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客户版本号	A0

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规　格　书
SPECIFICATIONS

产品类型 Product type	导电性高分子混合铝电解电容器 Conductive Polymer Hybrid Aluminum Electrolytic Capacitors
产品系列 Series	PHVB
产品规格 Description	63 V 68 μF Φ 10 × 10
产品编码 Part No.	PHV1JVB680MC10FVTSWP
客户编码 Customer P/N	/

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日　期 Date	批 准 Approved by	审 核 Checked by	制 定 Drawn by
2021.12.6	姚玉英	孙何欢	黄熊惑

承认栏 User	提醒事项 Reminders
	1.我司回流焊条件请参阅P14规格书要求。 2.客户如有特殊回流焊要求,须提供回流焊条件要求给我司,我司提供对应回流焊要求产品。 3.未经双方确认回流焊条件,电容器可能会出现不良现象。

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规格书变更记录 (Change history of specification)

发行日期 Issued date	版本 Edition	原 因 Reason	内 容 Contents	页 码 Page	标 记 Mark	发 行 编 号 Issue No.
2021.12.6	A	首次发行 Original	-	1 to 14	-	G.PHVB.202112003

1. 适用范围 Scope

本规格书适用于　PHVB 系列导电性高分子混合铝电解电容器。

This specification is applicable to　PHVB　series conductive polymer hybrid　aluminum electrolytic capacitors .

2. 规格值 Specifications

No.	项目 Item	规格值 Specifications
1	额定电压 Rated voltage	63　V
2	额定容量 Rated capacitance	68　μF　20℃,120Hz
3	尺寸 Case size	Φ　10　× 10
4	容量允许偏差 Tolerance on rated capacitance	±20　%
5	浪涌电压 Surge voltage	72.5　V
6	漏电流 Leakage current	42.84　μA (max.)　20℃, After 2 minutes
7	损耗角正切 Tangent of loss angle (tanδ)	8　% (max.)　20℃,120Hz
8	等效串联电阻 ESR	30　mΩ (max.)　100 kHz
9	额定纹波电流 Rated ripple current	1400　mA　125 ℃ 100kHz
10	温度范围 Category temperature range	-55　to　125 ℃
11	额定寿命 Lifespan*	125 ℃, 4000 h

*电容器的故障率适应JIS C 5003标准,信赖性水准为60%,具体如下:0.5% / 1,000小时(工作上限温度加载额定电压)

The failure rate of capacitors follows JIS C 5003 standard, with a reliability level of 60 %, as follows: 0.5 % / 1,000 hours (Maximum operating temperature, load rated voltage)

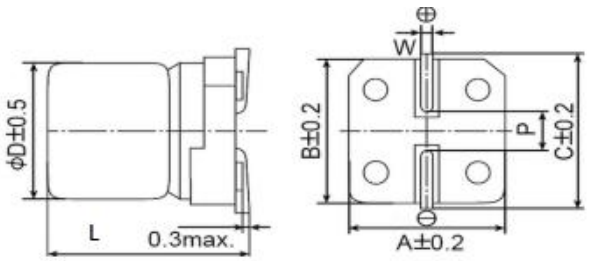
纹波电流频率系数 Frequency coefficient for ripple current

频率 Frequency	120Hz≤f＜1kHz	1kHz≤f＜10kHz	10kHz≤f＜100kHz	100kHz≤f＜500kHz
系数 Coefficient	0.1	0.4	0.75	1.0

注意:不要使急速充放电的电路超过10A.

Note:Do not exceed 10A rush current in rapid chargr and discharge applications.

