规格书

SPECIFICATION

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1. 范围（scope）：

1.1 通用型厚膜电流检测贴片电阻——CF 系列

General Purpose Thick Film Current Sensing Chip Resistor —— CF Series

1.2■应用领域 Application

— 电机电器

Motor Circuit

— 家电：空调

Appliance: Air-condition

— 计算机及相关产品

Computer & relative products

— 通信设备：手持产品

Communication equipment: Hand Held Products

— DC-DC 转换器、充电器、适配器

DC-DC Converter, Charger, Adaptor

■ 特性 Features

— 适用于流焊和回流焊

Suitable for flow and reflow solderings

— 用于电源、电机电路等电流检测电阻

Current detecting resistors for power supplies, motor circuits, etc.

— 低电阻（100mΩ 或以下）和高精度电阻（±1%）

Low resistance (100mΩ or under) and high accuracy resistors (±1%) for current detection.

— 低 TCR/低电感

Low TCR/Low Inductance(≦5nH)

2. 产品料号（part number）：

1206 1/4W 1% R050

CF1206F4R050G

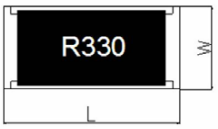
CF	1206	F	4	R050	G	
类型(Type) CF：厚膜贴片电阻 (thick film chip resistors)	尺寸(Size) 0805 1206 1210 1812 2010 2512 1225	公差 Tolerance F=±1% J=±5%	额定功率 Rated Power 1= 1W 2= 3/4W 3= 1/2W 4= 1/4W 8= 1/8W	阻值 Resistance value R010=10mΩ R082=82mΩ ≥100mΩ: R100=100mΩ R910=910mΩ	包装代码 Packing Code G=成品，7 inch reel 常规包装量 H=成品，10 inch reel 两倍包装量 Z=成品，15K包装量 S=成品，20K包装量 U=成品，50K包装 V=bulk（散料） *包装数量见10.2包装尺寸及数量	区别码 Distinction Code 空码 = 无指定 -“X“= 特别指定， H= High Power 不同字母代表不同指定

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

※ 0805（含）以上尺寸的产品，以四字码标示，第一位码R 表示10^{-3}，后三位表示阻值的有效数字。 The size larger than 0805 use four digitals to declare resistance. The first letter 'R' denotes 10^{-3}, The other three digitals declare resistance.		R010 = 10mΩ R220 = 220mΩ R330 = 330mΩ

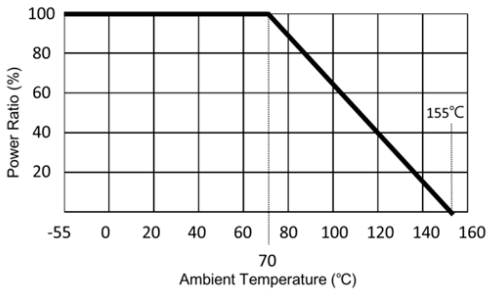
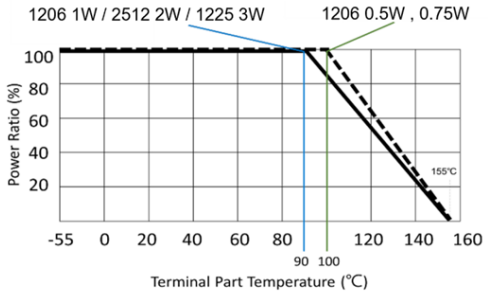
R-value	0805 以上 Code	R-value	0805 以上 Code	R-value	0805 以上 Code
10mΩ	R010	100mΩ	R100	360mΩ	R360
15mΩ	R015	110mΩ	R110	390mΩ	R390
20mΩ	R020	120mΩ	R120	400mΩ	R400
25mΩ	R025	130mΩ	R130	430mΩ	R430
30mΩ	R030	150mΩ	R150	470mΩ	R470
40mΩ	R040	160mΩ	R160	500mΩ	R500
50mΩ	R050	180mΩ	R180	510mΩ	R510
56mΩ	R056	200mΩ	R200	560mΩ	R560
62mΩ	R062	220mΩ	R220	620mΩ	R620
68mΩ	R068	240mΩ	R240	680mΩ	R680
75mΩ	R075	270mΩ	R270	750mΩ	R750
82mΩ	R082	300mΩ	R300	820mΩ	R820
91mΩ	R091	330mΩ	R330	910mΩ	R910

