丽智电子
LIZ Electronics

低阻分流器贴片电阻承认书-RZ 系列

Approval Specification Low-Resistance Shunt Chip Resistors-Type *RZ series*

规格书

SPECIFICATION

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1.范围（scope）：

1.1 适用于本公司所生产的无铅、无卤之低阻分流器合金贴片电阻 RZ 系列产品

This specification applies to Low-Resistance Shunt resistors of RZ Series which meet requirements of Pb free and halogen free.

1.2 符合 AEC-Q200 条款

The relevant provisions of the AEC-Q200

2.产品料号（Part number）：

For example: 2512 1% 5W 1mΩ

RZ2512FRR001G

RZ	2512	F	R	R001	G
类型(Type) RZ:低阻分流器贴片电阻(Low-Resistance Shunt chip resistors)	尺寸(Size) 2512 3920 5930	公差 Tolerance F=±1% G=±2% J=±5%	额定功率 Rated Power C=3W O=4W R=5W P=6W S=7W Q=8W T=9W U=10W W=12W Z=15W	阻值 Resistance value R001=1mΩ 0L50=0.5mΩ	包装代码 Packing Code G= reel （卷装） V= bulk （散料） S= Double Standard Quantity (两倍卷盘标准包装量)

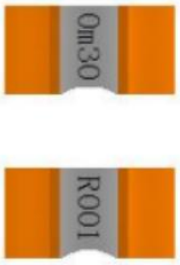
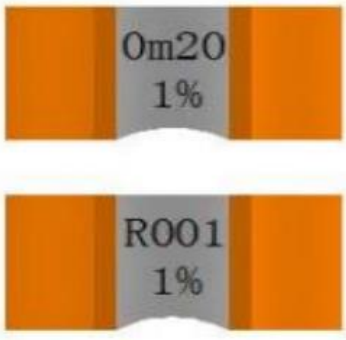
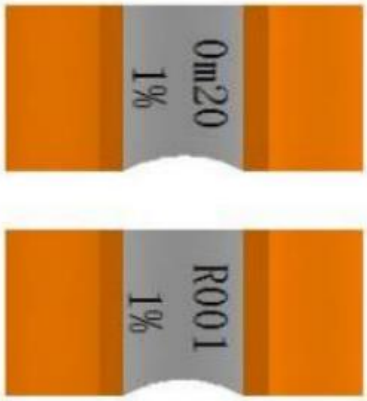
3. 分流器本体字码标示(Marking on the Shunt Resistor's Body):

※ ±1%,±2%,±5%的产品，以四字码标示，第一位字码”R”标示 10^{-3}，后三位表示阻值的有效数字。

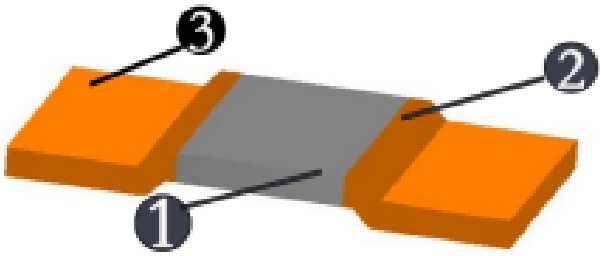
※ 第二位字码”m”表示阻值小数点。

±1%,±2%,±5% tolerance product: the marking is 4 digits, The first letter‘R’ denotes 10^{-3},The other three digitals declare resistance.

The second letter ‘m’ mean point.。

2512	3920	5930
		

4. 产品结构（Construction ）：

产品图示	产品结构图
	

No	描述
①	锰铜，镍铬 或铁铬合金本体
②	电子束焊接结构稳定可靠
③	纯紫铜端子

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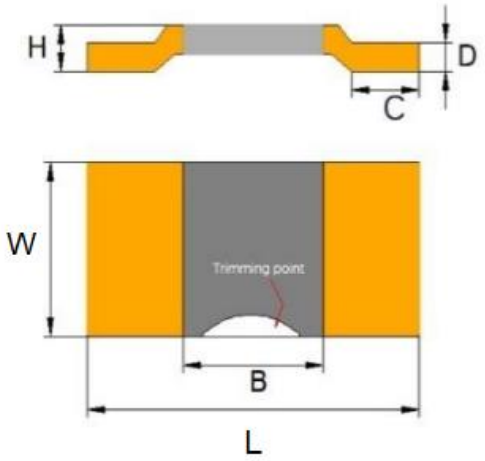
5. 尺寸（Dimension）：



