



小型化精密金屬膜電阻
Power: 1/8W ~ 4Wu

SPM Series
Small Precision Metal Film Resistor

Scope

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

Features

- ◆ High thermal conductivity and specific gravity rods.
- ◆ Power Rating : Standard Size: 1/8W ~ 2W
Miniature Size: 1/4W ~ 3W
Ultra Small Size: 1/2Wu ~ 4Wu
- ◆ Precision tolerance tight to : ±0.1% ~ ±1%.
- ◆ Superior electrical TCR performances narrowed to ±5ppm/°C.
- ◆ Epoxy coating, precision metal film, Lead (Pb)-free and

Figure



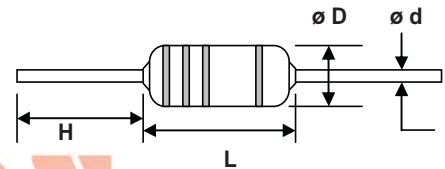
ORDERING

Example: V-SPM025B1001BT (1/4W 100R ±0.1% ±10ppm T-Box)

Type	Power	T.C.R/°C	*Resistance	Tolerance	Package
Standard Size					
W-SPM0125	1/8W	S=±5ppm	100 =10Ω	A = ±0.05%	B = Bulk
V-SPM025	1/4W	B=±10ppm	101 =100Ω	B = ±0.1%	T = T-Box
VA-SPM04	2/5W	N=±15ppm	102=1KΩ	C = ±0.25%	R = Reel
U-SPM05	1/2W	C=±25ppm	103=10KΩ	D = ±0.5%	
UA-SPM06	3/5W	D=±50ppm	104=100KΩ	F = ±1%	
S-SPM10	1W	E=±100ppm	105=1MΩ	J = ±5%	
Q-SPM20	2W	F=±200ppm			
		G=±300ppm			
Small Size:					
V-SPM14S	1/4Ws				
U-SPM12S	1/2WS				
S-SPM10S	1Ws				
Q-SPM20S	2Ws				
N-SPM30S	3Ws				
Ultra Small Size:					
U-SPM05U	1/2Wu				
S-SMP10U	1Wu				
Q-SPM20U	2Wu				
N-SPM30U	3Wu				
M-SPM40U	4Wu				

EXTERNAL DIMENSIONS

Type	Power	Dimensions (mm)			
		L	ΦD	Φd	H
Standard Size (標準)					
W-SPM0125	1/8W	3.3 ^{+0.4} _{-0.2}	1.8±0.35	0.45±0.03	29±2.0
V-SPM025	1/4W	6.3±0.5	2.3±0.3	0.55±0.03	28±2.0
VA-SPM04	2/5W	3.3 ^{+0.7} _{-0.2}	1.8±0.35	0.45±0.03	29±2.0
U-SPM05	1/2W	9.0±0.5	3.2±0.3	0.65±0.03	26±2.0
UA-SPM06	3/5W	6.3±0.5	2.3±0.3	0.55±0.03	28±2.0
S-SPM10	1W	11.5±1.0	4.5±0.5	0.78±0.03	35±2.0
Q-SPM20	2W	15.5±1.0	5.0±0.5	0.78±0.03	32±2.0
Small Size (小型)					
V-SPM14S	1/4Ws	3.3 ^{+0.4} _{-0.2}	1.8±0.35	0.45±0.03	29±2.0
U-SPM12S	1/2Ws	6.3±0.5	2.3±0.3	0.55±0.03	28±2.0
S-SPM10S	1Ws	9.0±0.5	3.2±0.3	0.65±0.03	26±2.0
Q-SPM20S	2Ws	11.5±1.0	4.5±0.5	0.78±0.03	35±2.0
N-SPM30S	3Ws	15.5±1.0	5.0±0.5	0.78±0.03	32±2.0
Ultra Small Size (微型)					
U-SPM05U	1/2Wu	3.3 ^{+0.7} _{-0.2}	1.8±0.35	0.45±0.03	29±2.0
S-SMP10U	1Wu	6.3±0.5	2.3±0.3	0.65±0.03	28±2.0
Q-SPM20U	2Wu	9.0±0.5	3.2±0.3	0.55±0.03	35±2.0
N-SPM30U	3Wu	11.5±1.0	4.5±0.5	0.78±0.03	35±2.0
M-SPM40U	4Wu	15.5±1.0	5.0±0.5	0.78±0.03	32±2.0