3. 尺寸 Dimensions

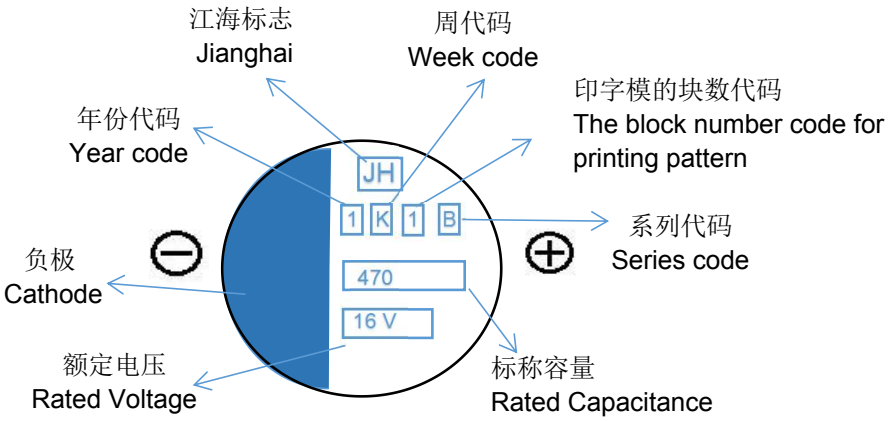


单位 Unit: mm

Code	ΦD±0.5	L ± 0.5	A±0.2	B±0.2	C±0.2	W	P±0.2
C10	10	10	10.3	10.3	11.0	0.7~1.1	4.6

4. 标志 Marking

颜色：蓝色 Color: Blue (Example: PHVB 16V470)



4.1 印字说明 Printed words

1）江海标志：JH

2）年份代码：制造年份，1位数字，0~9表示，如2021年为1，每十年一轮换。

年份	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
代码	8	9	0	1	2	3	4	5	6	7	8	9	0

3）周代码：制造周，1位数字，1~26周分别印为26个大写字母A、B、C、D到Z；27~52周分别印为26个小写字母a、b、c、d到z。

周	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
代码	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
周	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
代码	S	T	U	V	W	X	Y	Z	a	b	c	d	e	f	g	h	i	j
周	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		
代码	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z		

4）印字模块数代码：第一块用1表示，第二块用2表示，第三块用3表示，以此类推。

5) 系列代码

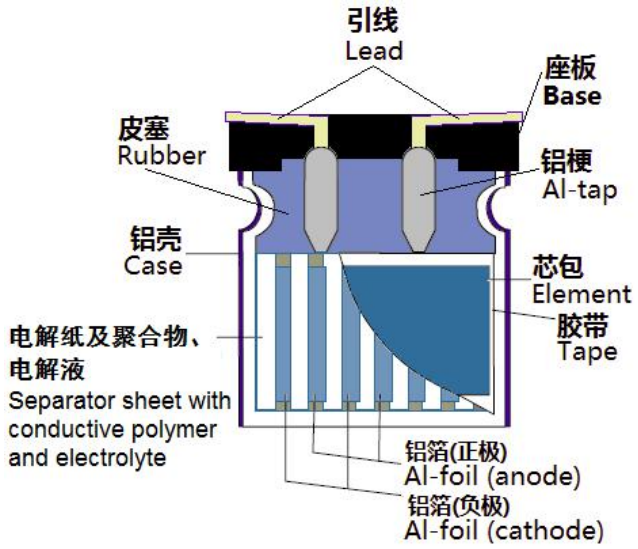
系列	PHVA	PHVB	PHLA	PHLB
代码	A	B	Y	H

6）负极：极性，负极标志

7）额定电压：如额定电压6.3V印字为6.3V

8）静电容量（单位μF），如560μF印字为560。

5. 构造 Construction



No.	成分 Compositions	
1	芯包 Element	正极箔 Anode foil
2		负极箔 Cathode foil
3		电解纸 Separator
4		胶带 Tape
5		聚合物 Polymer
6		电解液 Electrolyte
7	皮塞 Rubber	
8	铝梗 Al-tap	
9	引线 Lead wires	
10	铝壳 Case	
11	座板 Base	

