

SINLOON®

低阻值合金貼片電阻

Power Rating: 0.5W(1206) ~ 5W(4527)

MR Series

Metal Alloy Low Ohm Chip Resistor

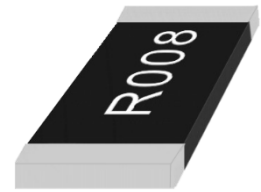
■ Feature

- Battery management system
- Entertainment
- Industrial
- Measuring instrument
- Power supply

■ Application

- Low Resistance
- Low TCR
- Excellent long term stability
- RoHS compliant and halogen free
- Lead free
- High precision current sensing and voltage division.

Figure

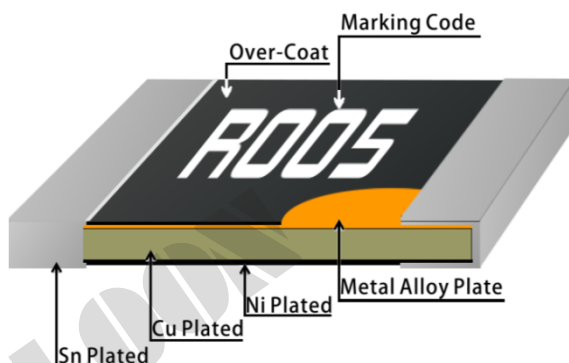


■ ORDERING INFORMATION

Example: U-MR06MCSJ1m0 (0.5W 1206 MnCuSn ±5% R001)

Power Code	Power	Size	Type	Material	Tolerance	Resistance(Ω)	Packing
U	0.5W	1206	U-MR06	MCS: MnCuSn	J = ±5%	m5=R0005	5000 Reel
T	0.75W		T-MR06	MC: MnCu	G = ±2%	5m=R005	
S	1W		S-MR06	FCA : FeCuAl	F = ±1%	50m=R050	
R	1.5W		R-MR06		D = ±0.5%	100m=R100	
T	0.75W	2010	T-MR10			1000m=1R0	4000 Reel
S	1W		S-MR10			1R = 1R00	
R	1.5W		R-MR10				
S	1W	2512	S-MR12				1000 Reel
Q	2W		Q-MR12				
N	3W	2817	N-MR12				2000 Reel
N	3W		N-MR17				
L	4W	2725	L-MR25				1000 Reel
L	4W	2728	N-MR28				2000 Reel
N	3W	4527	N-MR27				1000 Reel
K	5W	4527	K-MR27				

□ Construction



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■ Standard Electrical Spec.

