RSM series

RoHS COMPLIANT

AEC Q200

SMD E-Beam Welding Alloy Resistor

· Electron-beam welding process with pure copper electrodes: an ideal solution for current sensing applications.

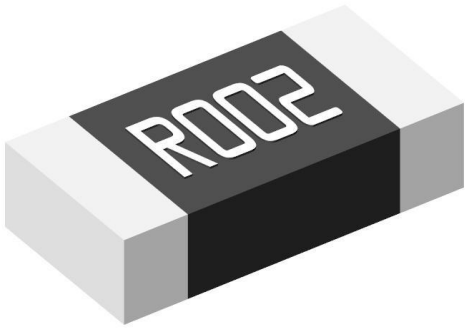
· Excellent product consistency, high reliability & stability, and superior pulse withstanding capability.

· All-metal structure supporting ultra-low resistance; high- temperature resistant resin molding encapsulation with excellent weather resistance.

· Ultra-low thermal EMF.

· Ultra-low parasitic inductance with fast response speed.

· RoHS compliant and AEC-Q200 compliant



GENERAL SPECIFICATIONS

Model	Rated Power (70℃)	Resistance Value (mΩ)	Material	Tolerance	T.C.R (ppm/℃)	Inductance	Thermal EMF (0-100℃)	Temp. Range
RSM1206	2W	1	M	±0.5 (D)	±150	< 5nH	< 3μV/℃	-55℃ ~ +170℃
		2~20	M	±1.0 (F)	±75			
		6~25	K	±5.0 (J)	±75			
RSM2010	2W	0.5~1	M	±1.0 (F)	±175	< 5nH	< 1μV/℃	-55℃ ~ +170℃
		2~7	M	±5.0 (J)	±100			
		8~250	K		±75			
RSM2512	2W	0.5~1	M	±0.5 (D)	±150	< 5nH	< 1μV/℃	-55℃ ~ +170℃
		1~4	M	±1.0 (F)	±100			
		3~4	F	±5.0 (J)	±50			
		3~4	K		±50			
		5~50	M		±100			
		5~50	F		±25			
		5~50	K		±50			
RSMB2512	2W	51~300	K	±1.0 (F)	±50	< 5nH	< 1μV/℃	-55℃ ~ +170℃
			F	±5.0 (J)	±50			
RSMP2512	3W	0.5~1	M	±0.5 (D)	±150	< 5nH	< 1μV/℃	-55℃ ~ +170℃
		1~2	M	±1.0 (F)	±100			
		3~4	F	±5.0 (J)	±50			
		3~4	K		±50			
		5~50	F		±25			
		5~50	K		±50			
RSM2725	4W	0.2	M	±1.0 (F)	±100	< 5nH	< 1μV/℃	-55℃ ~ +170℃
		0.25	M	±5.0 (J)	±100			
		0.5	M		±100			
		1	F		±25			
		1.5	F		±25			
		2	F		±25			
		2.5	F		±25			
		3	F		±25			

GENERAL SPECIFICATIONS

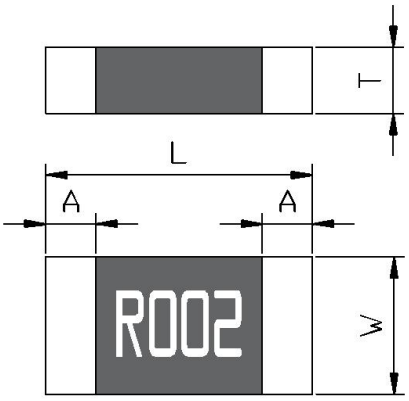
Model	Rated Power (70℃)	Resistance Value (mΩ)	Material	Tolerance	T.C.R (ppm/℃)	Inductance	Thermal EMF (0-100℃)	Temp. Range
RSM2728	5W	3~50	F, K	±0.5 (D) ±1.0 (F) ±5.0 (J)	±50	< 5nH	< 1μV/℃	-55℃ ~ +170℃
	3W	51~100	F, K					
RSM2817	5W	1~3	M	±1.0 (F) ±5.0 (J)	±75	< 5nH	< 1μV/℃	-55℃ ~ +170℃
	5W	4~50	K		±50			
	3W	51~100	K		±50			
RSMB4527	6W	0.5	M	±1.0 (F) ±5.0 (J)	±150	< 5nH	< 1μV/℃	-55℃ ~ +170℃
	6W	1	M		±150			
	6W	2~50	K		±50			
	4W	51~300	K		±50			