类别 Type	L	W	C	B
2512	6.4±0.3	3.2±0.3	1.5±0.5	3±0.5
3920	10±0.5	5.2±0.5	2.0±0.5	5±0.5
5930	15.2±0.5	7.6±0.5	4.2±0.5	5±0.5

6. 阻值范围及电气特性（Resistance Range and Electrical Characteristics）：

类别 Type	材料 Material	阻值(mΩ) Resistance(mΩ)	H/mm	D/mm	P70℃/W	TCR (ppm/℃)
RZ2512	MnCu	0.2	2.2±0.3	1.7±0.3	6	175
		0.25	2.1±0.3	1.6±0.3	6	175
		0.3	1.5±0.3	1.0±0.1	6	175
		0.5	1.3±0.3	0.8±0.1	6	115
		1	0.9±0.3	0.36±0.1	5	100
	Karma/ FeCrAl	2	1.2±0.3	0.65±0.1	5	50
		3	0.9±0.3	0.4±0.1	4	50
		4	0.7±0.3	0.3±0.1	3	50
		5	0.8±0.3	0.25±0.1	3	50
RZ3920	MnCu	0.2	2.1±0.2	1.66±0.1	12	125
		0.3	1.9±0.2	1.38±0.1	10	150
		0.5	1.2±0.2	0.74±0.1	9	50
		0.7	1.0±0.2	0.56±0.1	8	50
		1	0.9±0.2	0.4±0.1	7	50
	Karma/ FeCrAl	1	1.66±0.2	1.16±0.1	8	50
		2	1.1±0.2	0.58±0.1	6	50
		2.5	1.1±0.2	0.54±0.1	6	50
		3	0.8±0.2	0.44±0.1	5	50
		4	0.9±0.2	0.38±0.1	5	50
		5	0.9±0.2	0.30±0.1	5	50

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类别 Type	材料 Material	阻值(mΩ) Resistance(mΩ)	H/mm	D/mm	P70℃/W	TCR (ppm/℃)
RZ5930	MnCu	0.1	2.50±0.2	2.0±0.1	15	100
		0.2	2.0±0.2	1.5±0.1	15	100
		0.3	1.46±0.2	0.92±0.1	10	75
		0.5	1.1±0.2	0.56±0.1	10	75
		0.75	0.9±0.2	0.4±0.1	10	75
	Karma/ FeCrAl	1	1.4±0.2	0.9±0.1	9	50
		1.5	1.1±0.2	0.64±0.1	7	50
		2	1.0±0.2	0.48±0.1	7	50
		2.5	0.9±0.2	0.4±0.1	7	50
		3	0.8±0.2	0.3±0.1	7	50
		4	0.5±0.2	0.24±0.1	7	50

备注（remark）：

※ 额定电流计算公式（The rated current is calculated by the following formula）：

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

I：额定电流（Rated current）(A)

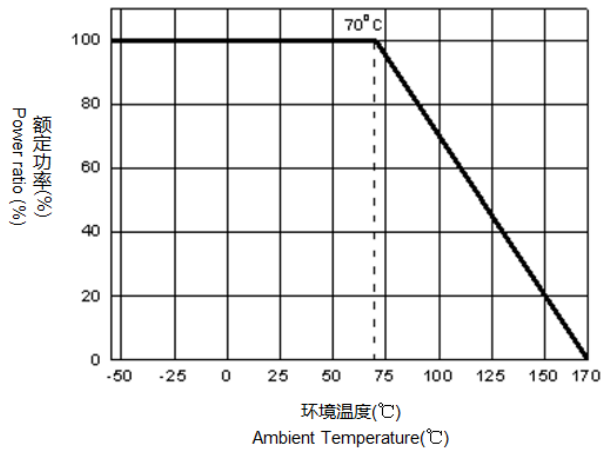
P：额定功率（Rated Power）(W)

R：电阻阻值（Resistance ）(Ω)

※ 如果计算出的电流超过此型别的最大工作电流，则此型别的最大工作电流为此电阻的额定电流。

In case the value calculated by the formula exceed the maximum working current as above table, the maximum working current shall be regarded as rated current.

7. 功率衰减曲线（Power Derating Curve）：



工作温度范围（Operating Temperature Range）：
-55℃~+170℃;

储存条件（storage condition ）：
5～30℃, 30～75%RH.

