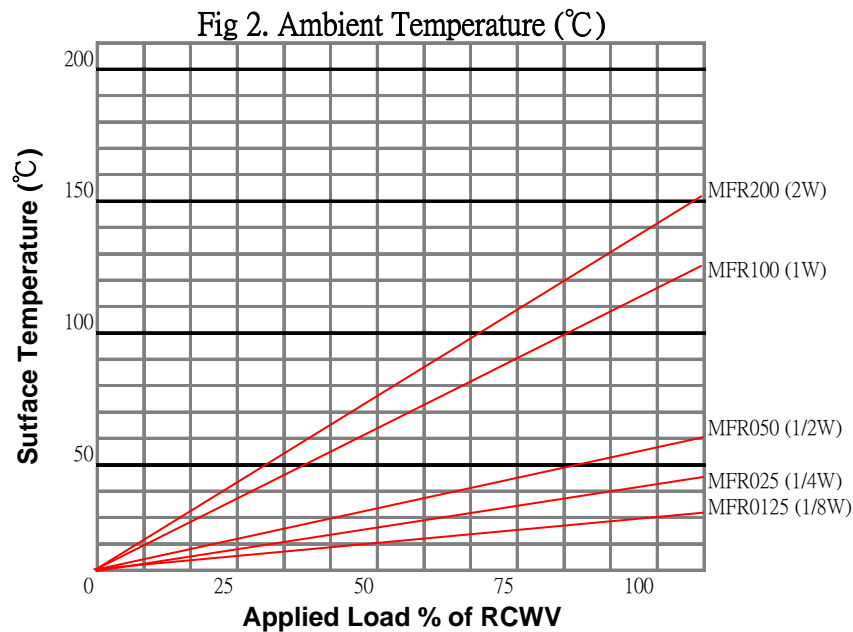
PERFORMANCE TEST	TEST METHOD	APPRAISE
SHORT TIME OVERLOAD	JIS-5202 5.5 2.5 times RCWV for 5 seconds.	±(0.25%+0.05Ω)
TEMPERATURE COEFFICIENT (T.C.R.)	Resistance value at room temperature and room temperature +100°C	By Type
DIELECTRIC WITHSTANDING VOLTAGE	JIS-C5202 5.7 in V-Block for 60 seconds.	By Type
PULSE OVERLOAD	JIS-C5202 5.8 4 times RCWV for 10000 cycles (1sec.on, 25secs.off)	±(0.75%+0.05Ω)
INSULATION RESISTANCE	JIS-C5202 5.6 In V-Block	>10000MΩ
LOAD LIFE	JIS-C-5202 7.10 70°C at RCWV for 1000hrs. (1.5hrs.on, 0.5hrs.off)	±(1.5%+0.05Ω)
LOAD LIFE IN HUMIDITY	JIS-C5202 7.9 40±2°C 90~95%RH at RCWV for 1000hrs.(1.5hrs.on,0.5hrs.off)	±(1.5%+0.05Ω)
SOLDER ABILITY	JIS-C5202 6.5 260±5°C for 2±0.5 seconds.	95% min. coverage
RESISTANCE TO SOLVENT	JIS-C5202 6.9 Trichroethane for 1 min. with ultrasonic.	No deterioration of coatings and markings.
TERMINAL STRENGTH	Direct load for 10 sec. In the direction off the terminal leads.	Tensile: ≥2.5kg

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

◆ POWER GRAPH

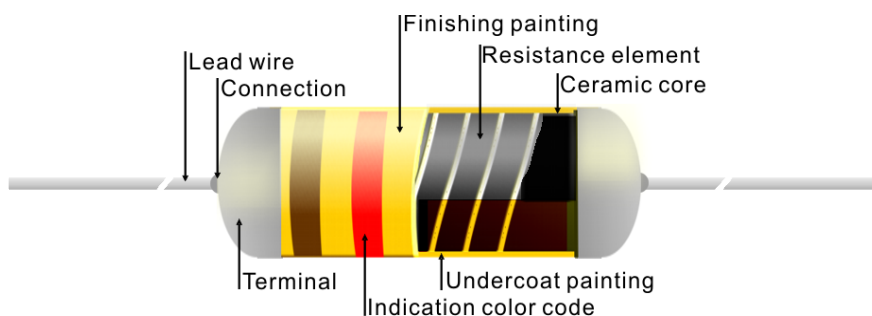


◆ HOT-SPOT TEMPERATURE



◆ Construction

The construction of resistor (MFR Series) shall be Figure.