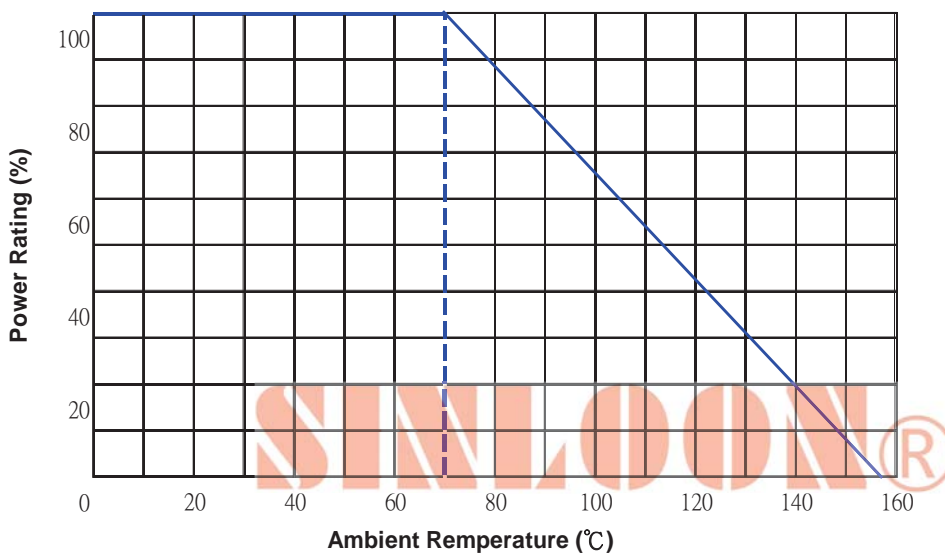


□ **RATED POWER SPECIFICATION**

Type	Power	Resistance (Ω) Tolerance				Maximum Voltage		Dielectric	Temp. Range
		±0.1%	±0.25%	±0.5%	±1%	Working	Overload	Withstanding	
Standard Size (標準)									
W-SPM012	1/8W	10~100K	10~100K	10~100K	10~100K	150V	300V	300 Vol.	-55°C ~ +155°C
V-SPM025	1/4W	10~100K	10~100K	10~1M	10~1M	250V	250V	500 Vol.	
VA-SPM04	2/5W	10~100K	10~100K	0.1~1M	0.1~1M	200V	200V	400 Vol.	
U-SPM05	1/2W	10~100K	10~100K	10~100K	10~100K	350V	500V	500 Vol.	
UA-SPM06	3/5W	10~100K	10~100K	10~1M	10~1M	300V	500V	500 Vol.	
S-SPM10	1W	10~100K	10~100K	0.1~1M	0.1~1M	500V	700V	700 Vol.	
Q-SPM20	2W	10~100K	10~100K	0.1~1M	0.1~1M	500V	1000V	1000 Vol.	
Small Size (小型)									
V-SPM14S	1/4Ws	10~100K	10~100K	10~100K	10~100K	200V	400V	400 Vol.	-55°C ~ +155°C
U-SPM12S	1/2Ws	10~100K	10~100K	10~1M	10~1M	300V	500V	500 Vol.	
S-SPM10S	1Ws	10~100K	10~100K	0.1~1M	0.1~1M	400V	600V	600 Vol.	
Q-SPM20S	2Ws	10~100K	10~100K	0.1~1M	0.1~1M	500V	500V	700 Vol.	
N-SPM30S	3Ws	10~100K	10~100K	0.1~1M	0.1~1M	500V	1000V	1000 Vol.	
Ultra Small Size (微型)									
U-SPM05U	1/2Wu	---	---	10~100K	10~100K	250V	250V	400 Vol.	-55°C ~ +155°C
S-SMP10U	1Wu	---	---	10~1M	10~1M	450V	400V	400 Vol.	
Q-SPM20U	2Wu	---	---	10K~1M	10K~1M	500V	600V	500 Vol.	
N-SPM30U	3Wu	---	---	10K~1M	10K~1M	500V	700V	800 Vol.	
M-SPM40U	4Wu	---	---	10K~1M	10K~1M	500V	1000V	1000 Vol.	

