

SPECIFICATION FOR APPROVAL

承認書

Description : Piezo Audio Transducer

Kingstate Part No. : KMTG1603-1

Customer's Model No. : _____

Specification No. : PKD-7904

Number Of The Edition : 1.5

| CUSTOMER'S APPROVED SIGNATURE | | |
|-------------------------------|--|--|
| | | |

志豐電子股份有限公司 KINGSTATE ELECTRONICS CORP.

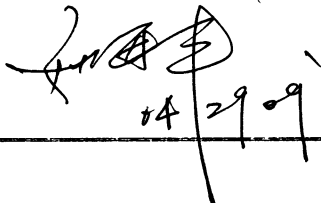


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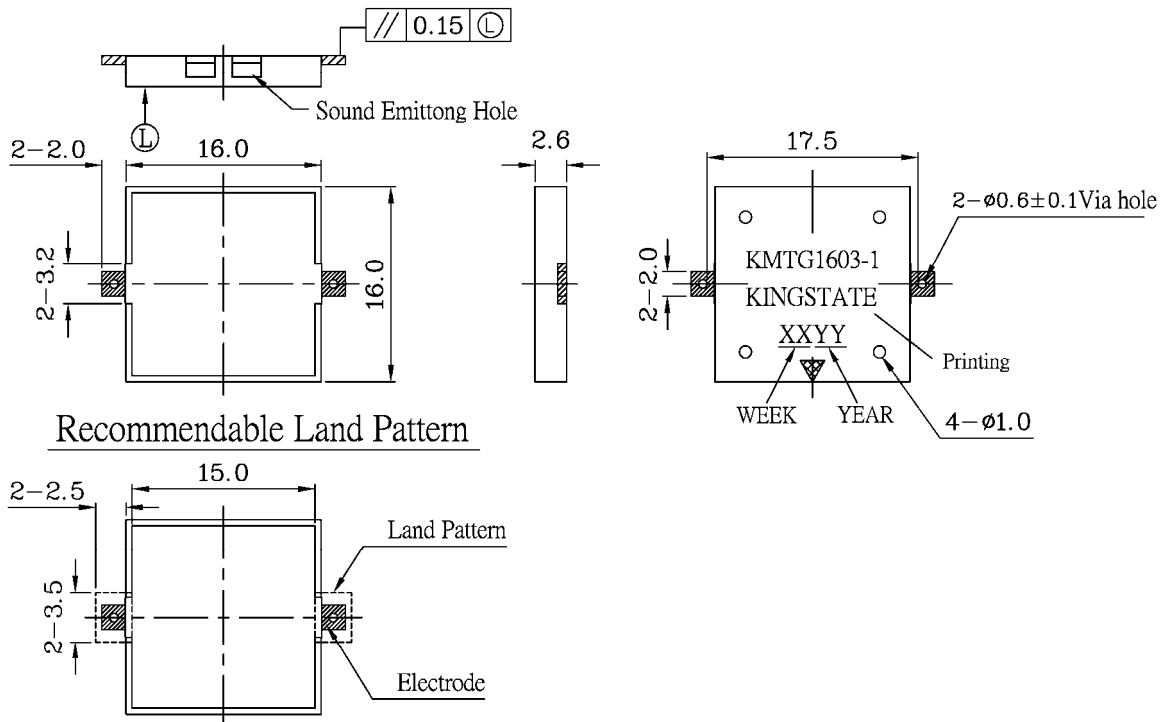
A. SCOPE 範疇

This specification applies piezo audio transducer, **KMTG1603-1**
 此規格書適用於壓電式蜂鳴器, **KMTG1603-1**