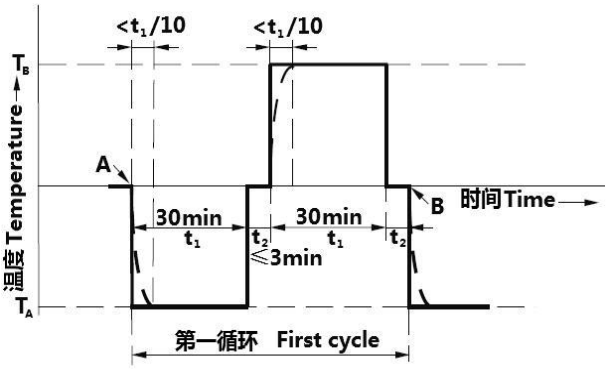
6. 编码规则 Part number system

PH	V	1J	VB	680	M	C10
电容类型 Capacitor type	端子形状 Terminal type	电压代码 Rated voltage code	系列代码 Series code	容量代码 Capacitance code	容量偏差 Capacitance tolerance	尺寸代码 Dimension code
导电性高分子混合电容 Conductive Polymer Hybrid Aluminum Electrolytic Capacitors	贴片式 Vertical	63	PHVB	68	±20	10 * 10

FV	TS	W	P	*
引线形状 Lead Form	引脚/间距尺寸 Terminal / Pitch size	热收缩套管 Heat shrinkable sleeve	胶塞形状 Rubber plug shape	特殊代码 Special code
表面安装 SMD	特殊长度 Special length	涂层(无套管) Laminated	平皮塞 Flat rubber plug	_

7. 特性 Characteristics

No.	项目 Item	特性 Characteristics	测试方法 Test method
1	漏电流 Leakage current	见规格表值 See specifications list	保护电阻：1,000 Ω 施加额定电压2分钟 如果有异议，请先进行电压处理 电压处理： 电容器应串联1000 Ω电阻， 125 ℃±2 ℃下施加额定电压2 h；接着串联1Ω/V的电阻在标准大气压下放置12~24 h冷却至室温。 Series resistor: 1,000 Ω Applied rated voltage 2 minutes. If this value is doubtful, performed the voltage treatment. Voltage treatment: The capacitor should be serially attached to a protective 1,000 Ω resistor and d.c. voltage equivalent to the rated voltage should be applied for 2h at 125 ℃±2℃.Next, after letting the capacitor cool to room temperature, it should be discharged through a resistor of approximately 1 Ω/V and then stored at standard atmospheric conditions for 12 h to 24 h.
2	电容量 Capacitance	见规格表值 See specifications list	测量线路：等效串联线路 频率：120 Hz±10% 测量电压：≤0.5 Vrms Measuring circuit: Equivalent series circuit Frequency: 120 Hz±10% Measuring voltage: ≤0.5 Vrms
3	损耗角正切 Tangent of loss angle (tanδ)	见规格表值 See specifications list	测量温度：20℃±2℃ Measuring temperature: 20℃±2℃
4	等效串联电阻 Equivalent Series Resistance (ESR)	见规格表值 See specifications list	频率：100 kHz±10% 测量电压：≤0.5Vrms，测量温度：20℃±2℃ Frequency: 100 kHz±10% Measuring voltage: ≤0.5Vrms Measuring temperature: 20℃±2℃
5	可焊性 Solderability	95%以上面积的浸渍表面应附着一层光滑焊锡。 At least 95% of circumferential surface of the dipped portion of termination shall be covered with new solder.	焊锡槽温度：245±5°C 浸入速度：25±6mm/s 停留时间：5±0.5S Solder temperature: 245±5℃ Immerse and withdraw speed: 25±6mm/s Dwell time: 5±0.5s

