# LI TAI ELECTRONIC ENTERPRISE CO.,LTD

**CUSTOMER**

## Qisda

# SPECIFICATION FOR APPROVAL

**CUSTOMER PART NO:** 1J.42028.001

**LI TAI PART NO:** SLF-000001

**DESCRIPTION:** LINE FILTER

**DATE:** 2022-07-15


TAIWAN □HEAD OFFICE：東力泰企業有限公司

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TEL: 86-512-66219182 FAX: 86-512-66219183

| Customer | Qisda | Customer P/N | 1J.42028.001 | Spec Version | A2 |
|---|---|---|---|---|---|
| Supplier | LI TAI | Maker P/N | SLF-000001 | Component Type | ET20 |

Form Version: 3.0

# Transformer / Coil Specification

| | |
|---|---|
| Customer | Qisda |
| Customer P/N | 1J.42028.001 |
| Core Type | ET-20 |
| Maker P/N | SLF-000001 |
| Create Date | 2022-07-15 |
| Spec Version | A2 |
| Maker Factory Address | LI TAI ELECTRONIC ENTERPRISE CO LTD<br>SUZHOU PLANT: 1027-2 SUNWU RD XUKOU TOWN<br>WUZHONG DISTRICT SUZHOU JIANGSU CHINA<br>蘇州祥崴電子有限公司: 江蘇省蘇州市吳中區胥口鎮孫武路 1027-2 號<br>TEL:86-512-66219182 FAX:86-512-66210696 |

| Customer | Qisda | Customer P/N | 1J.42028.001 | Spec Version | A2 |
|---|---|---|---|---|---|
| Supplier | LI TAI | Maker P/N | SLF-000001 | Component Type | ET-20 |

Form Version: 3.0

# History

| Version | Original | Change To | Date | Remark |
|---|---|---|---|---|
| A0 | ISSUE | | 2003 | |
| A1 | | 圖面修改 | 2005-12-14 | |
| A2 | | 變更 DRC | 2022-07-15 | |
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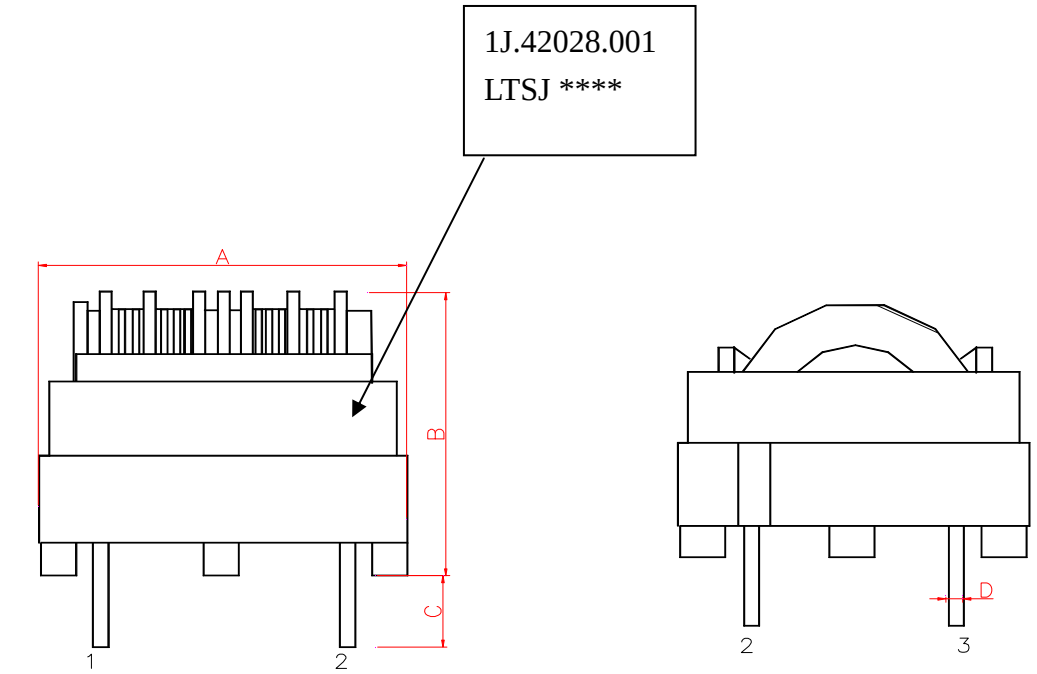
- Content:
  - Configuration & Dimension
  - Bobbin Dimension
  - Winding Specification
  - Electrical Characteristics
  - Material List
  - Package Specification
  - Reliability Criteria
  - Qisda Check List