B. SPECIFICATION 規格

| No. | Item | Unit | Specification | Condition |
|-----|--|------|------------------------------------|------------------------------------|
| 1 | Operating Volt. Range 最大操作電壓 | Vp-p | MAX 25 | |
| 2 | Current consumption 消耗電流 | mA | MAX 5 | at 3Vp-p, square wave, 4.0KHz. |
| 3 | Sound pressure level 輸出音壓 | dB | MIN 81 | at 10cm/3Vp-p, square wave, 4.0KHz |
| 4 | Electrostatic capacity 靜電容量 | pF | 20,000 ± 30% | at 1KHz/1V |
| 5 | Operating temp. 操作溫度 | | -40 ~ +120 | |
| 6 | Storage temp. 儲存溫度 | | -40 ~ +120 | |
| 7 | Dimension 尺寸 | mm | L16.0 x W16.0 x H2.6 | See appearance drawing 請參照外觀尺寸圖 |
| 8 | Weight (MAX) 重量 | gram | 0.96 | |
| 9 | Material 材質 | | LCP (White) + PCB (FR4) | |
| 10 | Terminal 端子 | | SMD type (鍍化金/Plating Au:3~5um) | See appearance drawing 請參照外觀尺寸圖 |
| 11 | Environmental Protection Regulation 環保法規 | | RoHS | |