4. 尺寸（dimension）：

尺寸 dimension	  单位（unit）: mm					
型别（Type）	Resistance(mΩ)	L	W	T	E	e
0805	10~99	2.00±0.20	1.25±0.15	0.50±0.15	0.30±0.15	0.50±0.20
	100~1000	2.00±0.20	1.25±0.15	0.50±0.15	0.30±0.15	0.50±0.20
1206	10~99	3.05±0.20	1.60±0.20	0.55±0.15	0.40±0.20	0.70±0.20
	100~1000	3.05±0.20	1.60±0.20	0.55±0.15	0.40±0.20	0.50±0.20
1210	10~99	3.05±0.20	2.50±0.20	0.55±0.15	0.50±0.20	0.70±0.20
	100~1000	3.05±0.20	2.50±0.20	0.55±0.15	0.50±0.20	0.50±0.20
1812	10~99	4.50±0.20	3.10±0.20	0.55±0.15	0.55±0.20	0.80±0.20
	100~1000	4.50±0.20	3.10±0.20	0.55±0.15	0.55±0.20	0.70±0.20
2010	10~99	5.00±0.20	2.50±0.20	0.55±0.15	0.60±0.20	1.10±0.30
	100~1000	5.00±0.20	2.50±0.20	0.55±0.15	0.60±0.20	0.60±0.20
2512	10~99	6.30±0.20	3.20±0.20	0.55±0.15	0.60±0.20	1.10±0.30
	100~1000	6.30±0.20	3.20±0.20	0.55±0.15	0.60±0.20	0.60±0.20

型别（Type）	Resistance(mΩ)	L	W	T	E	e
1206*H	10~99	3.05±0.20	1.60±0.20	0.65±0.15	0.65±0.25	0.65±0.25
	100~1000	3.05±0.20	1.60±0.20	0.55±0.15	0.540±0.25	0.50±0.25
2512*H	10~99	6.30±0.20	3.20±0.20	0.75±0.15	0.70±0.25	0.70±0.25
	100~1000	6.30±0.20	3.20±0.20	0.65±0.15	0.70±0.25	0.70±0.25
RW1225	20~100	3.15±0.15	6.35±0.15	0.70±0.15	0.45±0.20	0.625±0.15

5. 功率衰减曲线（ Derating Curve）：

使用温度范围 Operating Temperature Range	-55℃~+155℃	
说明 Directions	电阻的额定功率基于环境温度 -55℃到 70℃ ,周围温度若超遇 70℃至 155℃之间 ,功率可照下图曲线予以修定之。 Resistors shall have a power rating based on continuous load operation at an ambient temperature from -55℃ to 70℃.For temperature in excess of 70℃ ，the load shall be derated as shown in figure.	对于各尺寸电阻器，其工作端子温度应按规定的描述进行，功率额定值应根据降额曲线进行降额。 For resistors working terminal temperature of described for each size, power rating shall be derated in accordance with the derating curve .
功率衰减曲线 Derating Curve		

储存条件（storage condition ）： 20～30℃, 40～80%R 有效期 2 年
Storage time at the environment temp: 25±5℃& humidity: 60±20% is valid for two years.

6. CF 标准电气规格-正常功率（CF Standard Electrical Specifications - Normal Power）：

Type	Rated Power at 70℃	Rated Current Range	Max Overload Current	T.C.R (PPM/℃)	电阻范围（mΩ） F（±1%）、J（±5%）
CF0805	1/8W	0.35~3.54A	8.84A	±1500	10≤R < 20
				±800	20≤R < 40
				±400	40≤R < 50
				±300	50≤R < 100
				±200	100≤R < 200
				±100	200≤R < 1000
CF1206	1/4W	0.5~5.00A	12.50A	±1500	10≤R < 20
				±800	20≤R < 40
				±400	40≤R < 50
				±300	50≤R < 100
				±200	100≤R < 200
				±100	200≤R < 1000
CF1210	1/2W	0.71~7.07A	17.68A	±1500	10≤R < 20
				±800	20≤R < 40
				±500	40≤R < 50
				±300	50≤R < 100
				±200	100≤R < 200
				±100	200≤R < 1000
CF1812	3/4W	0.87~8.66A	21.65A	±1500	10≤R < 20
				±800	20≤R < 40
				±500	40≤R < 50
				±300	50≤R < 100
				±200	100≤R < 200
				±100	200≤R < 1000
CF2010	3/4W	0.87~8.66A	21.65A	±1500	10≤R < 20
				±800	20≤R < 40
				±500	40≤R < 50
				±300	50≤R < 100
				±200	100≤R < 200
				±100	200≤R < 1000
CF2512	1W	1~10.00A	25.00A	±1500	10≤R < 20
				±800	20≤R < 40
				±500	40≤R < 50
				±300	50≤R < 100
				±200	100≤R < 200
				±100	200≤R < 1000