No.	项目 Item	特性 Characteristics		测试方法 Test method
6	耐焊接热 Resistance to soldering heat	容量变化 Capacitance change	初始值的±5%以内 Within ±5% of the initial value	温度：260℃±5°C，时间：10 ±1 秒 Temperature: 260℃±5°C Duration: 10 ±1 seconds
		损耗角正切 Tanδ	项目2的规定值以内 Within the value of item 2.	
		漏电流 Leakage current	项目2的规定值以内 Within the value of item 2.	
		外观 Appearance	无可见损伤，标志清晰 No visible damage, Legible marking	
7	温度快速变化 Rapid change of temperature	容量变化 Capacitance change	初始值的±10%以内 Within ±10% of the initial value	施加电压：无加电 循环次数：5次 Applied voltage: Without load Cycle number: 5 cycles  A 第一循环的起点 B 第一循环的终点及第二循环的起点 A start of first cycle B end of first cycle and star of second cycle TA=-55 ℃ TB= 125 ℃
		损耗角正切 Tanδ	项目2的规定值以内 Within the value of item 2.	
		漏电流 Leakage current	项目2的规定值以内 Within the value of item 2.	
		外观 Appearance	无可见损伤，标志清晰 No visible damage, Legible marking	

No.	项目 Item	特性 Characteristics		测试方法 Test method
8	振动 Vibration	容量变化 Capacitance Change	初始值的±10%以内 Within ±10% of the initial value	频率：10~55 Hz（每分钟互换） 振幅：0.75mm 方向：X, Y, Z (3 向) 时间：三个方向，每个方向2小时。 Frequency: 10~55 Hz （reciprocation for 1 min） Total amplitudes: 0.75mm Direction: X, Y, Z (3 axes) Duration:3 orthogonal directions, each for 2hrs .
		损耗角正切 Tanδ	项目2的规定值以内 Within the value of item 2.	
		漏电流 Leakage current	项目2的规定值以内 Within the value of item 2.	
		外观 Appearance	无可见损伤，标志清晰 No visible damage,Legible marking	
9	耐久性 Endurance	容量变化 Capacitance change	初始值的±30%以内 Within ±30% of the initial value	温度： 125 ±2℃ 时间： 4000 +48/-0小时 施加电压：额定电压 纹波电流：额定纹波电流 Temperature: 125 ±2℃ Duration: 4000 +48/-0h Applied voltage: Rated voltage Ripple current:Rated ripple current
		损耗角正切 Tanδ	≤2倍项目2的规定值 Within 2 times of the value of item 2.	
		漏电流 Leakage current	项目2的规定值以内 Within the value of item 2.	
		外观 Appearance	无可见损伤，标志清晰 No visible damage,Legible marking	

No.	项目 Item	特性 Characteristics		测试方法 Test method
10	稳态湿热 Damp heat, steady state	容量变化 Capacitance change	初始值的±20%以内 Within ±20% of the initial value	温度：40±2℃ 相对湿度：90 ~ 95% 时间：240 +8/$_{-8}$小时 试验后常温放置24-48小时 Temperature: 40±2°C Relative humidity: 90 ~ 95% Duration: 240 +8/-8 hours
		损耗角正切 Tanδ	≤2倍项目2的规定值 Within 2 times of the value of item 2.	
		漏电流 Leakage current	项目2的规定值以内 (通电处理后) Within the value of item 2. (After voltage treatment)	
		外观 Appearance	无可见损伤，标志清晰 No visible damage,Legible marking	
11	浪涌 Surge	容量变化 Capacitance change	初始值的±20%以内 Within ±20% of the initial value	温度：常温 施加电压： 72.5 V 保护电阻：1 kΩ 循环次数：1,000 次 (A) 充电：30±5 秒 (B) 放电：5.5 分钟 (A) + (B)：1 个循环 Temperature: Normal temperature Applied voltage: 72.5 V Protective resistor: 1 kΩ Cycle number: 1,000 cycles (A) Charge: 30±5 seconds (B) Discharge: 5.5 minutes (A) + (B): 1 cycle
		损耗角正切 Tanδ	≤1.5倍项目2的规定值 Within 1.5 times of the value of item 2.	
		漏电流 Leakage current	项目2的规定值以内 Within the value of item 2.	
		外观 Appearance	无可见损伤，标志清晰 No visible damage, Legible marking	