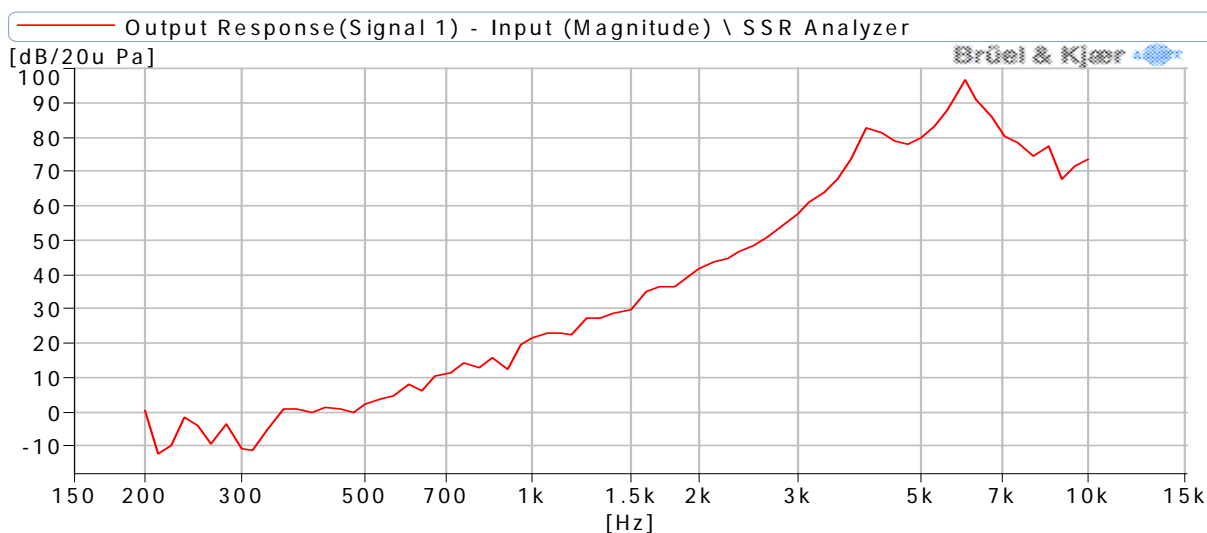
C. APPEARANCE DRAWING 外觀尺寸圖



Recommendable Land Pattern

Tol: ± 0.2
Unit: mm

D. TYPICAL FREQUENCY RESPONSE CURVE 頻率響應曲線



E. MEASURING METHOD 測量方法

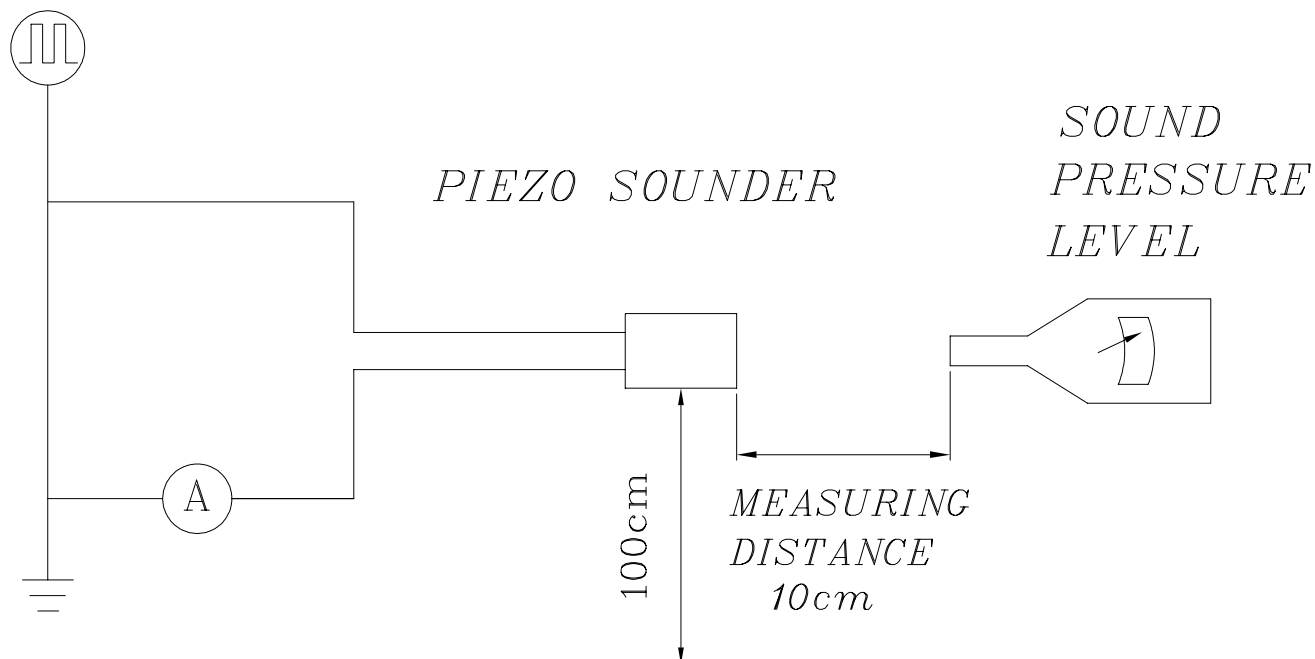
S.P.L. Measuring Circuit 音壓測試接線圖

Input Signal: 3Vp-p, 4.0kHz, Square Wave

輸入信號: 3Vp-p, 4.0kHz, 方波

