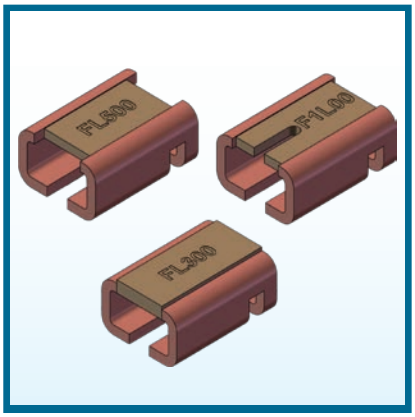


Lead free | Halogen free | RoHS Compliance

High-Precision Low-Inductance Alloy Current Sensing Resistor

■MSRPM 1216

AEC-Q200 Compliant

Features

- The MSRPM 1216 series is based on precision resistive alloy and welded with vacuum electron beam welding equipment to ensure its characteristics and reliability.
- The MSRPM 1216 series product can achieve a maximum target tolerance of ± 0.5% after precision trimming.
- TCR of MSRPM 1216 series is ≤±100ppm/°C within the operating temperature range from -55°C to +170°C and inductance is less than 3nH.
- The MSRPM 1216 series successfully achieves the independent and controllable production, stable quality, and timely delivery relying on our self-developed raw materials,core equipment and core processes.
- Providing standard specifications and custom solutions to meet various industry needs.

Applications

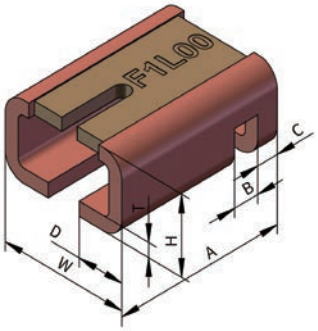
- Automotive Electronics
- Precision Power Supply
- Instrumentation
- Formation & Sorting of Battery
- Medical Equipment

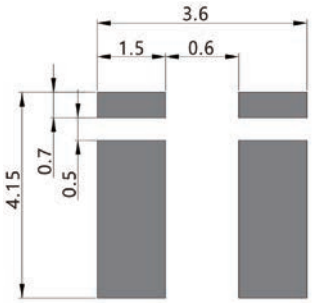
◆Electrical Specification

Series	Size inch. (mm)	Resistance Value	Power (+70°C)	Max.Operating Current	Operating Tempertature	TCR ppm/°C+20°C Ref)	Thermal Resistance	Weight	Tolerance	PKG.
MSRPM	1216 (3040)	0.3mΩ	10 W	182A	-55℃~+170℃	±100(20℃~170℃)	7.8 ℃/W	0.1±0.05g	± 0.5 % ± 1.0 % ± 5.0 %	Tape 3,000 pcs.
		0.5mΩ	9 W	134A	-55℃~+170℃	±100(20℃~170℃)	12.1 ℃/W	0.1±0.05g		
		1.0mΩ	7 W	83A	-55℃~+170℃	±100(20℃~170℃)	12.7 ℃/W	0.07±0.03g		

◆Dimensions

Resistor





Series	Resistance Value	Unit:mm						
		T	H	W	A	B	C	D
MSRPM 1216	0.3mΩ	0.33 ± 0.2	1.92 ± 0.5	3.0 ± 0.2	4.0 ± 0.2	0.6 ± 0.2	0.5 ± 0.1	1.1 ± 0.2
	0.5mΩ	0.33 ± 0.2	1.8 ± 0.5	3.0 ± 0.2	4.0 ± 0.2	0.6 ± 0.2	0.5 ± 0.1	1.1 ± 0.2
	1.0mΩ	0.33 ± 0.2	1.8 ± 0.5	3.0 ± 0.2	4.0 ± 0.2	0.6 ± 0.2	0.5 ± 0.1	1.1 ± 0.2

