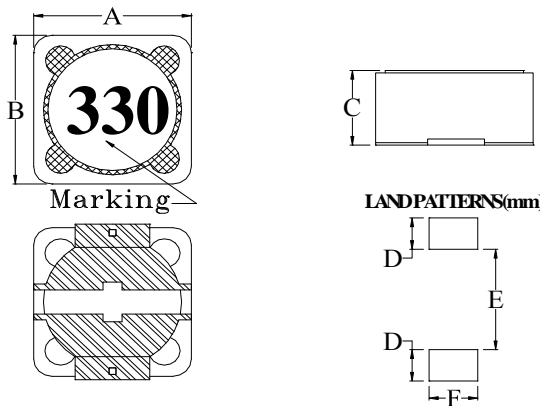


ECN HISTORY LIST

| 版別 | ECN NO | 變更內容 | 變更日期 | 確認章 |
|----|--------|--------------------|-----------|---------|
| 0 | | 新發行 | 2015/4/9 | 李 艷楠 |
| 1 | | A/B尺寸統一定義為12.5 Max | 2017/6/26 | 朱 小倩 |
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SPECIFICATION FOR APPROVAL

| | | | |
|-----------|--|----------|-----------------|
| COMMODITY | SMD POWER COIL | SPEC NO. | SP-0150413004 |
| ITEM | JPRH 1207-330M-4R6-A Green | 版本：D | 表單編號：QRRD-01-02 |

| (1) DIMENSION: (UNIT: mm) | | DIM. | TOL. |
|---|---|------|------|
|  <p style="text-align: center;">Marking</p> <p style="text-align: center;">LAND PATTERNS(mm)</p> | A | 12.5 | Max. |
| | B | 12.5 | Max. |
| | C | 8.0 | Max. |
| | D | 2.9 | REF. |
| | E | 7.0 | REF. |
| | F | 5.4 | REF. |
| | G | | |
| | H | | |
| | I | | |
| | J | | |




| (2) ELECTRICAL CHARACTERISTIC | TEST INSTRUMENTS. |
|-------------------------------|---|
| INDUCTANCE | $33 \pm 20\%$ μ H |
| TEST FREQUENCY | 1 KHz |
| TEST VOLT | 0.25 V |
| RDC | 53.3 (max) m Ω |
| Isat | 3.90 (max) A |
| Irms | 4.60 (max) A |
| | <input checked="" type="checkbox"/> AGILENT 4294A Precision Impedance Analyzer. <input type="checkbox"/> AGILENT 4285A Precision L.C.R. Meter. <input type="checkbox"/> HP-4286A RF L.C.R. Meter. <input checked="" type="checkbox"/> ZENTECH 3302 Automatic Components Analyzer. <input type="checkbox"/> ZENTECH 101 L.C.R. Meter. <input type="checkbox"/> WAYNE KERR 6420 Precision Impedance Analyzer. <input checked="" type="checkbox"/> ZENTECH 1320 BIAS CURRENT. <input checked="" type="checkbox"/> ZENTECH 502AC Resistance Meter. <input type="checkbox"/> ADEX AX-1155B DC Low Ohm Meter. |

REMARK :

1. Inductance drop = 25% typ at Isat.
2. $\Delta T = 40^{\circ}\text{C}$ rise typ at Irms.

| | | | |
|---------------------|--|---|---|
| PURCHASER CONFIRMED | APPROVED | CHECKED | DRAWN |
| |  |  |  |

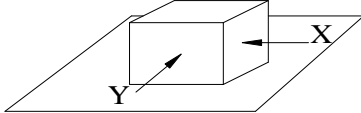
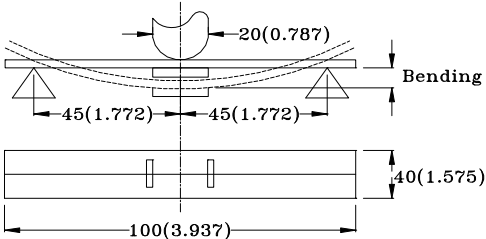
SPECIFICATION FOR APPROVAL

| COMMODITY | SMD POWER COIL | SPEC NO. | SP-0150413004 |
|--------------------------|--|--|---|
| ITEM | JPRH 1207-330M-4R6-A Green | 版本：D | 表單編號：QRRD-01-02 |
| (3) Material List | | | |
| NO | ITEM | MATERIAL | NOTE |
| 1 | CORE | DR 9.9*7.1 & RI 12.1*7.0*10.65 Or other's equivalent | |
| 2 | BASE | C1100 | |
| 3 | WIRE | P180 G1 Or other's equivalent | 180°C CLASS |
| 4 | SOLDER | 100H Or other's equivalent | |
| 5 | EPOXY | 6020H-6-9(NH) / S-9001A-6B Or other's equivalent | |
| 6 | TAPE | MYLAR TAPE | Yellow |
| 7 | INK | SMD-48A Or other's equivalent | Black |
| | | | |
| REMARK : | | | |
| PURCHASER CONFIRMED : | | APPROVED | CHECKED |
| | |  |  |
| | | |  |

