

# RELIABILITY AND TEST CONDITION

## 信賴性測試條件

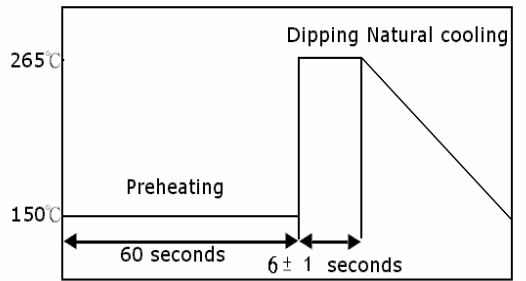
Item 項目	Performance 標準	Test condition 測試條件
Operating temperature range 操作溫度範圍	EBMS / ACMS / BCMS / ECMS / BCAS series: -55 ~ +125°C For EBLs / HBLS / BHLS series: -40 ~ +85°C	
Storage temperature and humidity range 儲存溫度及濕度範圍	EBMS / ACMS / BCMS series: -10~40°C, 70 %RH max For EBLs / HBLS series: -10~40°C, 70 %RH max	

**Soldering heat resistance**  
The chips must have no cracks. More than 90% of the terminal electrode must be covered with new solder.  
Impedance: within ± 30% of initial value  
Inductance: within ± 20% of initial value

Preheat: 100~150°C, 60 seconds  
Solder: Sn-3Ag-0.5Cu  
Solder temperature: 265±3°C  
Flux: Rosin  
Dip time: 6±1 seconds

錫熱阻抗  
晶片必須沒有裂痕，外電極銀端所覆蓋的錫必須超過 90%  
阻抗值:變異性在初始值 30%以內  
電感值:變異性在初始值 20%以內  
參考標準 MIL-STD-202 Method210

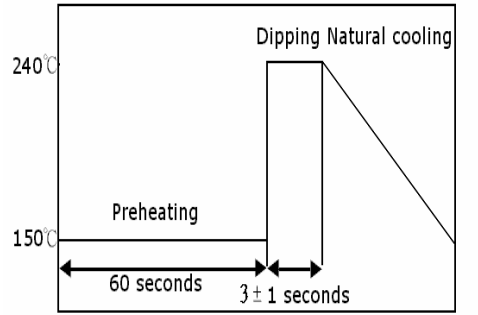
預熱：攝氏 100~150 度，60 秒  
錫膏：Sn-3Ag-0.5Cu  
助錫劑：松香  
浸泡時間：6±1 秒



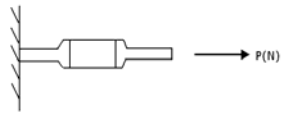
**Solderability**  
More than 95% of the terminal electrode must be covered with new solder.  
Preheat: 150°C, 60 seconds  
Solder: Sn-3Ag-0.5Cu  
Solder temperature: 240 ± 5°C  
Flux: Rosin  
Dip time: 3 ± 1 second

錫性測試  
外電極銀端所覆蓋的錫必須超過 95%  
參考標準 J-STD-002

預熱：攝氏 150 度，60 秒  
錫膏：Sn-3Ag-0.5Cu  
助錫劑：松香  
浸泡時間：3 ± 1 秒



**Terminal strength**  
The terminal electrode and the ferrite must not be damaged by the force applied on the right conditions.  
After soldering a lead wire to a terminal electrode, apply a load the force applied on the right power in the arrow direction.



銀端強度  
銀端電極不能被在正當的方式下所施加的外力所破壞  
錫一條鉛絲於銀端電極後，依箭頭方向載入力量

For EBMS、ACMS、BCMS、EBLS、HBLS :

SIZE	FORCE (kgf)	Time(sec)
1005	0.3	>25
1608	0.4	
2012	0.6	
2520	0.8	
3216	1.0	
3225	1.0	
4516	1.0	
4532	1.5	

For ECMS3216 Series :

SIZE	FORCE (kgf)	Time(sec)
3216	0.5	>25

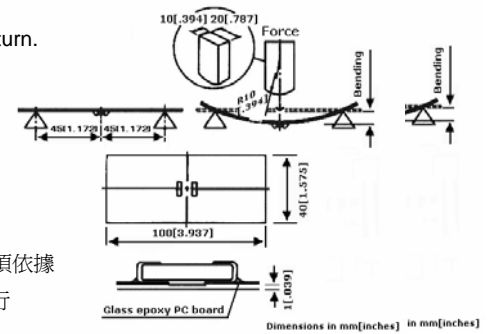
# RELIABILITY AND TEST CONDITION

## 信賴性測試條件

Item 項目      Performance 標準      Test condition 測試條件

**Substrate bending test**  
The terminal electrode and the ferrite must not be damaged by the force applied on the right conditions.

