



宽电极厚膜贴片电阻规格书-RW 系列

Approval Specification for Wide Terminal Thick Film Chip Resistors-Type RW

规格书

SPECIFICATION

丽智电子（南通）有限公司

地址：江苏省南通市通州区康富路 789 号

Address: No. 789, Kang Fu Road Tongzhou District Nantong city Jiangsu province

Tel: 0086-0513-68856666

Fax: 0086-0513-68383688

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1. 范围 (scope) :

1.1 适用于本公司所生产的无铅、宽电极厚膜贴片电阻 RW 系列

This specification applies to Wide Terminal thick film chip resistors which meet requirements of Pb free.

1.2 本公司的无铅产品指的贴片电阻端电极无铅，而存在于电阻层的玻璃中的符合 RoHS 豁免条款。

There no lead exists in terminal of resistor, and lead which exist in glass of resistor layer meets RoHS exemption.

2. 产品料号 (part number) :

0612 0.75W 1% 10Ω


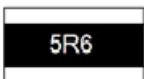


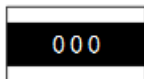
RW0612F210R0G

<u>RW</u>	<u>0612</u>	<u>F</u>	<u>2</u>	<u>10R0</u>	<u>G</u>	
类型(Type)	尺寸(Size)	公差	额定功率	阻值	包装代码	区别码
RW: 宽电极 厚膜贴片电 阻 (Wide Terminal thick film chip resistors)	0612 1020 1225	Tolerance F=±1% J=±5%	Rated Power 1= 1W 2= 3/4W D=1.5W B= 2W C= 3W	Resistance value ±1% : 10R0=10 Ω 49R9=49.9 Ω 1002=10K Ω ±5% : 6R8=6.8 Ω 200=20 Ω 564=560K Ω	Packing Code G=成品, 7 inch reel 常规包装量 H=成品, 10 inch reel 两倍包装量 S=成品, 20K包装量 V=bulk (散料)	Distinction Code 空码 = 无指定 - "X" = 特别指 定, 不同字母代表 不同指定

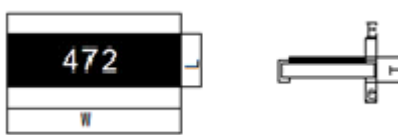
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3. 电阻本体字码标示 (Marking on the Resistor's Body) :

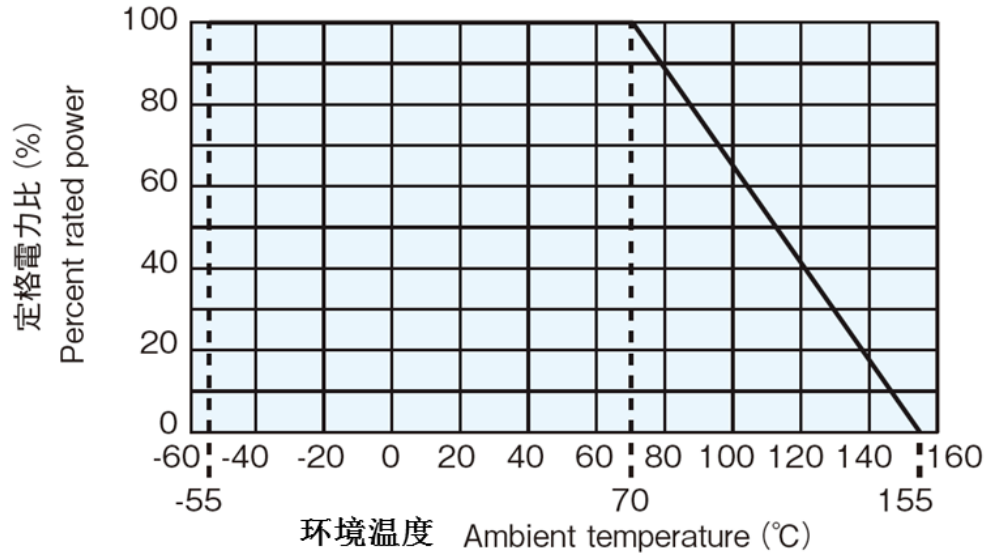
※ 公差±5%的产品，以三字码标示，前两位表示阻值的有效数字，最后一位表示 10 的乘幂 ±5% tolerance product: the marking is 3 digits, the first 2 digits are significant figures of resistance value and the 3rd one denotes the power number of 10, (10 ^x)		472=47×10 ² =4.7K Ω
		10Ω 以下标示：5R6=5.6Ω Below 10Ω: 5R6=5.6Ω
※ ±1%的产品，以四字码标示，前三位表示阻值的有效数字，最后一位表示 10 的乘幂 ±1% tolerance product: the marking is 4 digits, the first 3 digits are significant figures of resistance value and the 4th one denotes the power number of 10, (10 ^x)		4992=499×10 ² =49.9K Ω
		100Ω 以下标示：20R0=20Ω Below 100Ω: 20R0=20Ω
※ 0 欧姆产品，采用 000 三位代码标示。 0Ω Products, use 000 3digits code to indicate the resistance value.		000=0Ω