◆ Part Number information

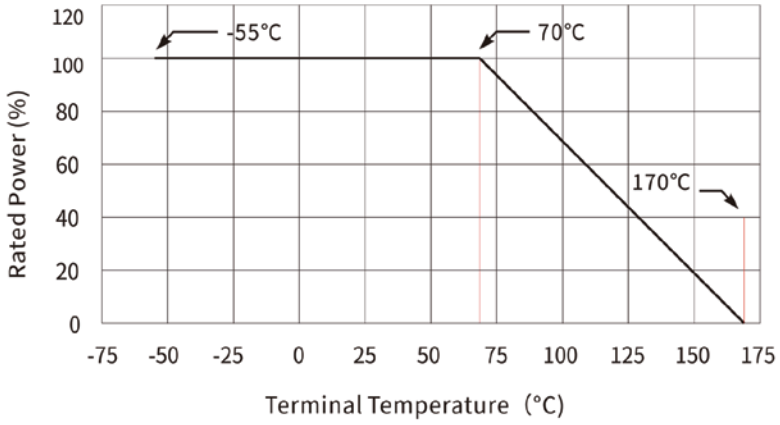
M	S	R	P	M	1	2	1	6	R	-	0	L	3	0	-	J	3	P	0

Series (5 characters)	Size (4 characters)	TCR (1 character)	Resistance (6 characters)	Tolerance (1 characters)	Quantity (3 characters)
MSRPM	1216	R = ±100 ppm/°C (+20°CRef) (+20°C~+170°C)	-0L30- = 0.3 mΩ -0L50- = 0.5 mΩ -1L00- = 1.0 mΩ	D = ±0.5 % F = ±1.0 % J = ±5.0 %	3P0 = 3,000 pcs.

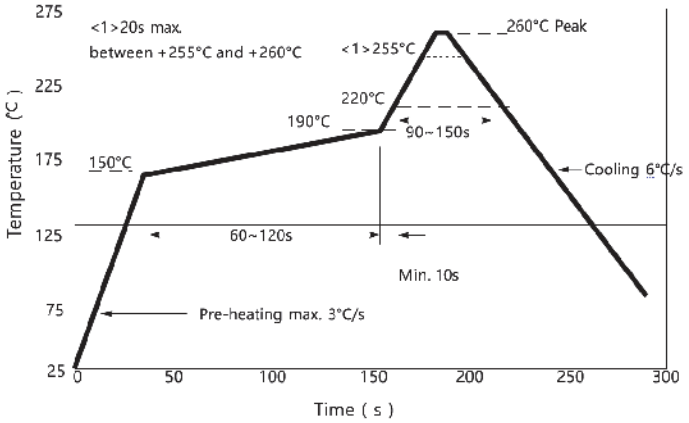
◆Performance

Test	Test Method		Standards	Max.
High Temperature Storage	+170°C for 1000h, unpowered	AEC-Q200 TEST 3 MIL-STD-202 Method 108	ΔR≤±0.5%	ΔR≤±1.0%
Thermal Shock	-55°C, 15min~ambient temperature <20s~+155°C, 15min, 1000 cycles	MIL-STD-202 Method 107	ΔR≤±0.5%	ΔR≤±1.0%
Bias Humidity	+85°C, 85%RH, powered 10% rated power for 1000h	AEC-Q200 TEST 7 MIL-STD-202 Method 103	ΔR≤±0.2%	ΔR≤±0.5%
Load Life	+70°C for 2000h, rated power, 90min on, 30min off +70℃ refers to terminal temperature	AEC-Q200 TEST 8 MIL-STD-202 Method 108	ΔR≤±0.5%	ΔR≤±1.0%
Resistance to Solvent	Immerse in solvent for 3 min and wipe 10 times. Three cycles ofthree solvents. Dry at ambient temperature after cleaning	AEC-Q200 TEST 12 MIL-STD-202 Method 215	Clear marking. No visible damage	
Mechanical Shock	Half Sine Wave, peak acceleration 100g's, pulse duration 6ms, 3 times in each of six directions, on three different axes	AEC-Q200 TEST 13 MIL-STD-202 Method 213	ΔR≤±0.05%	ΔR≤±0.2%
Vibration	10-2KHz, 5g's, 20 min per cycle, 12 cycles in each of the three directions of X.Y.Z loops	AEC-Q200 TEST 14 MIL-STD-202 Method 204	ΔR≤±0.05%	ΔR≤±0.2%
Resistance to Solder Heat	+260°C , 10s	AEC-Q200 TEST 15 MIL-STD-202 Method 210	ΔΔR≤±0.2%	ΔR≤±0.5%
Solderability	+245°C tin bath for 3s	AEC-Q200 TEST 18 IEC 60115-1 4.17	No visible damage. 95% minimum coverage	
TCR	-55℃ and +170℃, +20℃ Ref.	AEC-Q200 TEST 19 IEC 60115-1 4.8	In the range of ±100ppm/°C	
Substrate Bending	2mm. Duration: 60s.	AEC-Q200 TEST 21 AEC-Q200-005	ΔR≤±0.1%	ΔR≤±0.5%
Short Time Overload	2.5x rated voltage, 5s	IEC 60115-1 4.13	ΔR≤±0.5%	ΔR≤±1.0%
Low Temperature Storage	-55℃ for 96h, unpowered	IEC 60068-2-1	ΔR=0	ΔR≤±0.1%
Moisture Resistance	Apply T = 24 hours/cycle, zero power, 7a and 7b are not required in the method	MIL-STD-202 Method 106	ΔR=0	ΔR≤±0.2%