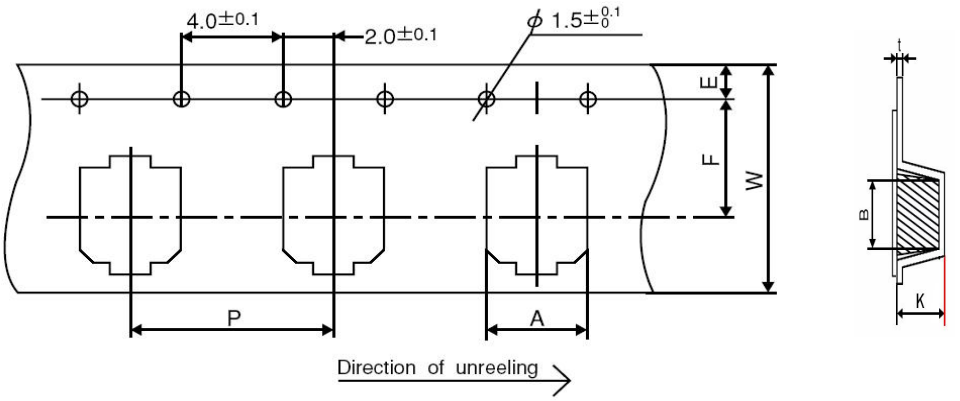
<table>
<tr><th>No.</th><th>项目 Item</th><th colspan="2">特性 Characteristics</th><th>测试方法 Test method</th></tr>
<tr><td>12</td><td>高、低温特性
Characteristics at high and low temperature</td><td>Z(-55℃)/Z(+20℃)
容量变化
Capacitance change
Max impedance ratio at 120Hz</td><td>≤2
步骤1的±20%以内
Within ±20% of the Step 1</td><td>
<table>
<tr><th>步骤
Step</th><th>温度
Temperature</th><th>项目
Item</th></tr>
<tr><td>1</td><td>+20℃±2℃</td><td>电容量
Capacitance</td></tr>
<tr><td>2</td><td>-55℃±3℃</td><td>阻抗
Impedance(Z)</td></tr>
<tr><td>3</td><td>+20℃±2℃</td><td>-</td></tr>
<tr><td>4</td><td>+125℃±2℃</td><td>电容量
Capacitance</td></tr>
<tr><td>5</td><td>+20℃±2℃</td><td>容量变化
Capacitance change</td></tr>
</table>
</td></tr>
<tr><td>13</td><td>耐溶剂性
Resistance To Solvents</td><td></td><td>标示不能脱落或模糊
Print cannot fall off or ambiguous</td><td>方法1：
1.电容器应浸入异丙基中
2.浸泡时间:25±5°C浸泡3+0.5/-0分钟
3.用毛刷刷电容器10次
按步骤1~3进行三个循环
1.The capacitor shall be immersed into the isopropyl
2. Immersion time: 3 +0.5/-0 minutes at 25±5℃
3.Use wool brush to brush capacitor for 10 times
Repeat step 1~3 for 3 times

方法2：
1.电容器应浸入软化水或蒸馏水中
2.浸泡时间:50-60°C浸泡3+0.5/-0分钟
3.用毛刷刷电容器10次
按步骤1~3进行三个循环
1.The capacitor shall be immersed into the demineralized or distilled Water
2. Immersion time: 3 +0.5/-0 minutes at 50-60°C
3.Use wool brush to brush capacitor for 10 times
Repeat step 1~3 for 3 times</td></tr>
</table>