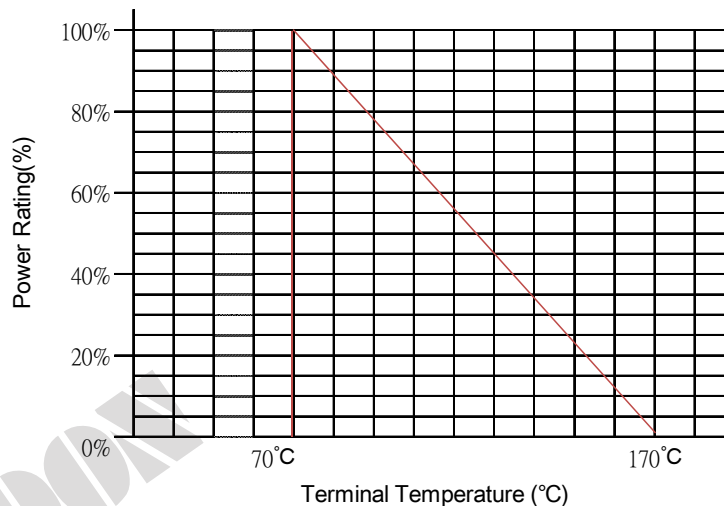
Power	Size	Type	Maximum		Resistance Range (mΩ)		Material	Operating Temperature Range (°C)
			Rating	Overload	D= ±0.5%	±5%; ±2% ±1%		
			Current (A)	Current (A)				
0.5W	1206	U-MR06	22.36	44.72	7 ~ 100	1 ~ 50	-55 ~ +170	1m: MnCuSn
0.75W		T-MR06	27.39	84.77	7 ~ 50	1 ~ 100		2m~10m: MnCu
1W		S-MR06	31.62	63.25	7 ~ 100	1 ~ 50		10m~100m:FeCrAl
1.5W		R-MR06	38.73	77.46	7 ~ 50	1 ~ 100		
0.75W	2010	T-MR10	27.39	61.24	7 ~ 100	1 ~ 100	1m: MnCuSn	
1W		S-MR10	31.62	70.71	7 ~ 70	1 ~ 70	2m~7m: MnCu	
1.5W		R-MR10	38.73	77.46	7 ~ 100	1 ~ 100	8m~100m:FeCrAl	
1W	2512	S-MR12	44.72	100	7 ~ 680	0.5 ~ 680	m5: MnCuSn	
2W		Q-MR12	63.25	141.42	7 ~ 450	0.5 ~ 450	1m~6m: MnCu	
3W		N-MR12	77.46	134.16	7 ~ 100	0.5 ~ 100	7m~680m:FeCrAl	
3W	2817	N-MR17	54.77	109.54	1 ~ 200	1 ~ 200	10m~50m: MnCu 6m~200m: FCA	
4W	2725	L-MR25	126.49	252.98	---	0.25 ~ 3	m25: MnCuSn m5~2m5: MnCu 3m: FeCrAl	
4W	2728	N-MR28	31.62	54.77	7 ~ 600	4 ~ 600	4m~600m: FeCrAl	
3W / 5W	4527	N-MR27	54.77	94.87	1 - 1000	1 ~ 1000	m5: MnCuSn	
							1m~5m: MnCu	
		K-MR27	70.71	122.47	1 ~ 500	1 ~ 500	6m~1R0 :FeCrAl	
TCR (ppm/°C)		≤ ±50						

■ Performance Characteristics

Power Derating Curve

The Operating Temperature Range : -55 ~ 170°C

For resistors operated in ambient temperatures above 70 , power rating must be derated in accordance with the curve below:



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Rating Current

The following equation may be used to determine the DC (Direct Current) or AC (Alternating Current) (RMS, root mean square value) of normal rated power. However, if the result value exceeds the highest current of regulated standard (paragraph 5), the highest normal rater power is to be used.

$$I = \sqrt{P/R}$$

I = Rating current (A)
P = Rating power (W)
R = Resistance (Ω)

Marking Format:

All the other products marking are 4 digits.

"R" designates the decimal location in ohms

e.g : 1mΩ the product marking is R001
25mΩ the product marking is R025
100mΩ the product marking is R100

"m" designates the decimal location in milli-ohms

e.g. 0.25mΩ the product marking is 0m25
0.5mΩ the product marking is 0m50
5.5mΩ the product marking is 5m50
25.5mΩ the product marking is 25m5

R001	1mΩ	R025	25mΩ
R100	100mΩ	0m25	0.25mΩ
0m50	0.5mΩ	5m50	5.5mΩ
		25m5	25.5mΩ

The criteria to distinguishing the mark on the surface of products are that characters can be identified.