Temp.: 25±3 Humidity: 60±10%, Free Room

溫度: 25±3 , 濕度: 60±10%, Free Room



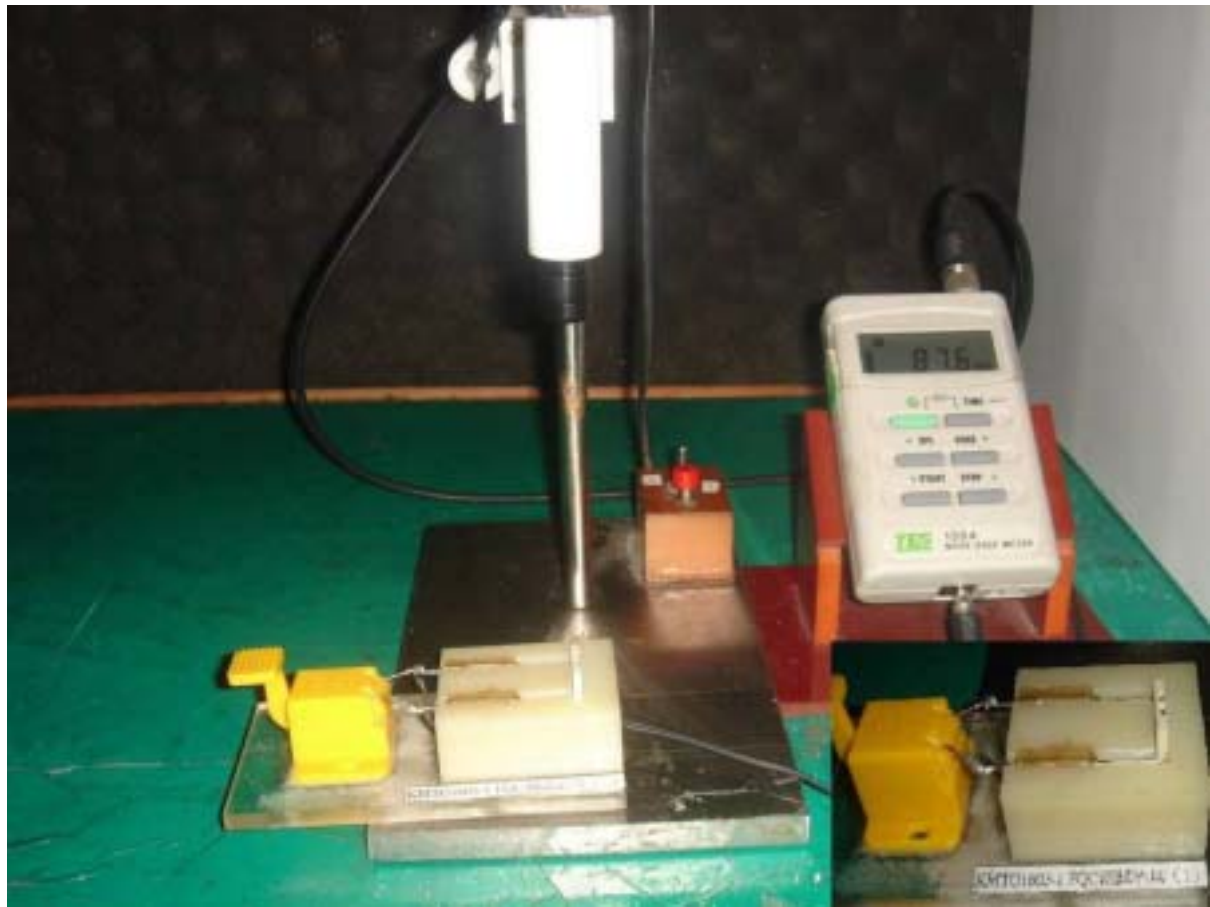
Mic : RION S.P.L meter UC30 or equivalent

Mic : RION 噪音計 UC30 或同等品

S.G : Hewlett Packard 33120A Function Generator or equivalent

S.G : Hewlett Packard 33120A 函數信號產生器或同等品

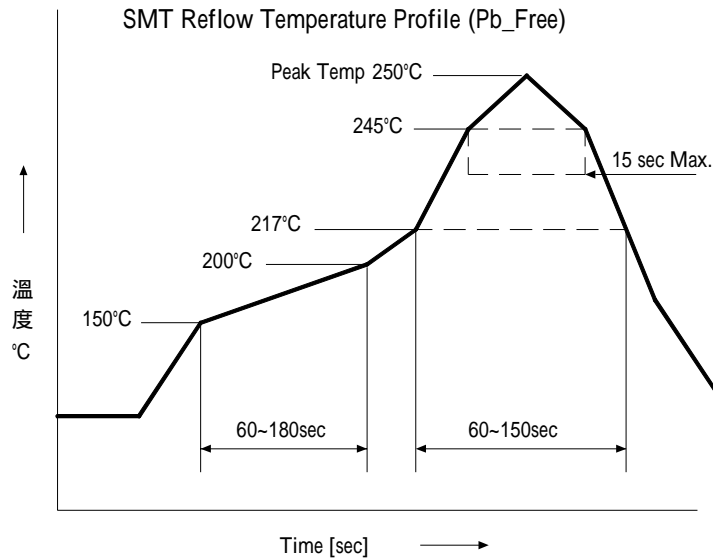
Test Photo:



