| Scanning | LIB. |
|---|---|
| | |

Safety

RoHS

# SPECIFICATION FOR APPROVAL

- **CUSTOMER : LG Electronics inc.**
- **ITEM : Power Supply Unit.**
- **P/NO**

| Model Name | Customer | Supplier |
|---|---|---|
| LGP4247-13LPB | EAY62810901 | OPVP-0182 |

- **DATE : 2013.08.20**
- **Revision : REV 2.5**
- **Remark : MP (PCB REV 2.0)**

**Producing District : CSG ( CHINA SUZHOU GENMAO )**

생산지 : CSG ( 중국 소주 겐마오 )

★ **Safety Standard Parts [안전규격부품 List ]**

Power Cord, Power Plug, X/Y-Capacitor, Power Switch, Fuse, SMPS Trans, Stand-By Trans, Photo coupler, Insulation(절연) Resistor, Discharge(방전) Resistor, Fusing Resistor, FBT.CPT, CPT Socket, DY, D-Coil, Line Filter, PCB Material, Front / Back-cover Material Relay(1-2차간), Varistor, Adapter

★ **EMC Standard Parts [전자규격 부품 List ]**

Power Plug, Line Filter, X-Capacitor, Y-Capacitor, SMPS Trans, Tuner, Saw-Filter, Shield Case, Oscillator, Pattern Change

★ **Green [유해물질 확인사항]**

This item must meet the standards of LG Electronics for six major substances as designated by RoHS for control.

(Cd: 10ppm under, Pb/Hg/Cr+6/PBB/PBDE: 100 ppm under)

**Lien Chang Electronic Enterprise Co., Ltd.**
**ADD：No.2, Lane 234, Hsin Shu Rd., Hsin Chuang**
**Taipei County, Taiwan 242**
**TEL: (886-2)2203-5100**
**FAX: (886-2)2202-8472**

# Documentation For Approval

| Model Name | Customer | Supplier |
|---|---|---|
| LGP4247-13LPB | EAY62810901 | OPVP-0182 |

| Written | Checked | Approved |
|---|---|---|
| Miki | July | C.T |

# Contents

# Revision History

| Rev No. | Contents | Date of Approval | Checked | Remark |
|---|---|---|---|---|
| 0.1 | Apply to PV (PCB REV 0.2)<br>PCB P/No. EAX64905701(1.8)<br>Micom Version 0.98a (Checksum : 0x980A)<br><br>PV 1st Edition. | 12.10.19 | July | |
| 0.2 | Apply to PV ( PCB REV 0.22 )<br>PCB P/No. EAX64905701(2.1)<br>Micom Ver : 0.99a ( Checksum : 0x1F7D )<br><br>PV 2st Edition | 12.11.26 | July | |
| 1.0 | Apply to MP ( PCB REV 1.0 )<br>PCB P/No. EAX64905701(2.3)<br>Micom Ver : 1.00a ( Checksum : 0x1F8D )<br><br>1. MP<br>- Add UL Mark | 12.12.07 | July | |
| 1.1 | Apply to MP ( PCB REV 1.0 )<br>PCB P/No. EAX64905701(2.3)<br>Micom Ver : 1.00a ( Checksum : 0x1F8D )<br><br>FEELUX TRAN`S 13S-LM07,13S-LP02 ,13S-DD02 Field smell issue, delete Trans tape maker | 13.02.08 | July | |
| 2.0 | Apply to MP ( PCB REV 2.0 )<br>PCB P/No. EAX64905701(2.5)<br>Micom Ver : 1.00a ( Checksum : 0x1F8D )<br><br>1. Noise temporary countermeasure ( apply soon )<br>- J39 --> Axial 470K Ohm modify<br>- R722 SMD 470K Ohm --> SMD 0 Ohm modify<br>2. Noise root countermeasure ( 4/25 apply )<br>- Micom Driver On input単 MLCC add (C705)<br>3. Line Filter modify ( 4/25 apply )<br>- LLF-130 --> LLF-134 modify<br>4. PCB is modified (It will be applied from 5/15)<br>- AC Socket fixture hole change<br>- 431(GND Pattern separate)<br>- add SLIT within C610 and J1<br>- D201, 204 Type change, EL33,34 delete<br>- D801 Type change<br>5. DCDC Boding Point<br>- L801 : Silicon bond 4Point +Center Bond -> Silicon bond 2Point + Three Bond 6 Point<br>6. AC Socket modify<br>- Ground Pin : 2.36±0.06㎜ -> 2.1±0.06㎜<br>-Ground Tab : 2.5±0.05㎜ -> 2.23±0.05㎜ | 13.04.17 | July | |
| 2.1 | Apply to MP ( PCB REV 2.0 )<br>PCB P/No. EAX64905701(2.5)<br>Micom Ver : 1.00a ( Checksum : 0x1F8D )<br><br>1. no use vendor delete, and remain actual vendor | 13.05.14 | July | |

# Revision History

| Rev No. | Contents | Date of Approval | Checked | Remark |
|---|---|---|---|---|
| 2.2 | **Apply to MP ( PCB REV 2.0 )**<br>**PCB P/No. EAX64905701(2.5)**<br>**Micom Ver : 1.00a ( Checksum : 0x1F8D )**<br><br>**1. Add WANSHENG CERAMIC CAP 4M** | 13.05.14 | July | |
| 2.3 | **Apply to MP ( PCB REV 2.0 )**<br>**PCB P/No. EAX64905701(2.5)**<br>**Micom Ver : 1.00a ( Checksum : 0x1F8D )**<br><br>**LGE RQA test is finished and the result is passed.**<br>**1.adding a aluminum cap supplier : SUSCON**<br><br>**SG 2.2uF 50V 5x11** | 13.05.23 | July | |
| 2.4 | **Apply to MP ( PCB REV 2.0 )**<br>**PCB P/No. EAX64905701(2.5)**<br>**Micom Ver : 1.00a ( Checksum : 0x1F8D )**<br><br>**1.ION FLUX Model : ILF714 -> ILF710**<br>**2.13Y LPB & 直下 Low Model Renesas PFC IC defect solution 4M**<br>**: D607 1N4148 → (ZD602) Zener 3.6V 變更** | 13.07.14 | July | |
| 2.5 | **Apply to MP ( PCB REV 2.0 )**<br>**PCB P/No. EAX64905701(2.5)**<br>**Micom Ver : 1.00a ( Checksum : 0x1F8D )**<br><br>**<DONGIL> AC Socket modify : add cover ,**<br>**DAC-18C3M1→DAC-18C3M1c (It will be applied from 9/23)** | 13.08.20 | July | |

# Software Revision History

| No. | Firmware Revision Contents | Date of Approval | Checked | Remark |
|---|---|---|---|---|
| 1 | **- Firmware Version 1.00a**<br>**Checksum 0x1F8D** | 12.12.07 | July | |
| | | | | |

# CTQ Management

# Specification

# 1. INTRODUCTION

## 1.1 Scope

This approval is the description related to every electrical and structural specifications and reliability For Power Supply Unit used on 42/47 inch LGE LED TV.

## 1.2 Customers product related items

Product : Power Supply Unit
Part code : EAY62810901

## 1.3 Product name

Product name : LGP4247-13LPB
Revision code : 2.5

# 2. SPECIFICATION

## 2.1 Input Requirements

| | |
|---|---|
| Nominal Input Voltage | AC 100V to AC 240V |
| Input Voltage Variation | AC 90V to AC 264V |
| Input Current | Under 1.5Arms . (at 100Vac & Nominal Load)<br>Under 1.2Arms . (at 240Vac & Nominal Load) |
| Nominal Frequency | 50 / 60 Hz |
| Frequency Variation Range | 47 Hz to 63 Hz |
| Phase | Single |
| Leakage Current | 0.35mA_peak. (100Vac ~ 240Vac) |
| Surge Immunity | ± 4kV / 1000ns / 0˚ to 360˚ |
| Hold-up Time | More than 20ms at 100Vac and maximum output load<br>※When it doesn't meet 20ms hold up time,<br>1. PSU restarts.<br>2. No hardware failure.(All components) |
| Lightning Surge | 2kA Normal, Common Mode |
| Inrush Current | 80A zero-peak max<br>at cold start and any specified line, load, temperature conditions. |

### 2.1.1 Power Factor

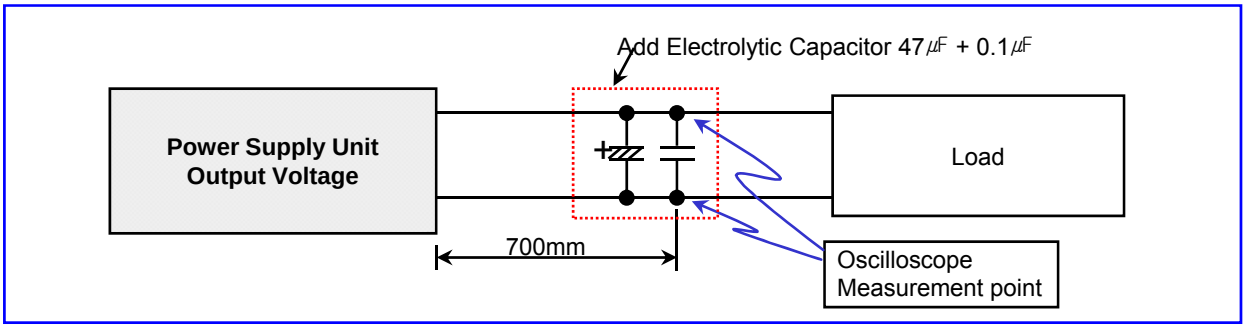
**over than 0.90 at 90 – 264Vac & max load condition**

## 2.2 Power Output Characteristics

| Output | Voltage Variable range [V] | Rated Current (Min, Max) [A mean] | Voltage Regulation [V] | Ripple Voltage [mVp_p] |
|---|---|---|---|---|
| 3.5V (STBY) | 3.325V ~ 3.675V | 0.3W Under (15mA) | - | - |
| | | 1.5A (0.2~1.5A) (ON condition) | ± 5% | 250 mVp_p |
| 12V | 11.4V ~ 12.6V | 2.0A (0.2~2.0A) | ± 5% | 350 mVp_p |
| 24V | 22.8V ~ 25.2V | 0.8A (0.1~0.8A) | ± 5% | 500 mVp_p |
| LED B+ | 52.1V ~ 75.2V | 0.15A(0.142~0.158A) × 6Ch | ± 5% | - |

* On Condition : In a moment of Power_ON Signal activated, the current of 3.5V output should be limited within 40mA(Max) at LCD TV condition for stability.
Do not turn “Power_ON” Signal on at the load condition of 3.5V output, more than 40mA.
* Total regulation for each output circuit includes the results of input voltage variation, load variation, warm-up drift and temperature change.
* The following instruments shall be used for measuring ripple noise.
1. Probe having impedance ratio of 1:1.
2. Oscilloscope having frequency characteristic of 100MHz or more.

Test Point : power output each pin




※ Ripple and noise are measured at the end of output cable which are added a 0.1uF ceramic capacitor and 47uF electrolytic capacitor. ( connected parallel )

### 2.2.1 Stand By Power Consumption

| Output Voltage | 3.5V (STBY) | 12V | 24V |
|---|---|---|---|
| Load [A] | 0.015 | Don’t Care (Power-Off) | |
| Wattage [W] | Less than 0.3W Under (230Vac / 50Hz) | | |

## 2.3 Environment Requirement

| | |
|---|---|
| Operating Temperature Range | -10℃ to 40℃<br>(60℃:No Hardware Failure, TV SET Condition) |
| Operating Humidity Range | 30 to 85 % |
| Storage Temperature Range | -25 to 85 deg. |
| Storage humidity Range | 5 to 90 % |
| Power board Storage Condition | Temperature 40℃, Humidity 90% |
| MTBF<br>(Mean Time Between Failure) | 50,000 hour |
| Cooling Condition | Natural Air |
| Shock | 98 ㎨<br>Shock test consists of pivoting the power supply, from one edge of it's bottom side, on a flat surface<br>(such as wood having thickness of 10mm or more) and allowing the opposite edge to fall from a height of 50mm to this surface.<br>The test is performed three times on each edge of the bottom side of the power supply |

## 2.4 Dielectric Strength Voltage and Insulation Resistance

Safety

| | |
|---|---|
| Dielectric<br>Strength Voltage | AC 1.5KV or DC 2,121V 1 Min 10 mA (Test SPEC)<br>AC 1.8KV 1 Sec 10 mA (PSU Mass Production)<br>Between Primary and All Secondary Circuits. |

| | |
|---|---|
| Insulation<br>Resistance | Insulation resistance shall be more than 8M ohm (at DC 500V)<br>Between Primary Live, Neutral line and Secondary. |

* Above tests are performed at room temperature in non-condensing atmospheric conditions
* Frame grounds are connected to secondary circuits.

## 2.5 Burn-in

More than 2 hours at 45℃(±5℃), Normal input voltage.
AC on/off must be test 1 time after burn-in.
80% Load (except LED String current : 150mA) of specification.

## 2.6 Interface

| Appellation | Explanation | Signal Direction | Action |
|---|---|---|---|
| POWER ON | Vcc Circuit ON/OFF | Input | High : Vcc ON<br>Low : Vcc OFF |

## 2.7 Product Safety Safety

| | |
|---|---|
| Safety Standards to be applied | Design to meet the requirements as follows<br>UL60950, IEC60950, IEC60065 and 60950 |
| EMI/RFI Standards to be applied | Design to meet the requirements as follows<br>FCC and EN55020, EN55013 Class B<br>with 4dB minimum margin. |

## 2.8 Construction

| | |
|---|---|
| Weight | Less than 450g |
| Unit Size (typ.) | 159(W) X 245(D) X 19.6(H) |

## 2.9 Function of protection

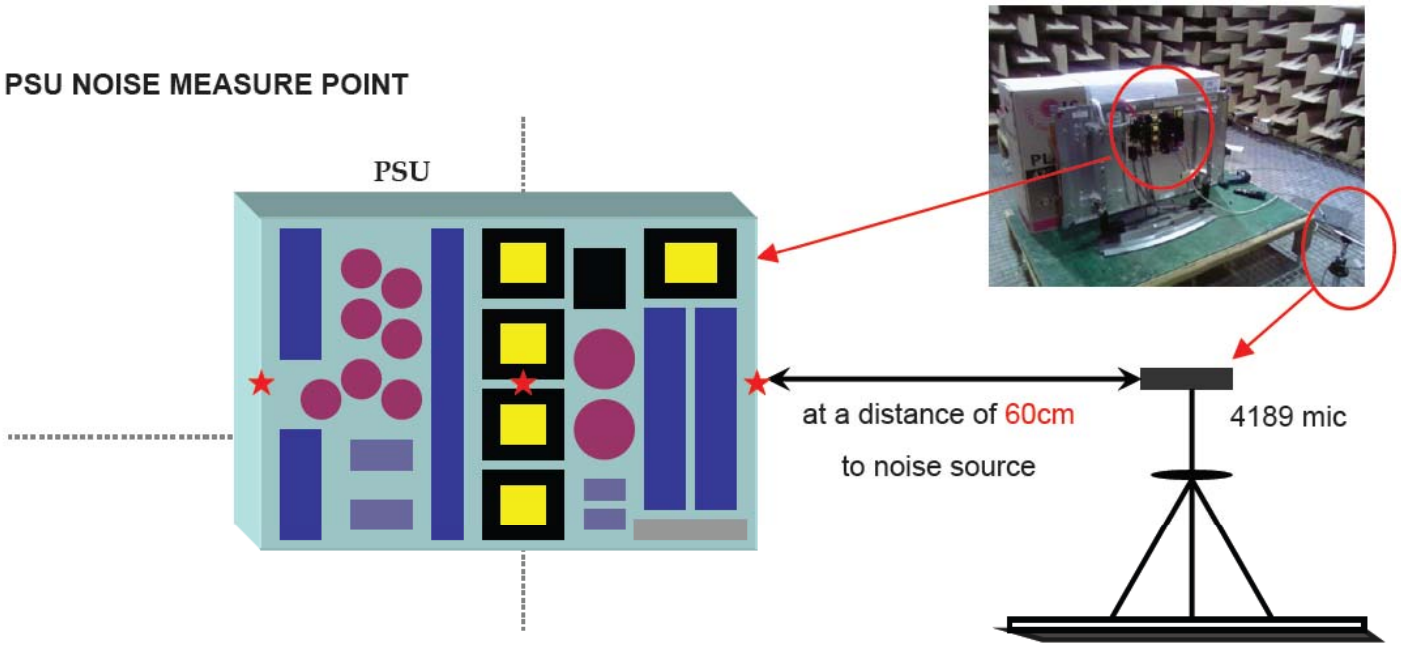
| Protection | Output Circuit | Trip point | | Notes |
|---|---|---|---|---|
| | | Min | Max | |
| Over Current | STBY 3.5V | 1.8A | 5.0A | Auto Re-start |
| | 12V | 3.0A | 18.0A | Latch |
| | 24V | 2.0A | 11.0A | Latch |
| Short Circuit | STBY 3.5V | - | - | Auto Re-start |
| | 12V | - | - | Latch |
| | 24V | - | - | Latch |

* This Power Supply has above-mentioned protections.
* Short circuit protection between different output terminals is not considered.
* Trip point for over voltage indicates the operating point when the output voltage slowly increases.
* The conditions of Over Current measurement
  Multi output(3.5V,12V,24V) is nominal load state except an over current measurement.