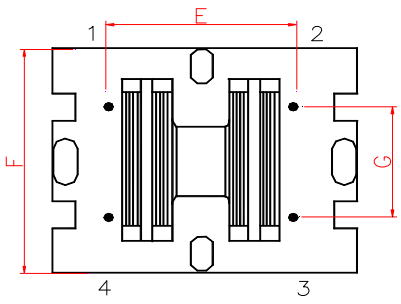
| Customer | Qisda | Customer P/N | 1J.42028.001 | Spec Version | A2 |
|---|---|---|---|---|---|
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## ● Configuration & Dimension

**(Should be including Top View、Front View、Bottom view、Side View、Pin Pad Drawing、Picture of Core Tapping &Other note)**




A：23.0 MAX
B：20.0 MAX
C：4.0±0.5
D：Φ0.8±0.1
E：13.0±0.5
F：23.0 MAX
G：10.0±0.5

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|---|---|---|---|---|---|
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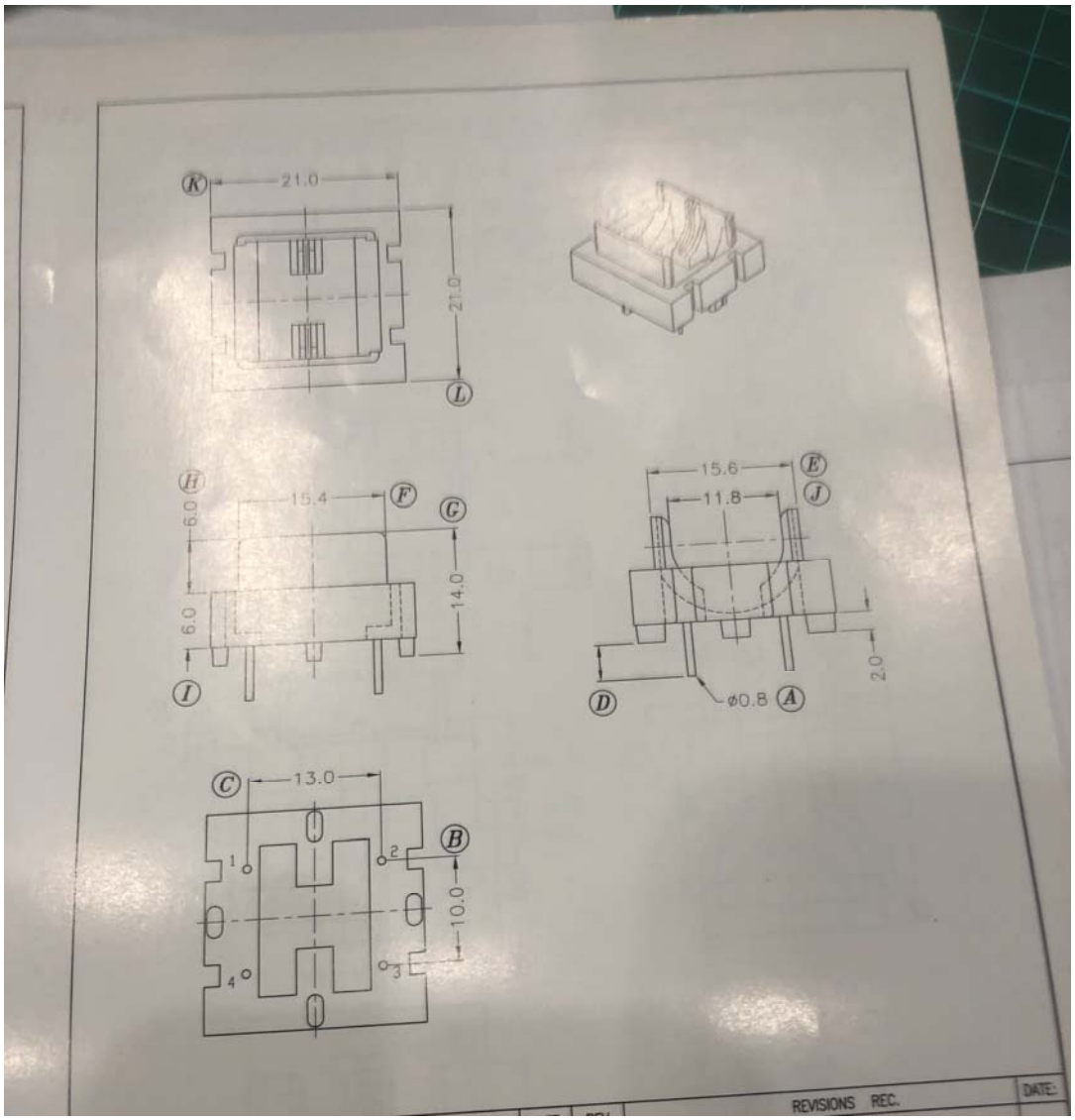
Form Version: 3.0

| | | |
|---|---|---|
| 1 | Marking Rule | MANUFACTURING SITE: (□□□□)<br>LTFC: Fujian,China<br>LTSZ: Shenzhen,Gongdong,China<br>LTSJ: Suzhou,Jiangsu,China<br>LOT NO (XX XX)<br>YEAR WEEK |
| 2 | 成品須真空含浸,含浸後 PIN 腳須二次焊錫 | |
| 3 | WEIGHT is 11.85+/- 2 g | |
| 4 | Photo for Final sample | VIEW A |