No.	项目 Item	特性 Characteristics		测试方法 Test method
14	回流焊判定 Reflow soldering determination	容量变化 Capacitance change	初始值的±10%以内 Within ±10% of the initial value	回流焊条件请按照我司标准或者双方沟通认可的条件进行。如需进行二次回流焊，二次回流焊需间隔1H以上。回流焊前后特性测试方法详见项目1~4.其中回流焊后漏电流测试前请进行电压处理※。 电压处理：电容器应串联1000 Ω电阻，125 ℃±2 ℃下施加额定电压2 h；接着串联1 Ω/V的电阻在标准大气压下放置12~24 h冷却至室温。 If reflow soldering is required, Please refer to our standard or mutual recognition conditions.If we need two reflow soldering. The two reflow soldering should be more than 1H to do.The characteristic test method before and after reflow is detailed in item 1~4. After reflow soldering, voltage treatment is needed before leakage current test※. Voltage treatment: The capacitor should be serially attached to a protective 1,000 Ω resistor and d.c. Voltage equivalent to the rated voltage should be applied for 2 h at 125°C±2°C. Next,after letting the capacitor cool to room temperature,it should be discharged through a resistor of approximately 1Ω/V and then stored at standard atmospheric conditions for 12h to 24 h.
		损耗角正切 Tanδ	≤1.3倍项目2的规定值 Within 1.3 times of the value of item 2.	
		等效串联电阻 ESR	≤1.3倍项目2的规定值 Within 1.3 times of the value of item 2.	
		漏电流 Leakage current	电压处理※后项目2的规定值以内 Within the value of item 2. after Voltage treatment.	
		外观 Appearance	无可见损伤，标志清晰 No visible damage, Legible marking	

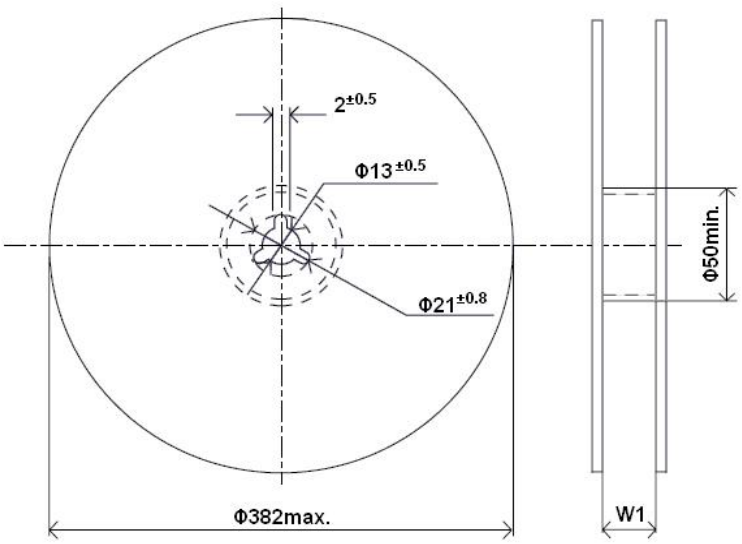
8. 包装 Packing

8.1 载带尺寸 Taping Dimensions

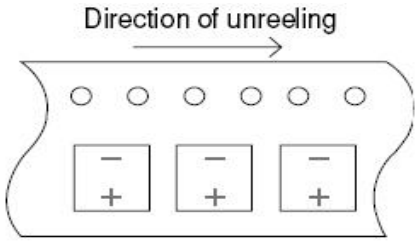


Code	A ±0.2	B ±0.2	W ±0.3	E ±0.1	F ±0.1	P ±0.1	K ±0.2	t ±0.2
C10	10.7	10.7	24.0	1.75	11.5	16.0	11.0	0.4

