RMQR series
Metal Foil Low Resistance Resistor (AEC-Q200)

◆ Features

»Low Resistance / TCR /Inductance

»Excellent long term stability

»RoHs compliant and halogen free

»Lead free

»AEC-Q200 Compliant

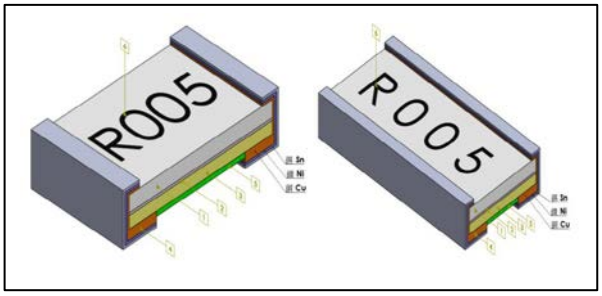
◆ Applications

»In-Vehicle Infotainment system

»Headlight control unit

»Non-safety Automotive electronics unit

◆ Configuration



TYPE	RMF
1. Substrate	Alumina Ceramic
2. Adhesive	Epoxy
3. Resistive element	Cu – alloy
4. Terminal electrode	Sn、Ni、Cu
5. Protective coating	Flame-retardant epoxy, meets UL- 94-V0 requirements(green)
6. Marking coating	Flame-retardant epoxy, meets UL- 94-V0 requirements (black)

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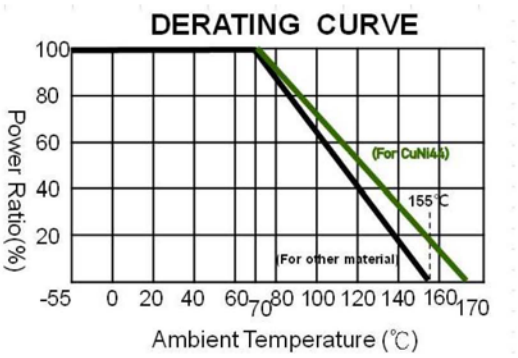
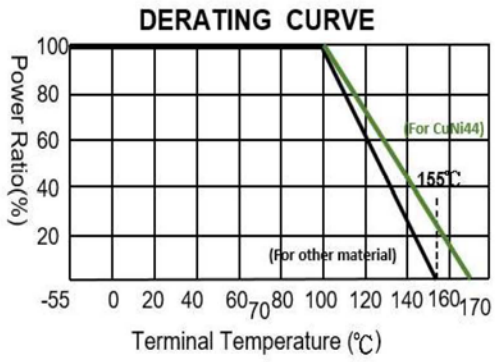
◆ Power Derating Curve

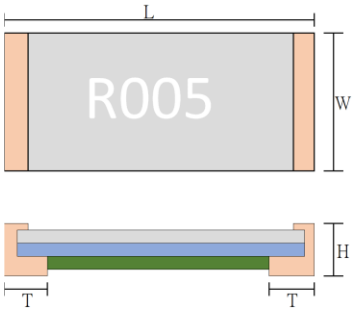
Operating Temperature Range: -55 to +155 deg. C

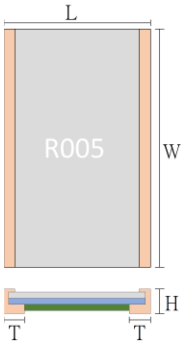
The Operating Temperature Range: -55°C ~+155°C (CuNi44 material : -55°C ~+170°C). For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with the curve below (Terminal temperature derating from above 100°C)





◆ Dimension





TYPE	Power Rating	Resistance Range	L	W	T	a
RMQR0805	0.5W	5~65mΩ	2.00±0.25	1.20±0.25	0.65±0.20	0.50±0.20
RMQR1206	1W	5~90mΩ	3.20±0.25	1.60±0.25	0.65±0.20	0.68±0.30
RMQR2512	2W	5~90mΩ	6.40±0.30	3.20±0.30	0.65±0.20	1.05±0.30
RMQR3921	3W	5~50mΩ	11.10±0.40	5.10±0.30	0.65±0.30	2.36±0.30
RMQR0508	1W	5~62mΩ	1.20±0.25	2.10±0.25	0.65±0.20	0.43±0.20
RMQR0612	1.5W	5~62mΩ	1.60±0.25	3.20±0.25	0.65±0.20	0.40±0.20