Pb-FREE PRODUCTS 無鉛產品

| No | Item [項目] | Test Method & Conditions [試驗方法、條件] | Specification After Test [試驗後規格] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--|--|------|------|----------|--|--|--|---------------------------|--|---------------|--|--------------|-------|------------|--|---------------------|--|---------------|--|-----------------|----|--------|--------|--|----|-----------|-----------|------------------|-------|-------------------|-------------------|-------------------------------|--|----------------|--|
| A . Mechanical Characteristics 機械特性 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Operating Temperature 工作溫度 | - 40 °C ~ + 125 °C (Including self - temperature rise) 含自身發熱溫度 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Storage temperature and Humidity range 儲存溫度濕度 | + 5 ~ +40°C ; 60 to 70% RH | <ul style="list-style-type: none"> · on Tape & Reel · 在捲帶包裝 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Solder Heat Resistance 抗焊錫熱特性 | <ul style="list-style-type: none"> · Solder : M705-GRN360-K2-V · Peak-temp.hold time : 4 sec · Pre-heat , Solder Temperature & Dip Reflow soldering time as follow : | <ul style="list-style-type: none"> · No Damage and No Abnormal on Surface · Inductance : Within ±10% of Initial Value · More than 75% of the terminal electrode should be covered and uniformity with solder · 產品表面不能被破壞及不正常的情形 · 電感值：初始值的±10%以內 · 端子吃錫需均勻，吃錫面積75%以上 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th rowspan="2">Item</th> <th rowspan="2">mark</th> <th colspan="2">products</th> </tr> <tr> <th>size ≥ 350mm³ or thickness ≥ 2.5mm</th> <th>size < 350mm³ or thickness < 2.5mm</th> </tr> </thead> <tbody> <tr> <td>Temperature rise gradient</td> <td></td> <td colspan="2">3°C/sec (max)</td> </tr> <tr> <td>Heating time</td> <td>Tsoak</td> <td colspan="2">50s ~ 150s</td> </tr> <tr> <td>Heating temperature</td> <td></td> <td colspan="2">120°C ~ 180°C</td> </tr> <tr> <td>Time over 217°C</td> <td>t1</td> <td>60 sec</td> <td>90 sec</td> </tr> <tr> <td>Time within 5°C of actual peak temperature</td> <td>t3</td> <td>10~30 sec</td> <td>10~30 sec</td> </tr> <tr> <td>Peak temperature</td> <td>Tpeak</td> <td>250 (+0 / -5 °C)</td> <td>260 (+0 / -5 °C)</td> </tr> <tr> <td>Time 25°C to peak Temperature</td> <td></td> <td colspan="2">6 minutes max.</td> </tr> </tbody> </table> <p>*The determination, first primarily determines by the size, then determines the altitude.</p> | | | | Item | mark | products | | size ≥ 350mm ³ or thickness ≥ 2.5mm | size < 350mm ³ or thickness < 2.5mm | Temperature rise gradient | | 3°C/sec (max) | | Heating time | Tsoak | 50s ~ 150s | | Heating temperature | | 120°C ~ 180°C | | Time over 217°C | t1 | 60 sec | 90 sec | Time within 5°C of actual peak temperature | t3 | 10~30 sec | 10~30 sec | Peak temperature | Tpeak | 250 (+0 / -5 °C) | 260 (+0 / -5 °C) | Time 25°C to peak Temperature | | 6 minutes max. | |
| Item | mark | products | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | size ≥ 350mm ³ or thickness ≥ 2.5mm | size < 350mm ³ or thickness < 2.5mm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Temperature rise gradient | | 3°C/sec (max) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Heating time | Tsoak | 50s ~ 150s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Heating temperature | | 120°C ~ 180°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Time over 217°C | t1 | 60 sec | 90 sec | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Time within 5°C of actual peak temperature | t3 | 10~30 sec | 10~30 sec | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peak temperature | Tpeak | 250 (+0 / -5 °C) | 260 (+0 / -5 °C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Time 25°C to peak Temperature | | 6 minutes max. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p style="text-align: center;">Reflow soldering temperature profile</p> <p>The graph illustrates the reflow soldering temperature profile. The vertical axis represents Temperature in degrees Celsius, and the horizontal axis represents Time in seconds. The profile starts at a constant 25°C. It then rises linearly to a plateau at temperature Tsoak. The time taken to reach Tsoak is labeled as t1. The profile remains at Tsoak for a duration Tsoak. It then rises linearly to a peak at temperature Tpeak. The time taken to reach Tpeak from the start of the Tsoak plateau is labeled as t3. The time taken to reach Tpeak from the end of the Tsoak plateau is labeled as t1. Finally, the profile cools down linearly.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Pb-FREE PRODUCTS 無鉛產品