## 2.10 Sound Noise Characteristics.

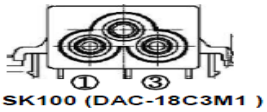
PSU Noise Specification
22.5 dB(a) / 20.u Pa 2.0E-5 Pa
(1/1 octave, A-weighting, to 1khz ~ 16khz Total overall

Measure Location : Anechoic Room
Measure Condition : At a distance of 60cm mic
Full white pattern, at AC 110V/220V
The max specification
(measure 3 points, at PSU center and left & right on the side)



## 2.11 Connector Specification

### 2.11.1 Connectors Usage




| SK100<br>DONGIL TECH<br>(DAC-18C3M1 c) | |
|---|---|
| Pin No. | Assignment |
| 1 | LIVE |
| 2 | GND |
| 3 | NEUTRAL |

| P702<br>YEONHO<br>(20010WR-06A03) | |
|---|---|
| Pin No. | Assignment |
| 1 | MICOM_VDD |
| 2 | RXD |
| 3 | TXD |
| 4 | TOOL 0 |
| 5 | RESET |
| 6 | GND |

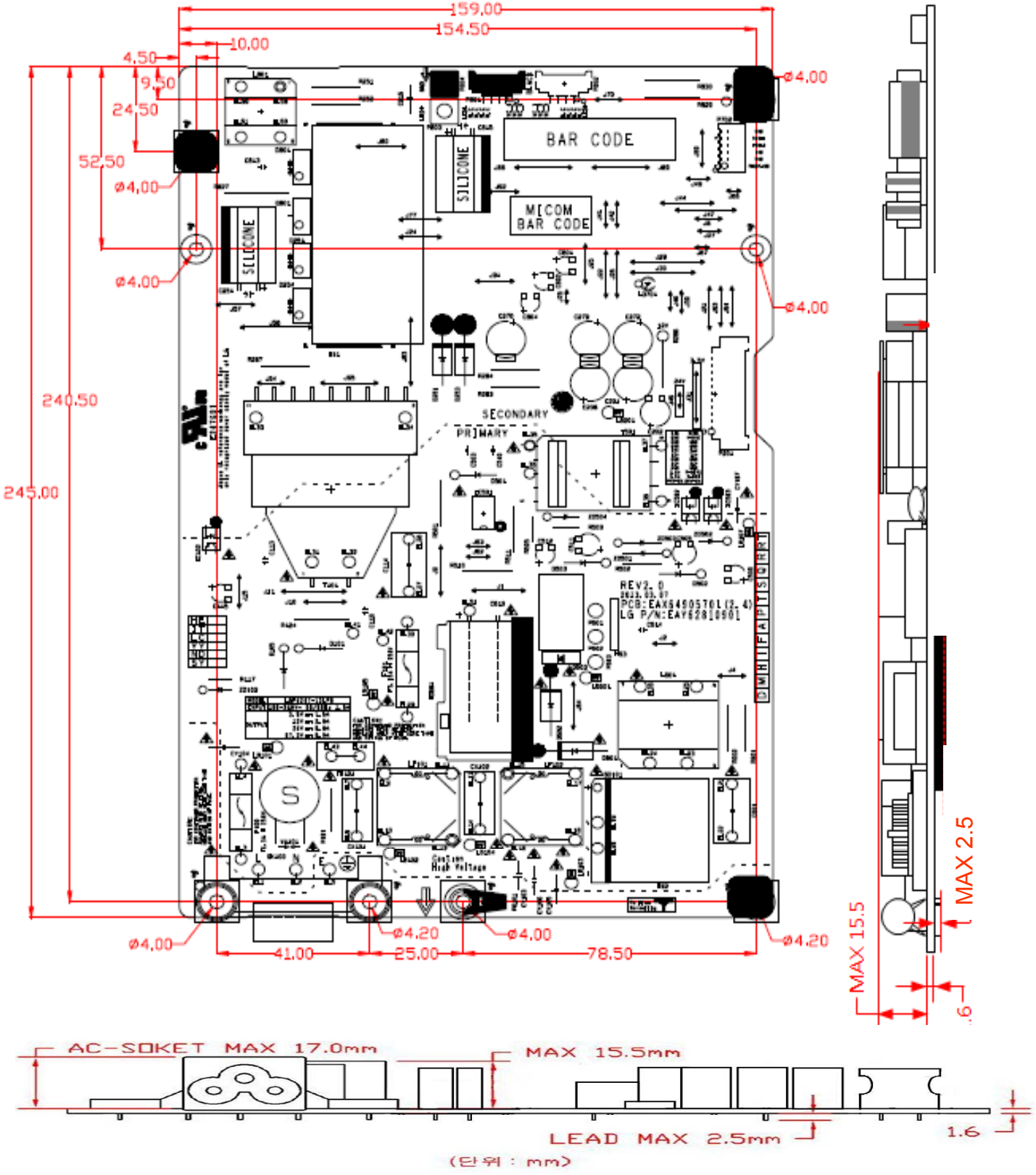
| P201<br>YEONHO<br>(SMAW200-H24S2) | | | |
|---|---|---|---|
| Pin No. | Assignment | Pin No. | Assignment |
| 1 | Power on | 2 | DRV-ON |
| 3 | 3.5V | 4 | PDIM |
| 5 | 3.5V | 6 | PDIM2 |
| 7 | GND | 8 | GND |
| 9 | 24V | 10 | 24V |
| 11 | GND | 12 | GND |
| 13 | 12V | 14 | 12V |
| 15 | 12V | 16 | 24V |
| 17 | GND | 18 | GND |
| 19 | GND | 20 | GND |
| 21 | GND | 22 | V-SYNC |
| 23 | SPI-SIN | 24 | SPI-SCLK |

| P801<br>UJU<br>(IS100-L08T-C46)<br>(BLACK) | |
|---|---|
| Pin No. | Assignment |
| 1 | VC_6 |
| 2 | VC_5 |
| 3 | VC_4 |
| 4 | N.C |
| 5 | N.C |
| 6 | N.C |
| 7 | N.C |
| 8 | LED + |

| P802<br>UJU<br>(IS100-L08T-C46-A)<br>(WHITE) | |
|---|---|
| Pin No. | Assignment |
| 1 | LED + |
| 2 | N.C |
| 3 | N.C |
| 4 | N.C |
| 5 | N.C |
| 6 | VC_3 |
| 7 | VC_2 |
| 8 | VC_1 |

## 2.12 PCB Dimension.

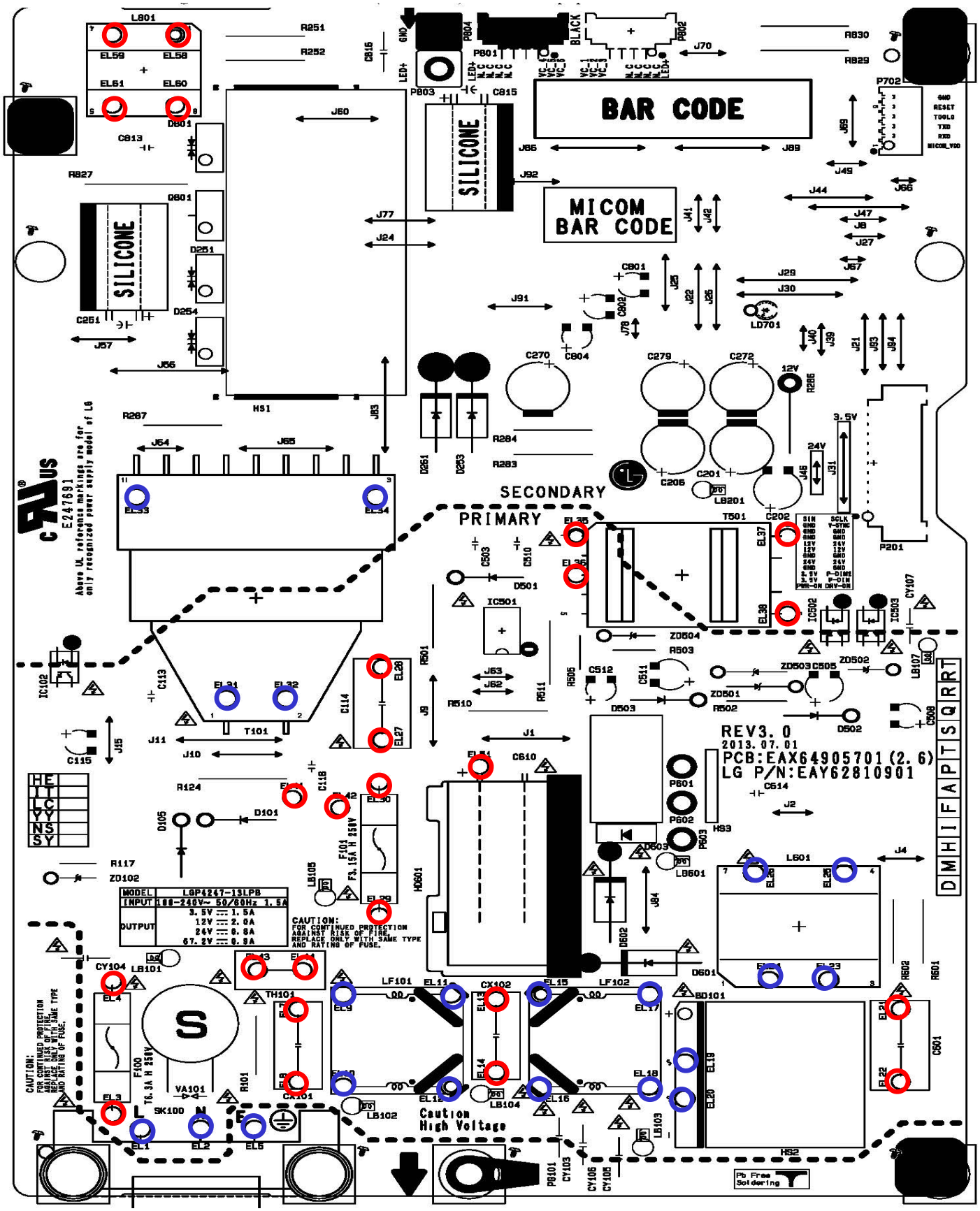
1) Power board PCB : 159mm X 245mm X 1.6(T)mm
2) Component height ; Max 15.5mm (Except SK100 : Max 17.0mm)
3) Lead Cutting : Max 2.5mm
4) PCB Material : FR-1,KB,DS,L,R-8700 CTI-600



## 2.13 Apply to the Eyelet point.(LGP4247-13LPB)

Apply to the Eyelet point 2.0Φ : EL1,EL2,EL5,EL9,EL10,EL11,EL12,EL15,EL16,EL17,EL18,EL19,EL20,EL23
EL24,EL25,EL26,EL31,EL32,EL33,EL34 (21EA)

Apply to the small Eyelet point 1.6Φ : EL3,EL4,EL7,EL8,EL13,EL14,EL21,EL22,EL27,EL28,EL29,EL30,EL35,EL36,EL37
EL38,EL41,EL42,EL43,EL44,EL51,EL58,EL59,EL60,EL61 (25EA)



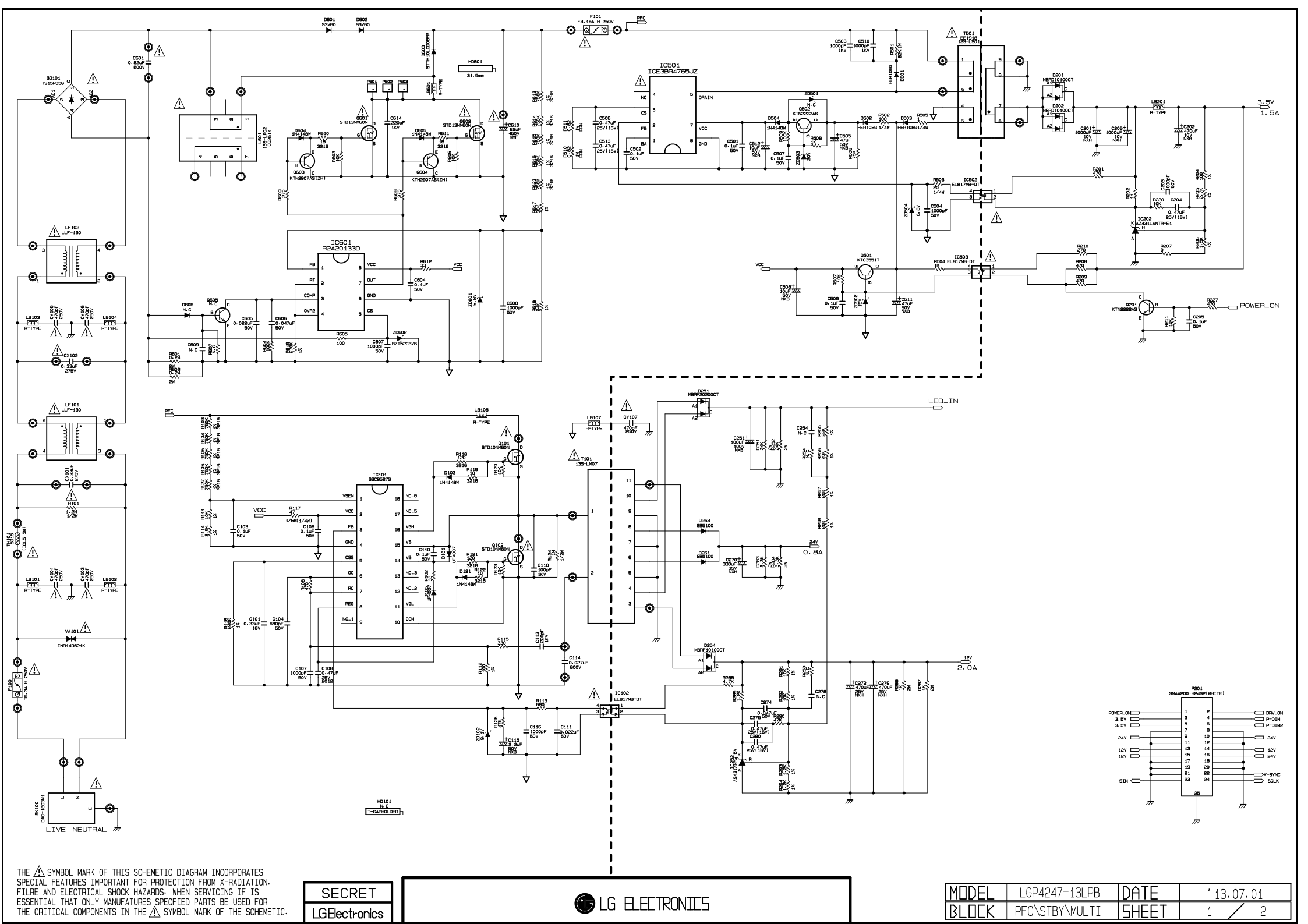
## 2.14 Electrical Characteristics

<table>
<tr><th>No.</th><th>Test Item</th><th>Test method</th></tr>
<tr><td>1</td><td>Intermittent Operation stability Test</td><td>The switching regulator shall ON/OFF for 20,000 time at an Interval of 10 sec at maximum load, after that electrical Characteristics shall be satisfied.</td></tr>
<tr><td>2</td><td>Low temperature operation</td><td>The switching regulator is left at the operating guarantee Minimum temperature for 2 hours without applying electricity. After that power shall be turned on, and then the electrical Characteristics shall be satisfied.</td></tr>
<tr><td>3</td><td>Low temperature Storage test Leave At low temperature</td><td>The switching regulator is left at minimum storage Temperature for 96 hours or more.<br>Then the switching regulator is left at a room temperature and humidity for 1 hour or more, after that electrical characteristics shall be satisfied.</td></tr>
<tr><td>4</td><td>Heat cycle storage test</td><td>The switching regulator is 10 consecutive temperature cycle that shown below is performed and then leave them at room temperature and humidity for 1 hour or more.<br>After that, electrical characteristics shall be satisfied.
<table>
<tr><th>Time</th><th>Temperature</th></tr>
<tr><td>30 minutes</td><td>25℃</td></tr>
<tr><td>30 minutes</td><td>25℃ -> -20℃</td></tr>
<tr><td>60 minutes</td><td>Minimum storage temperature (-20℃)</td></tr>
<tr><td>30 minutes</td><td>-20℃ -> 25℃</td></tr>
<tr><td>30 minutes</td><td>25℃</td></tr>
<tr><td>30 minutes</td><td>25℃ -> 70℃</td></tr>
<tr><td>60 minutes</td><td>Maximum storage temperature (70℃)</td></tr>
<tr><td>30 minutes</td><td>70℃ -> 25℃</td></tr>
</table></td></tr>
<tr><td>5</td><td>Heat shock test</td><td>Heat shock test performed under following conditions without applying electricity and then leave them at room temperature and humidity for 1 hour or more.<br>After that, electrical characteristics shall be satisfied.<br>Condition : -45℃(30minutes), 120℃(30minutes),<br>Switching time : Less than 5 minutes, 200 cycles.</td></tr>
</table>

## 2.15 Mechanical Characteristics

| No. | Test Item | Test method |
|---|---|---|
| 1 | Appearance | There shall be no contaminant or dirt on the switching regulator which has adverse effect on electrical characteristics.<br>There shall be no excessive unevenness or scratches on the plated or painted surface. |
| 2 | Vibration | While applying electricity :<br>Vibration frequency : 5 ~ 100Hz<br>Acceleration : 4.9 m/s∧2<br>Vibration in X,Y,Z direction for 30 minutes<br><br>While applying electricity :<br>Vibration frequency : 5 ~ 100Hz<br>Acceleration : 14.7 m/s∧2<br>Vibration in X,Y,Z direction for 30 minutes<br><br>After that electrical characteristics shall be satisfied.<br>There shall be no damage to appearance and construction. |
| 3 | Shock | Shock : 98 m/s∧2<br><br>On the oak more than 10mm thickness with the flat face, raise the one side for 50mm, and it carries out each side free fail for three sides.<br>There shall be no damage to appearance and construction. |