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RMQR1225	3W	5~68mΩ	3.20±0.30	6.40±0.30	0.65±0.20	0.60±0.20
RMQR2139	4W	5~47mΩ	5.10±0.30	11.10±0.40	0.65±0.30	0.90±0.30

Unit: mm

◆ Standard Electrical Specifications

Type	Rating Power at 70℃	T.C.R. (ppm/℃)	Max. Rating Current	Max. Overload Current	Resistance Range (mΩ)		Material	Operating Temperature Range (℃)
					0.5% (D)	1.0% (F)		
RMQR0805	0.5W	±75	10.00A	15.81A	—	5~9	R005~R006 : CuMn7Sn R007~R009 : CuMn12Ni R010~R065 : CuNi44	-55℃~155℃ (CuNi44: -55℃~170℃)
		±50	7.07A	11.18A	10~65			
RMQR1206	1W	±75	14.14A	22.36A	—	5~9	R005~R008 : CuMn7Sn R009 : CuMn12Ni R010~R090 : CuNi44	
		±50	10.00A	15.81A	10~90			
RMQR2512	2W	±75	20.00A	31.62A	—	5~9	R005~R007 : CuMn7Sn R008~R009 : CuMn12Ni R010~R090 : CuNi44	
		±50	14.14A	22.36A	10~90			
RMQR3921	3W	±100	24.49A	38.73A	—	5~9	R005~R007 : CuMn7Sn R008~R009 : CuMn12Ni R010~R050 : CuNi44	
		±50	17.32A	27.38A	10~50			

Type	Rating Power at 70℃	T.C.R. (ppm/℃)	Max. Rating Current	Max. Overload Current	Resistance Range (mΩ)		Material	Operating Temperature Range (℃)
					1.0% (F)	2.0% (G)		
RMQR0508	1W	±100	14.14A	22.36A	5~9		R005~R062 : CuNi44	-55℃~170℃
		±50	10.00A	15.81A	10~62			
RMQR0612	1.5W	±100	17.32A	27.38A	5~9		R005~R062 : CuNi44	
		±50	12.24A	19.36A	10~62			
RMQR1225	3W	±100	24.49A	38.72A	5~9		R005~R068 : CuNi44	
		±50	17.32A	27.38A	10~68			
RMQR2139	4W	±100	28.28A	44.72A	5~9		R005~R047 : CuNi44	
		±50	20.00A	31.62A	10~47			

Operating Current=√(P/R), Operating Voltage=√(P*R)

All product specification and data are subject to change without notice

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◆ Part Number

RMQR	2512	F	T	R005
Type	**Size**	**Tolerance**	**Watt**	**R Value**
RMQR	0805 1206 2512 3921 0508 0612 1225 2139	D: 0.5% F: 1% G: 2%	T:1W S:2W U:1/2W V:1.5W R:3W A:4W	R005=5mΩ

» Standard Package Q'ty for each size is as following.

TYPE	Standard Package Q'ty
RMQR0805 / RMQR0508	5000
RMQR1206 / RMQR0612	5000
RMQR2512 / RMQR1225	4000
RMQR3921/ RMQR2139	2000