F. MECHANICAL CHARACTERISTICS 機械特性

| No. | Item | Test condition | Evaluation standard |
|-----|--|---|--|
| 1 | Solderability 焊錫附著性 | Lead terminals are immersed in rosin for 5 seconds and then immersed in solder bath of $+270 \pm 5$ for 2 ± 0.5 second. 端子浸松香液中 5 秒後置於錫膏內,錫膏溫度: $+270 \pm 5$. 焊接時間: 2 ± 0.5 秒. | 95% surface of lead pads must be covered with fresh solder 錫膏須覆蓋端子上方 95% |
| 2 | Soldering Heat Resistance 焊錫耐熱性 | 1)IR reflow 遠紅外線熱風迴焊爐 Pre-heating conditions shall be $+150$ to $+200$ for 60 to 180 seconds. Ascending time up to $+250$ shall be longer than 55 seconds. Heating conditions shall be within 15 seconds at $+245$ min. But peak temperature shall be lower than $+250$,then being place in natural condition for 1 hour, sounder shall be measured 預熱條件為加熱到 $+150$ to $+200$ 為 60 到 180 秒. 加熱到 245 時間須長於 55 秒. 焊接條件為 15 秒最低 $+245$, 最高不可超過 $+250$. 結束後須靜置於室溫中 1 小時後進行檢測 2)Soldering Iron 烙鐵 Soldering iron of $+270 \pm 5$ shall be placed 0.5mm above from electrode of sounder. Melting solder through soldering iron shall be applied to electrode for 3 ± 1 seconds, then being place in natural condition for 4 hours, sounder shall be measured. $+270 \pm 5$ 的烙鐵置於電極上方 0.5mm 處, 以烙鐵將焊錫溶於電極上 3 ± 1 秒,然後置於室溫中 4 小時後進行檢測. | No interference in operation. 操作上無任何不良. |
| 3 | Terminal Mechanical Strength 端子強度 | The force 10 seconds of 9.8N(1kg) is applied to each terminal is axial direction. 對每一端子以軸方向, 施 9.8N(1kg)拉力 10 秒. | No damage and cutting off 端子不鬆動, 不脫落 |
| 4 | Vibration 振動測試 | The part shall be subjected to a vibration cycle of 10Hz to 55Hz in a period of 1 minute. Total peak amplitude shall be 1.55mm . The vibration test shall consist of 2 hours per axis in each three axes (X, Y, Z), Total 6 hours. 振幅 1.55mm, 頻率 10Hz-55Hz,時間 1 分鐘. X,Y,Z 3 個方向各 2 小時, 共 6 小時. | After the test the part shall meet specifications without any damage in appearance and performance except SPL. The SPL shall be in ± 4 dB compared with initial one, Higher than 81 dB. 經測試後,單體除音壓外,外觀及電氣特性須符合規格.輸出音壓變化量須在 ± 4 dB 內,且 >81 dB. |
| 5 | Piezo ass'y Solder joint rally test 蜂鳴片焊點拉力測試 | Piezo ass'y on the spot for each piece of wire, to exert the level of tension, the rate of 20mm/min, may have to bear the min.200g Rally 對蜂鳴片每一焊點的線材,施加水平拉力,速率 20mm/min,須可承受 min.200g 的拉力 | The product which was tested can not be packed and deliver, it should be abandoned 測試后的產品不可包裝出貨,以報廢處理 |

G. Recommended Temperature Profile For Reflow Oven 建議迴焊爐溫度曲線



Note: 245 is Less than 15 sec. ,but only pass the lead free reflow once.The SPL should be in ± 4 dB compared with initial one, Higher than 81 dB.