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|---|---|---|---|---|---|
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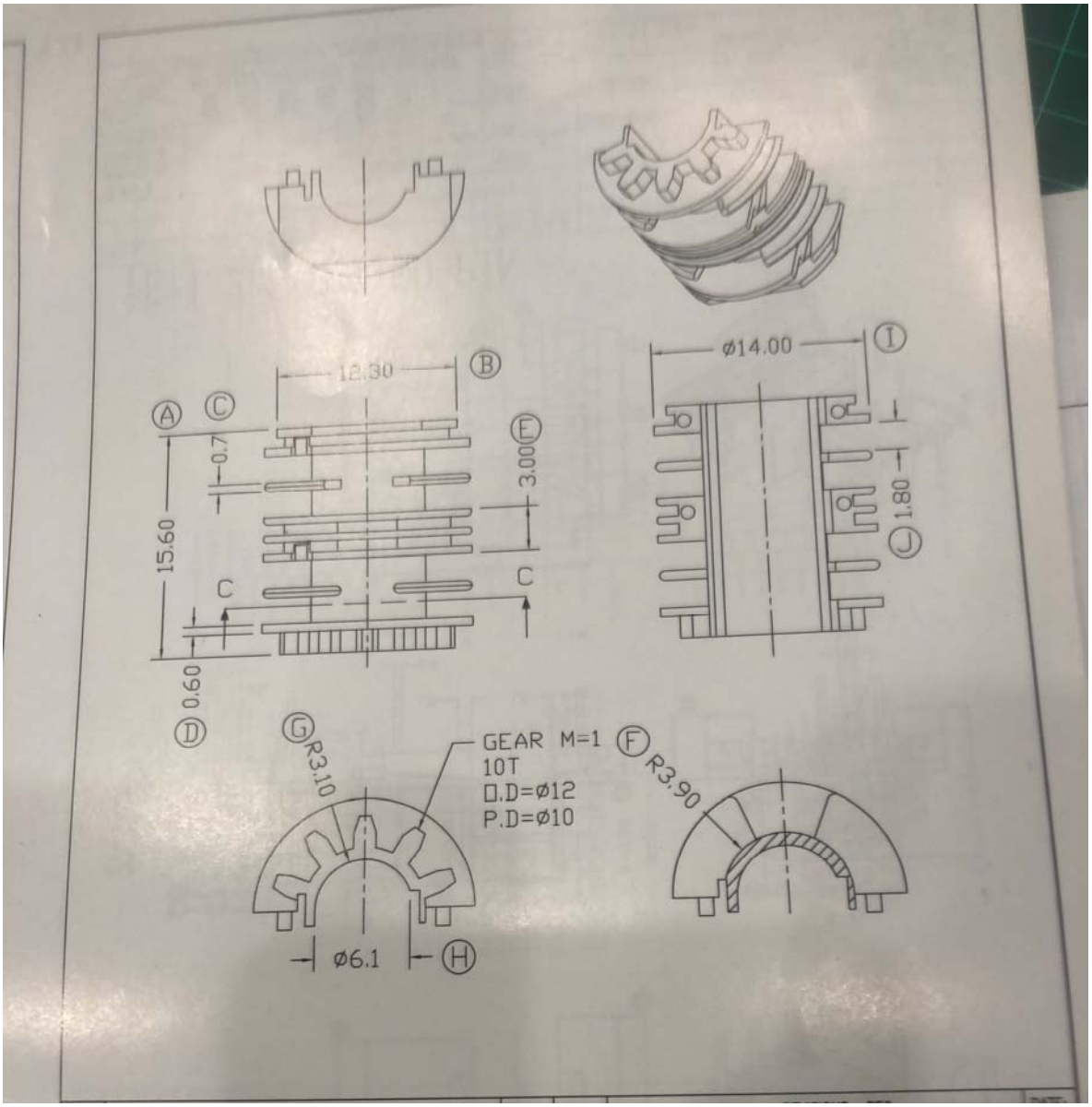
- Bobbin Dimension