8.2 轮盘尺寸 Reel Dimensions



尺寸代码 Size Code	数量 Quantity (pcs/reel)
C10	500



极性 Polarity

9. 环保方面 Environmental

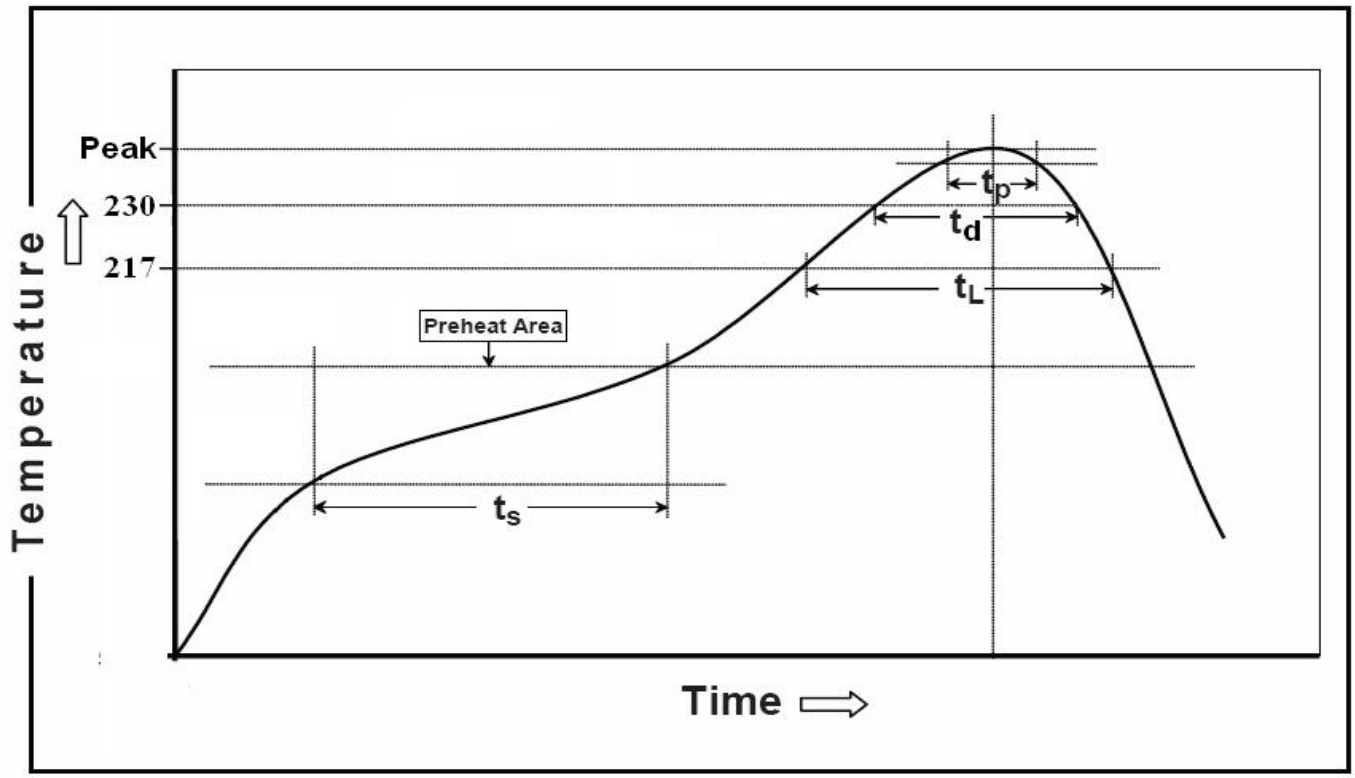
符合欧盟RoHS 2002/95/EC标准。RoHS 2002/95/EC compliant.

符合无卤素IEC 61249-2-21:2003标准。Halogen-free, IEC 61249-2-21:2003 compliant.

溴、氯含量分别小于 900 ppm，且溴与氯的含量总和小于 1,500 ppm。

The maximum total halogens contained in the resin plus reinforcement matrix is 1,500 ppm with a maximum chlorine of 900 ppm and maximum bromine being 900 ppm.

10. 推荐回流焊曲线 Recommended reflow soldering conditions



Can Size (size code)	Peak temperature	Peak temperature nearby	Duration temp≥230℃	Duration temp≥217℃	Duration temp≥200℃	Reflow Frequency
Φ10	245℃	240℃以上10秒	30s	40s	70s	2
	260℃	250℃以上5秒	30s	40s	70s	1

* All temperatures are measured on the topside of the Al-can and terminal surface.

* Please ensure that the capacitor became cold enough to the room temperature (5 to 35℃) before the second reflow.