備注: 245 不可超過 15 秒, 且只能過無鉛回流焊一次. 輸出音壓變化量須在 ± 4 dB 內, 且 > 81 dB.

H. ENVIRONMENT TEST 環境測試

| No. | Item | Test Condition | Evaluation standard |
|-----|-------------------------|---|---|
| 1 | High temp. test 高溫測試 | After being placed in a chamber at +120 for 240 hours 置於+120 環境中 240 小時 | |
| 2 | Low temp. test 低溫測試 | After being placed in a chamber at -40 for 240 hours 置於-40 環境中 240 小時 | |
| 3 | Humidity test 相對濕度測試 | After being placed in a chamber at +40 and 90 \pm 5% relative humidity for 240 hours 置於+40 , 相對濕度 90 \pm 5% 環境中 240 小時 | |
| 3 | Temp. Cycle 溫度循環測試 | The part shall be subjected to 5 cycles. 單體承受溫度循環測試 5 次. 其循環內容如圖示. Unit: Minute | Being placed for 4 hours at +25 , buzzer shall be measured. The value of oscillation frequency/ current consumption should be in $\pm 10\%$ compared with initial ones .The SPL should be in ± 4 dB compared with initial one, Higher than 81 dB. 經測試後, 靜置於+25 (室溫) 環境中 4 小時後, 諧振頻率與消耗電流變化量須在 $\pm 10\%$ 內. 輸出音壓變化量須在 ± 4 dB 內, 且 > 81 dB. |

I. RELIABILITY TEST 信賴性測試

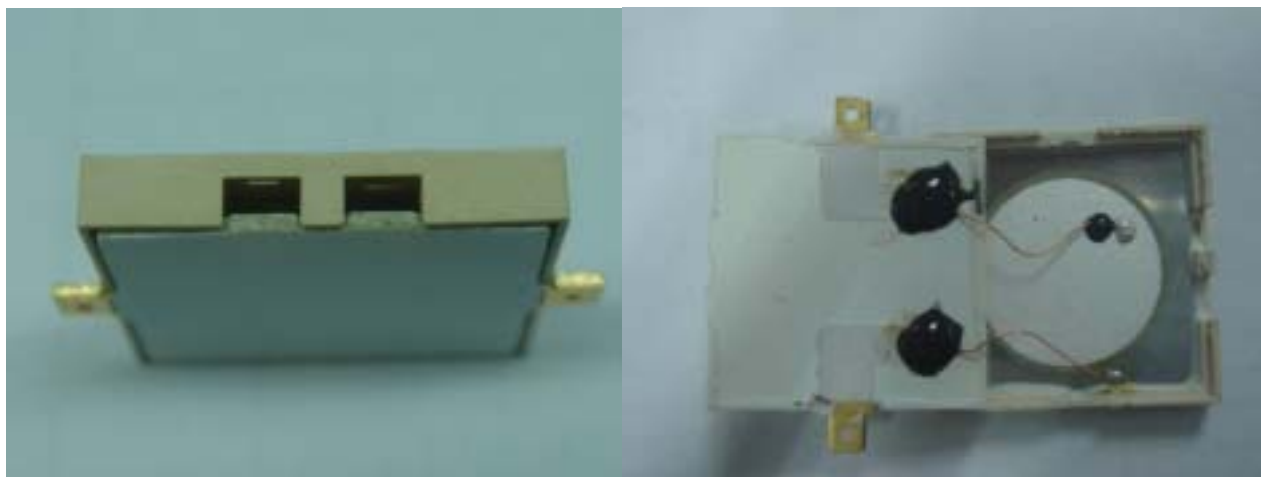
| No. | Item | Test condition | Evaluation standard |
|-----|-----------------------------|---|---|
| 1 | Operating life test 壽命測試 | 1. Continuous life test 高溫壽命測試(連續) 48 hours continuous operation at +105 with rated voltage applied. 在+105 環境下,以額定電壓連續操作 48 小時。 2. Intermittent life test 室溫壽命測試(間歇) A duty cycle of 1 minute on, 1 minutes off, a minimum of 5000 times at room temp.(+25 ±2)and rated voltage applied. 在室溫下(+25 ±2), 以額定電壓操作, 通電 1 分鐘斷電 1 分鐘,測試 5000 次循環。 | Being placed for 4 hours at +25 , buzzer shall be measured. The value of oscillation frequency/ current consumption should be in ±10% compared with initial ones .The SPL should be in ±4dB compared with initial one, Higher than 81 dB. 經測試後, 靜置於+25 (室溫) 環境中 4 小時後, 諧振頻率與消耗電流變化量須在±10%內. 輸出音壓變化量須在±4dB 內, 且>81dB. |