4. 尺寸 (dimension) :

尺寸 dimension					
	单位 (unit) : mm				
型别 (Type)	L	W	T	E	e
RW0612	1.60±0.20	3.20±0.20	0.55±0.10	0.30±0.20	0.50±0.20
RW1020	2.50±0.15	5.00±0.20	0.55±0.10	0.40±0.20	0.75±0.20
RW1225	3.20±0.20	6.50±0.20	0.55±0.20	0.40±0.20	0.75±0.20

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5. 功率衰减曲线 (Derating Curve) :



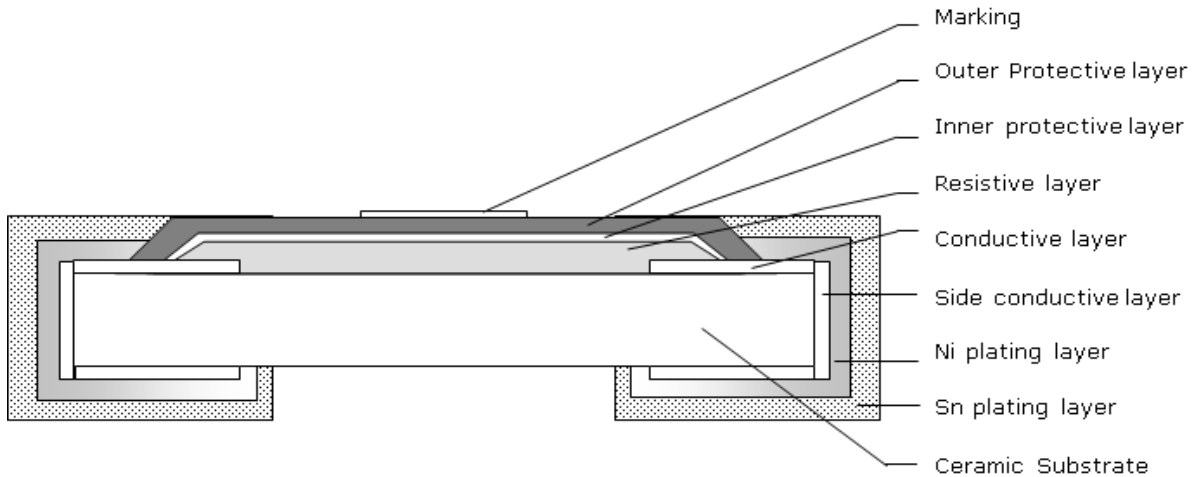
工作温度范围 (Operating Temperature Range) : $-55^{\circ}\text{C} \sim +155^{\circ}\text{C}$;

储存条件 (storage condition) : $5 \sim 30^{\circ}\text{C}$, $30 \sim 75\% \text{RH}$.