CHARACTERISTICS

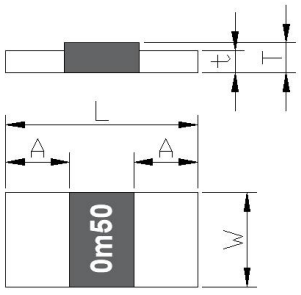
Test Item	Standard	Test method
T.C.R	Within specified value	IEC60115-1 4.8; Measurement points:20°C +130°C; Reference point: +25°C
Solderability	Minimum 95%	IEC60115-1 4.17; 245°C solder bath, held for 3s
Short time overload	△R±1%	IEC60115-1 4.13; 5 times rated power for 5s
Solder heat resistance	△R±0.5%	IEC60115-1 4.18; 260°C solder bath, held for 10s
Substrate bending test	Within specified value	IEC60115-1 4.33 , 2mm deflection; Holding time: 60+5s
Flammability	Not fully burned; Thin packing paper not ignited; Pine board not charred	UL-94 V-0 or V-1 acceptable; No electrical test required
Insulation resistance	Minimum 1000MΩ	IEC60115-1 4.6; Apply 100V DC voltage between electrode and substrate, hold for 60s, then measure insulation resistance
Withstand voltage	No breakdown or arcing	IEC60115-1 4.7; Apply AC voltage (effective value equal to maximum rated voltage) at a rate of approximately 100V/s between electrode and substrate, hold for 60±5s
Solvent resistance	Marking legible; No visible damage	IEC60115-1 4.29; Isopropyl alcohol (IPA); Solvent temperature: 23±5°C; Duration: 5± 0.5min
High temperature & Humidity	△R±1%	MIL-STD-202 Method 103; Apply 10% rated power (current) or component maximum current (whichever is smaller) under 85°C and 85% humidity for 1000 hours
High temperature storage	△R±1%	IEC60115-1 4.25.3 , 1000 hours @ 170°C, no load applied
Low temperature with load	△R±0.5%	IEC60115-1 Clause 4.36: Cool from room temperature to -55°C, hold for 1.5 hours with no load applied; apply rated power for 45 minutes, then cool for another 15 minutes, and test after returning to room temperature
Temperature cycling	△R±1%	IEC60115-1 4.19 , -55°C @ 30 min ~+155°C @ 30 min; 1000 cycles
Load life	△R±1%	IEC 60115-1 4.25.1 , 1000 hours at 70℃±2℃; Rated current or component maximum current (whichever is smaller); 1.5 hours on / 0.5 hours off

DIMENSIONS[mm]