通用厚膜电流检测贴片电阻规格书-CF 系列

General Purpose Thick Film Current Sensing Chip Resistor Product Specifications

■CF 标准电气规格—高功率（CF Standard Electrical Specifications - High Power）

Type	Rated Power at 70℃	Rated Terminal Temperature	Rated Current Range	Max Overload Current	T.C.R (PPM/℃)	电阻范围（mΩ） F（±1%）、J（±5%）
CF1206	1.0W	90℃	10.00A	22.36A	±250	10≤R < 20
					±100	20≤R < 39
	0.75W	100℃	4.37A	9.80A	±100	39≤R < 100
	0.5W	100℃	2.23A	5.00A	±100	100≤R < 1000
CF2512	2W	90℃	14.14A	31.62A	±250	10≤R < 20
			10.00A	22.36A	±100	20≤R < 100
			4.47A	10.00A	±100	100≤R < 1000
RW1225	3W	90℃	12.24A	27.38A	±100	20≤R≤100

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 8, the maximum working voltage shall be regarded as rated voltage.

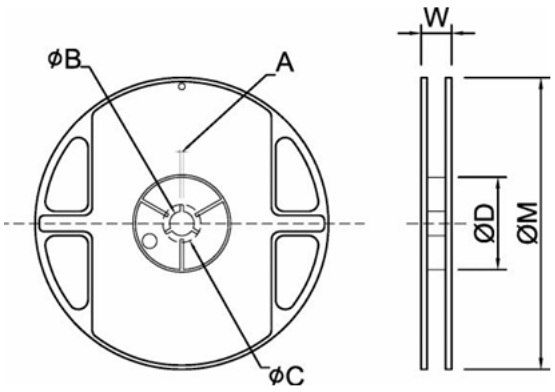
7.性能信赖性测试（Performance Reliability Test Methods）

内容 Item	测试方法 Test Methods	测试条件 Test Conditions	规格 Specification
温度系数 Temperature Coefficient	JIS-C-5201-1 4.8 IEC-60115-1 4.8	25℃/ + 155℃，25℃为参考温度 25℃ /+155℃, 25℃ is the reference temperature	按规格 As Spec
短时间过负荷 Short-time overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	CF 系列：2.5 倍额定连续工作电流或最大过载电流（以最小为准），持续 5S。 For CF type: 2.5 times Rated Continuous Working Current or Max. Overload Current whichever is less for 5 seconds. CF*H&RW1225 型别，1206 1W、0.75W、0.5W/2512 2W /1225 3W 其 5 倍额定功率或最大过载电流（两者最小为准）持续 5S; 其他型号 2.5 倍工作电压或最大过载电流（两者最小）持续 5S For CF*H type & RW1225 type 1206 1W,0.75W ,0.5W / 2512 2W / 1225 3W 5 times Rated Power or Max. overload Current whichever is less for 5 seconds. Others 2.5 time RCWV or Max. Overload Current whichever is less for 5 seconds.	▵ R(%): ±(2.0%+0.005Ω)
溶蚀 Leaching	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1	锡炉温度 260±5℃，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℃ 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 Resist to soldering heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	锡炉温度 260±5℃，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℃ for 10±0.5sec. Measure the variation of resistance.	▵ R(%): ±(1.0%+0.005Ω)
温度循环 Temperature Cycling	JIS-C-5201-1 4.19 IEC-60115-1 4.19	-55℃至 +155℃，5 个循环 -55℃ to +155℃,5 cycles	▵ R(%): ±(1.0%+0.005Ω)