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|---|---|---|---|---|---|
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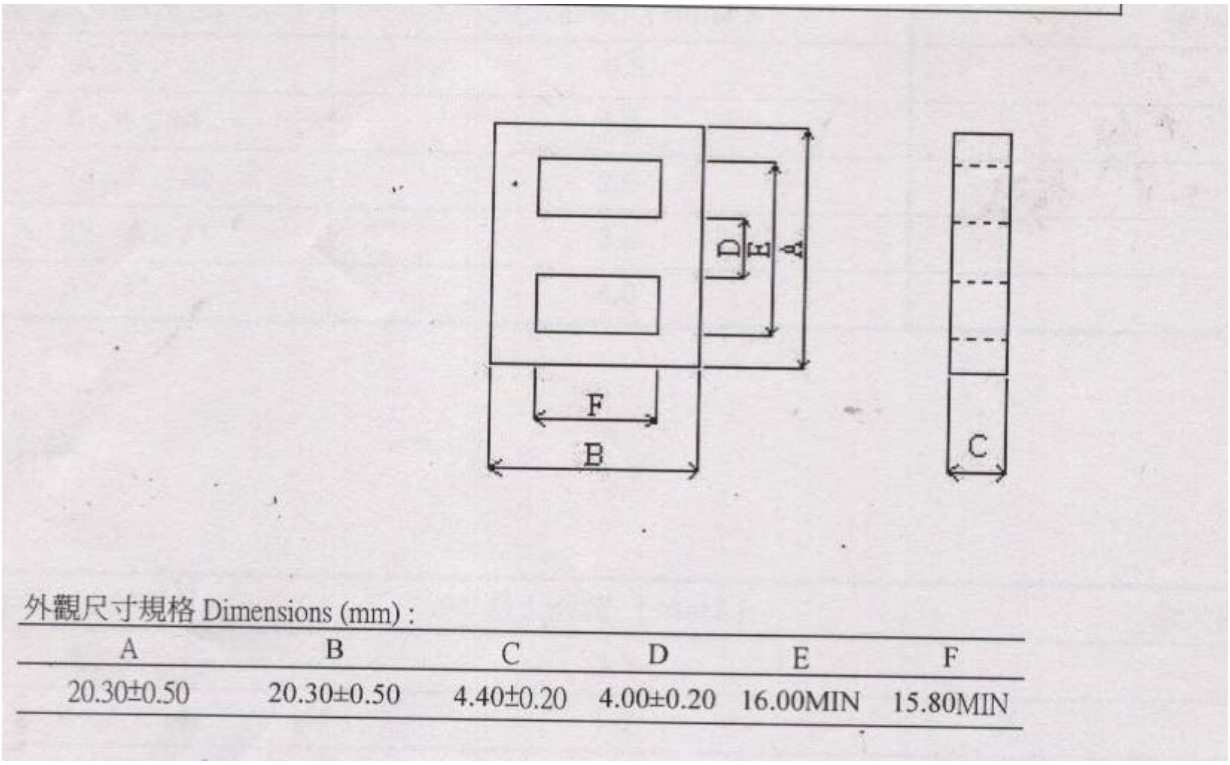
# Base Dimension



| Customer | Qisda | Customer P/N | 1J.42028.001 | Spec Version | A2 |
|---|---|---|---|---|---|
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Form Version: 3.0

# Core Dimension




外觀尺寸規格 Dimensions (mm) :

| A | B | C | D | E | F |
|---|---|---|---|---|---|
| 20.30±0.50 | 20.30±0.50 | 4.40±0.20 | 4.00±0.20 | 16.00MIN | 15.80MIN |

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|---|---|---|---|---|---|
| Supplier | LI TAI | Maker P/N | SLF-000001 | Component Type | ET-20 |

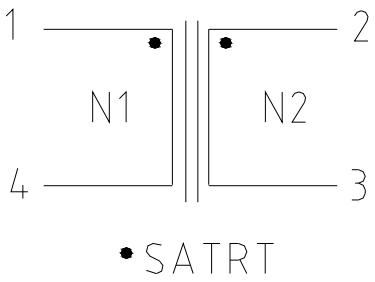
Form Version: 3.0

# Winding Specification

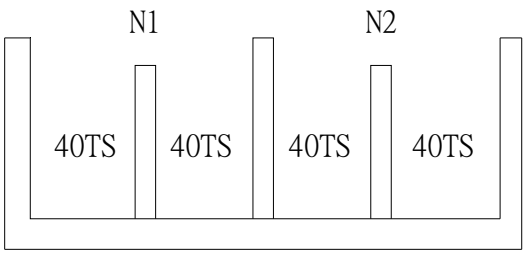
## ➔ Winding List:

| No | Winding No. | Terminal | Wire | Turns | Winding Rule |
|---|---|---|---|---|---|
| 1 | N1 | 1---4 | 2 UEW 0.3φx1c | 40+40Ts | REF |
| 2 | N2 | 2---3 | 2 UEW 0.3φx1c | 40+40Ts | REF |