Reliability Test and Requirement

Test item	Test Method	Procedure	Requirements
Temperature Coefficient of Resustance (T.C.R.)	JIS 5201-1 clause 4.8	$T.C.R.(ppm/^{\circ}C) = \frac{(R2-R1)}{R1 (T2-T1)} \times 10^6$ R1: Resistance at room temperature (T1) R2: Resistance at 150°C (T2)	Refer to Ratings
Short Time Overload	JIS C 5201-1 clause 4.13	The number of rated power are as follows: U-MR06 (0.5W); T-MR06 (0.75W) 4 times of rated power S-MR06 (1W) ; R-MR06 (1.5W) 4 times of rated power T-MR10(0.75W); S-MR10(1W); 5 times of rated power R-MR10 (1.5W) 4 times of rated power S-MR12 (1W); Q-MLR12(2W) 5 times of rated power N-MR12(3W) 3 times of rated power N-MR17 (3W) 3 times of rated power N-MR27 (3W) 3 times of rated power L-MR25 (4W) 4 times of rated power L-MR28 (4W) 3 times of rated power K-MR27 (5W) 3 times of rated power Rating power duration: 5 secs.	N-MR27 (4527) :ΔR/R1 ≤ ±2.0% The others:ΔR/R1 ≤ ±0.5%
High Temp. Exposure	JIS C 5201-1 clause 4.23.2	1,000hrs at +170°C	N-MR27 (4527) :ΔR/R1 ≤ ±2.0% The others:ΔR/R1 ≤ ±0.5%
Soldering Heat	JIS C 5201-1 clause 4.18	265 ±5°C for 10 seconds	ΔR/R1 ≤ ±0.5%
Temperature Cycling	JIS C 5201-1 clause 4.19	-55°C to +150°C , 1,000 cycles , 15 min at each extreme.	ΔR/R1 ≤ ±0.5%
Bias Humidity	JIS C 5201-1 clause 4.24	1,000hrs@+85°C /85%RH, Bias 1.5hrs "ON" 0.5Hrs "OFF".	ΔR/R1 ≤ ±0.5%
Load at Rated Power	JIS C 5201-1 clause 4.25	1,000hrs@70°C , 1.5hrs "ON"; 0.5Hrs "OFF".	N-MR27 (4527) :ΔR/R1 ≤ ±2.0% The others:ΔR/R1 ≤ ±1%
Solderability	JIS C 5201-1 clause 4.17	245 ±5°C for 2±0.5 seconds	>95% coverage

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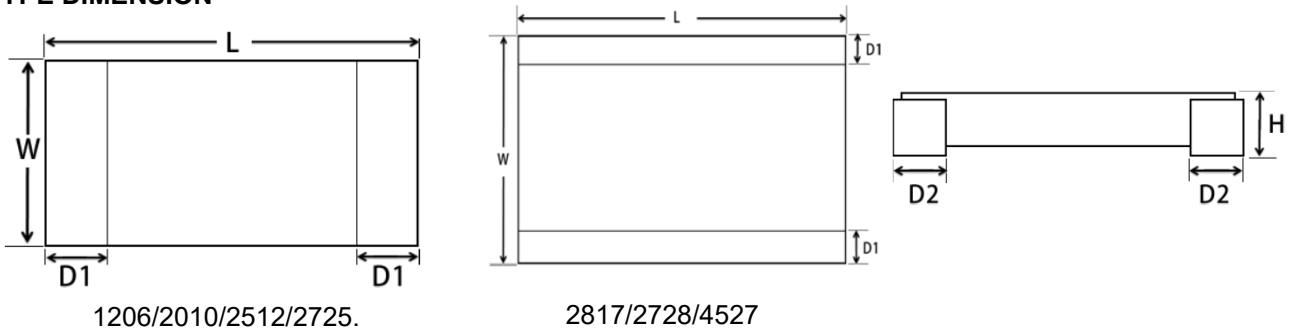
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TYPE DIMENSION