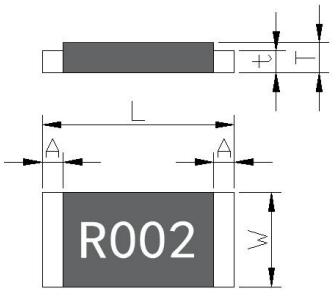
RSM1206



RSM2010

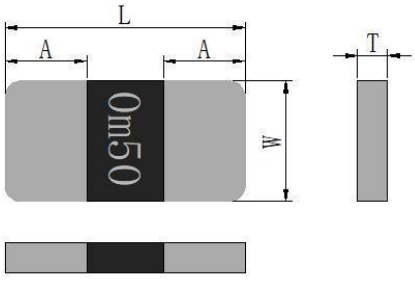


R0. 5–R1

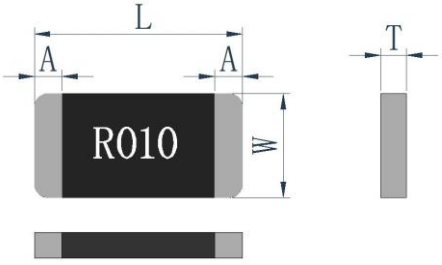


R002–R250

RSM2512 & RSMP2512

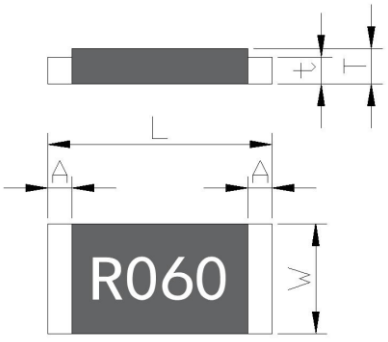


0.5mΩ~4mΩ



5mΩ~50mΩ

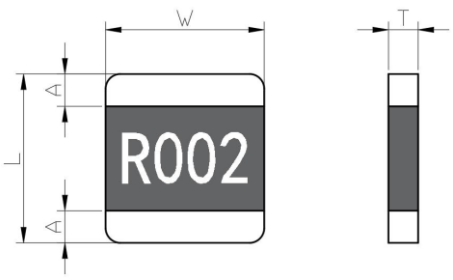
RSMB2512



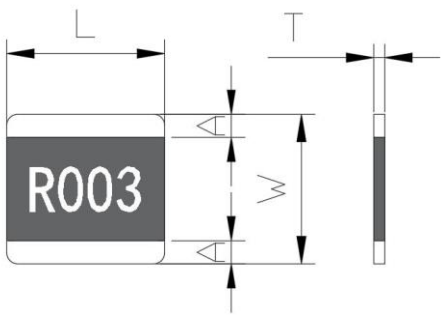
Model	Resistance Value (mΩ)	L	W	A	t	T
RSM1206	1	3.2±0.2	1.65±0.2	0.7±0.2	-	0.8±0.15
	2~20	3.2±0.2	1.65±0.2	0.6±0.2	-	0.8±0.15
	6~25	3.2±0.2	1.65±0.2	0.6±0.2	-	0.8±0.15
RSM2010	0.5~1	5.1±0.2	2.5±0.2	1.7±0.2	0.6±0.1	0.8±0.15
	2~7	5.1±0.2	2.5±0.2	0.55±0.2	0.6±0.1	0.8±0.15
	8~250	5.1±0.2	2.5±0.2	0.55±0.2	0.6±0.1	0.8±0.15
RSM2512	0.5~1	6.4±0.2	3.2±0.2	2.3	-	0.8±0.15
	1~4	6.4±0.2	3.2±0.2	1.5	-	0.8±0.15
	5~50	6.4±0.2	3.2±0.2	0.85	-	0.8±0.15
RSMB2512	51~300	6.4±0.2	3.2±0.2	0.95±0.2	0.6±0.1	0.8±0.15
RSMP2512	0.5~1	6.4±0.2	3.2±0.2	2.3±0.2	-	0.8±0.15
	1~2	6.4±0.2	3.2±0.2	1.5±0.2	-	0.8±0.15
	3~4	6.4±0.2	3.2±0.2	1.5±0.2	-	0.8±0.15
	3~4	6.4±0.2	3.2±0.2	1.5±0.2	-	0.8±0.15
	5~50	6.4±0.2	3.2±0.2	0.85±0.2	-	0.8±0.15
	5~50	6.4±0.2	3.2±0.2	0.85±0.2	-	0.8±0.15

DIMENSIONS[mm]