内容 Item	测试方法 Test Methods	测试条件 Test Conditions	规格 Specification
耐溶剂 Resistance to Solvent	JIS-C-5201-1 4.29	电阻器浸入 20~25℃异丙酮 60S，然后室温放置 48H。 The tested resistor be immersed into isopropyl alcohol of 20~25℃ for 60 secs. Then the resistor is left in the room for 48 hrs.	▵ R(%): ±(1.0%+0.005Ω)
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
耐湿特性 Humidity	JIS-C-5201-1 4.24 IEC-60115-1 4.24	温度 40±2℃，湿度 90~95 %RH;通电额定连续工作电流或最大额定连续工作电流（两者最小值）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. 40±2℃, 90~95% R.H. Rated Continuous Working Current or Max. Rated Continuous Working Current whichever is less for 1000 hrs with 1.5 hrs〝ON〞and 0.5 hrs〝OFF〞.	▵ R(%):±(2.0%+0.005Ω) For CRH2512 500~999mΩ: ▵ R(%):±(3.0%+0.005Ω)
负荷寿命 Load Life	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1	温度 70±2℃，ON TIME:1.5H，OFF TIME:0.5H，通电额定电流或最大额定连续工作电流（两者最小值）1000 +24/-0 小时，量测试验前后阻值变化率. 70±2℃, Rated continuous working current or Max. Rated continuous working current whichever is less for 1000 hrs with 1.5 hrs〝ON〞and 0.5 hrs〝OFF〞	▵ R(%): ±(2.0%+0.005Ω) For CF *H2512 500~999mΩ: ▵ R(%):± (3.0%+0.005Ω)
弯曲强度 Bending Strength	JIS-C-5201-1 4.33 IEC-60115-1 4.33	单次弯曲 5S Bending once for 5 seconds D： 0805=5mm 1206、1210、1812=3mm 2010、2512、1225=2mm	▵ R(%): ±(1.0%+0.005Ω)

8. 包装规格（Tapping Specification）

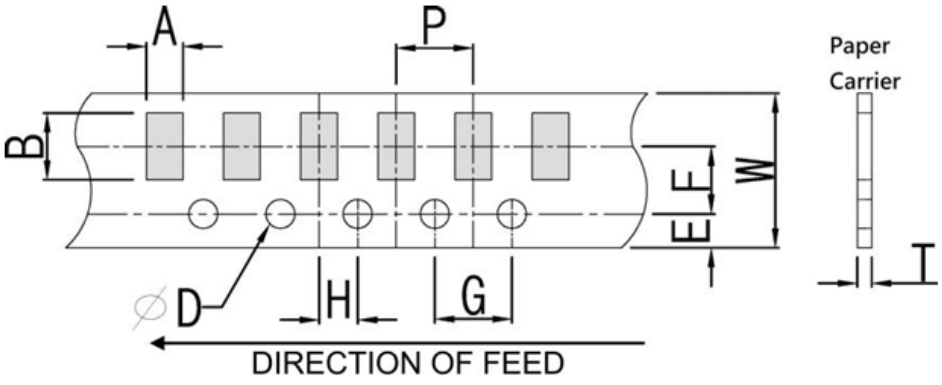
8.1 卷盘尺寸（reel dimension）



Unit: mm

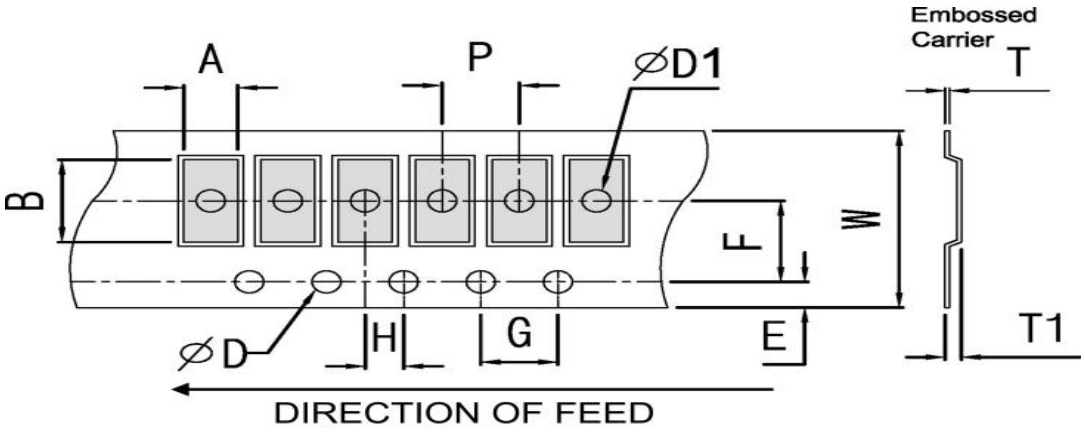
Type	Size		A	Φ B	Φ C	Φ D	W	Φ M
0805/1206/1210	7″	5K Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
2010/2512/1812/1225	7″	4K Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	16.0±2.0	178±2.0