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6.电阻结构（Construction）：



No.	结构 construction	主要材料 Major material
1	陶瓷基板 Ceramic substrate	三氧化二铝 Al ₂ O ₃
2	内银电极 Inner Conductive layer	银钯 Ag-Pd
3	侧电极 Side conductive layer	镍铬合金 NiCr
4	阻体层 Resistive layer	氧化钌+玻璃 RuO ₂ + glass
5	内保护层 Inner protective layer	玻璃 Glass
6	外保护层 Outer Protective layer	环氧树脂 Epoxy
7	文字 Marking	环氧树脂 Epoxy
8	镍电极 Ni plating layer	镍 Ni
9	锡电极 Sn plating layer	雾锡 Matte Tin

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7. 阻值范围 (resistance range) :

型别 Type	额定功率 Rated power	最大工作电压 Max Working Voltage	最大过载电压 Max Overload Voltage	T.C.R. (PPM/°C)	阻值范围	
					F: ±1.0%	J: ±5.0%
0612	0.75W	200V	400V	±200	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 10MΩ	
1020	1W			±200	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 10MΩ	
1225	2W			±200	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 10MΩ	

8. 电气特性 (electrical characteristics) :

型别 Type	AW0612	AW1020	AW1225
额定功率 Rated power	0.75W	1W	2W
零欧姆阻值 Resistance Value of Jumper	20mΩ Max		
零欧姆额定电流 Rated Current of Jumper	4.0A	6.0A	8.0A
最大过载电流 < 1 秒且 1 次 Max Over Load Current < 1 Second and 1 times	15.0A	22.0A	30.0A

备注 (remark) :

※ 额定电压计算公式 (The rated voltage is calculated by the following formula) :

$$E = \sqrt{RP}$$

E : 额定电压 (Rated Voltage) (V)

P : 额定功率 (Rated Power) (W)

R : 电阻阻值 (Resistance) (ohm)

※ 如果计算出的电压超过此型别的最大工作电压, 则此型别的最大工作电压为此电阻的额定电压。
 In case the value calculated by the formula exceed the maximum working voltage as above table 9, the maximum working voltage shall be regarded as rated voltage.

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9. 性能信赖性测试 (Performance Reliability Test Methods)

内容 Item	测试方法 Test Methods	测试条件 Test Conditions	规格 Specification
温度系数 Temperature Coefficient of Resistance (T.C.R.)□	JIS C 5201 4.8 IEC-60115-1 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 155°C或-55°C下的阻值(resistance at 155°C or -55°C) t ₀ 室温(room temperature) t 测试温度 (test temperature 155°C or -55°C)	参考第 7 项
短时间过负荷 Short-time overload	JIS C 5201 4.13 IEC-60115-1 4.13	加载 2.5 倍的额定电压, 时间 5 秒后测量试验前后的阻值变化率。 Applied 2.5 times of rated voltage for 5 second. Measure the variation of resistance. 跳线: 过载电流持续 5 秒 Jumper : Over Load Current for 5 seconds 0612=10A / 1020=15A / 1225=20A	±1%: ±(1.0%+0.05Ω) ±5%: ±(2.0%+0.1Ω) Jumper : Max 0.02Ω after test.
溶蚀 Leaching	JIS C 5201 4.18 IEC-60068-2-58 8.2.1	锡炉温度 260±5°C, 时间 30+1/-0 秒, 取出置于显微镜下观察焊锡面积。 Dip the resistance in a tin furnace at 260±5°C for 30+1/-0seconds, then take it out and observe the solder area under a microscope;	单边未吃锡面积≤ 5% Individual leaching area ≤ 5% 总未吃锡面积≤ 10% Total leaching area ≤ 10%
抗焊锡热 Resistance to soldering heat	JIS C 5201 4.18 IEC-60115-1 4.18	锡炉温度 260±5°C, 时间 10±0.5 秒, 测量试验前后的阻值变化率。 Dip the resistance in a tin furnace at 260±5°C for 10±0.5sec. Measure the variation of resistance.	< 5%: ±(0.50%+0.05Ω) ≥ 5%: ±(1.00%+0.05Ω)
绝缘电阻 Insulation resistance	JIS C 5201 4.6 IEC-60115-1 4.6	电阻本体上加载 100V (DC) 绝缘耐压 60±5 秒后, 测量绝缘阻抗 Applying 100V (DC) to the resistor body and withstanding 60±5 seconds of insulation voltage. Measure the insulation resistance	≥ 10GΩ