# Schematic Diagram



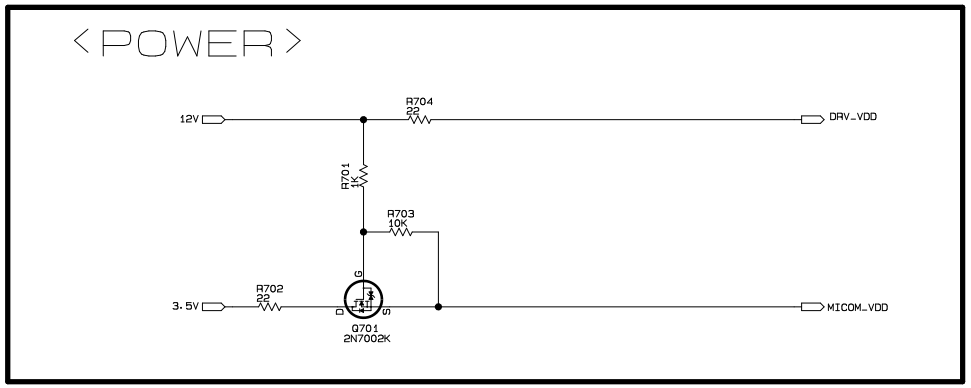

THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

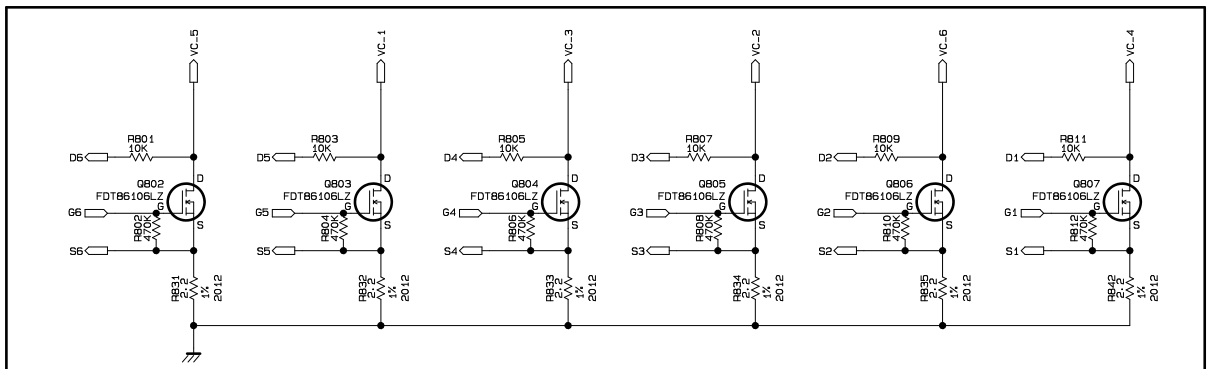
SECRET

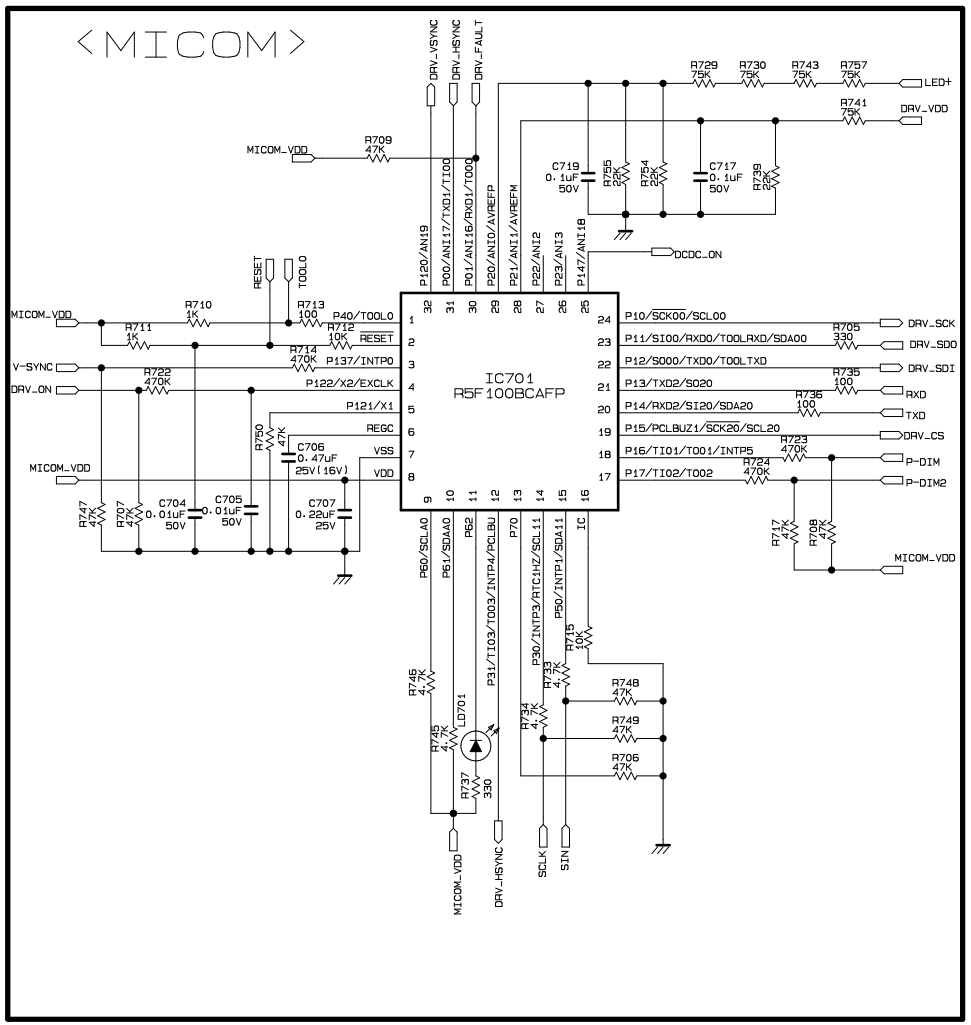
LGElectronics

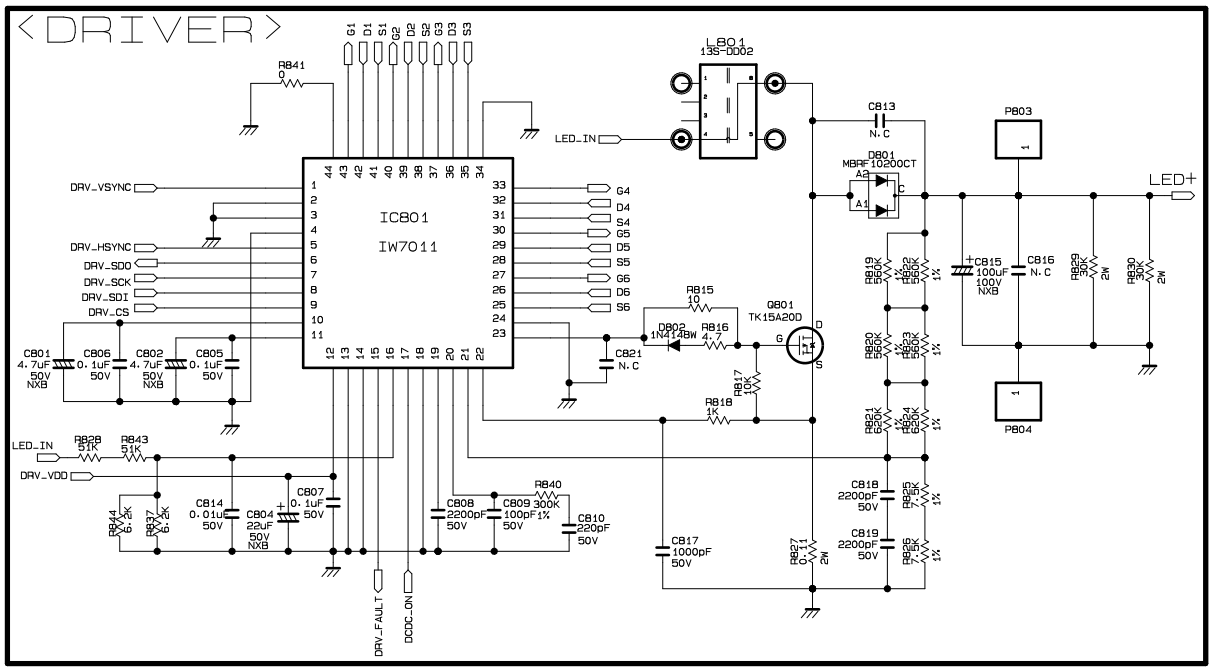
LG ELECTRONICS

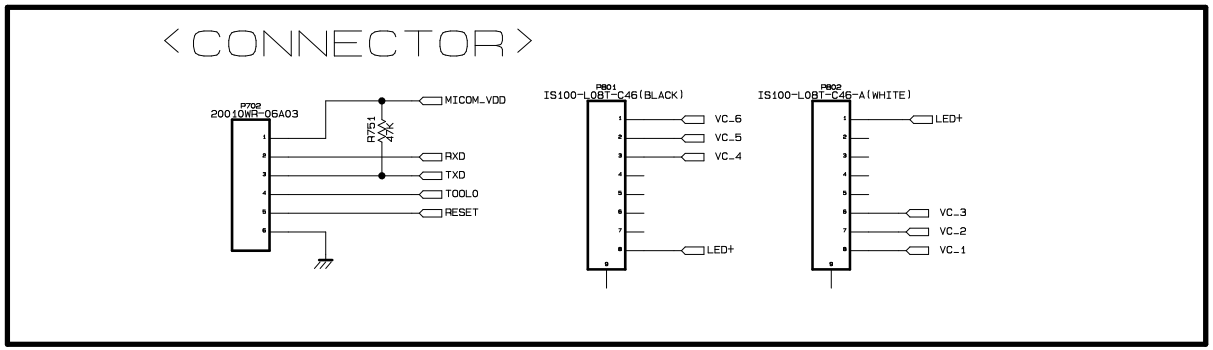
| MODEL | LGP4247-13LPB | DATE | '13.07.01 |
|---|---|---|---|
| BLOCK | PFC\STBY\MULTI | SHEET | 1 / 2 |




THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

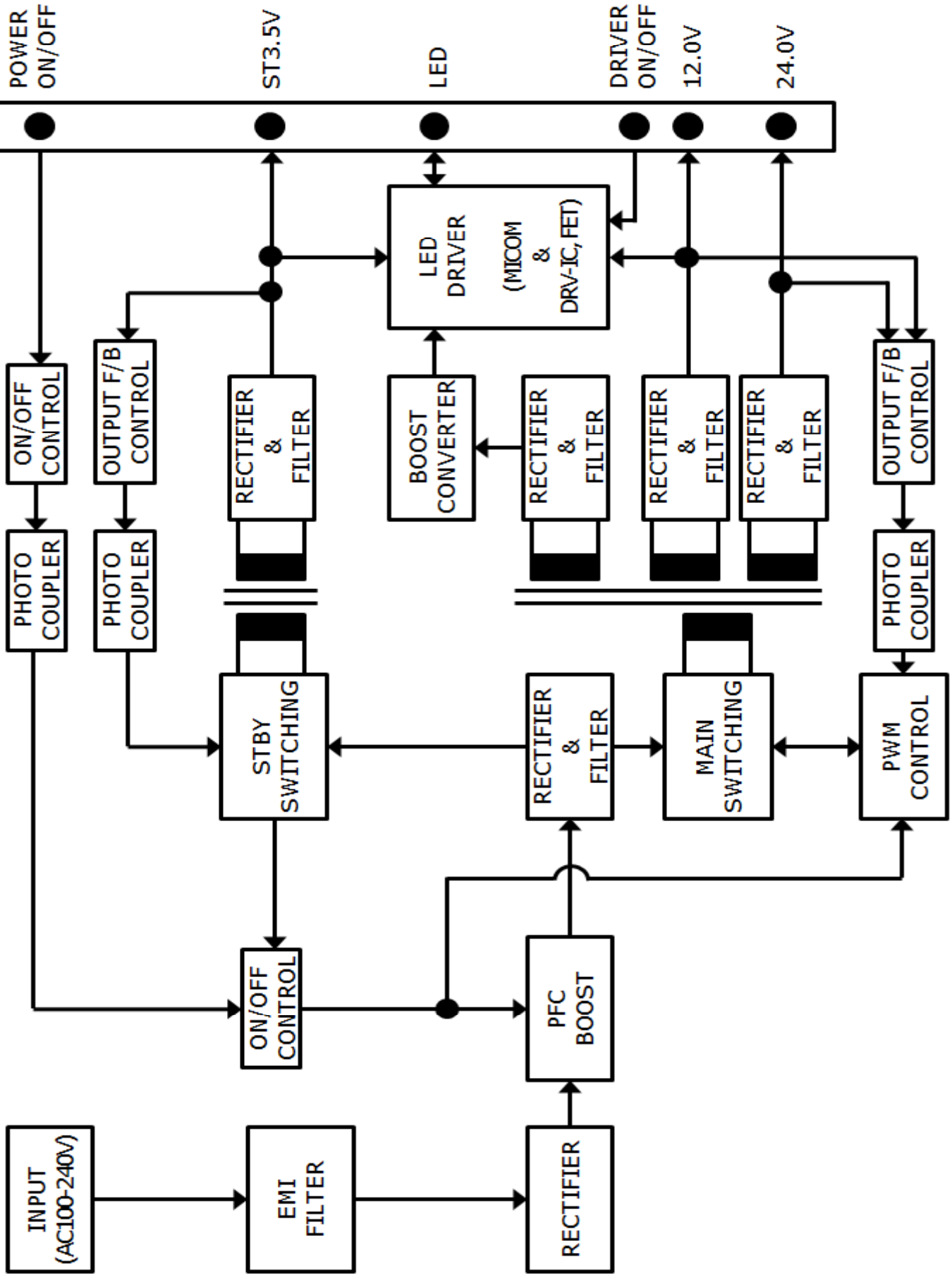
SECRET

LGElectronics

LG ELECTRONICS

| MODEL | LGP4247-13LPB | DATE | '13.07.01 |
|---|---|---|---|
| BLOCK | DRV | SHEET | 2 / 2 |

# Block Diagram



# Parts List

| NO. | L/V | Q'ty | UNIT | LOCATION | SPECIFICATION | DESCRIPTION | MAKER |
|---|---|---|---|---|---|---|---|
| | MI | | | | FET ASS'Y | HEAT SINK ASS'Y | |
| 1 | MI | 1 | EA | HS1 | HS1 ( 63 X 30 X 11.3mm) | HEAT SINK | MINGXUE<br>HUAPENG<br>YAOFENG |
| 2 | MI | 1 | EA | D251 | MBRF20200CT 200V 20A ITO-220AB<br>MBRF20U200CT 200V 20A TO-220IS<br>MBRF20200CT 200V 20A ITO-220AB | DIODE | SENSITRON<br>KEC<br>TSC |
| 3 | MI | 1 | EA | D254 | MBRF10100CT 100V 10A ITO-220AB<br>MBRF10U100CT 100V 10A TO-220IS<br>MBRF10100CT 100V 10A ITO-220AB | DIODE | SENSITRON<br>KEC<br>TSC |
| 4 | MI | 1 | EA | Q801 | STF19NF20 200V 15A TO-220FP<br>TK15A20D 200V 15A TO-220F | FET | STM<br>TOSHIBA |
| 5 | MI | 1 | EA | D801 | MBRF10200CT 200V 10A ITO-220AB<br>MBRF10U200CT 200V 10A TO-220IS<br>MBRF10200CT 200V 10A ITO-220AB | DIODE | SENSITRON<br>KEC<br>TSC |
| 6 | MI | 4 | EA | FOR D251,D254,D801,Q801 | M/S S/W + Φ3.0 7L SILVER PLATE HEAD | SCREW | RUI YOU<br>ROEN |
| 7 | MI | 0.04 | GR | FOR D251,D254,D801,Q801 | KD-3<br>H-SC-7 | SILICON GREASE | SANCHEN<br>XUNWEI |
| | MI | | | | BRIDGE DIODE ASS'Y | HEAT SINK ASS'Y | |
| 8 | MI | 1 | EA | HS2 | HS2 ( 30 X 25 X 5.5mm) | HEAT SINK | MINGXUE<br>HUAPENG<br>YAOFENG |
| 9 | MI | 1 | EA | BD101 | TS15P05G 600V 15A L-FORMING<br>GBJ1506 600V 15A L-FORMING<br>D15SB60 600V 15A L-FORMING | DIODE | TSC<br>LITEON<br>DACHANG |
| 10 | MI | 1 | EA | FOR BD101 | M/S S/W + Φ3.0 7L SILVER PLATE HEAD | SCREW | RUI YOU<br>ROEN |
| 11 | MI | 0.06 | GR | FOR BD101 | KD-3<br>H-SC-7 | SILICON GREASE | SANCHEN<br>XUNWEI |
| | MI | | | | LGP4247-13LPB MI COMPONENTS | MI ASS'Y | |
| 12 | MI | 1 | EA | C610 | KMF 82uF 450V M RU P7.5 Φ18x31.5<br>SK 82uF 450V M RU P7.5 Φ18X32 | CAPACITOR, ALUMINUM | SAMYOUNG<br>SUSCON |
| 13 | MI | 2 | EA | C251,C815 | NXB 100uF 100V M RB P5 Φ12.5x20<br>MF 100uF 100V M RB P5 Φ13x21 | CAPACITOR, ALUMINUM | SAMYOUNG<br>SUSCON |
| 14 | MI | 1 | EA | HD601 | EC31.5CAP-C-12 | MAIN CAP HOLDER | TBI<br>FUHUA |
| 15 | MI | 2 | EA | CX101,CX102 | PCX2 337 0.33uF 275V P15<br>CTX 0.33uF 275V P15<br>MPX 0.33uF 275V P15 | CAPACITOR, FILM | PILKOR<br>CHENG TUNG<br>EUROPTRONIC |
| 16 | MI | 1 | EA | C601 | PCMP 372 0.82uF 500V J P15<br>MPHB 0.82uF 500V J P15<br>CTH 0.82uF 500V J P15 | CAPACITOR,FILM | PILKOR<br>EUROPTRONIC<br>CHENG TUNG |
| 17 | MI | 1 | EA | C114 | PCMP 384 0.027uF 800V J P15<br>MPLB 0.027uF 1000V J P15 | CAPACITOR,FILM | PILKOR<br>EUROPTRONIC |
| 18 | MI | 2 | EA | D601,D602 | 1N5408G 1KV 3A P20 | DIODE | TSC |
| 19 | MI | 1 | EA | D603 | STTH10LCD06 600V 10A TO-220F<br>BYV29FX-600 600V 9A TO-220F | DIODE | STM<br>NXP |
| 20 | MI | 2 | EA | D253,D261 | SR510-24 100V 5A P20<br>SB5100 100V 5A P20<br>SB5100 100V 5A P20 | DIODE | TSC<br>LITE-ON<br>DACHANG |
| 21 | MI | 1 | EA | F100 | T6.3A H 250V 215 BROWN(1-LINE)<br>T6.3A H 250V 50CT BROWN(1-LINE) | FUSE, TIME LAG | LITTELFUSE<br>Dainfuse |
| 22 | MI | 1 | EA | F101 | F3.15A H 250V 216 VIOLET(2-LINE)<br>F3.15A H 250V 50CF VIOLET(2-LINE) | FUSE, FAST ACTING | LITTELFUSE<br>Dainfuse |
| 23 | MI | 3 | EA | IC102,IC502,IC503 | EL817MB(DT)<br>LTV817M-BN | IC | EVERLIGHT<br>LITEON |
| 24 | MI | 1 | EA | IC501 | ICE3BR4765JZ DIP-8 | IC | INFINEON |
| 25 | MI | 1 | EA | TH101 | ICL-5W 5R00MSMT | RESISTOR, NTC | SMART |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 26 | MI | 1 | EA | L601 | 13S-LP02 240uH CQ2514 | PFC CHOKE | FEELUX<br>ZHONGTAI |
| 27 | MI | 1 | EA | L801 | 13S-DD02 30uH EE1616 | DCDC CHOKE | FEELUX<br>ZHONGTAI |
| 28 | MI | 2 | EA | LF101,LF102 | LLF-134(20mH) | LINE FILTER | FEELUX<br>ZHONGTAI |
| 29 | MI | 1 | EA | T101 | 13S-LM07 440uH SRV4214 | TRANSFORMER | FEELUX<br>ZHONGTAI |
| 30 | MI | 1 | EA | T501 | 12S-LS01 1.1mH EE1918 | TRANSFORMER | FEELUX<br>ZHONGTAI |
| 31 | MI | 1 | EA | VA101 | INR14D621K-CAP 620V Φ14 TUBE L-FORM<br>WMR14D621K 620V Φ14 TUBEC L-FORM<br>SVC621D-14ATM7 620V Φ14 TUBE L-FORM<br>NFC14D621KO037WC 620V Φ14 TUBE L-FORM | VARISTOR | AMOTECH<br>Xiamen Wanming<br>SAMWHA<br>NFC |
| 32 | MI | 1 | EA | SK100 | DAC-18C3M1 c | AC SOCKET | DONGIL ETCH |
| 33 | MI | 1 | EA | P201 | SMAW200-H24S2 24PIN WHITE | WAFER | YEONHO |
| 34 | MI | 1 | EA | P801 | IS100-L08T-C46 8PIN BLACK | WAFER | UJU ELE |
| 35 | MI | 1 | EA | P802 | IS100-L08T-C46-A 8PIN WHITE | WAFER | UJU ELE |
| 36 | MI | 1 | EA | P702 | 20010WR-06A03 6PIN WHITE | WAFER | YEONHO |
| 37 | MI | 1 | EA | PG101 | YF-002-00131 SPCC 0.4T GND PIN<br>JS-12-75-04 SPCC 0.4T GND PIN | GND REINFORCE | YAOFENG<br>DIHUA |
| | SMT | | | | LGP4247-13LPB SMD COMPONENT | SMT ASS'Y | |
| 38 | SMT | 1 | EA | C809 | 100pF 50V J 1608 COG | CAPACITOR, CHIP | YAGEO<br>HEC |
| 39 | SMT | 1 | EA | C810 | 220pF 50V J 1608 COG | CAPACITOR, CHIP | YAGEO<br>HEC |
| 40 | SMT | 1 | EA | C104 | 680pF 50V J 1608 COG | CAPACITOR, CHIP | YAGEO<br>HEC |
| 41 | SMT | 7 | EA | C107,C116,C203,C504,C607,<br>C608,C817 | 1000pF 50V K 1608 X7R | CAPACITOR, CHIP | YAGEO<br>HEC |
| 42 | SMT | 3 | EA | C808,C818,C819 | 2200pF 50V K 1608 X7R | CAPACITOR, CHIP | YAGEO<br>HEC |
| 43 | SMT | 2 | EA | C704,C814 | 0.010uF 50V K 1608 X7R | CAPACITOR, CHIP | YAGEO<br>HEC |
| 44 | SMT | 2 | EA | C111,C605 | 0.022uF 50V K 1608 X7R | CAPACITOR, CHIP | YAGEO<br>HEC |
| 45 | SMT | 2 | EA | C274,C606 | 0.047uF 50V K 1608 X7R | CAPACITOR, CHIP | YAGEO<br>HEC |
| 46 | SMT | 15 | EA | C103,C106,C110,C205,C501,<br>C502,C507,C509,C604,C705,C717,<br>C719,C805,C806,C807 | 0.1uF 50V K 1608 X7R | CAPACITOR, CHIP | YAGEO<br>HEC |
| 47 | SMT | 1 | EA | C707 | 0.22uF 16V K 1608 X7R<br>/0.22uF 25V K 1608 X7R | CAPACITOR, CHIP | YAGEO<br>HEC |
| 48 | SMT | 1 | EA | C101 | 0.33uF 16V K 1608 X7R<br>/0.33uF 25V K 1608 X7R | CAPACITOR, CHIP | YAGEO<br>HEC |
| 49 | SMT | 6 | EA | C204,C275,C280,C506,C513,<br>C706 | 0.47uF 16V K 1608 X7R<br>/0.47uF 25V K 1608 X7R | CAPACITOR, CHIP | YAGEO<br>HEC |
| 50 | SMT | 1 | EA | C108 | 0.47uF 25V K 2012 X7R | CAPACITOR, CHIP | YAGEO<br>HEC |
| 51 | SMT | 6 | EA | D103,D121,D504,D604,D605,D802 | 1N4148W 100V 150mA SOD-123<br>MMSD4148T1 100V 200mA SOD-123<br>SDS4148G 100V 150mA SOD-123<br>1N4148W 100V 150mA SOD-123 | DIODE | DIODES<br>ONSEMI<br>AUK<br>TSC |
| 52 | SMT | 1 | EA | ZD602 | MMSZ5227B 3.6V SOD-123<br>BZT52C3V6 3.6V SOD-123<br>SDZ3V6G 3.6V SOD-123<br>MMSZ3V6T1G 3.6V SOD-123 | DIODE, ZENER | Rectron<br>DIODES<br>AUK<br>ONSEMI |
| 53 | SMT | 2 | EA | D201,D202 | MBRD10100CT 100V 10A D-PAK<br>MBRD10U100CT 100V 10A D-PAK | DIODE | SENSITRON<br>KEC |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 54 | SMT | 2 | EA | Q101,Q102 | STD10NM60N 600V 10A D-PAK<br>FCD600N60Z 600V 7.4A D-PAK<br>TK8P60V 600V 8A D-PAK | FET | STM<br>FAIRCHILD<br>TOSHIBA |
| 55 | SMT | 2 | EA | Q601,Q602 | STD13NM60N 600V 11A D-PAK<br>FCD380N60E 600V 10.2A D-PAK<br>TK10P60W 600V 9.8A D-PAK | FET | STM<br>FAIRCHILD<br>TOSHIBA |
| 56 | SMT | 1 | EA | Q701 | RK7002 60V 115mA SOT-23 | FET | ROHM |
| 57 | SMT | 6 | EA | Q802,Q803,Q804,Q805,Q806,<br>Q807 | FDT86106LZ 100V 3.2A SOT-223<br>PF610BL 100V 0.9A SOT-223<br>STN4NF20L 200V 1A SOT-223<br>MDHT4N20Y 200V 0.85A SOT-223 | FET | FAIRCHILD<br>NIKO-SEM<br>STM<br>MAGNACHIP |
| 58 | SMT | 1 | EA | Q501 | BCW66GLT SOT-23 NPN<br>2SC5865 SOT-23 NPN | TRANSISTOR | ONSEMI<br>ROHM |
| 59 | SMT | 2 | EA | Q201,Q502 | MMBT2222A 40V 600mA SOT-23 NPN<br>KTN2222AS 40V 600mA SOT-23 NPN<br>SBT2222A 40V 600mA SOT-23 NPN | TRANSISTOR | ONSEMI<br>KEC<br>AUK |
| 60 | SMT | 2 | EA | Q603,Q604 | MMBT2907A -60V -600mA SOT-23 PNP<br>KTN2907AS -60V -600mA SOT-23 PNP<br>SBT2907A -60V -600mA SOT-23 PNP | TRANSISTOR | ONSEMI<br>KEC<br>AUK |
| 61 | SMT | 1 | EA | IC601 | R2A20133D, SOIC-8 | IC | RENESAS |
| 62 | SMT | 1 | EA | IC101 | SSC9527S, SOIC-18 | IC | SANKEN |
| 63 | SMT | 1 | EA | IC701 | R5F100BCAFP | IC | RENESAS |
| 64 | SMT | 1 | EA | IC801 | IW7011 QFP44 | IC | IWATT |
| 65 | SMT | 1 | EA | IC202 | SJ432BS 1.24V ±0.5% SOT-23<br>AZ431LANTR-E1 1.24V±0.5% SOT-23 | IC | AUK<br>BCD |
| 66 | SMT | 1 | EA | IC252 | SNF431BS 2.5V ±0.5% SOT-23<br>AS431ANTR-E1 2.5V ±0.5% SOT-23<br>KIA431BM 2.5V ±0.5% SOT-23 | IC | AUK<br>BCD<br>KEC |
| 67 | SMT | 1 | EA | ZD601 | BZT52C6V8S 6.8V SOD-323 | DIODE, ZENER | DIODES<br>TSC |
| 68 | SMT | 2 | EA | R207,R841 | 0Ω J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 69 | SMT | 1 | EA | R816 | 4.7Ω J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 70 | SMT | 1 | EA | R815 | 10Ω J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 71 | SMT | 1 | EA | R702,R704 | 22Ω J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 72 | SMT | 2 | EA | R102,R612 | 33Ω J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 73 | SMT | 4 | EA | R605,R713,R735,R736 | 100Ω J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 74 | SMT | 3 | EA | R210,R608,R609 | 270Ω J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 75 | SMT | 3 | EA | R115,R705,R737 | 330Ω J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 76 | SMT | 5 | EA | R108,R201,R208,R209,R227 | 470Ω J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 77 | SMT | 1 | EA | R113 | 680Ω J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 78 | SMT | 7 | EA | R202,R504,R508,R701,R710,<br>R711,R818 | 1KΩ J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |

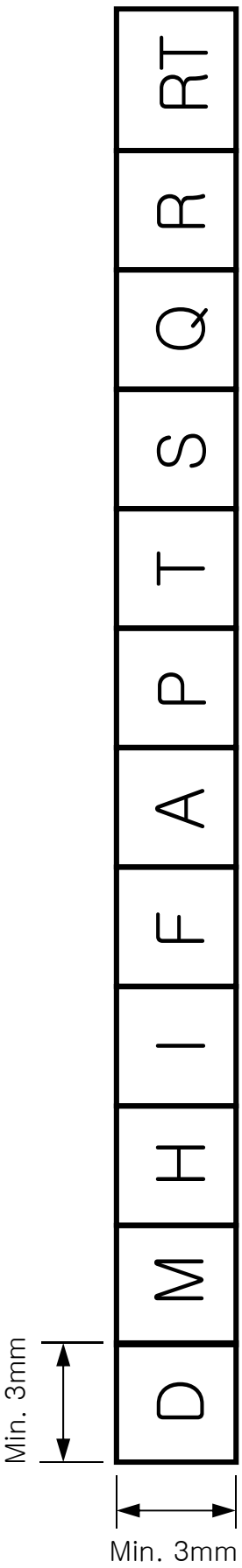
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 79 | SMT | 1 | EA | R289 | 1.2KΩ J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 80 | SMT | 5 | EA | R288,R733,R734,R745,R746 | 4.7KΩ J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 81 | SMT | 2 | EA | R837,R844 | 6.2KΩ J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 82 | SMT | 17 | EA | R120,R123,R211,R220,R507,<br>R603,R606,R703,R712,R715,<br>R801,R803,R805,R807,R809,<br>R811,R817 | 10KΩ J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 83 | SMT | 3 | EA | R739,R754,R755 | 22KΩ J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 84 | SMT | 12 | EA | R128,R290,R706,R707,R708,<br>R709,R717,R747,R748,R749,<br>R750,R751 | 47KΩ J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 85 | SMT | 2 | EA | R828,R843 | 51KΩ J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 86 | SMT | 6 | EA | R506,R729,R730,R741,R743,<br>R757 | 75KΩ J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 87 | SMT | 2 | EA | R509,R604 | 100KΩ J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 88 | SMT | 10 | EA | R714,R722,R723,R724,R802,<br>R804,R806,R808,R810,R812 | 470KΩ J 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 89 | SMT | 2 | EA | R112,R204 | 100Ω F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 90 | SMT | 2 | EA | R293,R294 | 1.2KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 91 | SMT | 1 | EA | R206 | 1.5KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 92 | SMT | 1 | EA | R205 | 2.7KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 93 | SMT | 1 | EA | R114 | 3.9KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 94 | SMT | 2 | EA | R825,R826 | 7.5KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 95 | SMT | 3 | EA | R111,R291,R292 | 10KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 96 | SMT | 3 | EA | R256,R257,R258 | 20KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 97 | SMT | 1 | EA | R255 | 22KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 98 | SMT | 1 | EA | R618 | 24KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 99 | SMT | 1 | EA | R617 | 30KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 100 | SMT | 1 | EA | R116 | 240KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 101 | SMT | 1 | EA | R619 | 270KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 102 | SMT | 1 | EA | R840 | 300KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 103 | SMT | 4 | EA | R819,R820,R822,R823 | 560KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 104 | SMT | 2 | EA | R821,R824 | 620KΩ F 1608 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 105 | SMT | 6 | EA | R831,R832,R833,R834,R835,<br>R842 | 2.2Ω F 2012 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 106 | SMT | 2 | EA | J12,J74 | 0Ω J 3216 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 107 | SMT | 2 | EA | R119,R122 | 10Ω J 3216 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 108 | SMT | 2 | EA | R610,R611 | 18Ω J 3216 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 109 | SMT | 2 | EA | R118,R121 | 120Ω J 3216 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 110 | SMT | 10 | EA | R103,R104,R105,R106,R127,<br>R613,R614,R615,R616,R623 | 750KΩ F 3216 | RESISTOR, CHIP | YAGEO<br>TZAI YUAN |
| 111 | SMT | 0.5 | GR | | NE8800T | BOND | FUJI |
| | AI | | | | LGP4247-13LPB AI COMPONENTS | AI ASS'Y | |
| 112 | AI | 1 | EA | C270 | NXH 330uF 35V M P5 Φ10X12.5<br>MG 330uF 35V M P5 Φ10X13 | CAPACITOR, ALUMINUM | SAMYOUNG<br>SUSCON |
| 113 | AI | 2 | EA | C508,C512 | NXB 10uF 50V M P5 Φ5X11<br>SG 10uF 50V M P5 Φ5X11 | CAPACITOR, ALUMINUM | SAMYOUNG<br>SUSCON |
| 114 | AI | 1 | EA | C804 | NXB 22uF 50V M P5 Φ5X11<br>SG 22uF 50V M P5 Φ5X11 | CAPACITOR, ALUMINUM | SAMYOUNG<br>SUSCON |
| 115 | AI | 2 | EA | C272,C279 | NXH 470uF 25V M P5 Φ10X12.5<br>MG 470uF 25V M P5 Φ10X13 | CAPACITOR, ALUMINUM | SAMYOUNG<br>SUSCON |
| 116 | AI | 1 | EA | C115 | NXB 2.2uF 50V M P5 Φ5X11<br>SG 2.2uF 50V M P5 Φ5X11 | CAPACITOR, ALUMINUM | SAMYOUNG<br>SUSCON |
| 117 | AI | 2 | EA | C801,C802 | NXB 4.7uF 50V M P5 Φ5X11<br>SG 4.7uF 50V M P5 Φ5X11 | CAPACITOR, ALUMINUM | SAMYOUNG<br>SUSCON |
| 118 | AI | 2 | EA | C505,C511 | NXB 47uF 50V M P5 Φ6.3X11<br>SG 47uF 50V M P5 Φ6.3X11 | CAPACITOR, ALUMINUM | SAMYOUNG<br>SUSCON |
| 119 | AI | 2 | EA | C201,C206 | NXH 1000uF 10V M P5 Φ10X12.5<br>MG 1000uF 10V M P5 Φ10X13 | CAPACITOR, ALUMINUM | SAMYOUNG<br>SUSCON |
| 120 | AI | 1 | EA | C202 | NXB 470uF 10V M P5 Φ8X11.5<br>SG 470uF 10V M P5 Φ8X12 | CAPACITOR, ALUMINUM | SAMYOUNG<br>SUSCON |
| 121 | MI | 5 | EA | CY103,CY104,CY105,<br>CY106,CY107 | CD 470pF 250V K P10, Y1<br>CT81 470pF 250V K P10, Y1 | CAPACITOR, CERAMIC | TDK<br>YINANDON |
| 122 | AI | 1 | EA | C118 | CK45 100pF 1KV K P5 125℃<br>CT81 100pF 1KV K P5 125℃<br>CT81 100pF 1KV K P5 125℃ | CAPACITOR, CERAMIC | TDK<br>YINANDON<br>Kunshan Wansheng |
| 123 | AI | 2 | EA | C113,C614 | CK45 220pF 1KV K P5 125℃<br>CT81 220pF 1KV K P5 125℃<br>CT81 220pF 1KV K P5 125℃ | CAPACITOR, CERAMIC | TDK<br>YINANDON<br>Kunshan Wansheng |
| 124 | AI | 2 | EA | C503,C510 | CK45 1000pF 1KV K P5 125℃<br>CT81 1000pF 1KV K P5 125℃<br>CT81 1000pF 1KV K P5 125℃ | CAPACITOR, CERAMIC | TDK<br>YINANDON<br>Kunshan Wansheng |
| 125 | AI | 5 | EA | D101,D105,D501,D502,D503 | UF4007 1KV 1A DO-41<br>UF4007 1KV 1A DO-41 | DIODE | TSC<br>DACHANG |
| 126 | AI | 1 | EA | ZD504 | 1N5235B 6.8V DO-35 | DIODE, ZENER | TSC |
| 127 | AI | 1 | EA | ZD102 | 1N5239B 9.1V DO-35 | DIODE, ZENER | TSC |
| 128 | AI | 1 | EA | ZD502 | 1N5245B 15V DO-35 | DIODE, ZENER | TSC |
| 129 | AI | 1 | EA | ZD503 | 1N5250B 20V DO-35 | DIODE, ZENER | TSC |
| 130 | AI | 1 | EA | LD701 | LTL1KH6FK-0C1A, 5mm Pitch Type ( AMBER YELLOW)<br>204-26UYOC/S530-A3/F151-33, 5mm Pitch Type(Brilliant Orange) | LED | LITE-ON<br>EVERLIGHT\ |
| 131 | AI | 25 | EA | EL3,EL4,EL7,EL8,EL13,<br>EL14,EL21,EL22,EL27,EL28,<br>EL29,EL30,EL35,EL36,EL37,<br>EL38,EL41,EL42,EL43,EL44,<br>EL51,EL58,EL59,EL60,<br>EL61 | 1.6X3.0 | EYELET | YAOFENG<br>DELIKANG |
| 132 | AI | 21 | EA | EL1,EL2,EL5,EL9,EL10,<br>EL11,EL12,EL15,EL16,EL17,<br>EL18,EL19,EL20,EL23,EL24,<br>EL25,EL26,EL31,EL32,EL33,<br>EL34 | 2.0X3.0 | EYELET | YAOFENG<br>DELIKANG |
| 133 | AI | 46 | EA | J1,J2,J4,J8,J9,<br>J10,J11,J15,J21,J22,<br>J24,J25,J26,J27,J29,<br>J30,J31,J39,J40,J41,<br>J42,J44,J46,J47,J49,<br>J56,J57,J60,J62,J63,<br>J64,J65,J66,J67,J69,<br>J70,J77,J78,J83,J84,<br>J86,J89,J91,J92,J93,J94 | Φ0.6 | JUMPER WIRE | TZAI YUAN<br>HUIHUA |
| 134 | AI | 2 | EA | P803,P804 | SSJS236-6-3 (6mm Under) | GT PIN | YAOFENG<br>DELIKANG |
| 135 | AI | 5 | EA | P601,P602,P603 | SSJS236-10-3 (10mm Under) | GT PIN | YAOFENG<br>DELIKANG |
| 136 | AI | 8 | EA | LB101,LB102,LB103,LB104,<br>LB105,LB107,LB601,LB201 | BFS3550R2F SINGLE RADIAL | INDUCTOR,<br>BEAD FILTER LEAD | SAMWHA |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 137 | AI | 1 | EA | R505 | CF 1Ω 1/4W J SMALL | RESISTOR, CARBON FILM | TZAI YUAN |
| 138 | AI | 1 | EA | R503 | CF 20Ω 1/4W J SMALL | RESISTOR, CARBON FILM | TZAI YUAN |
| 139 | AI | 1 | EA | R117 | CF 47Ω 1/4W J SMALL / CF 47Ω 1/6W J | RESISTOR, CARBON FILM | TZAI YUAN |
| 140 | AI | 1 | EA | R502 | CF 100Ω 1/4W J SMALL | RESISTOR, CARBON FILM | TZAI YUAN |
| 141 | AI | 1 | EA | R101 | MSR37 1.2MΩ 1/2W J SURGE | RESISTOR, FIXED CARBON COMPOSITION | PILKOR |
| 142 | AI | 1 | EA | R124 | MSR37 1MΩ 1/2W J SURGE | RESISTOR, FIXED CARBON COMPOSITION | PILKOR |
| 143 | AI | 2 | EA | R510,R511 | WNPS 0.82Ω 1W J SMALL<br>PRN 0.82Ω 1W J SMALL | RESISTOR,WIRE WOUND | ABCO<br>SMART |
| 144 | AI | 1 | EA | R827 | WNPS 0.11Ω 2W J SMALL<br>PRN 0.11Ω 2W J SMALL | RESISTOR,WIRE WOUND | ABCO<br>SMART |
| 145 | AI | 2 | EA | R601,R602 | WNPS 0.24Ω 2W J SMALL<br>PRN 0.24Ω 2W J SMALL | RESISTOR,WIRE WOUND | ABCO<br>SMART |
| 146 | AI | 1 | EA | R501 | MOF 62KΩ 1W J SMALL | RESISTOR, METAL OXIDE FILM | TZAI YUAN |
| 147 | AI | 2 | EA | R286,R287 | MOF 1KΩ 2W J SMALL | RESISTOR, METAL OXIDE FILM | TZAI YUAN |
| 148 | AI | 2 | EA | R283,R284 | MOF 3.3KΩ 2W J SMALL | RESISTOR, METAL OXIDE FILM | TZAI YUAN |
| 149 | AI | 2 | EA | R251,R252 | MOF 24KΩ 2W J SMALL | RESISTOR, METAL OXIDE FILM | TZAI YUAN |
| 150 | AI | 2 | EA | R829,R830 | MOF 30KΩ 2W J SMALL | RESISTOR, METAL OXIDE FILM | TZAI YUAN |
| 151 | AI | 1 | EA | PCB | LGP4247-13LPB(159X245X1.6)<br>FR-1 KB,DS,L, 1oz CTI-600 | PCB | SHANGHAI WANZHENG<br>NEW TRIUNION<br>WYT |
| | ETC | | | | LGP4247-13LPB SUBSIDIARY MATERIALS | | |
| 152 | ETC | 1 | EA | | 40X8 NY WHITE 93CODE 19DIGIT | BAR CODE | QIUJING |
| 153 | ETC | 3.00 | GR | | ES2044H & ES2482W<br>SD-5<br>UB-5601 | BOND (RTV) | CANADA<br>SANCHEN<br>U-BOND |
| 154 | ETC | 0.0417 | EA | | 630 x 425 x 205 x t8 | BOX CARTON | WUJIANG ZHENLONG<br>SUZHOU JIADELONG |
| 155 | ETC | 0.0833 | EA | | 615 x 410 x t8 | BOX PAD | WUJIANG ZHENLONG<br>SUZHOU JIADELONG |
| 156 | ETC | 0.5417 | EA | | 620 x 165 x t8 | BOX PARTITION | WUJIANG ZHENLONG<br>SUZHOU JIADELONG |
| 157 | ETC | 0.1667 | EA | | 415 x 165 x t8 | BOX PARTITION | WUJIANG ZHENLONG<br>SUZHOU JIADELONG |
| 158 | ETC | 0.1667 | EA | | 145 x 250 x t25 | BOX PARTITION | WUJIANG ZHENLONG<br>SUZHOU JIADELONG |
| 159 | ETC | 1.00 | EA | | 260 x 440 | BUBBLE SHEET | LIYUAN<br>WINWORLD |
| 160 | ETC | 25 | GR | | ILF-710(kg) | FLUX | ION ELEC |
| 161 | ETC | 15 | GR | | SAC0307 A+ SN:99%, AG:0.3%, CU:0.7% | SOLDER BAR | DYFENCO |
| 162 | ETC | 5 | GR | | SAC0307 A+ SN:99%, AG:0.3%, CU:0.7% | SOLDER WIRE | DYFENCO |

# Process Marking

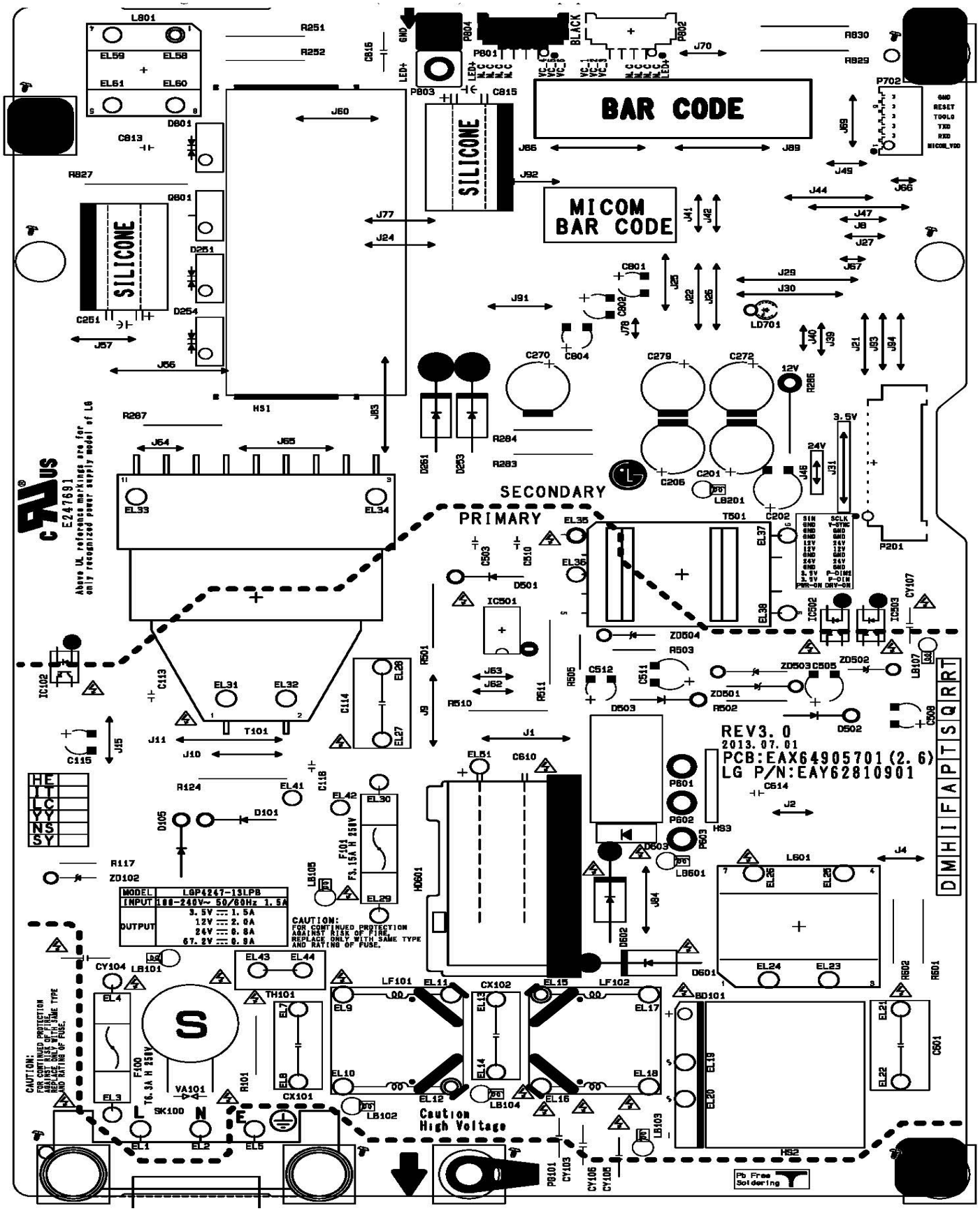
# 공정표시 MARK (PCB SILK)



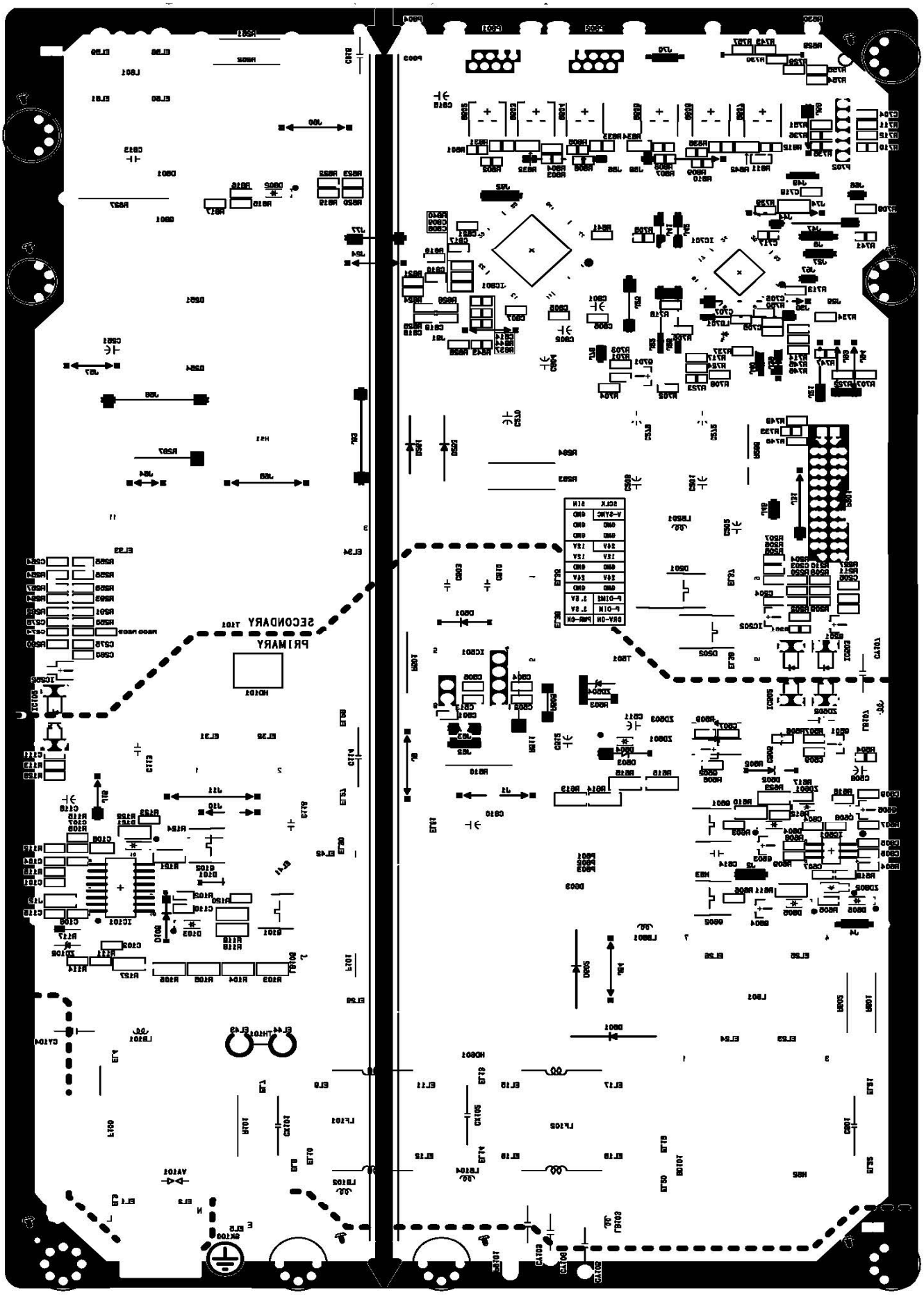

D : 자삽
M : SMD
H : 수삽 취
I : ICT
F : 1차 실
A : AGING
P : HI-POT
T : 취 검사 (ATE)
S : SET 검사
Q : QC 검사
R : 불 수리
RT : 양산 무 시험