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

□ **POWER DERATING CURVE**



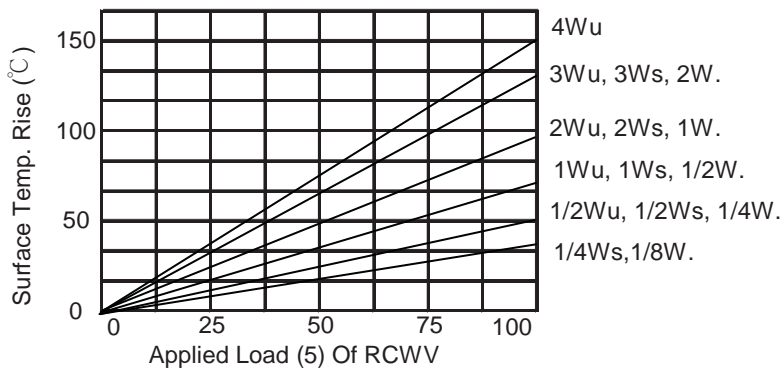
ENVIRONMENTAL CHARACTERISTICS

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

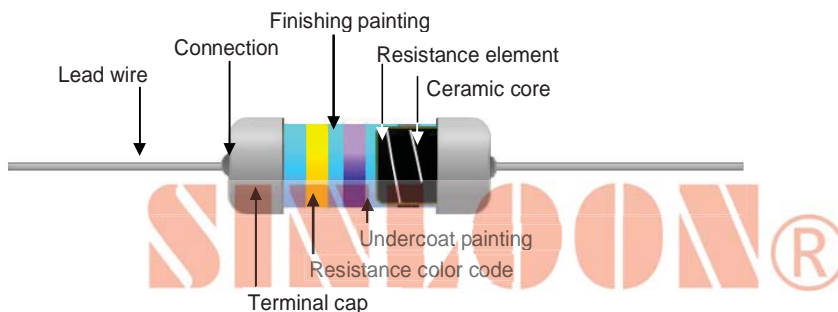
Rated continuous Working Voltage (RCWV) = $\sqrt{\text{POWER RATING} \cdot \text{RESISTANCE VALUE}}$

- * Standard Test: MIL-STD-202, JIS-C 5201-1
- * Control Room: 25±3°C Humidity: <80%RH

HOT-SPOT TEMPERATURE



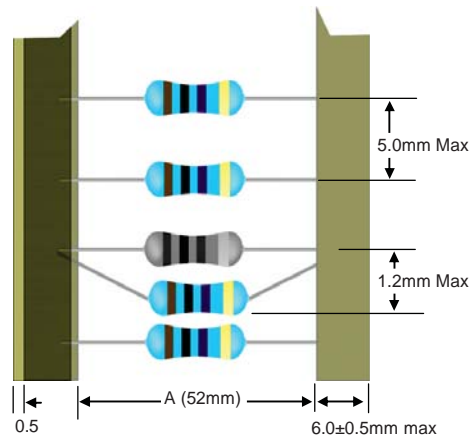
Structure Diagram



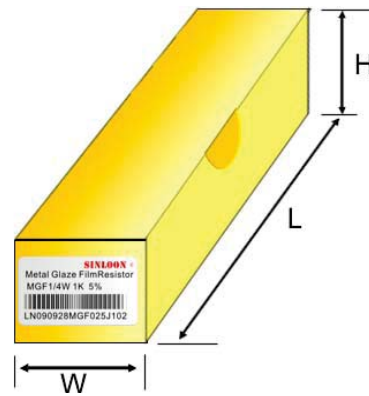
□ PACKAGE:

Type	Power	Methods Tape (A)	Tape Box Dimensions (mm)			Quantity Inner Box	Quantity Cartons	Brand Name
			L	W	H			
Standard Size (標準)								
W-SPM0125	1/8W	52mm	80	75	264	5,000	100,000	SINLOON®
V-SPM025	1/4W	52mm	80	105	264	5,000	100,000	
VA-SPM04	2/5W	26mm	80	75	264	5,000	100,000	
U-SPM05	1/2W	52mm	80	46	264	1,000	20,000	
UA-SPM06	3/5W	26mm	80	105	264	5,000	100,000	
S-SPM10	1W	52mm	103	82	265	1,000	20,000	
Q-SPM20	2W	52mm	103	96	265	1,000	20,000	
Small Size (小型)								
V-SPM14S	1/4Ws	52mm	80	75	264	5,000	100,000	SINLOON®
U-SPM12S	1/2Ws	52mm	80	105	264	5,000	100,000	
S-SPM10S	1Ws	52mm	80	46	264	1,000	20,000	
Q-SPM20S	2Ws	52mm	103	82	264	1,000	20,000	
N-SPM30S	3Ws	73mm	103	96	265	1,000	20,000	
Ultra Small Size (微型)								
U-SPM05U	1/2Wu	26mm	80	46	264	5,000	100,000	SINLOON®
S-SMP10U	1Wu	26mm	80	105	264	5,000	100,000	
Q-SPM20U	2Wu	52mm	80	46	264	1,000	20,000	
N-SPM30U	3Wu	73mm	103	82	265	1,000	20,000	
M-SPM40U	4Wu	7300	103	96	265	1,000	20,000	