保存期限(Shelf Life): 2 年

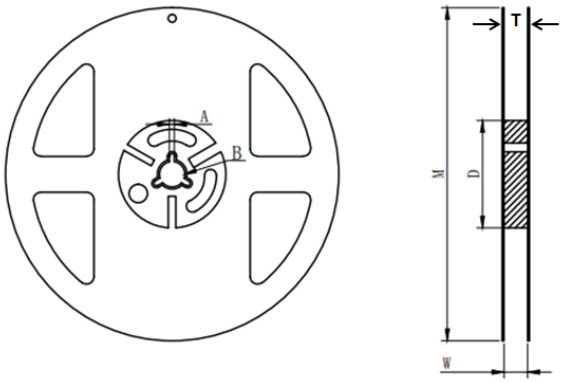
7. 性能(Performance Specifications)

内容 Item	测试方法 Test Methods	测试条件 Test Conditions	规格 Specification
短时间过负荷 Short-time overload	IEC60115-1 4.13	加载 5 倍的额定功率，时间 5 秒后测量试验前后的阻值变化率。 Applied 5.0 times of rated power for 5 second. Measure the variation of resistance. ΔR%=(R2-R1)/R1 *100------（%） R1＝试验前阻值(resistance before test) R2＝试验后阻值(resistance after test)	△R±0.5% Maximum
温度系数 Temperature Coefficient	IEC60115-1 4.8	TCR=（R-R_0 ）/（t-t_0）R_0 ×10^6（ppm） R_0 电阻在室温下的阻值(resistance at room temperature) R 电阻在 125℃下的阻值(resistance at 125℃) t_0 室温(room temperature) t 测试温度 125℃（test temperature 125℃）	参照规格表 As Spec.
耐湿特性 Biased Humidity	MIL-STD-202 METHOD 103	加载 10%额定功率，85℃/85%RH, 持续通电 1000H,试验结束 24±4 小时后进行测试 1000 hrs 85℃/85%RH, 10% of operating power. Measurement at 24±4 hours after test condition.	△R±1% Maximum
温度循环 Temperature cycling	IEC60115-1-4.19	-55°C@30 分钟～常温@<5 分钟～+155°C@30 分钟；500 个循环 -55 ° C@30 Minute to room temperature @<5 minutes to+155 ° C@30 Minutes; 500 cycles	△R±0.5% Maximum

低温负载 Operation at low temperature	IEC60115-1-4.36	-55°C，无负载一小时，额定电压负载 45 分钟，无负载 15 分钟 -55 ° C, no load for one hour, rated voltage load for 45 minutes, no load for 15 minutes	△R±0.5% Maximum
高温储存 High Temperature Exposure	IEC60115-1-4.25.3	170℃下放置 1000H，试验结束 24±4 小时后量测试验前后阻值变化率. 1000 hrs. @T=170℃. Measure the variation of resistance at 24±4 hours after test conclusion.	△R±0.5% Maximum
负荷寿命 Load life	IEC60115-1 -4.25.1	电阻放入恒温箱中，温度 70±2℃，通电额定电流 1.5 小时，断电 0.5 小时；重复通断电至试验时间 1000 +48/-0 小时. 量测试验前后阻值变化率. Put the specimen in a chamber at 70±2℃ temperature , and applied rated Current for1.5H and rested for 0.5H repeatedly till total test time is 1000 +48/-0 .. Measure the variation of resistance.	△R±1% Maximum
抗焊锡热 Resistance to soldering heat	IEC60115-1 4.18	沾助焊剂后浸入锡炉，锡炉温度 270℃，时间 10 秒，测量试验前后的阻值变化率。 Dip the terminal in a flux and then dip into a soldering bath at 270℃ for 10sec. Measure the variation of resistance.	△R±0.5% Maximum 外观无损伤
焊锡性 Solderability	IEC60115-1 4.17	沾助焊剂后浸入锡炉，锡炉温度 245±5℃，时间 2~3 秒 Dip the terminal in a flux and then dip into a soldering bath at 245±5℃ for 2~3sec.	最少 95%面积上锡(Min 95% coverage)