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◆ Specification

Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	JIS-C-5201-1 4.8 IEC-60115-1 4.8	At 25℃ /+125℃, 25℃ is the reference temperature	As Spec
Short Time Overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	The number of rated power are as follows: 2.5 times of rated power for 5 seconds.	±1.0%+0.5mΩ
Leaching	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1	260±5℃ for 30 seconds.	Individual leaching area ≦5% Total leaching area ≦ 10%
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5℃ for 10 seconds.	±1.0%+0.5mΩ
Insulation Resistance	JIS-C-5201-1 4.6 IEC-60115-1 4.6	Apply 100VDC for 1 minute.	≧10GΩ
Temperature Cycling	JESD22 Method JA-104	1000 Cycles (-55°C to +125°C) Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme.	±2.0%+0.5mΩ
Resistance to Solvent	MIL-STD-202 Method 215	Add Aqueous wash chemical - OKEM Clean or equivalent.	±2.0%+0.5mΩ
Biased Humidity	MIL-STD-202 Method 103	1,000 hours; 85°C / 85% RH, 10% of operating power. Measurement at 24±4 hours after test conclusion.	±2.0%+0.5mΩ
High Temperature Exposure (Storage)	MIL-STD-202 Method 108	1000 hrs. @ T=155°C. Unpowered. Measurement at 24±4 hours after test conclusion.	±2.0%+0.5mΩ
Operational Life	MIL-STD-202 Method 108	Condition D Steady State TA=125°C at derated power.Measurement at 24±4 hours after test conclusion.	±2.0%+0.5mΩ
External Visual	MIL-STD-883 Method 2009	Electrical test not required. Inspect device construction, marking and workmanship.	—
Mechanical Shock	MIL-STD-202 Method 213	)Test ½ Sine Pulse, Peak value: 100g, normal duration: 6ms, Velocity change:12.3ft/sec.	±2.0%+0.5mΩ
Vibration	MIL-STD-202 Method 204	5 g's for 20 min., 12 cycles each of 3 orientations. Note: Test from 10-2000 Hz	±2.0%+0.5mΩ
ESD	AEC-Q200- 002 or ISO/DIS 10605	Human body model 0805 and above：2KV	±3.0%+0.5mΩ
Solderability	J-STD-002	(1) 4 hrs 155℃ dry heat (2) 245±5℃ 3 sec.	The covered area >95%
Terminal Strength (SMD)	AEC Q200-006	Pressurizing force for 60 seconds 0805 and above：17.7N	No broken
Board Flex	AEC Q200-005	Beading once for 60 seconds all sizes:2mm	±2.0%+0.5mΩ

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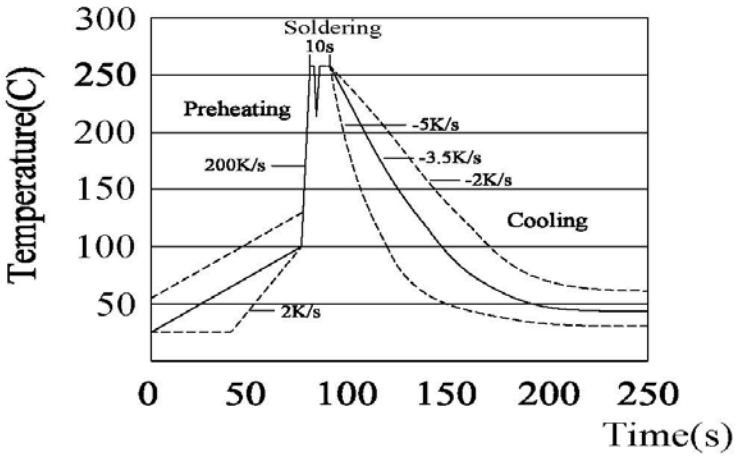
◆ Recommended Customer Soldering Parameters

Wave solder Temperature condition

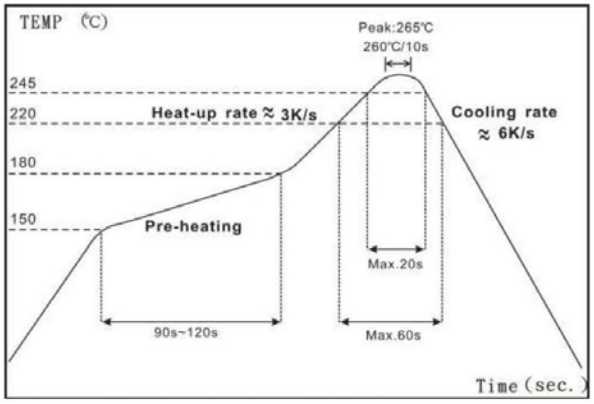
Preheating : 100℃~130℃, max.100 sec.

Soldering: 250℃~265℃ max. 10 sec.

Maximum temperature : 260±5℃, max. 10sec.



■ Solder reflow Temperature condition



Rework temperature（hot air equipment）: 350℃, 3~5seconds

Recommended reflow methods

IR, vapor phase oven, hot air oven

If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

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