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内容 Item	测试方法 Test Methods	测试条件 Test Conditions	规格 Specification
温度循环 Temperature Cycling	JIS C 5201 4.19	电阻放入温度循环机中, 温度 $155\pm 2^{\circ}\text{C}$ 至 $-55\pm 3^{\circ}\text{C}$, 共 5 个循环。 量测试验前后阻值变化率。 Put specimen in a chamber which temperature can be changed to $155\pm 2^{\circ}\text{C}$ or $-55\pm 3^{\circ}\text{C}$, repeated 5 times. Measure the variation of resistance.	1% and below: $\pm(0.5\%+0.05\Omega)$ 2%、5%: $\pm(1.0\%+0.10\Omega)$
耐溶剂 Resistance to Solvent	MIL-STD-202 Method 215	浸于洁净的 OKEM 化学水溶液中或同等水溶液中。 Add Aqueous wash chemical-OKEM clean or equivalent	$\pm(0.50\%+0.05\Omega)$
耐湿特性 Humidity	JIS-C-5201-1 4.24 IEC-60115-1 4.24	电阻放入恒温恒湿箱, 温度 $40\pm 2^{\circ}\text{C}$, 湿度 90~95 %RH;通电额定电压 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 $40\pm 2^{\circ}\text{C}$ temperature and 90~95% relative humidity, then applied rated voltage for 1.5H and rested for 0.5H repeatedly till total test time is 1000 +48/-0 .. Measure the variation of resistance.	1% and below: $\pm(1.0\%+0.05\Omega)$ 2%、5%: $\pm(2.0\%+0.05\Omega)$ Jumper : Max 0.05 Ω after test.
负荷寿命 Load life	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1	电阻放入恒温箱中, 温度 $70\pm 2^{\circ}\text{C}$, ON TIME:1.5H, OFF TIME:0.5H, 通电额定电压 1000 +24/-0 小时, 量测试验前后阻值变化率。 Put the specimen in a chamber at $70\pm 2^{\circ}\text{C}$ temperature, ON TIME:1.5H, OFF TIME:0.5H, and applied rated voltage for 1000 +24/-0H. Measure the variation of resistance.	1% and below: $\pm(1.0\%+0.05\Omega)$ 2%、5% : $\pm(3.0\%+0.10\Omega)$ Jumper : Max 0.05 Ω after test.
弯曲强度 Bending Strength	JIS-C-5201-1 4.33 IEC-60115-1 4.33	弯曲一次持续 5 秒 Bending once for 5 seconds D: 0612、1020、1225=2mm	1% and below: $\pm(1.0\%+0.05\Omega)$ 2%、5%: $\pm(1.0\%+0.05\Omega)$

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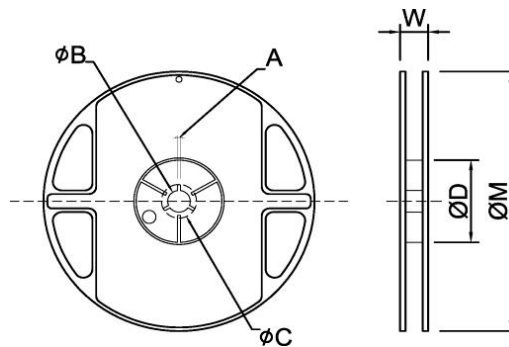
10. 包装规格 (Tapping Specification)

10.1 卷盘尺寸 (reel dimension)