8.2 包装尺寸（Packing Dimension）



Unit：mm　　Embossed Type

Type	A	B	W	E	F	G	H	T	ΦD	P
0805	1.55±0.2	2.30±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	$1.50\pm^{0.1}_{0.0}$	4.0±0.1
1206	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		
1210	2.85±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		



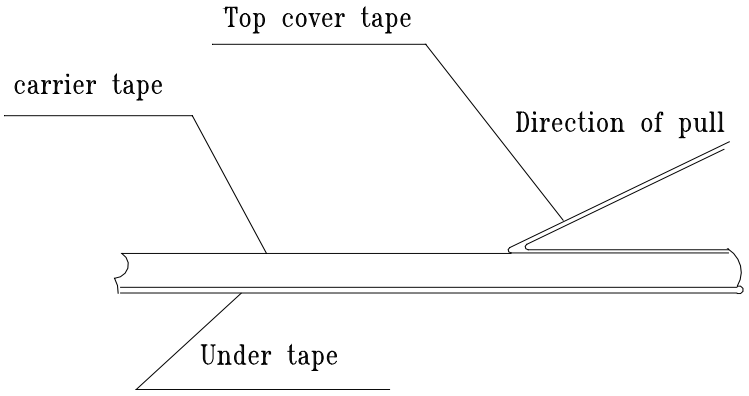
Unit：mm　　Embossed Type

Type	A	B	W	E	F	G	H	T	ΦD	ΦD1	T1	P
2010	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	$1.50\pm^{0.1}_{0.0}$	1.5±0.1	0.85±0.15	4.0±0.1
2512	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	
2512*H 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	0.95±0.15	
1812	3.30±0.2	4.60±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		1.5±0.1	0.85±0.15	

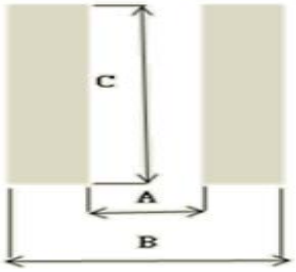
9.上胶带剥离力测试（Peel force of top cover tape）

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 10g～70g; 载带的剥离力范围为 15～80g.

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 0.1N to 0.7N(10 to 70 g), the peel force of plastic carrier tape shall be 0.15N to 0.80N (15 to 80 g)



10.焊盘尺寸(Recommended land patterns):



Dimensions for 10~99mr

型别 Type / 式样 Item	尺寸 Dimensions（mm）					
	CF0805	CF1206	CF1210	CF1812	CF2010	CF2512
A	0.80	1.45	1.45	2.70	2.80	3.90
B	2.90	4.40	4.40	5.90	6.60	8.10
C	1.40	1.70	2.70	3.00	2.70	3.40

Dimensions for 100~999mr

型别 Type / 式样 Item	尺寸 Dimensions（mm）					
	CF0805	CF1206	CF1210	CF1812	CF2010	CF2512
A	1.30	2.20	2.00	3.11	3.80	4.90
B	2.90	4.40	4.40	5.90	6.60	8.10
C	1.40	1.70	2.70	3.00	2.70	3.40