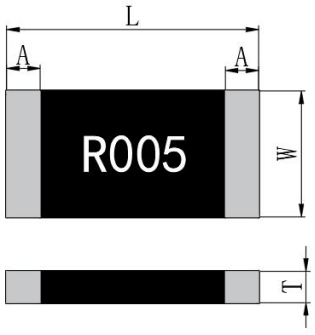
RSM2725



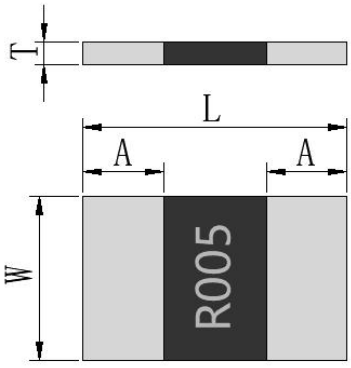
RSM2728



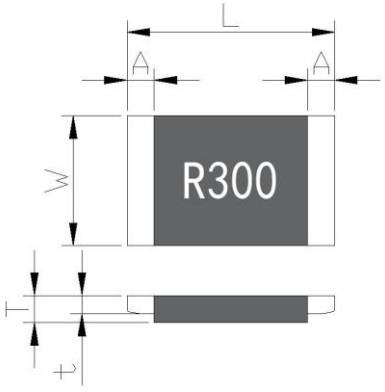
RSM2817



RSMB4527



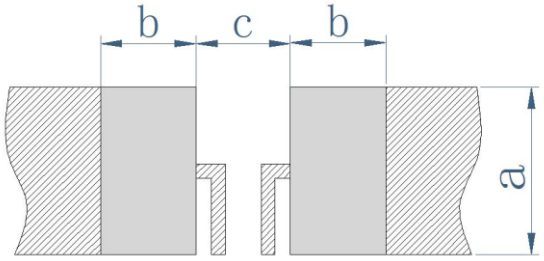
0.5mΩ~50mΩ



51mΩ~300mΩ

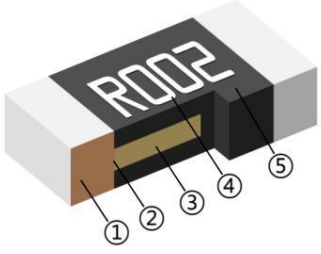
Model	Resistance Value (mΩ)	L	W	A	t	T
RSM2725	0.2~0.25	6.8±0.25	6.5±0.25	1.7±0.15	-	1.2±0.1
	0.5~2	6.8±0.25	6.5±0.25	1.2±0.15	-	1.2±0.1
	2.5~3	6.8±0.25	6.5±0.25	1.0±0.15	-	1.2±0.1
RSM2728	3~100	7.2±0.2	6.8±0.2	1.1±0.15	-	1±0.1
RSM2817	1~100	7.1±0.1	4.3±0.2	1.2±0.2	-	1±0.15
RSMB4527	0.5	11.5±0.2	7.2±0.2	4.1±0.2	-	1±0.15
	1~50	11.5±0.2	7.2±0.2	3.5±0.2	-	1±0.15
	51~300	11.5±0.2	7.2±0.2	1.5±0.2	1±0.15	1.5±0.15

Recommended pad and size[mm]



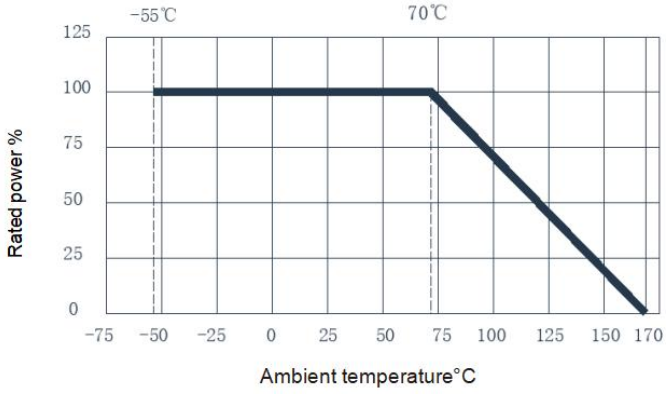
Model	Resistance Value(mΩ)	a	B	c
RSM1206	1~25	1.78	1.27	1.4
RSM2010	0.5~1	3.0	2.4	1.4
	2~250	3.0	1.6	3.0
RSM2512 RSMP2512	0.5~1	3.7	3.0	1.3
	1~4	3.7	2.3	2.8
	5~50	3.7	1.9	3.6
RSMB2512	51~300	3.7	1.9	3.6
RSM2725	0.2~0.25	6.86	3.18	1.32
	0.5~3	6.86	2.28	3.12
RSM2728	3~100	7.82	2.75	3.51
RSM2817	1~100	5.2	2.75	3.5
RSMB4527	0.5	8.7	5.2	3.0
	1~50	8.7	5.0	3.5
	51~300	8.7	3.0	7.5