## ➔ Schematic:




## ➔ Winding Order:



| Customer | Qisda | Customer P/N | 1J.42028.001 | Spec Version | A2 |
|---|---|---|---|---|---|
| Supplier | LI TAI | Maker P/N | SLF-000001 | Component Type | ET-20 |

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## ● Electrical Characteristics

| Item | Test Terminal | Specification | Test Instrument |
|---|---|---|---|
| Inductance | L(1---4)<br>L(2---3) | 20 mH MIN. | WAYKE KERR 3260B LCR METER/HP4129 @40KHz, 1V |
| Q Value (min) | Q(1---4) | 5 MIN. | |
| D.C. Resistance @25℃ | R(1---4)<br>R(2---3) | 0.8Ω MAX. | CHEN HWA 502 OHM METER @25℃ |
| Hi-Pot | COIL TO COIL | AC 1000V/3mA/1MIN | ZENTECH 9072A |
| | COIL TO CORE | AC 500V/3mA/1MIN | |
| Insulation Resistance | COIL TO CORE | DC500V/100MΩ MIN | |
| | COIL TO COIL | DC500V/100MΩ MIN | |
| Current Rated | 0.25A | | |
| Operation Temp. Range | -20℃ ~ +130℃ | | |
| Storage Temp. Range | -20℃ ~ +60℃ | | |

| Customer | Qisda | Customer P/N | 1J.42028.001 | Spec Version | A2 |
|---|---|---|---|---|---|
| Supplier | LI TAI | Maker P/N | SLF-000001 | Component Type | ET-20 |

Form Version: 3.0

## ➔ Insulation System

| System Company | Description | UL No. |
|---|---|---|
| LI TAI ELECTRONIC ENTERPRISE CO., LTD | CLASS 130(B)<br>CIS.04 | E258545 |

## ● Material List

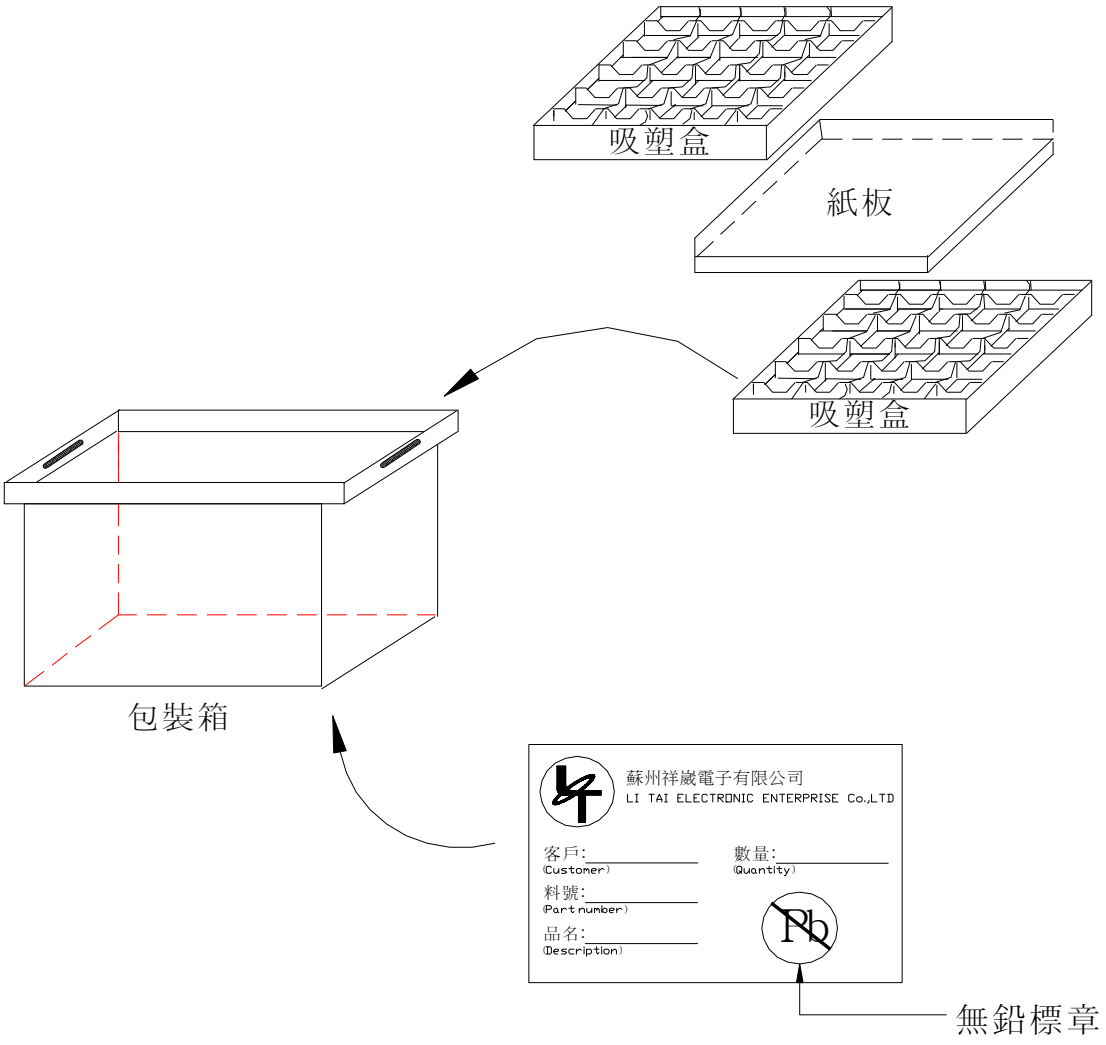
| | No | Sub Part | Supplier | Description | Type | Flame/ Temp. | UL No. |
|---|---|---|---|---|---|---|---|
| * | 1 | CORE | ACME | FERRITE CORE ET-20 | A10 | N/A | N/A |
| | | | TDG | | TS10 | | |
| | 2 | BOBBIN<br>CTI group III<br>Thk. 0.8(min.) | CHANG CHUN | PHENOLIC | PBT 5630F | 94V-0/ 130℃ | E59481 (S) |
| | 3 | BASE<br>CTI group III<br>Thk. 0.75(min.) | | | T375HF | 94V-0/ 150℃ | E59481 (S) |
| | 4 | WIRE | PACIFIC | POLYURETHANE | UEW/U | 130℃ | E201757 |
| | 5 | VARNISH | ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC | POLYESTER | V1380FC | 130℃ | E75225 |
| | | | | | | | |
| | 6 | PIN | WELL FORE | SOLDER 99.26% Sn 0.05% Ag 0.08% Cu,ECT | N/A | N/A | N/A |
| | 7 | INK | DOMINO | INK | N/A | N/A | N/A |
| | 8 | TIN | SHI PIN | Lead Free Solder Sn98% Cu2% | N/A | N/A | N/A |