After soldering a chip to a test substrate, bend the substrate by 3m/m[0.118 inches] and for 10sec then return. Soldering shall be done in accordance with the recommended PC board pattern and reflow soldering

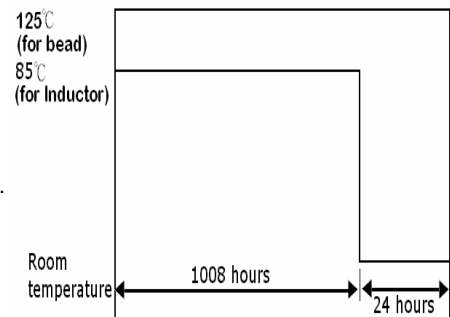


**彎曲強度**  
銀端電極不能被在正當的方式下所施加的外力所破壞  
參考標準 JIS-C-5101

將晶片銲錫於測試板上後，使板子彎曲至 3m/m[0.118 英寸]10 秒，然後再回復。銲接須依據推薦的 PC 板配置及 reflow 銲錫方式來進行

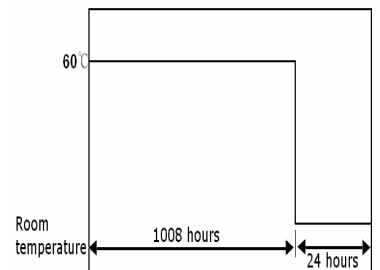
**High temperature resistance**  
Appearance : Ferrite shall not be damaged  
Impedance: within  $\pm 30\%$  of initial value  
Inductance: within  $\pm 20\%$  of initial value  
  
高溫測試  
外觀：氧化鐵不能被破壞  
  
阻抗值:變異性在初始值 30%以內  
電感值:變異性在初始值 20%以內  
參考標準 MIL-PRF-27

Temperature:  $+125 \pm 2^\circ\text{C}$  (for bead)  
 **$+85 \pm 2^\circ\text{C}$  (for inductor)**  
Applied current: Rated current (max.)  
Duration: 1008 $\pm$ 12 hours  
Measurement: After placing for 24 hours min.  
溫度:  $+125 \pm 2^\circ\text{C}$  (針對磁珠系列)  
 **$+85 \pm 2^\circ\text{C}$  (針對電感系列)**  
適用電流：最大的額定電流  
測試時間：1008 $\pm$ 12 hours  
量測時間：須放置至少 24 小時後



**Humidity Resistance**  
Appearance: Ferrite shall not be damaged  
Impedance: within  $\pm 30\%$  of initial value  
Inductance: within  $\pm 20\%$  of initial value  
  
抗濕度測試  
外觀：氧化鐵不能被破壞  
  
阻抗值:變異性在初始值 30%以內  
電感值:變異性在初始值 20%以內  
參考標準 MIL-STD-202 Method103

Humidity: 90 to 95%RH  
Temperature:  $60 \pm 2^\circ\text{C}$   
Applied current: Rated current (max.)  
Duration: 1008  $\pm$  12 hours  
Measurement: After placing for 24 hours min  
濕度：90 至 95%RH  
溫度： $60 \pm 2^\circ\text{C}$   
應用電流：最大的額定電流  
測試時間：1008  $\pm$  12 hours  
量測時間：至少放置 24 小時後



**Low temperature storage life test**  
Appearance: Cracking ,chipping or any other defects harmful to the characteristics shall not be allowed  
Impedance: within  $\pm 30\%$  of initial value  
Inductance: within  $\pm 20\%$  of initial value

Temperature:  $-55 \pm 2^\circ\text{C}$  (for bead)  
 **$-40 \pm 2^\circ\text{C}$  (for inductor)**  
Duration: 1008 $\pm$ 12 hours  
Measurement: After placing for 24 hours min.