◆Derating Curve

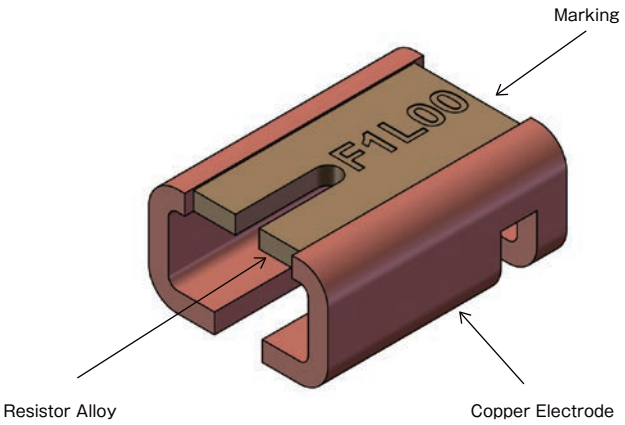


◆Reflow Soldering Profile



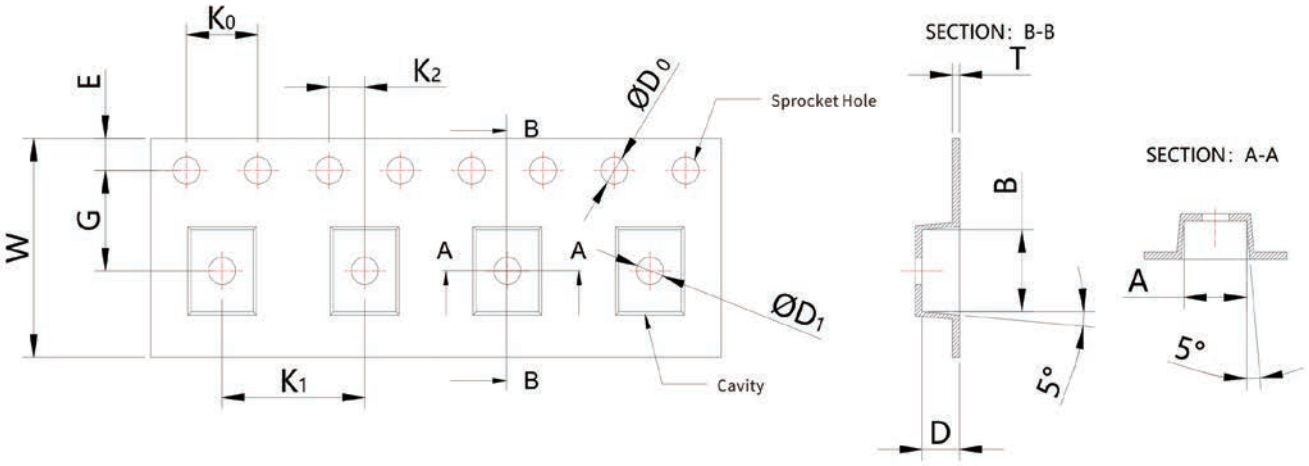
Resistor Surface Temperature:
Pre-Heat: +150℃+190℃,60~120sec.
Reflow: Above +220℃,90~150sec.
Applicable Solder Composition: Sn-Ag-Cu