* Safety concerned subparts.

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# Package Specification



| Customer | Qisda | Customer P/N | 1J.42028.001 | Spec Version | A2 |
|---|---|---|---|---|---|
| Supplier | LI TAI | Maker P/N | SLF-000001 | Component Type | ET-20 |

Form Version: 3.0

包裝箱外箱標籤說明：

A.Condition:

For the packing identification of standard shipment

B.Label specification:

Material : Copper plate

Dimension: 80*60 mm for SOT series

Back Glue: Acrylic Glue series

Color: Frame: White Character: Black

C. Bar Code Specification (Bar code printer is DATAMAX)

(1). Code: Regular Code 128(Auto)

(2). Parameter:

X Dimension: 9.8mil

Ratio: 300dpi(3 dots)

Height: 0.7cm.

(3).Character:

Type: Arial (For Bar code machine Datamax)

Right character size 12 (Packer, Pack Date, QC)

Pb character size 24

Qisda character size 20




D. Label Content:

(1). P/N: Part No.

(2). LOT NO.: Product Lot No.

(3). (Q)Quantity

(4). Product Date+Expire days: Assembly Date Code, Expire days

(5). (B): Customer Part No. Code,Li tai Code,D/C Code, Quantity

(6)ReellD: Li tai Code,Assembly Date Code, Manufacture Lot No.

(7) Pb : For Pb free package

(8) Qisda : Customer name

NOTE:（括弧內中文為解釋說明，紅線標注）

| Customer | Qisda | Customer P/N | 1J.42028.001 | Spec Version | A2 |
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Form Version: 3.0

包裝盒嗲頭標籤說明：

A.Condition:

For the packing identification of shipping mark

B Label specification:

Material : Copper plate

Dimension: 20*60 mm for SOT series

Back Glue: Acrylic Glue series

Color: Frame: White Character: Black




C. Bar Code Specification

(1). Code: Regular Code 128(Auto)

(2). Parameter:

X Dimension: 9.8mil

Ratio: 300dpi(3 dots)

Height: 0.7cm.

D. Label Content:

客户料号：Customer Part No.