Dimensions for 10~99mr

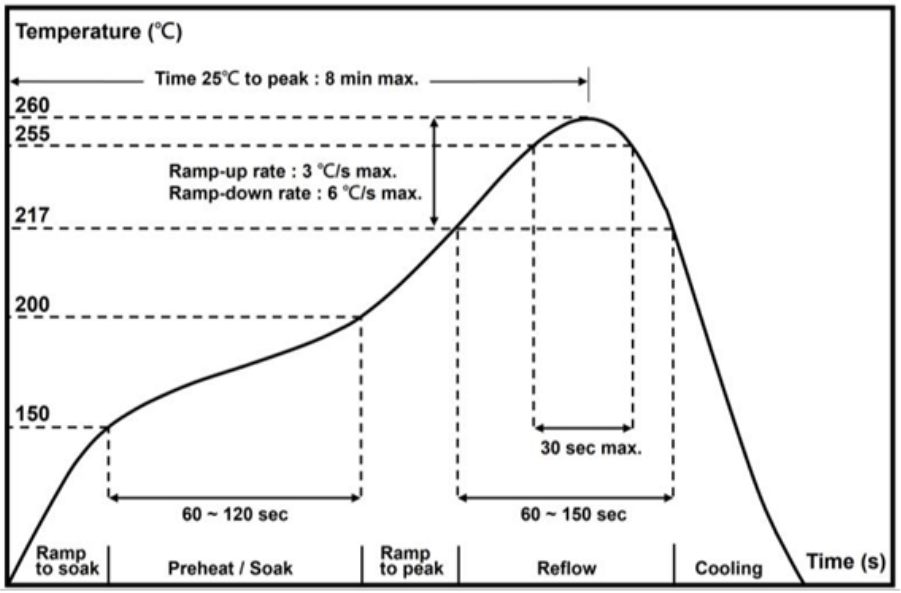
型别 Type / 式样 Item	尺寸 Dimensions（mm）		
	CF1206*H	CF2512*H	RW1225（20~100mr）
A	1.55	4.70	1.40
B	4.40	8.10	3.90
C	1.70	3.40	6.50

Dimensions for 100~999mr

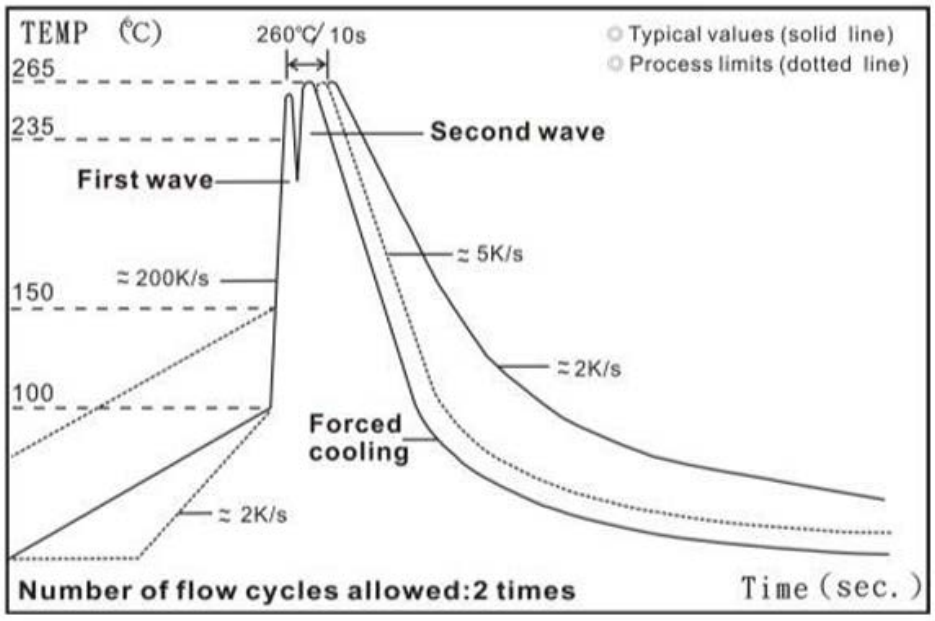
型别 Type / 式样 Item	尺寸 Dimensions（mm）	
	CF1206*H	CF2512*H
A	1.85	4.70
B	4.40	8.10
C	1.70	3.40

11. 焊接 （soldering）

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



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



11.3 手工焊温度（hand soldering temperature）

烙铁温度 350±10℃ 3 秒之内，避免烙铁接触电阻本体

The iron temperature is 350±10℃, hand soldering time less than 3S. Avoid solder iron tip direct touch the components body.

■ 产品测试方法 Product Testing Method:

我们的产品会由本公司专用的探针及测试设备进行检测，该设备使用四脚探针接触背面电极位置。若需针对特定的测试点或方法进行测试，请提前告知，我司可提供定制化的生产服务。

Our products are tested with our company's tapping & testing equipments by using four-feet probe to touch at the back of both electrodes. Supposed different testing points or methods are requested, please advise beforehand and customized-made production is available.