Unit: mm

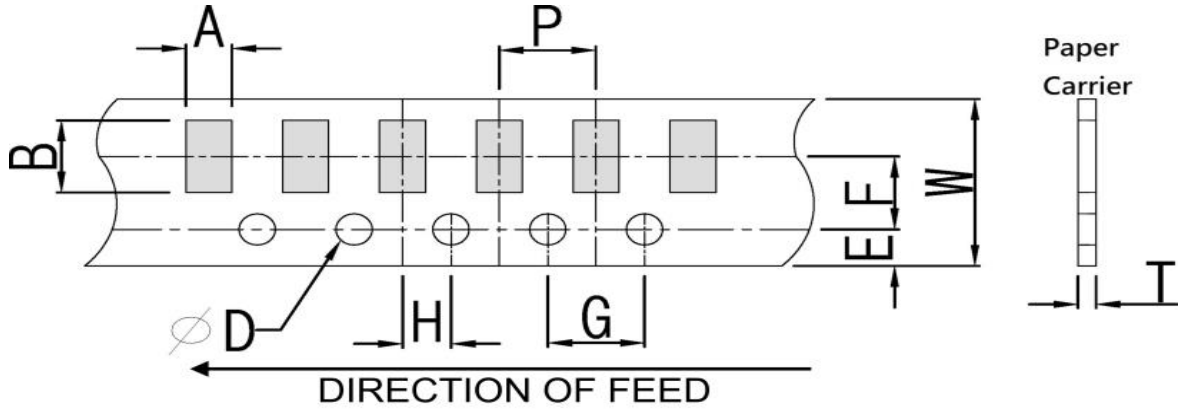
Type	Size		A	ΦB	ΦC	ΦD	W	ΦM
0612	7"	5K Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
1020 1225	7"	4K Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	16.0±2.0	178±2.0

- ※ 备注 (Remark) :
- (1) 1020/1225 每卷 4,000 pcs
 1020/1225 Quantity per Reel 4,000 pcs/Reel
 - (2) 0612 每卷 5,000pcs
 0612 Quantity per Reel 5,000 pcs/Reel

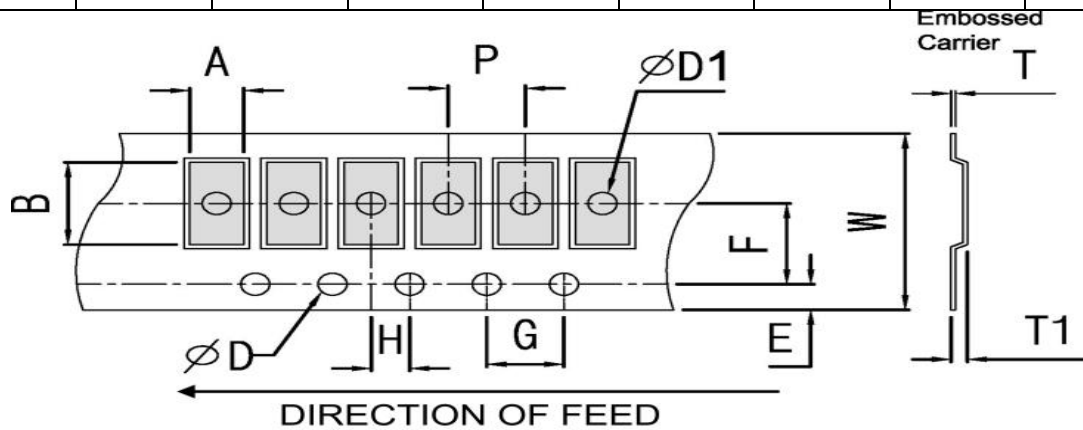


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10.2 包装尺寸 (packing dimension)



Type	A	B	W	E	F	G	H	T	ΦD	P
0612	1.90 ± 0.2	3.50 ± 0.2	8.0 ± 0.2	1.75 ± 0.1	3.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.75 ± 0.1	$1.50 \pm \begin{smallmatrix} 0.1 \\ 0.0 \end{smallmatrix}$	4.0 ± 0.1