DIMENSION

Unit: mm

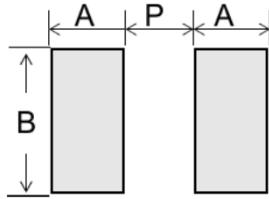
Power	Size	Type	Resistance(Ω)	L	W	H	D1	D2	Figure
0.5W	1206	U-MR06	1~100m	3.20±0.254	1.65±0.254	0.3±0.254	0~0.2	0.508±0.254	
0.75W		T-MR06	1~50m			0.39±0.254			
1W		S-MR06	1~2m			0.67±0.254			
			3~100m			0.49±0.254			
1.5W		R-MR06	1~50m			0.58±0.254			
0.75W	2010	T-MR10	1~100m	5.1±0.254	2.4±0.254	0.31±0.254	0~0.2	0.84±0.254	
1W		S-MR10	1~70m			0.46±0.254			
			1~2m			0.67±0.254			
1.5W		R-MR10	2.5~30m			0.46±0.254			
			31~100m			0.59±0.254			
1W	2512	S-MR12	0.5~1m	6.35±0.254	3.05±0.254	0.56±0.254	0.2~1.0	2.2±0.254	
			1.5m			0.56±0.254		2.0±0.254	
			2.0m			0.56±0.254		1.4±0.254	
			2.5~100m			0.56±0.254		1.1±0.254	
			101~680m			0.49±0.254		0.85±0.254	
2W	2512	Q-MR12	0.5~1m	6.35±0.254	3.05±0.254	0.67±0.254	0.2~1.0	2.2±0.254	
			1.5m			0.56±0.254		2.0±0.254	
			2.0m			0.56±0.254		1.4±0.254	
			2.5~100m			0.56±0.254		1.1±0.254	
			101~450m			0.61±0.254		0.85±0.254	
3W	2512	N-MR12	0.5~1m	6.35±0.254	3.05±0.254	0.67±0.254	0.2~1.0	2.2±0.254	
			1.5m			0.67±0.254		2.0±0.254	
			2.0m			0.67±0.254		1.4±0.254	
			2.5~50m			0.67±0.254		1.1±0.254	
			51~100m			0.74±0.254		1.1±0.254	
3W	2817	N-MR17	1m	6.35±0.254	4.2±0.254	0.69±0.254	0.2~1.0	1.8±0.254	
			2~30m			0.61±0.254		1.5±0.254	
			31~100m			0.72±0.254		1.5±0.254	
			101~130m			0.77±0.254		1.5±0.254	
			131~200m			0.69±0.254		1.5±0.254	
4W	2725	L-MR25	0.25m	6.8±0.254	6.35±0.254	0.82±0.254	0.2~1.0	2.3±0.254	
			0.5m			0.69±0.254		2.3±0.254	
			1m			0.69±0.254		1.8±0.254	
			1.5~3.0m			0.61±0.254		1.8±0.254	
4W	2728	N-MR28	4~50m	6.6±0.254	6.7±0.254	0.72±0.254	0.2~1.0	1.2±0.254	
			51~450m			0.84±0.254		1.2±0.254	
			451~600m			0.77±0.254		1.2±0.254	
3W	4527	N-MR27	1~680m	11.3±0.254	6.6±0.254	0.77±0.254	0.2~1.0	2.0±0.254	
			681~1R			0.69±0.254		2.0±0.254	
5W	4527	K-MR27	1m	11.3±0.254	6.6±0.254	0.79±0.254	0.2~1.0	3.0±0.254	
			1.5m			0.84±0.254		2.0±0.254	
			2~50m			0.84±0.254		2.0±0.254	

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Recommend Land Pattern Design (For Reflow Soldering)

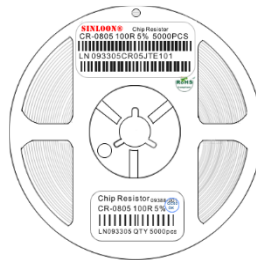
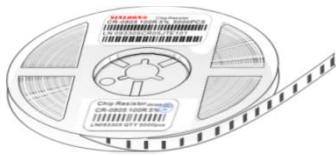