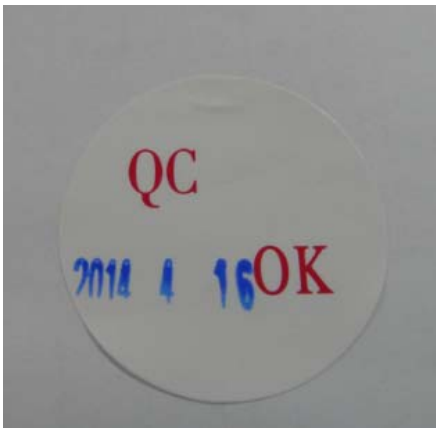
周期：D/C

数量：Quantity

包裝箱外箱 QC 標籤：

A.Condition:

For the packing identification of QC. mark




B Label specification:

Material : Copper plate

Dimension: Φ30.0mm series

Back Glue: Acrylic Glue series

Color: Frame: White Character: Red＆Blue

C Label Content:

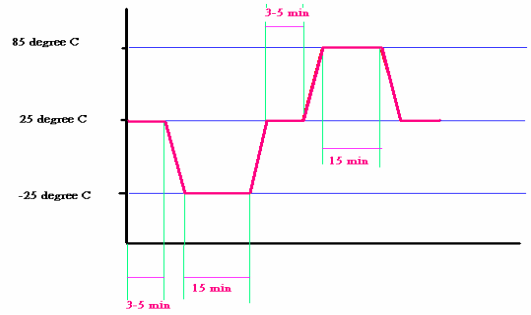
QC OK：Quality Control Pass

Date：Assembly Date

| Customer | Qisda | Customer P/N | 1J.42028.001 | Spec Version | A2 |
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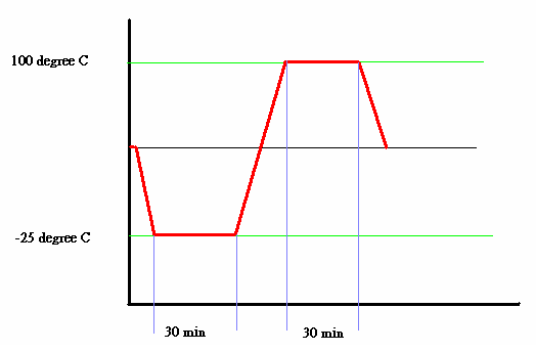
Form Version: 3.0

# ● Reliability Criteria (Qisda Version :2.0 )

| Test item | Test condition ( Test Method ) | inspection criteria |
|---|---|---|
| 高溫無負荷壽命測試 ( Hi-temp unload life test) | Condition: 85±2°C<br>Duration: 120 hours<br>96 Hrs (工厂例行性抽验) | 1. 外觀：無腐蝕、裂痕、其他機械損傷線圈鐵芯裝配牢固<br>2. 電氣特性：在原 SPEC 要求之規格內 |
| 低溫無負荷壽命測試 ( Low-temp unload life test) | Condition: -25℃ ± 2℃<br>Duration: 120 hours<br>96 Hrs (工厂例行性抽验) | 1. 外觀：無腐蝕、裂痕、其他機械損傷線圈鐵芯裝配牢固<br>2. 電氣特性：在原 SPEC 要求之規格內 |
| 耐濕性無負荷試驗 (Humidity unload test) | Condition: 65℃ ± 2℃<br>Humidity: 90 to 95% RH<br>Duration: 120 hours | 1. 外觀：無腐蝕、裂痕、其他機械損傷線圈鐵芯裝配牢固<br>2. 電氣特性：在原 SPEC 要求之規格內 |
| 溫度循環試驗 (Thermal cycle test ) | Cycle: 25+/-5℃/ 3-5 min --> -25+/-3℃/ 15 min --> 25+/-3℃/ 3-5 min --> 85+/-5℃/ 15 min<br>Times: 100 Cycles<br> | 1. 外觀無斷裂,脫落,鬆動而且外觀無任何異常現象.<br>2. 電氣特性:在原 SPEC 規格內 |
| 焊錫耐熱性試驗 (Solder heat-resistance test)<br>IR-Reflow or Wave solder | Pre-heating: 150±10℃<br>Time: 60 - 120 sec max<br>Temperature: 260±5℃ max<br>Time: 10 sec ±1 sec | 1. 外觀：無腐蝕、裂痕，其他機械損傷,不能有焊錫不良,其焊錫面積需達到 95%.<br>2. 電氣特性：在原 SPEC 要求之規格內 |
| 焊錫附著性試驗 (Solderability test) | Temperature: 235±5℃<br>Time: 5±0.5 sec | 1. 外觀：無斷裂、脫落而且外觀無任何異常現象<br>2. 焊錫面積需達到 95% |

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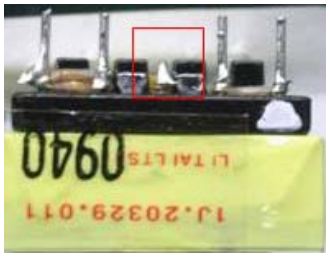
Form Version: 3.0