Unit: mm

Embossed Type

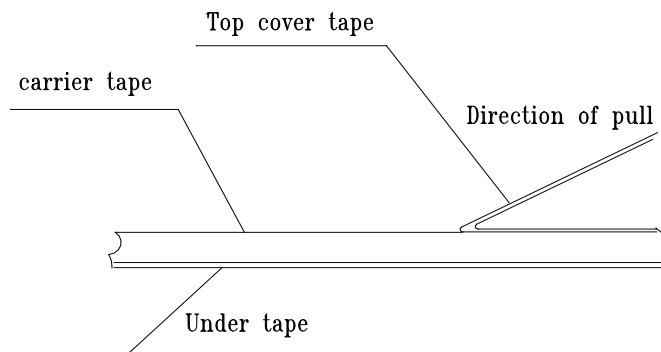
Type	A	B	W	E	F	G	H	T	ΦD	$\Phi D1$	T1	P
1020	2.80 ± 0.2	5.60 ± 0.2	12 ± 0.1	1.75 ± 0.1	5.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.23 ± 0.1	$1.50 \pm \begin{smallmatrix} 0.1 \\ 0.0 \end{smallmatrix}$	1.5 ± 0.1	0.85 ± 0.15	4.0 ± 0.1
1225	3.40 ± 0.2	6.70 ± 0.2	12 ± 0.1	1.75 ± 0.1	5.5 ± 0.05	4.0 ± 0.1	2.0 ± 0.05	0.23 ± 0.1		1.5 ± 0.1	0.85 ± 0.15	4.0 ± 0.1

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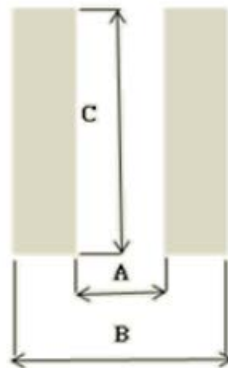
11. 上胶带剥离力测试 (Peel force of top cover tape)

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 10g~70g；载带的剥离力范围为 15g~80g。

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 0.10N to 0.70N (10g to 70 g), the peel force of plastic carrier tape shall be 0.15N to 0.80N (15g to 80 g)



12. 焊盘尺寸 (Recommended land patterns):