◆Construction & Marking



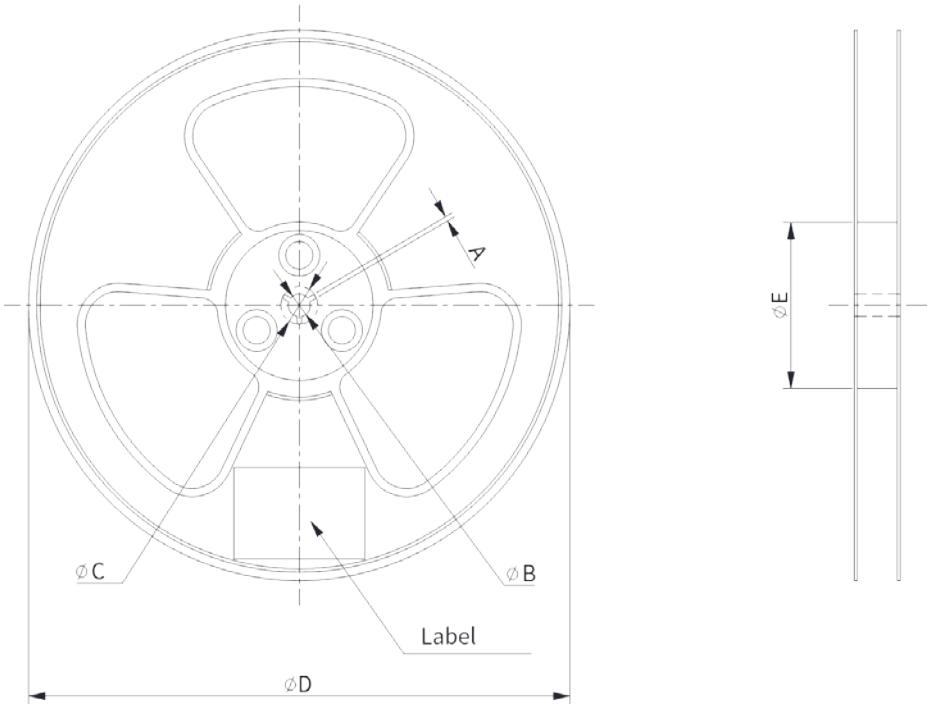
Marking: Tolerance+Resistance
F:Tolerance
1L00:Resistance

◆Tape Specification



Series	Resistance Value	Unit:mm											
		A	B	ϕD0	ϕD1	K0	K1	K2	E	G	W	D	T
MSRPM 1216	0.3 mΩ~1.0 mΩ	3.5±0.1	4.5±0.1	1.5±0.1	1.5±0.1	4.00±0.1	8.0±0.1	2.0±0.1	1.75±0.1	5.5±0.1	12.0±0.3	2.1±0.1	0.4±0.05

◆Reel Specification



Series	Unit:mm				
	A	ϕB	ϕC	ϕD	ϕE
MSRPM 1216	1.5 Min.	13.0+0.5/-0.2	20.2 Min.	330±2	100±2

◆Popular Part Numbers

Part Number	Size	Tolearance	Resistance	TCR (+20°C Ref)	Power	Quantity	Max. Operating Current
MSRPM1216R-0L30-D3P0	1216	±0.5%	0.3mΩ	±100ppm/℃	10W	3000pcs	182A
MSRPM1216R-0L30-F3P0	1216	±1.0%	0.3mΩ	±100ppm/℃	10W	3000pcs	182A
MSRPM1216R-0L30-J3P0	1216	±5.0%	0.3mΩ	±100ppm/℃	10W	3000pcs	182A
MSRPM1216R-0L50-D3P0	1216	±0.5%	0.5mΩ	±100ppm/℃	9W	3000pcs	134A
MSRPM1216R-0L50-F3P0	1216	±1.0%	0.5mΩ	±100ppm/℃	9W	3000pcs	134A
MSRPM1216R-0L50-J3P0	1216	±5.0%	0.5mΩ	±100ppm/℃	9W	3000pcs	134A
MSRPM1216R-1L00-D3P0	1216	±0.5%	1.0mΩ	±100ppm/℃	7W	3000pcs	83A
MSRPM1216R-1L00-F3P0	1216	±1.0%	1.0mΩ	±100ppm/℃	7W	3000pcs	83A
MSRPM1216R-1L00-J3P0	1216	±5.0%	1.0mΩ	±100ppm/℃	7W	3000pcs	83A