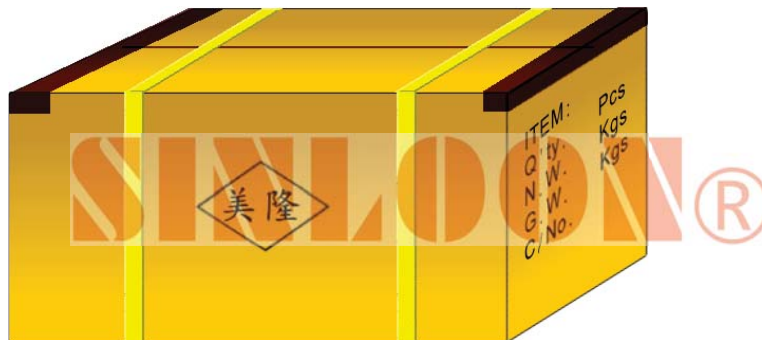
Methods Tape (A)



Inner Box



Carton Package



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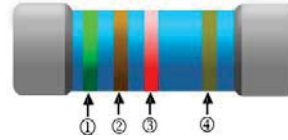
小型化精密金屬膜電阻
Power: 1/8W ~ 4Wu

SPM Series
Small Precision Metal Film Resistor

Standard Resistor Color Code E24 Series (4 band code)

Color	1st digit	2nd digit	3rd Multiplier	4 Tolerance
Black	0	0	$\times 10^0$	
Brown	1	1	$\times 10^1$	±1% (F)
Red	2	2	$\times 10^2$	±2% (G)
Orange	3	3	$\times 10^3$	
Yellow	4	4	$\times 10^4$	
Green	5	5	$\times 10^5$	±0.5% (D)
Blue	6	6	$\times 10^6$	±0.25%(C)
Violet	7	7	$\times 10^7$	±0.1% (B)
Gray	8	8	$\times 10^8$	±0.05% (A)
White	9	9	$\times 10^9$	
Gold			$\times 0.1$	±5% (J)
Silver			$\times 0.01$	±10% (K)
None				±20% (M)

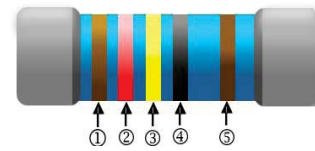
Example : Value : 5.1K Ω ±5%



Standard Resistor Color Code E96 Series (5 band code)

Color	1st digit	2nd digit	3rd digit	4 Multiplier	5 Tolerance
Black	0	0	0	$\times 10^0$	
Brown	1	1	1	$\times 10^1$	±1% (F)
Red	2	2	2	$\times 10^2$	±2% (G)
Orange	3	3	3	$\times 10^3$	
Yellow	4	4	4	$\times 10^4$	
Green	5	5	5	$\times 10^5$	±0.5% (D)
Blue	6	6	6	$\times 10^6$	±0.25%(C)
Violet	7	7	7	$\times 10^7$	±0.1% (B)
Gray	8	8	8	$\times 10^8$	±0.05% (A)
White	9	9	9	$\times 10^9$	
Gold				$\times 0.1$	±5% (J)
Silver				$\times 0.01$	±10% (K)
None					±20% (M)

Example : Value : 12.4Ω ±1%



STANDARD RESISTANCE VALUE IN A DECARD

For Resistance According to IEC Publication 63

E24	E96				Example :
10	100	178	316	562	
11	102	182	324	576	E26 Series: 102 Resistance: 0.102R; 1.02R; 10.2R; 102R; 1K02; 10K2; 102K; 1M02; 10M2; 102M.
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	

ORDERING RESISTANCE CODE

E96 (±1%)		E24 (±5%)	
Resistance (Ω) Code		Resistance (Ω) Code	
m5=R0005Ω	1K = 1001	m5=R0005Ω	1K=102
5m=R005Ω	10K = 1002	5m=R005Ω	10K = 103
50m=R05Ω	100K=1003	50m=R05Ω	100K=104
100m=R1Ω	1M=1-004	100m=R1Ω	1M=105
1000m=1Ω	10M=1005	1000m=1Ω	10M=106
1R = 1R00	100M=1006	1R = 1R0	100M=107
10R=10R0	1G = 1007	10R=100	1G=108
100R=100R	10G = 1008	100R=101	10G=109

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