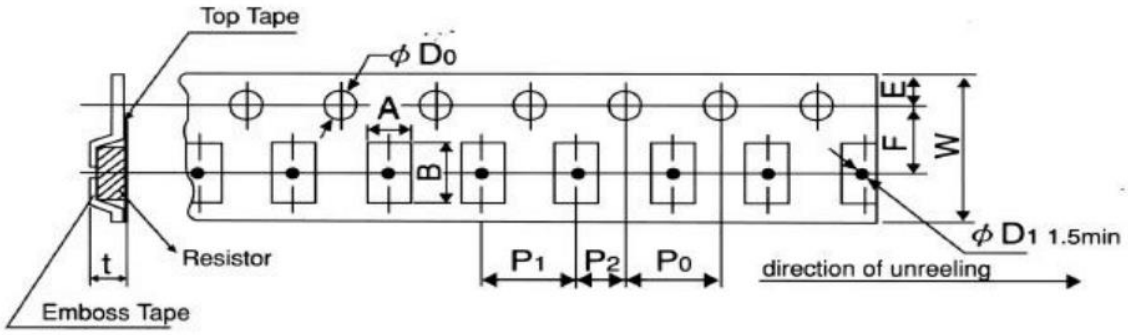
8.包装规格（Tapping Specification）

8.1 卷盘尺寸（reel dimension）



Reel Type	M(mm)	D(mm)	B(mm)	W(mm)	T(mm)
RZ2512	178±1.0	60.0±1.5	13.5±1	12.8 +0.5/-0	-
RZ3920	330±3.0	100.0±1.5	13.5±1	25 +3/-0	29 +3/-0
RZ5930	330±3.0	100.0±1.5	13.5±1	25 +3/-0	29 +3/-0

8.2 包装尺寸（packing dimension）



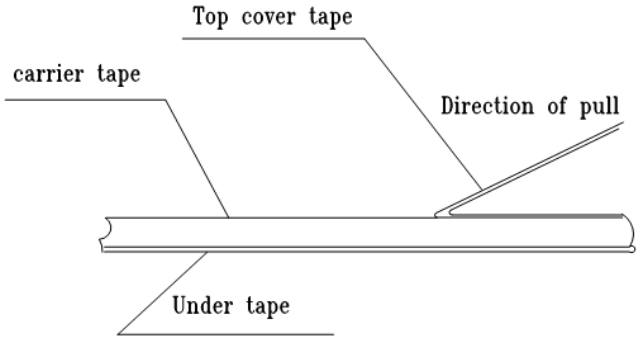
Unit：mm

Size	Pack	Q'ty/R	A	B	D0	E	F	P0	P1	P2	W	D1	T
2512	Emboss	1K	4.3	7.6	1.5	1.60	5.5	7.7	7.7	3.85	16.0	NA	1.7
3920	Emboss	2.5K	6.2	11.2	1.5	1.55	11.2	12.0	12.0	6.0	24.0	NA	2.0
5930	Emboss	2K	8.1	15.3	1.5	1.75	11.5	12.0	12.0	6.0	24.0	NA	2.2

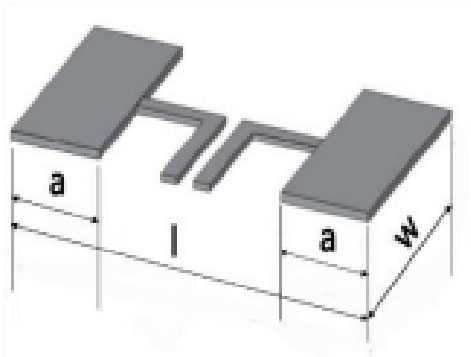
9.上胶带剥离力测试（Peel force of top cover tape）

上胶带以 300mm/分钟的速度，沿 165～180 度角的方向进行剥离，如下图所示。纸带的剥离力范围为 0.1N to 0.7N(10 to 70 g)；载带的剥离力范围为 0.3N to 1N (30 to 100 g)

The top cover tape is pulled at a speed of 300 mm/min with the angle between the tape during peel and the direction of unreeling maintained at 165 to 180 degree as following picture. The peel force of paper carrier tape shall be 0.1N to 0.7N(10 to 70 g), the peel force of plastic carrier tape shall be 0.3N to 1N (30 to 100 g)



10. 建议焊盘尺寸（Recommended Solder Pad Dimension）



类别 Type	l (mm)	w (mm)	a (mm)
RZ2512	7	3.4	1.8
RZ3920	11	6.2	2.7
RZ5930	16	8.75	5.2