Construction

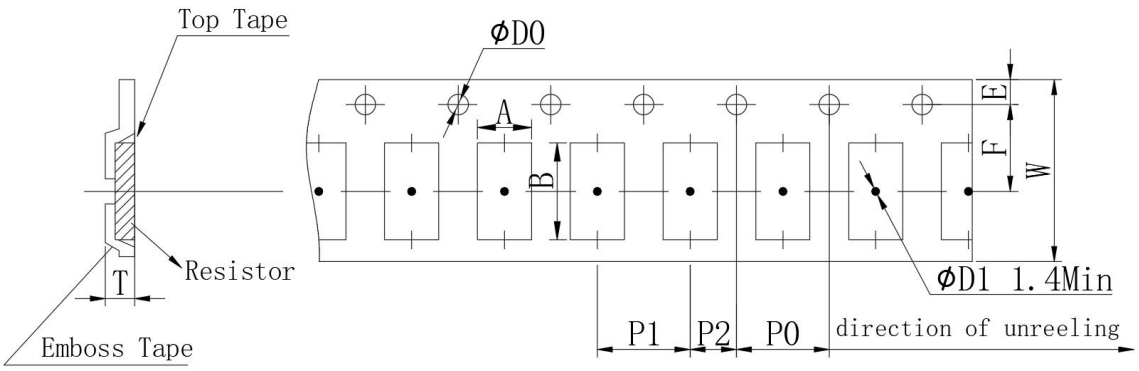


① Ni under plating & Sn top plating on copper terminals
② Electron-beam welded structure ensures high stability & reliability
③ Resistor body : Manganin, Karma, Fe-Cr-Al alloy
④ Silk-screen Markings
⑤ High-temperature-resistant, Insulating & Flame-retardant Resin

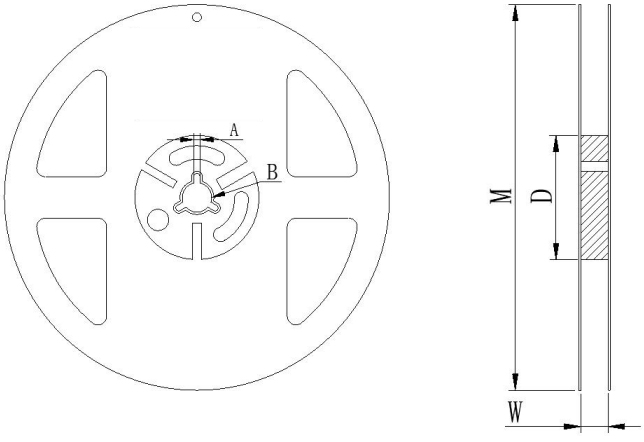
Derating curve



Packing specifications and size [mm]



Model	A	B	W	E	F	P0	P1	P2	ØD0	T	Qty
RSM1206	1.9	3.5	8	1.75	3.5	4	4	2	1.5	0.75	5,000
RSM2010	2.8	5.4	12	1.75	5.5	4	4	2	1.5	1.2	4,000
RSM(B,P)2512	3.5	6.8	12	1.75	5.5	4	4	2	1.5	1.2	4,000
RSM2725	6.9	7.2	12	1.75	5.5	4	8	2	1.5	1.5	1,000
RSM2728	8.2	7.2	12	1.75	5.5	4	12	2	1.5	1.45	1,000
RSM2817	4.7	7.25	12	1.75	5.5	4	8	2	1.5	1.5	1,000
RSMB4527 (0.5mΩ~50mΩ)	7.5	11.8	24	1.75	11.5	4	12	2	1.5	1.3	1,000
RSMB4527 (51mΩ~300mΩ)	7.5	11.8	24	1.75	11.5	4	12	2	1.5	2.3	500



Model	Reel type	W	M	A	B	D
RSM1206	7″ reel for 8mm tape	8.3±0.5	Ø178±2.0	2.0±0.5	13.5±0.5	60.0±1.0
RSM2010 RSM(B,P)2512 RSM2817	7″ reel for 12mm tape	12.3±0.5	Ø178±2.0	2.0±0.5	13.5±0.5	60.0±1.0
RSM2725 RSM2728	7″ reel for 12mm tape	12±0.3	Ø178±2.0	2.0±0.5	13.5±0.5	60.0±1.0
RSMB4527	7″ reel for 25mm tape	25±0.5	Ø178±2.0	2.0±0.5	13.5±0.5	60.0±1.0

ORDERING PROCEFURE EXAMPLE

Model#	Material	Resistance value	Tolerance	Packing code
RSM1206	F : Fe-Cr-Al K : Karma M : Manganin	L500 = 0.5mΩ R002 = 2mΩ R010 = 10mΩ R100 = 100mΩ	D = ±0.5% F = ±1% J = ±5%	T0 : Tape & Reel standard B0 : Bulk packaging