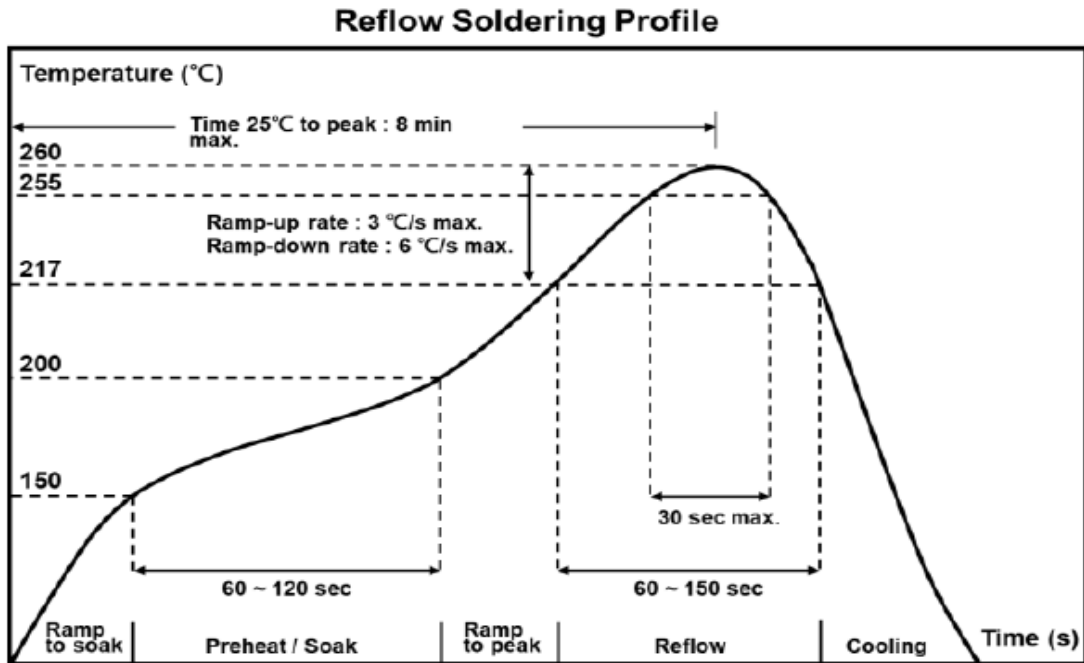


型别Type	焊盘式样 Land pattern	尺寸 Dimensions (mm)		
		A	B	C
RW0612		0.60	2.90	3.20
RW1020		0.75	3.40	5.00
RW1225		0.85	3.70	6.40

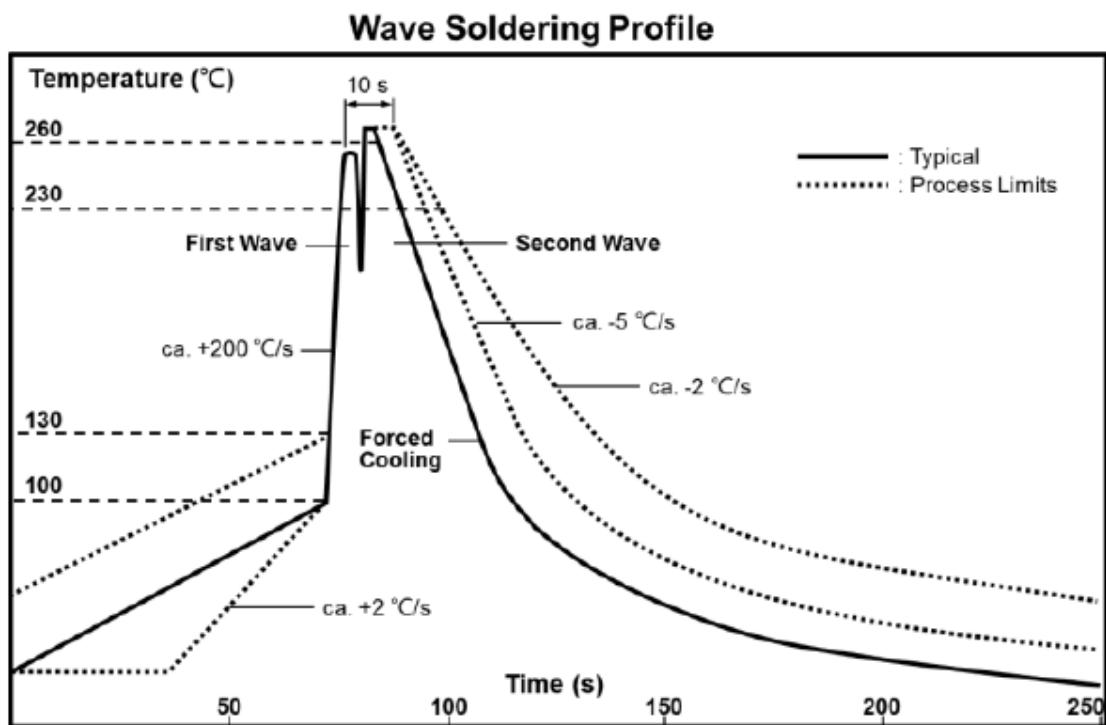
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13. 焊接 (soldering)

13.1 建议回流焊曲线 (Recommend reflow soldering profile)



13.2 建议波峰焊曲线 (Recommend wave soldering profile)



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13.3 手工焊温度 (hand soldering temperature)

烙鐵溫度 $350\pm 10^{\circ}\text{C}$, 3 秒之內, 避免烙鐵接觸電阻本體

The iron temperature is $350\pm 10^{\circ}\text{C}$, hand soldering time less than 3S. Avoid solder iron tip direct touch the components body.

產品規格及資料如有更改, 恕不另行通知。

All product specification and data are subject to change without notice.