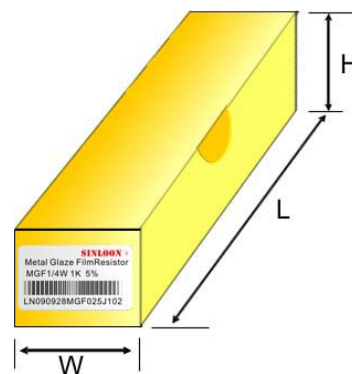
Item	Material
Ceramic Core	High alumina ceramic is used
Resistance element	The resistor element shall consist of metal glaze film.
Terminal	Tinned iron cap.
Connection	The lead wire, Which is Rated with solder, shall be mounted to the caps by welding process.
Lead Wire	Soldered or tinned annealed copper wire.
Undercoat Painting	Electric insulation varnish.
Finishing painting	Epoxy resin is used.
In diction	Color code.

◆ Painting Resistor body color

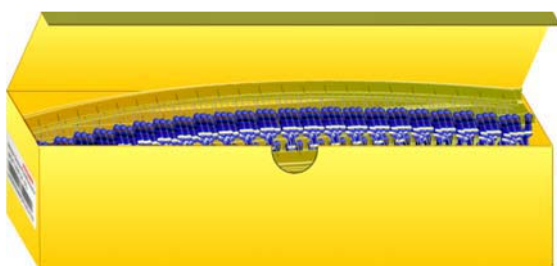
(1)	Normal size	
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◆ PACKAGE:

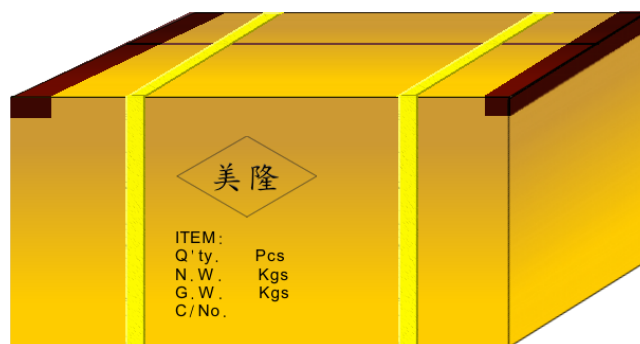
STYLE		Dimensions (mm)			Quantity
Normal	Power	L	W	H	
MFR0125	1/8W	264	80	75	5,000
MFR025	1/4W	264	80	105	5,000
MFR050	1/2W	264	80	35	1,000
MFR100	1W	264	80	46	1,000
MFR200	2W	265	103	82	1,000



Inner Box



Carton Packing



※美隆電子產品規格特性參數的改變或更新,將不會另行通知。

※Mayloon characteristic parameters of electronic product specification changes or updates without prior notice。



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Resistance Range : 0.1R ~ 1MΩ

MFR Series
Metal Film Resistor

□ **Standard Resistor Color Code (4 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		
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		±1% (F)	±2% (G)			±0.5% (D)	±0.25% (C)	±0.1% (B)			±5% (J)	±10% (K)

□ **Examples:**

Fig-1: (E24) Resistor 560R 5%

Tolerance ±5%
(3rd) Brown $\times 10$
(2nd) Blue digit 6
(1st) Green digit 5

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

Fig-2: (E24) Resistor 5.6K 10%

Tolerance ±10%
(3rd) Red $\times 100$
(2nd) Blue digit 6
(1st) Green digit 5

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		±1% (F)	±2% (G)			±0.5% (D)	±0.25% (C)	±0.1% (B)			±5% (J)	±10% (K)

□ **Examples:**

Fig-3: (E96) Resistor 280R ±1%

Tolerance: ±1%
Multiplier: $\times 1$
(3rd) digit 0
(2nd) digit 8
(1st) digit 2

Red, Gray, Black, Black, Brown tolerance band:
 $280 \times 1 = 280$ ohms (280 ohms), with a tolerance of 1%

Fig-4: (E96) Resistor 39.1K ±5%

Tolerance: ±5%
Multiplier: $\times 100$
(3rd) digit 1
(2nd) digit 9
(1st) digit 3

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



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