Dimension

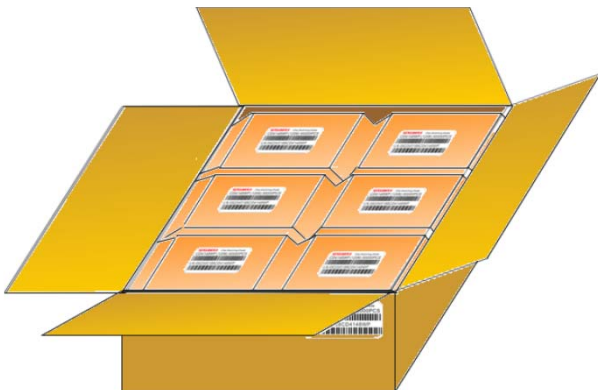
Unit: mm

Power	Size	Type	Resistance (Ω)	A	B	P
1W	1206	S-MR06	1m~100m	1.60	2.18	0.66
1W	2010	S-MR10	1m ~ 3m	2.29	2.92	1.22
			3.1m ~ 100m	2.29	2.29	2.41
1W	2512	S-MR12	0.5m ~ 1.5m	3.05	3.68	1.27
2W		Q-MR12	2m ~ 3.5m	2.11	3.68	3.18
3W		N-MR12	3.6m ~ 680m	1.90	3.68	3.50
3W	2817	N-MR17	1m ~ 3m	2.75	7.82	3.51
			3.5m ~ 200m	2.45	7.82	3.11
4W	2725	L-MR27	0.25m ~ 0.5m	3.18	6.86	1.32
			1m ~ 3m	2.34	6.86	3.00
4W	2728	L-MR28	4m ~ 600m	2.75	7.82	3.51
3W; 5W	4527	N-MR27; K-MR27.	1m ~ 3m	4.50	8.74	4.50
			3.5m ~ 100m	3.40	8.74	6.43
			101m ~ 1000m	2.93	8.74	7.63

Paper Reel Tape



Packing Quantity:



Size	Type	Reel type / tape	Reel/pcs
1206	7" Reel tape	Reel for 8mm embossed	5000
2010	7" Reel tape	Reel for 12mm embossed	4000
2512	7" Reel tape	Reel for 12mm embossed	4000
2817	7" Reel tape	Reel for 24mm embossed	1000
2725	7" Reel tape	Reel for 24mm embossed	2000
2728	7" Reel tape	Reel for 24mm embossed	2000
4527	7" Reel tape	Reel for 24mm embossed	1000

※美隆公司產品規格及其特性參數的改變和更新不會另行通知。

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

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Code Series
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STANDARD RESISTANCE VALUE IN A DECADE

誤差率	阻值表示法		電阻功率代碼		溫度系數
Tolerance	E96	E24	Power	Codes	T.C.R/°C
A= ±0.01%	m5=R0005Ω	m5=R0005Ω	1/32W	Z	S=±5ppm
B= ±0.1%	5m=R005Ω	5m=R005Ω	1/16W	Y	B=±10ppm
C= ±0.25%	50m=R05Ω	50m=R05Ω	1/10W	X	N=±15ppm
D= ±0.5%	100m=R1Ω	100m=R1Ω	1/8W	W	C=±25ppm
F= ±1%	1000m=1Ω	1000m=1Ω	1/4W	V	D=±50ppm
G= ±2%	1R = 1R00	1R = 1R0	1/2W	U	E=±100ppm
H= ±3%	10R=10R0	10R=100	3/4W	T	K=±150ppm
J= ±5%	100R=100R	100R=101	1W	S	F=±200ppm
K= ±10%	1K = 1001	100R=102	1.5W	R	G=±300ppm
M= ±20%	10K = 1002	10K = 103	2W	Q	H=±400ppm
N= ±50%	100K=1003	100K=104	2.5W	P	I=±500ppm
Z=+80-20%	1M=1-004	1M=105	3W	N	J=±600ppm
	10M=1005	10M=106	3.5W	M	V=±800ppm
	100M=1006	100M=107	4W (5W)	L (K)	Z=±1500ppm

Resistor Series Ordering Information :

±1%:	Marking Code please refer to E96 data form as below :
Ex.	121K the marking code is 1213 in E96 10R ohm the marking code is 1009 E96 1R ohm the marking code is 1008 E96 0.1R ohm the marking code is 0R10 E96
±5%:	Marking Code please refer to E24 data form as below :
Ex.	100K the marking code is 104 in E24 10R ohm the marking code is 100 E24 1R ohm the marking code is 1R0 E24 0.1R ohm the marking code is 0R1 E24

For Resistance According to IEC Publication 63

E24	E96			
10	100	178	316	562
11	102	182	324	576
12	105	187	332	590
13	107	191	340	604
15	110	196	348	619
16	113	200	357	634
18	115	205	365	649
20	118	210	374	665
22	121	215	383	681
24	124	221	392	698
27	127	226	402	715
30	130	232	412	732
33	133	237	422	750
36	137	243	432	768
39	140	249	442	787
43	143	255	453	806
47	147	261	464	825
51	150	267	475	845
56	154	274	487	866
62	158	280	499	887
68	162	287	511	909
75	165	294	523	931
82	169	301	536	953
91	174	309	549	976