TEST CONDITION.

| | | | | |
|-------------------------|---|---------------------------|----------------------|----------------------------|
| Standard Test Condition | : | a) Temperature : +5 ~ +35 | b) Humidity : 45-85% | c) Pressure : 860-1060mbar |
| 一般測試條件 | : | a) 溫度 : +5 ~ +35 | b) 濕度 : 45-85% | c) 氣壓 : 860-1060mbar |
| Judgment Test Condition | : | a) Temperature : +25 ± 2 | b) Humidity : 60-70% | c) Pressure : 860-1060mbar |
| 爭議時測試條件 | : | a) 溫度 : +25 ± 2 | b) 濕度 : 60-70% | c) 氣壓 : 860-1060mbar |

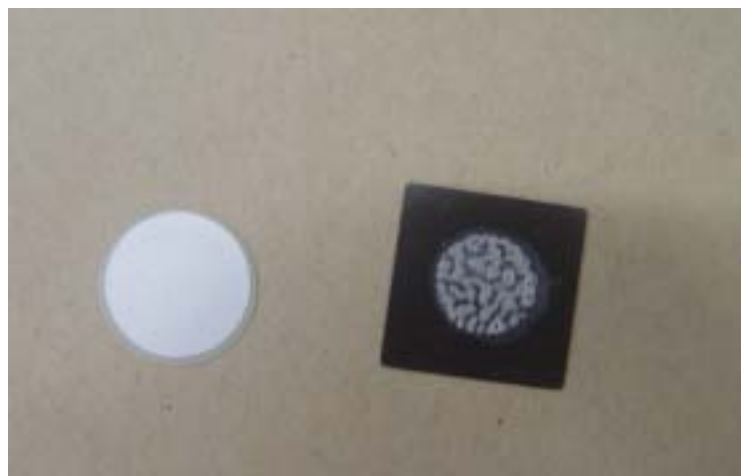
J. APPEARANCE

外觀

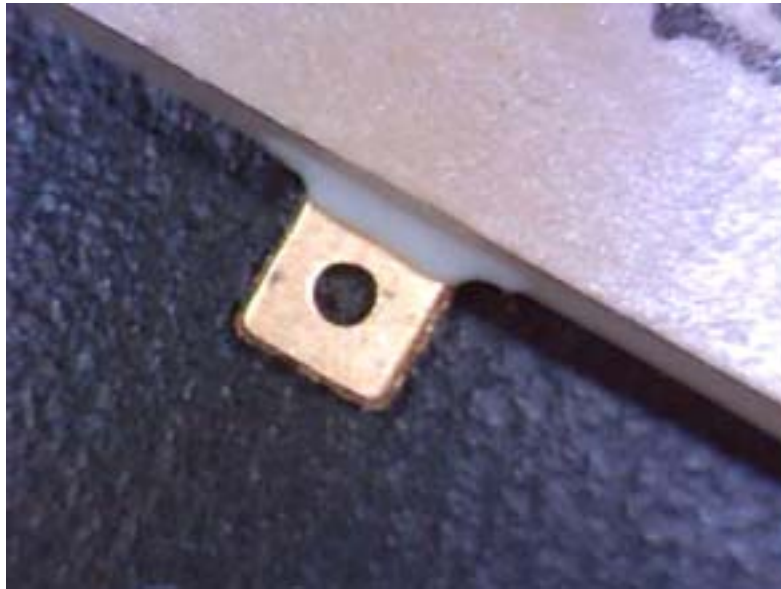


K. ADHEREING METHOD FOR CERAMIC DISC & NI-ALLOY DISC

陶瓷片與鎳合金片粘接方式



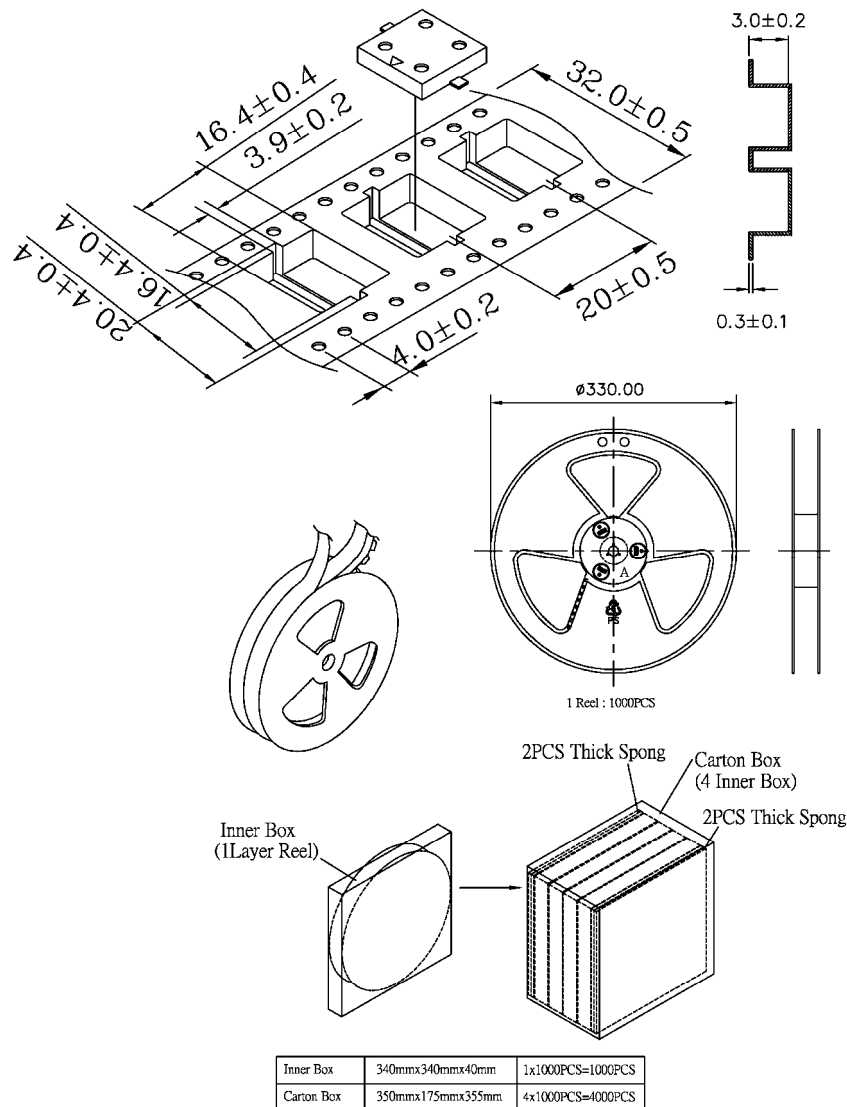
L. PIN assembly Resin test standard PIN 組裝溢膠檢驗標準



PIN bottom are not allowed to overflow glue, glue over the top criteria: Max.0.25mm

PIN 底面不允許有溢膠,上面溢膠標準:Max.0.25mm

M. PACKING STANDARD 包裝規格



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