# PCB Layout

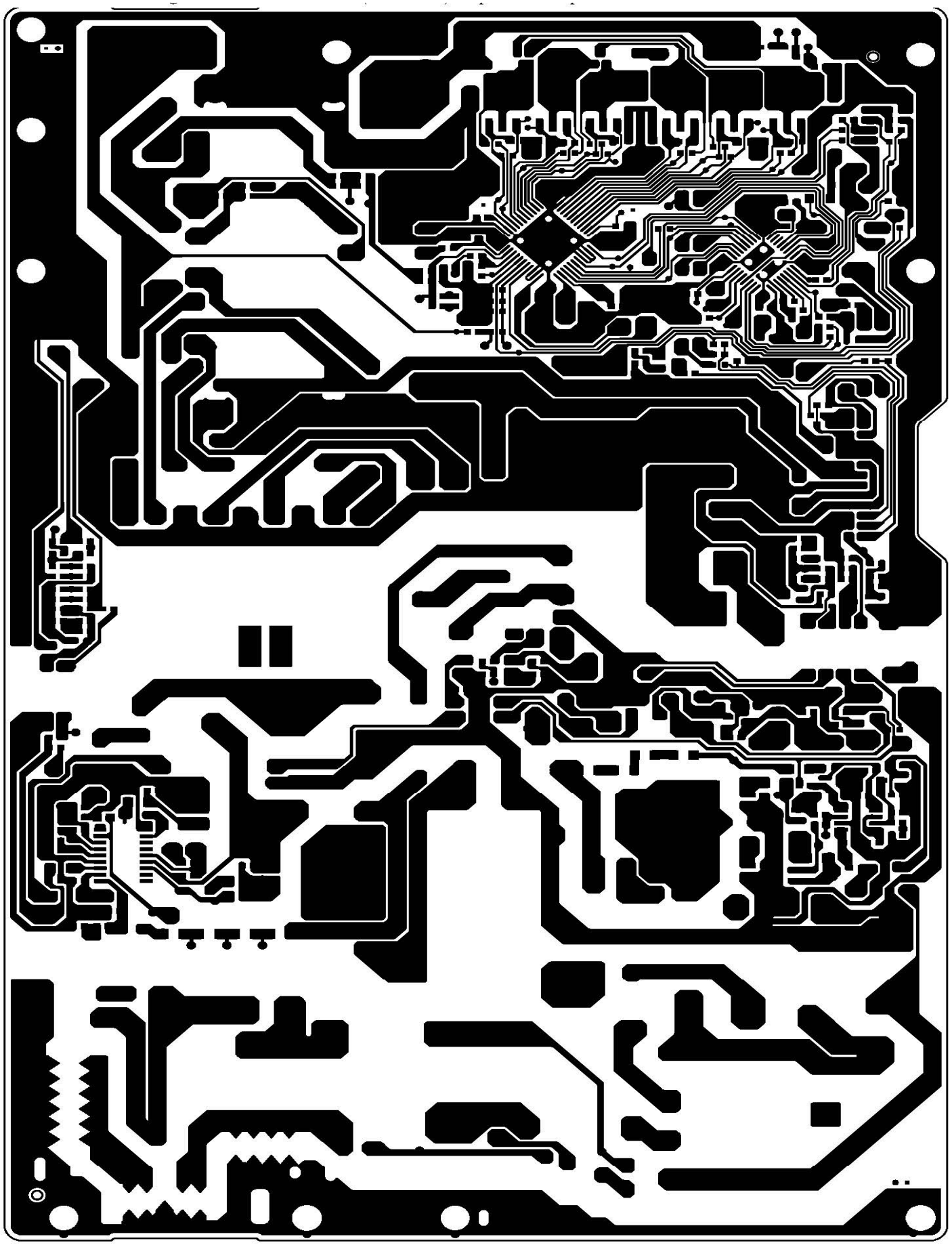
# Top Silk



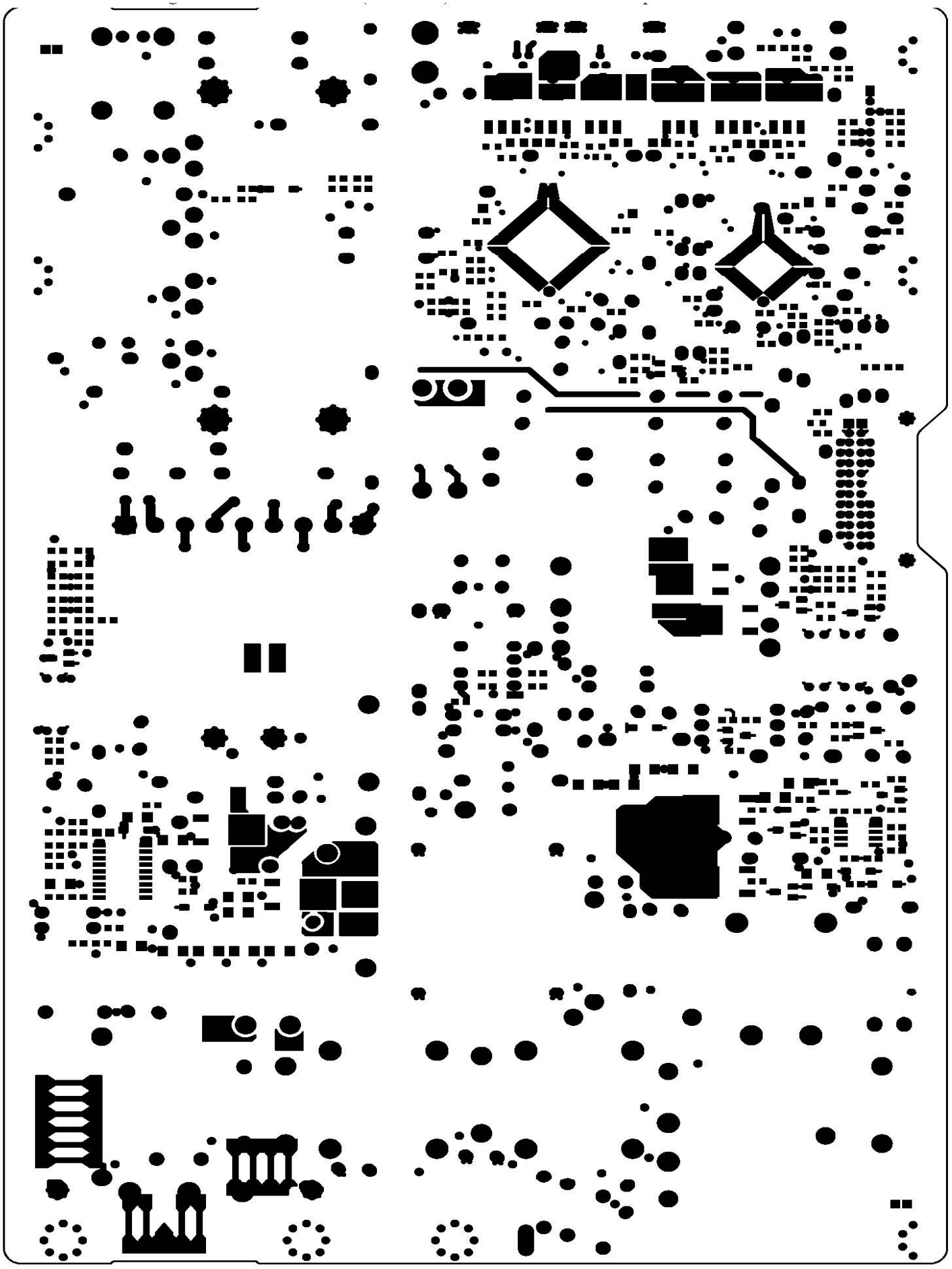
## Bottom Silk ：



## Bottom Pattern ：



## Bottom Solder mask ：



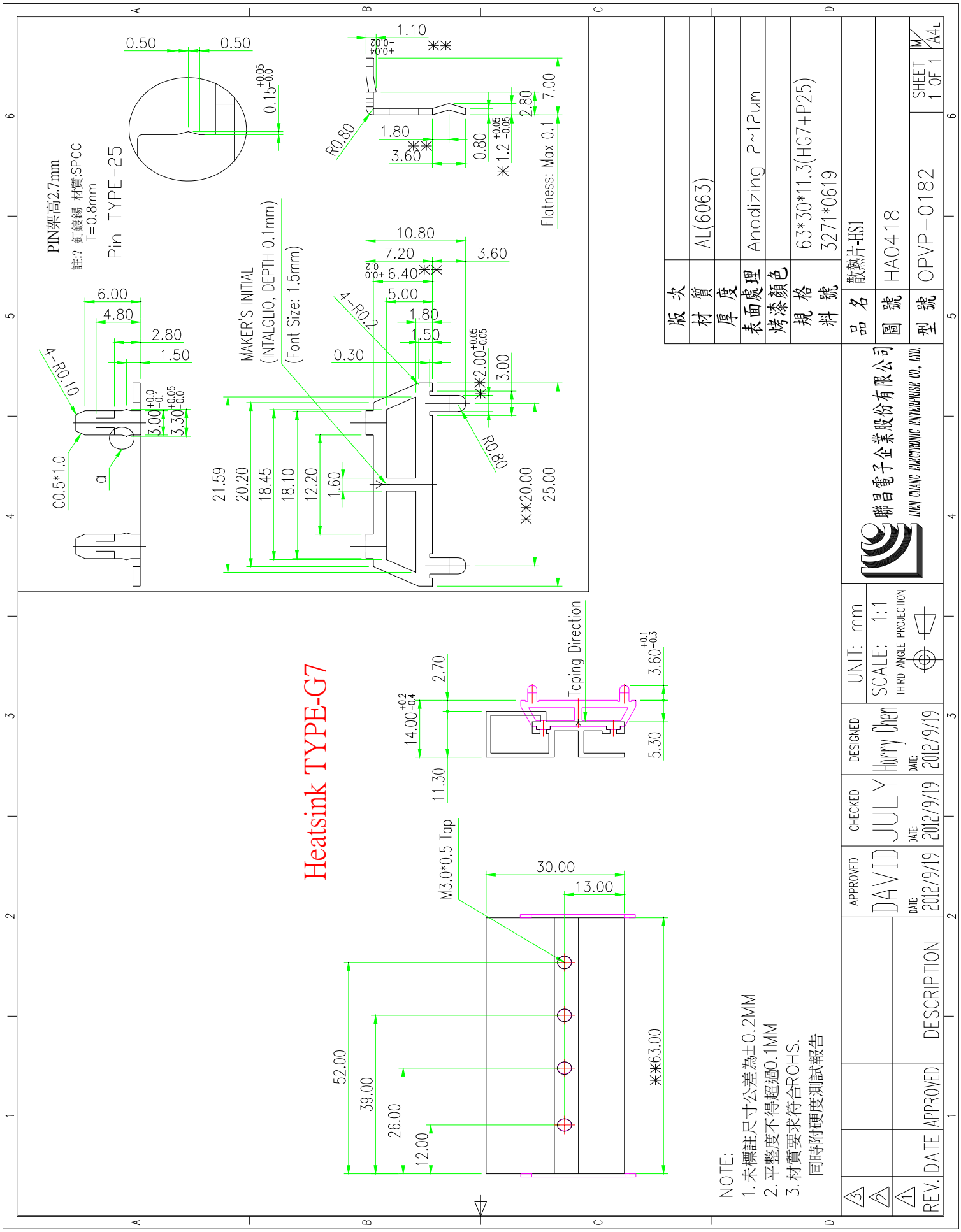
# Safety Parts

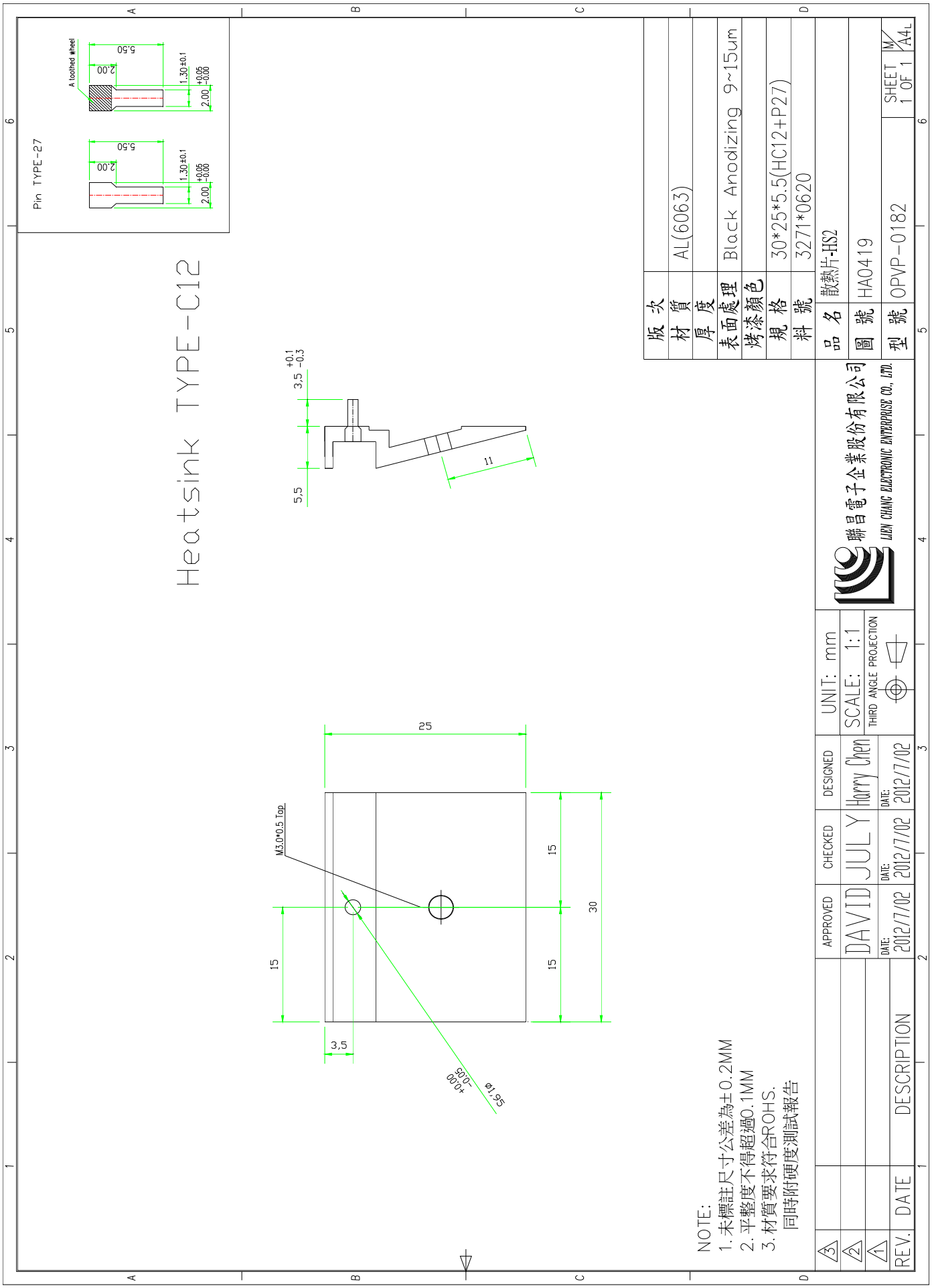
| Object/part No. | Manufacturer / Trademark | Type / Model | Value / Rating | Parts Marking (實物) | standard | mark(s) of conformity1) |
|---|---|---|---|---|---|---|
| AC input connector, (SK100) | Dongil Tech | DAC-18C3M1 | 250V / 2.5A | DAC-18C3M1 | IEC 60320-1 | |
| Fuse, (F100) | Littelfuse Inc. | 215 Series | T6.3A H / 250V | LF.T6.3AH250VP | IEC 60127-2 | |
| | WALTER FUSE | TSC | | TSC6.3A250V(P) | IEC 60127 | |
| | BUSSMANN | S505 | | T6.3AH250V | IEC 60127-2 | |
| | Dainfuse | 50CT | | T6.3AH 250V | IEC 60127 | |
| | CONQURE | UDA-A | | UDA-A T6.3A H 250V | IEC 60127-3-5 | |
| Fuse, (F101) | Littelfuse Inc. | 216.XXXX | F3.15A H / 250V | LF.F3.15AH250VP | IEC 60127-2 | |
| | WALTER FUSE | FSC | | FSC3.15A250V(P) | IEC 60127 | |
| | Dainfuse | 50CF | | F3.15AH250V | IEC 60127 | |
| | CONQURE | UBM-A | | UBM-A 3.15A 250V | IEC 60127-2-1 | |
| Line Filter, (LF101,LF102) | TNC | CS615200SHA | Rated 130℃ | 615200S | IEC 60065 | Test in appliance |
| | Dongil Tech | LT6015205 | | 015205 | | |
| | FEELUX | LLF-130 | | LLF-130 | | |
| | JIANGSU CHANNELON ELECTRONIC GROUP | | | | | |
| | SOOJUNG | | | | | |
| | ZHONGTAI | | | | | |
| | NAMYANG | | | | | |
| Base material of Linefilter (LF101,LF102) | MOMENTIVE SPECIALTY CHEMICALS GMBH | PF 2736 | V-0, 150℃ | | UL, E61040 | UL |
| Alt | Chang Chun Plastics Co., Ltd | T375HF, T375J | V-0, 150℃ | | UL, E59481 | UL |
| Alt | NAN YA PLASTICS CORP PLASTICS 4TH DIV | 1403G3, 1403G6 | V-0, 130℃ | | UL, E130155 | UL |
| Alt | POLY PLASTICS CO., LTD | 1140A66 | V-0, 130℃ | | UL, E109088 | UL |
| Alt | Rhodia Enginnering plastics | PA66, A50H1 | V-0, 130℃ | | UL, E44716 | UL |
| Alt | Sabic Innovative Plastics japan LLC | 420SE0 | V-0, 130℃ | | UL, E45587 | UL |
| Alt | Toray Industrial INC | A604 E604 | V-0 200℃ | | UL E41797 | UL |
| Alt | SAMYANG CORPORATION | 1500GN-30 | V-0 130℃ | | UL, E121254 | UL |
| Alt | SUMITOMO BAKELITE CO LTD | PM-9820 | V-0, 150℃ | | UL, E41429 | UL |
| Varistor, (VA101) | Samwha | SVC621D-14A | Climatic category: 40/085/21 Maximum continuous voltage:385Va.c. Current pulse rating: 6 kV/3 kA | SVC 621-14 | CECC 42000 CECC 42200 CECC 42201 IEC 60065 Clause 14.12 and IEC 60950-1 Annex Q | |
| | Amotech Co., Ltd. | INR 14D621K | Climatic category: 40/085/56 Maximum continuous voltage: 385Va.c. Current pulse rating: 6 kV/3 Ka | INR 14D621 | CECC42000/A1 CECC42200/A1 CECC 42201-001 IEC 61051-1 IEC 61051-2 IEC 61051-2-2 IEC 60065 Clause 14.12 and IEC 60950-1 Annex Q | |
| | Xiamen Wanming Electronics Co.,Ltd | WMR14D621K | Climatic category: 40/85/56 Maximum continuous voltage: 750Va.c. Current pulse rating: 6 kV/3 kA | WMR 14D621K | IEC 61051-1 IEC 61051-2 IEC 61051-2-2 IEC 60950-1 Annex Q | |
| | Guangxi New Future Information Industry Co.,Ltd | NFC 14D621K | Climatic category: 40/085/21 Maximum continuous voltage:385Va.c. Current pulse rating: 6 kV/3 kA | NFC 14D621K | IEC 61051-1 IEC 61051-2 IEC 61051-2-2 IEC 60950-1 Annex Q | |
| Bridge Diode, (BD101) | Lite-on | GBJ1506 | Min 600V / 15A | GBJ1506 | | Test in appliance |
| | DACHANG | D15SB60 | | D15SB60 | | |
| | TSC | TS15P05G | | TS15P05G | E96005 | |
| | RECTRON | RS1507M | | RS1507M | | |
| | GULF | G15XB60 | | G15XB60 | | |
| | SHINDENGEN | D15XB60 | | D15XB60 | E142422 | |
| X-cap.(CX101,CX102) | Pilkor | PCX2 337 | Min 275V~ / (CX101= Max 0.33uF, CX102= Max 0.33uF) | PCX2 337 MKP | IEC 60384-14 UL1414 | |
| | Okaya | LE | | LE | IEC 60384-14 UL1414 | |
| | EUROPTRONIC | MPX | | MPX | E199061/ E311052 IEC 60384-14-3'nd edition | |
| | CHENGTUNG | CTX | | CTX | IEC 60384-14 UL1414 | |
| Thermistor. (TH101) | DSC | DSC 5D-15 | 5ohm at 25 ° C | DSC 5D-15 | IEC 60065 | |
| | Xiamen Wanming Electronics Co.,Ltd | WTR15D050M | | WTR15D050 | | |
| | JIANGSU XINGSHUN ELECTRONICS CO., LTD | 5D2-15 | | 5D2-15 | | |
| | Smart | ICL-5W | | ICL-05 5R00MSMT | | |
| | NANJING SHIHENG ELECTRONICS CO., LTD | MF72-5D15 | | MF72 5D15 | | |
| Elec.Cap.(C610) | SAMYOUNG | KMF | 450V / Max 82uF / 105℃ | KMF450V82uF | IEC 60950-1 | Test in appliance |
| | SUSCON | SK | | SK450V82uF | | |
| | SAMYOUNG | NZE | 500V / Max 100uF / 105℃ | NZE500V100uF | IEC 60950-1 | Test in appliance |
| | SUSCON | SK | | SK500V100uF | | |
| Switching TR,(Q601,Q602) | STMICRO | STD13NM60N | Min. 600V / Min 8A | 13NM60N | IEC 60950-1 | Test in appliance |
| | FAIRCHILD | FCD380N60E | | FCD380N60E | | |
| | TOSHIBA | TK10A60W | | K10A60W | | |
| | INFINEON | IPD60R450E6 | | 6R450E6 | | |
| Switching TR,(Q101,Q102) | STMICRO | STD10NM60N | Min. 600V / Min 6A | 10NM60N | IEC 60950-1 | Test in appliance |
| | FAIRCHILD | FCD600N60Z | | FCD600N60Z | | |
| | TOSHIBA | TK8P60V | | K8P60V | | |
| | INFINEON | IPD60R600E6 | | 6R600E6 | | |
| Flyback IC, (IC501) | INFINEON | ICE3BR4765JZ | Min. 650 V / Min 1.67A | 3BR4765JZ | IEC 60950-1 | Test in appliance |