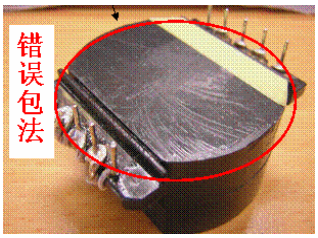
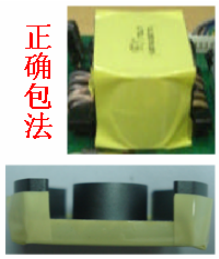
| Test item | Test condition ( Test Method ) | inspection criteria |
|---|---|---|
| 冷熱衝擊試驗 (Thermal shock test) | Cycle: -25℃ / 30 min -->100 ℃/ 30 min<br>Times: 100 Cycles<br> | 1. Inductance deviation within ±5.0% |
| 振動試驗 (Vibration test) | Frequency:10 Hz --> 55 Hz --> 10Hz (for 1 min.)<br>Time:6 hour<br>Perpendicular directions (X,Y,Z) | 1. 外觀:無裂痕,PIN 腳脫落與其他機械損傷.<br>2. 電性符合 SPEC 要求. |
| Solder Iron | Temperature: 390+/-10℃<br>Time: 4-5 sec | 1. 外觀：無斷裂、脫落而且外觀無任何異常現象<br>2. 焊錫面積需達到 95% |

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|---|---|---|---|---|---|
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## ● Qisda Check List

| No | Check Point | Remark | Supplier Confirm (Pass or N/A) |
|---|---|---|---|
| 1 | 2Pin 以上 Choke 類零件需注意防呆 | | N/A |
| 2 | Transformer 的繞組需加註繞法疏繞需注意是否需平均疏繞。走線槽位是否可避免傷到漆包線及是否與 Core 距離太近. 需注明走線方向順時針？逆時針？ | | N/A |
| 3 | Transformer 如果繞線太細（低於 0.04mm）， 外部需包 TAPE。 | | N/A |
| 4 | 是否標示研磨 Core 位置(打點) | | N/A |
| 5 | Transformer 出入線結線：不可超過 BOBBIN stand off<br>Cut off PIN ：需與 BOBBIN stand off 齊平<br> | | N/A |
| 6 | Power Transformer 限定常用 Core 廠商：<br>Others :TDK、TDG、SAMWHA、FERROXCUBE（PHILIPS）、TOKIN、NICERA<br>Projector: TDK、FERROXCUBE（PHILIPS）、TOKIN、NICERA | | N/A |
| 7 | Material List 標註 UL No. | | PASS |
| 8 | 規格書中需注明測試設備（指定測試設備：HP-4284A）。<br>電感測試條件一般為：40KHz 1V<br>Hi-pot 測試條件一般為：3mA/ 1min | 如需 CHEN HWA 量測，則須比較二種設備誤差，將誤差值加入到實際測試值中 | PASS |
| 9 | 使用 Ring choke, 引腳出線處需加 Teflon tube，tube 至少深入至線包不會短路，不得低於 core 底部；底部需加 PCB 板，起固定隔離作用。 | | N/A |
| 10 | Choke 類電感外部加熱縮套管，需保證套管高於線圈 | | N/A |
| 11 | Chock 類電感線徑若≤0.6mm，則不能由銅線直接沾錫作為 PIN 腳，必須加底座 | | N/A |

| | | | |
|---|---|---|---|
| 12 | 所有 Transformer 都要 "真空" 含浸，以防止異音及耐壓不足 | | PASS |
| 13 | Transformer 需廠商提供包裝方式，注意每層之間需加隔板，避免零件受擠壓 | | PASS |
| 14 | Ring Choke 的測試頻率需定義為 100KHz/1V | | N/A |
| 15 | 臥式 ER2828 所用 BOBBIN，需在 BOBBIN 兩側貼 margin tape  | | N/A |
| 16 | Transformer 需在規格書中定義:pin 腳需二次沾錫 (請確認剪腳處是否產生錫裂) | | PASS |
| 17 | 一二次側跨接的 power transformer，為保證其與 PCB 表面良好絕緣，要求：二次側需包 2 層膠布，成品外部再包 2 層膠布.具體如下圖     | | N/A |

| Customer | Qisda | Customer P/N | 1J.42028.001 | Spec Version | A2 |
|---|---|---|---|---|---|
| Supplier | LI TAI | Maker P/N | SLF-000001 | Component Type | ET-20 |

Form Version: 3.0

# Qisda Format History

| Date | Version | Change Notice | Owner |
|---|---|---|---|
| 2010-12-3 | V1.0 | Org | Jeremy Jong |
| 2011-1-3 | V2.0 | 1.Add Qisda Logo<br>2.Add Power Transformer 限定常用 Core 廠商 (NICERA)<br>3.Reliability 設為必須符合條件 | Jeremy Jong |
| 2012-04-16 | V3.0 | 1. Add photo for final sample.<br>2. Add Core dimension drawing.<br>3. Update material list form with thickness. | Carol.Sung |
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