| No | Item [項目] | Test Method & Conditions [試驗方法、條件] | Specification After Test [試驗後規格] |
|--|----------------------------------|--|---|
| A . Mechanical Characteristics 機械特性 | | | |
| 4 | Solderability 焊錫性 | <ul style="list-style-type: none"> · Solder : M705-GRN360-K2-V · Solder Temp : 245°C ± 5°C · Dip time : 5 sec · 錫 : M705-GRN360-K2-V · 錫爐溫度 : 245°C ± 5°C · 時間 : 5秒 | <ul style="list-style-type: none"> · More than 90% of the terminal electrode should be covered and uniformity with fresh solder. · 吃錫面積需90%以上且需均勻 |
| 5 | Terminal Strength 端子強度 | <ul style="list-style-type: none"> · After soldering of X , Y withstanding as below conditions. · The terminal should not peel off.(Refer to figure as below) · Define : A=sectional area of terminal $A \leq 8\text{mm}^2$ force $\geq 0.5\text{kg}$, time : 30sec $8\text{mm}^2 < A \leq 20\text{mm}^2$ force $\geq 1\text{kg}$, time : 10sec $20\text{mm}^2 < A$ force $\geq 2\text{kg}$, time : 10sec · 在銲接X,Y 後,所承受條件情況(如下圖) · 端點不可剝離(如下圖)  | <ul style="list-style-type: none"> · Terminal and body must not be damage or separate · 端子及本體不能被破壞或分離 |
| 6 | Flexure Strength 彎折強度 | <ul style="list-style-type: none"> · Put the component solder chip on a test board , and bend the board to 2mm then recovery to original point. Unit : mm (inch)  <ul style="list-style-type: none"> · 將待測品銲接到一測試基板上，測試基板彎曲度到2mm位置，然後回復至原點。 | <ul style="list-style-type: none"> · No damage and no abnormal on chip body surface. · 產品不能有被破壞或不正常情形。 |

Pb-FREE PRODUCTS 無鉛產品

| No | Item [項目] | Test Method & Conditions [試驗方法、條件] | Specification After Test [試驗後規格] |
|---|---|---|---|
| B . Environmental Characteristics 環境試驗 | | | |
| 7 | High Temp Resistance Test 高溫負荷測試 | <ul style="list-style-type: none"> · Operate Temperature : 125°C ± 3°C · Applied Current : per spec. · Time : 96 Hrs · Measure after exposure in the room temperature for 4 to 24 Hrs. · 動作溫度 : 125°C ± 3°C · 印加電流 : 依產品規格最大值 · 時間 : 96 小時 · 試驗完成後取出置於室溫4 - 24小時後進行測試 | <ul style="list-style-type: none"> · Appearance : no damage · Inductance : Within ±10% of Initial Value · 外觀 : 不能有破損異常現象 · 電感值 : 初始值的±10%以內 |
| 8 | Low Temperature Storage Test 低溫放置測試 | <ul style="list-style-type: none"> · Temperature : -40°C ± 3°C · Time : 96 Hrs · Measure after exposure in the room temperature for 4 to 24 Hrs. · 溫度 : -40°C ± 3°C · 時間 : 96 小時 · 試驗完成後取出置於室溫4 - 24小時後進行測試 | <ul style="list-style-type: none"> · Appearance : no damage · Inductance : Within ±10% of Initial Value · 外觀 : 不能有破損異常現象 · 電感值 : 初始值的±10%以內 |
| 9 | Humidity Test 耐濕試驗 | <ul style="list-style-type: none"> · Temperature : 40°C ± 2°C · Humidity : 95 ± 2% R.H. · Applied Current : per spec. · Time : 96 Hrs · Measure after exposure in the room temperature for 4 to 24 Hrs. · 溫度 : 40°C ± 2°C · 濕度 : 95 ± 2% R.H. · 印加電流 : 依產品規格最大值 · 時間 : 96 小時 · 試驗完成後取出置於室溫4 - 24小時後進行試驗 | <ul style="list-style-type: none"> · Appearance : no damage · Inductance : Within ±10% of Initial Value · 外觀 : 不能有破損異常現象 · 電感值 : 初始值的±10%以內 |

Pb-FREE PRODUCTS 無鉛產品

| No | Item [項目] | Test Method & Conditions [試驗方法、條件] | Specification After Test [試驗後規格] |
|---|---|--|---|
| B . Environmental Characteristics 環境試驗 | | | |
| 10 | Temperature Cycling Test 溫度循環試驗 | <ul style="list-style-type: none">· One Cycle : +125°C/30Min -40°C/30Min· Cycle Times : 5 Cycle· Measure after exposure in the room temperature for 4 to 24 Hrs. · 1 週期 : +125°C/30Min -40°C/30Min· 週期 : 5次· 試驗完成後取出置於室溫4 - 24小時後進行測試 | <ul style="list-style-type: none">· Appearance : no damage· Inductance : Within $\pm 10\%$ of Initial Value · 外觀 : 不能有破損異常現象· 電感值 : 初始值的$\pm 10\%$以內 |