| | | | | | | |
|---|---|---|---|---|---|---|
| Y Cap. (CY103,CY104,CY105,CY106) | Kunshan Wansheng | Y1 / CT7 | Min 250V / (CY103= Max 470pF, CY104= Max 470pF, CY105= Max 470pF, CY106= Max 470pF) | CT7 471K | IEC 60384-14 | |
| | Apex intec | Y1 / NK | | NK471K | | |
| | DONG IL | Y1 / DA | | DA471K | | |
| | YINANDON | Y1 / CT81 | | CT81 471K | | |
| | SAMWHA | Y1 / SD | | SD471K | | |
| | JYA-NAY | Y1 / JN | | JN471K | | |
| | GUANGDONG SOUTH HONGMING | Y1 / F | | F471K | | |
| | TDK | Y1 / CD | | CD471K | | |
| Y Cap. (CY107) | Kunshan Wansheng | Y1 / CT7 | Min 250V / Max 470pF | CT7 471K | IEC 60384-14 | |
| | Apex intec | Y1 / NK | | NK471K | | |
| | DONG IL | Y1 / DA | | DA471K | | |
| | YINANDON | Y1 / CT81 | | CT81 471K | | |
| | SAMWHA | Y1 / SD | | SD471K | | |
| | JYA-NAY | Y1 / JN | | JN471K | | |
| | GUANGDONG SOUTH HONGMING | Y1 / F | | F471K | | |
| | TDK | Y1 / CD | | CD471K | | |
| PFC Coil,(L601) | FEELUX<br>JIANGSU CHANNELON ELECTRONIC GROUP<br>SOOJUNG<br>TDK<br>LG Innotek<br>ZHONGTAI | 13S-LP02 | Class B 130℃ | 13S-LP02 | IEC 60950-1 | Test in appliance |
| Bobbin material of transformer (L601) | SUMITOMO BAKELITE CO LTD | PM-9820 | V-0, 150℃ | | UL, E41429 | UL |
| Switching Transformer, (T101) | FEELUX<br>JIANGSU CHANNELON ELECTRONIC GROUP<br>SOOJUNG<br>TDK<br>LG Innotek<br>ZHONGTAI<br>NAMYANG | 13S-LM07 | Class B 130℃ | 13S-LM07 | IEC 60950-1 | Test in appliance |
| Bobbin material of transformer (T101) | SUMITOMO BAKELITE CO LTD | PM-9820, PM-9630 | V-0, 150℃ | | UL, E41429 | UL |
| Alt | EI DUPONT DE NEMOURS & CO INC | FR530 | V-0, 155℃ | | UL, E41938 | UL |
| Switching Transformer, (T501) | FEELUX<br>JIANGSU CHANNELON ELECTRONIC GROUP<br>SOOJUNG<br>TDK<br>ZHONGTAI<br>JIANGSU TAICHANG ELECTRONICS Co.,LTD.<br>H&E CO LTD<br>Clover hi-tech Co., Ltd.<br>NAMYANG<br>DONG YANG TELECOM CO., LTD | 12S-LS01 | Class B 130℃ | 12S-LS01 | IEC 60065 | Test in appliance |
| Bobbin material of transformer (T501) | SUMITOMO BAKELITE CO LTD | PM-9820/PM-9630 | V-0, 150℃ | | UL, E41429 | UL |
| Insulating Tape of transformer (T501) | DUCK SUNG HITECH CO LTD | DTS-204 | 130℃ | | UL, E105147 | UL |
| Alt | METAL LINE CO LTD | 800(a) | 130℃ | | UL, E162848 | UL |
| Alt | JINGJIANG YAHUA PRESSURE SENSITIVE GLUE FTY | CT, PZ | 130℃ | | UL, E165111 | UL |
| Alt | JINGJIANG JINGYI ADHESIVE PRODUCT CO LTD | WF310, JY25-A | 130℃ | | UL, E246950 | UL |
| Alt | CHANG SHU LIANG YI TAPE INDUSTRY CO LTD | LY-XX, | 130℃ | | UL, E246820 | UL |
| Alt | 3M Company | No.1318 series, No.1350 serises | 130℃ | | UL, E17385 | UL |
| Reinforced insulation wire of transformer (T501) | COSMOLINK CO LTD | TIW-M | Class B, 130℃ | | UL, E213764 | UL |
| Alt | YOUNG CHANG SILICONE CO.,LTD. | STW-B | Class B, 130℃ | | UL, E242198 | UL |
| Alt | GREAT LEOFLON INDUSTRIAL CO.,LTD | TRW(B) | Class B, 130℃ | | UL, E211989 | UL |
| Alt | FURUKAWA ELECTRIC CO., LTD | TEX-E, TEX-BS | Class B, 130℃ | | UL, E206440 | UL |
| Opto-coupler, (IC102,IC502,IC503) | Everlight | EL817 | External cr: 7.7 mm, Internal cr: 6.0 mm DTI: 0.5 mm / 6000 Vrms | EL817 | IEC 60065<br>UL 1577 | |
| | Lite-on | LTV817... | External cr: 7.8 mm, Internal cr: 5.2 mm DTI: 0.8 mm / 6000 Vrms | 817BN | | |
| Discharge Resistor, (R101) | Smart | PRC | 1/2W, 1.2Mohm, 5% | | IEC 60065 | |
| | UNIROYAL ELECTRONICS INDUSTRY CO., LTD | MGROW2J****A10 | | | IEC 60065 | |
| | Pilkor | SR37,MSR37 | | | IEC 60065 | |
| Capacitor, (C601) | Pilkor | PCMP 372 (box) | 0.82uF / 500V | 820nJ 500V 372 MKP | IEC60384-1 | |
| | LUMEN | MP (Film) | 0.82uF / 500V | M 824J MP 500V | | |
| | EUROPTRONIC | MPHB (Box) | 0.82uF / 500V | MPHB 824 J 500 | | |
| | CHENG TUNG | CTH (Box) | 0.82uF / 500V | CTH 824 J 500V | | |
| Capacitor, (C114) | Pilkor | PCMP 384(Box) | 0.027uF / 800V | 27nJ 800V 384 MMKP | IEC60384-1 | |
| | LUMEN | MP (Film) | 0.027uF / 800V | M 273J MP 800V | | |
| | EUROPTRONIC | MPLB (Box) | 0.027uF / 1000V | MPLB 273J 1000 | | |
| PCB, FR-1 | DONGMYUNG CIR. | DM5-V-0 | 94V-0 | | | |
| | SHANGHAI WANZHENG | SWZ-2 | 94V-0 | | | |
| | WYT (Wan Yuan Tong) | SWZ-2 | 94V-0 | | | |
| | SHANGHAI AREX | 02V0 | 94V-0 | | | |
| | NEW TRIUNION | TU-3 | 94V-0 | | | |
| | CHIN POON | E5<br>E01 | 94V-0 | | | |
| | TIANJIN DAEDUCK | DC-1<br>DC-2 | 94V-0 | | | |
| | HUIHO | 4B-5<br>4B-1, 4B-2, 4D | 94V-0 | | | |
| | HSIANG KUO | 07V0 | 94V-0 | | | |
| | SAMHAN | SH7 | 94V-0 | | | |
| | HT CIRCUIT(QINGDAO) | 1794V0 | 94V-0 | | | |
| | WONKYUNG | WK-1 | 94V-0 | | | |
| | TIAN FENG | TU-1 | 94V-0 | | | |
| | Duck sung | DS8-V-0 | 94V-0 | | | |
| | TIS KOREA | TIS-3 | 94V-0 | | | |
| | kyosha | 2294V-0 | 94V-0 | | | |
| | kyosha | S4594V-0 | 94V-0 | | | |
| | Wellbest | MTV0-01 | 94V-0 | | | |
| | Cosmotech | GS2-V-0-1<br>CJ2-V-0-1<br>CJ2-V-0-2 | 94V-0 | | | |
| | CHANGZHOU HAIHONG | CCE-V0 | 94V-0 | | | |

1) an asterisk indicates a mark which assures the agreed level of surveillance
Remarks: *) Large volume capacitors exceeding volume 1750mm³