**低溫儲存有效期間**  
外觀：特徵上不容許有斷裂、缺角  
  
及其他會影響電氣特性的瑕疵  
阻抗值:變異性在初始值 30%以內  
電感值:變異性在初始值 20%以內

溫度： $-55 \pm 2^\circ\text{C}$  (針對磁珠系列)  
 **$-40 \pm 2^\circ\text{C}$  (針對電感系列)**  
測試時間：1008 $\pm$ 12 hours  
量測時間：至少放置 24 小時後

Thermal shock	Appearance: Cracking, chipping or any other defects that are harmful to the characteristics shall not be allowed. Impedance: within $\pm 30\%$ of initial value Inductance: within $\pm 20\%$ of initial value	Temperature: $-55^{\circ}\text{C}$ , $+125^{\circ}\text{C}$ (for bead) $-40^{\circ}\text{C}$ , $+85^{\circ}\text{C}$ (for inductor) kept stabilized for 30 minutes each Cycle: 100 cycles Measurement: After placing for 24 hours min.	<p>125°C (for bead) 85°C (for Inductor) Room temperature 30minutes 30 minutes 1 cycle 40°C (for Inductor) -55°C (for bead)</p>
冷熱衝擊測試	外觀：特徵上不容許有斷裂，缺角及其他會影像電氣特性的瑕疵 阻抗值：變異性在初始值 30%以內 電感值：變異性在初始值 20%以內 參考標準 JESD22 Method JA104	溫度： $-55^{\circ}\text{C}$ ， $+125^{\circ}\text{C}$ (針對磁珠系列) $-40^{\circ}\text{C}$ ， $+85^{\circ}\text{C}$ (針對磁珠系列) 保持穩定，每次 30 分鐘 週期次數：100 次 量測時間：須放置室溫 24 小時後	
Vibration test	Appearance : no mechanical damage Impedance shall be within $\pm 30\%$ of the initial value	Waveform: Sine wave Frequency: 10~55~10 Hz Sweep time: 1min Amplitude: 1.5mm (peak-peak) Direction: X, Y, Z (3 axes) Duration: 2 hrs./axis, total 6 hrs.	
震動測試	外觀：沒有機械損害 阻抗值需在初始值之 $\pm 30\%$ 以內	波形：正弦波 頻率：10~55~10 赫茲 掃描時間：1 分鐘 震幅：1.5 毫米 (頂點-頂點) 方向：X, Y, Z (3 軸) 持續期間：2 小時/軸，合計 6 小時	

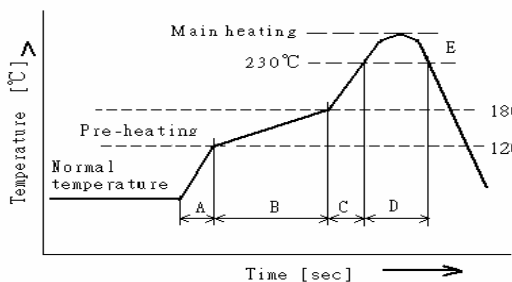
## RECOMMENDED SOLDERING CONDITIONS

## 推薦的錫焊方式

### REFLOW SOLDERING

### 表面加熱焊錫

### IRON SOLDERING 烙鐵錫



Perform soldering at  $255\sim 260^{\circ}\text{C}$  on 30W max. Within 10 seconds.

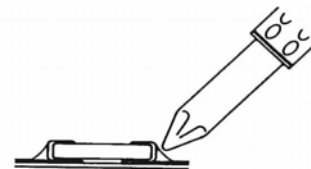
在 10 秒內，以最高 30 瓦、溫度  $255\sim 260^{\circ}\text{C}$  錫焊，

Please do not apply the tip of the soldering iron to the terminal electrodes.

請注意不要讓烙鐵之尖端碰觸銀端電極

◆And please contact us about peak temperature when you use lead-free paste.

當你使用無鉛錫膏，有關端點的溫度請與我們聯繫



## FLUX AND CLEANING 助錫劑及清潔

- Rosin-based flux is recommend  
推薦使用以松香為基材之助錫劑
- Isopropyl Alcohol Cleaning agent is recommended  
推薦使用 IPA 為清潔劑
- Soldering Flux should be compliant to RoHS regulation.  
符合RoHS 規範