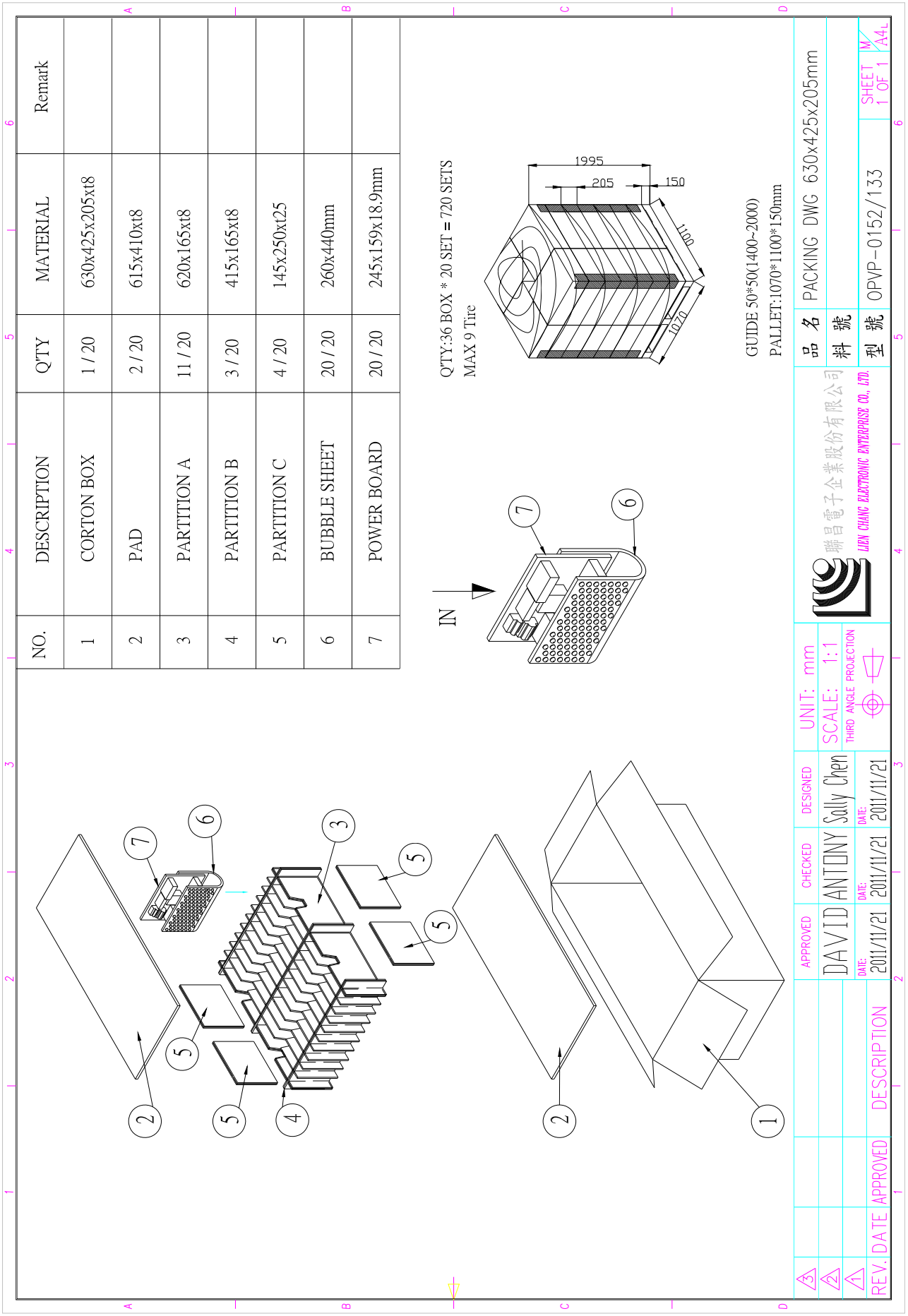
# Mechanical Drawing

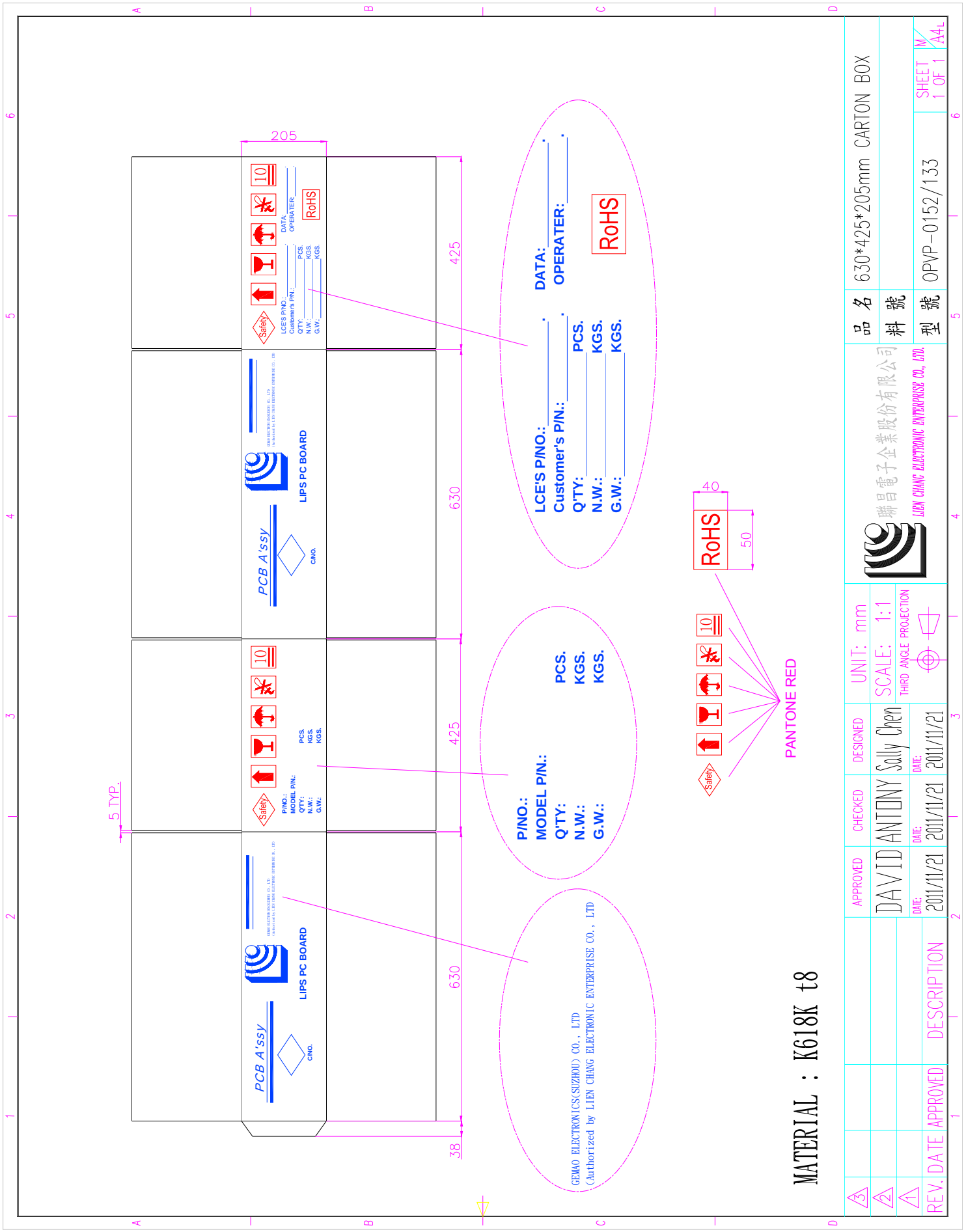


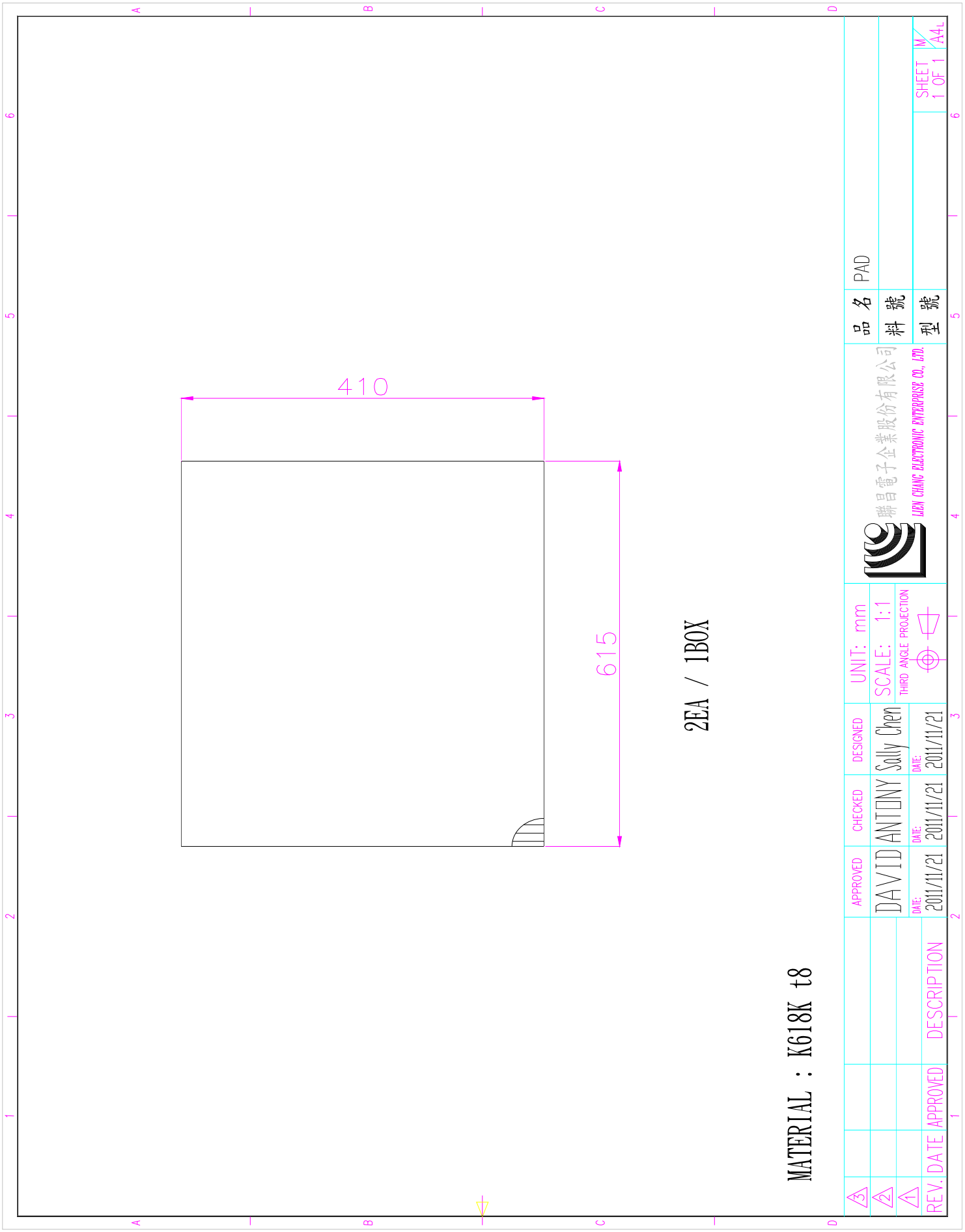


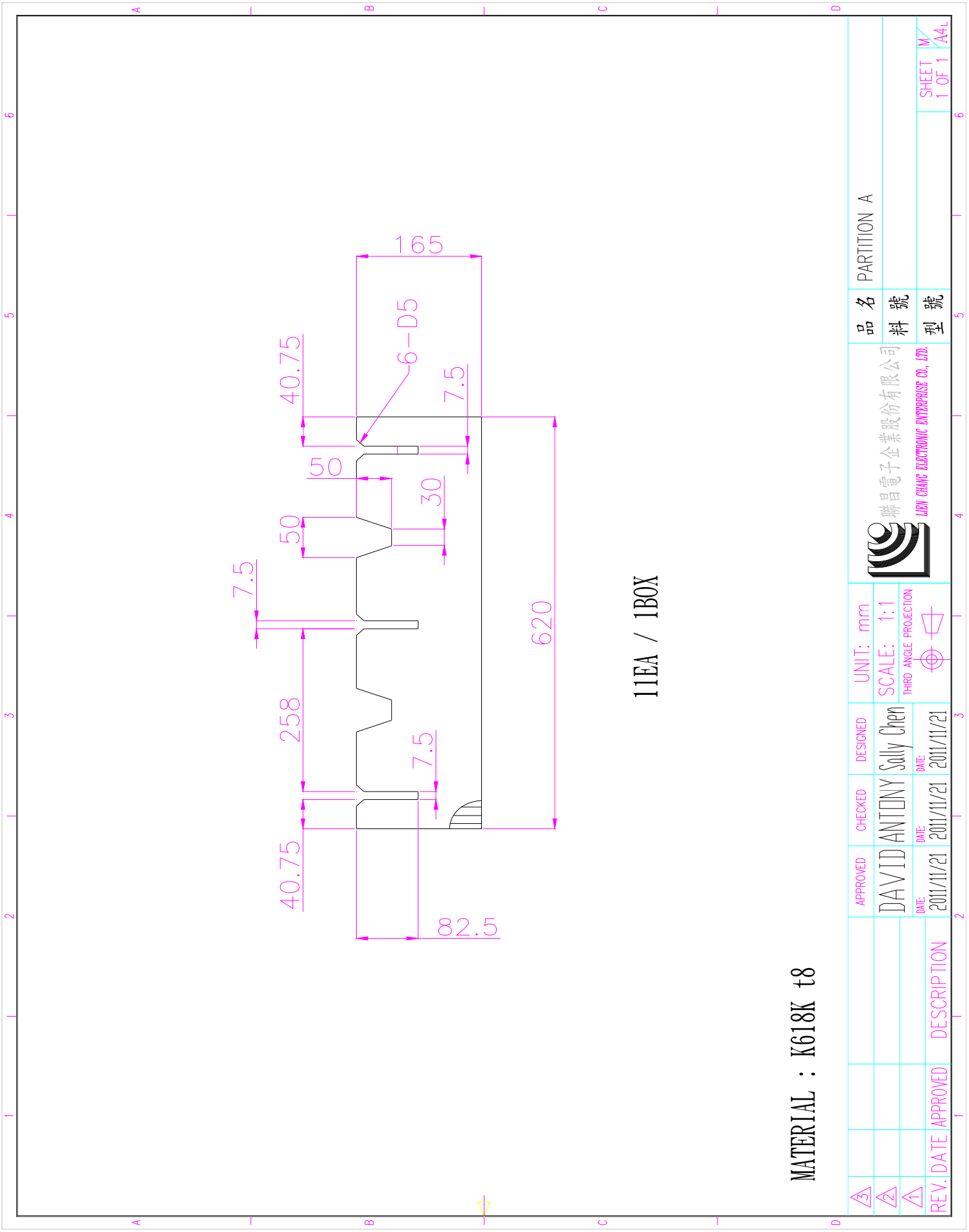
# Packing Drawing

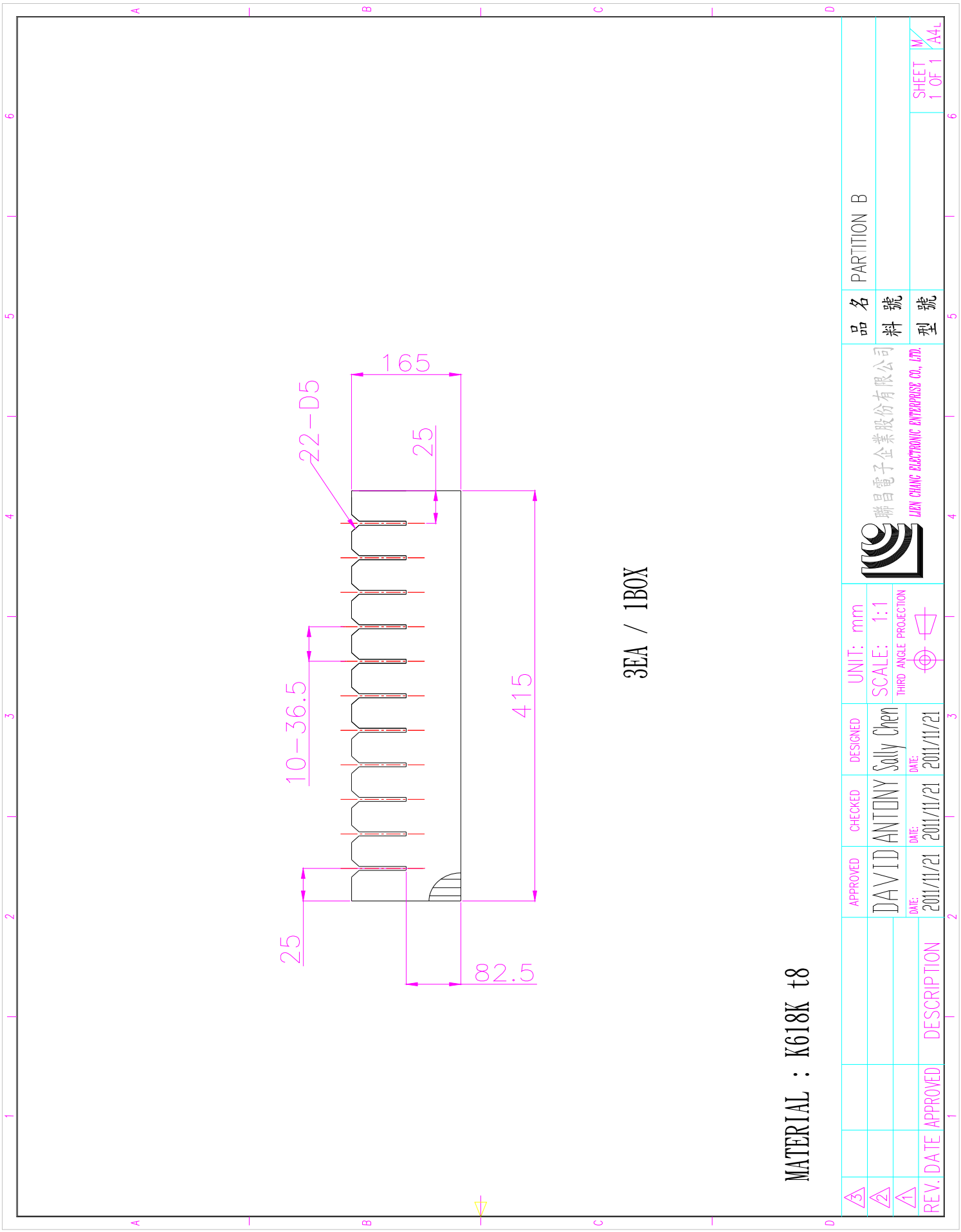
| NO. | DESCRIPTION | Q'TY | MATERIAL | Remark |
|---|---|---|---|---|
| 1 | CORTON BOX | 1 / 20 | 630x425x205xt8 | |
| 2 | PAD | 2 / 20 | 615x410xt8 | |
| 3 | PARTTION A | 11 / 20 | 620x165xt8 | |
| 4 | PARTTION B | 3 / 20 | 415x165xt8 | |
| 5 | PARTTION C | 4 / 20 | 145x250xt25 | |
| 6 | BUBBLE SHEET | 20 / 20 | 260x440mm | |
| 7 | POWER BOARD | 20 / 20 | 245x159x18.9mm | |

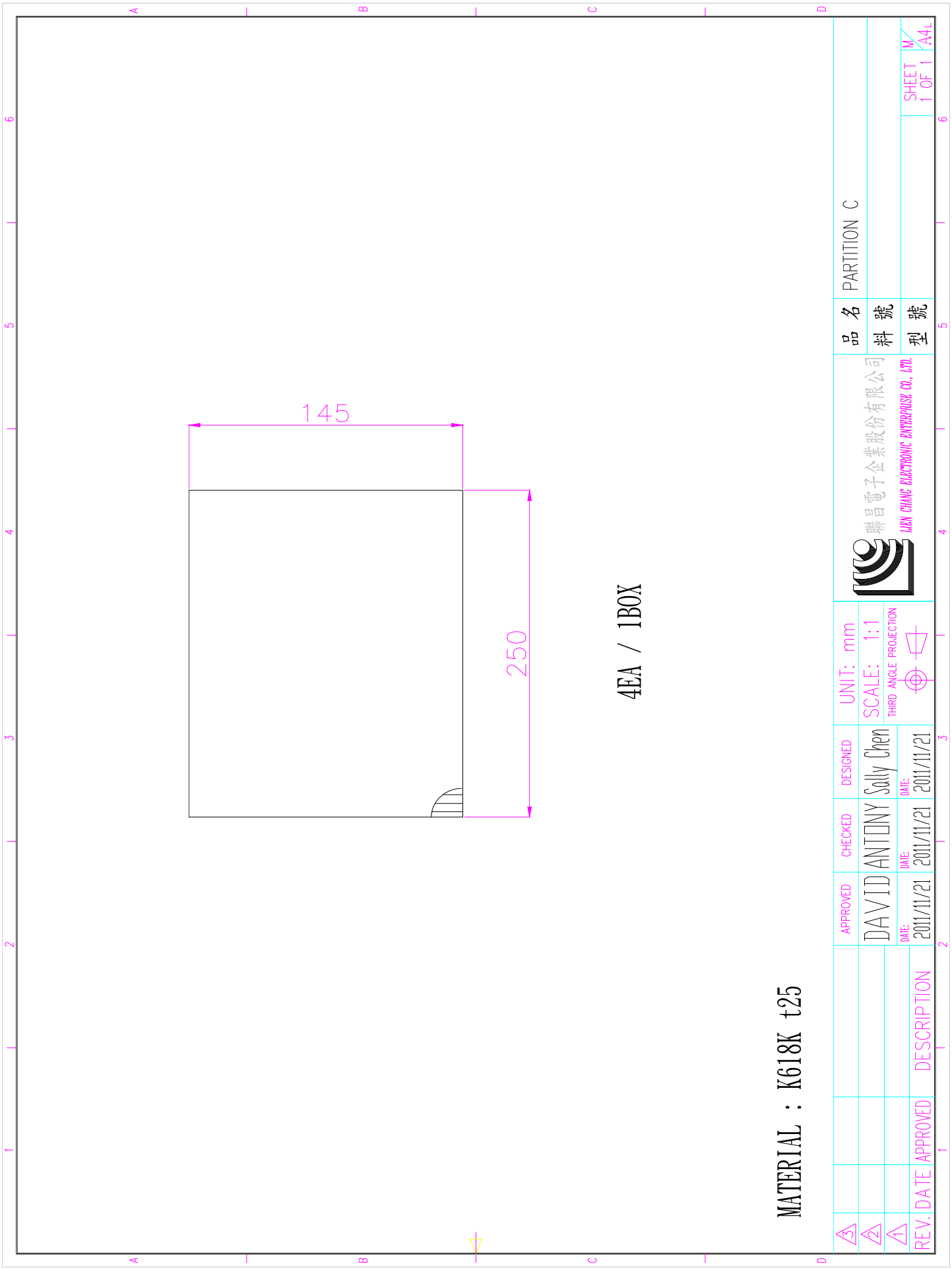


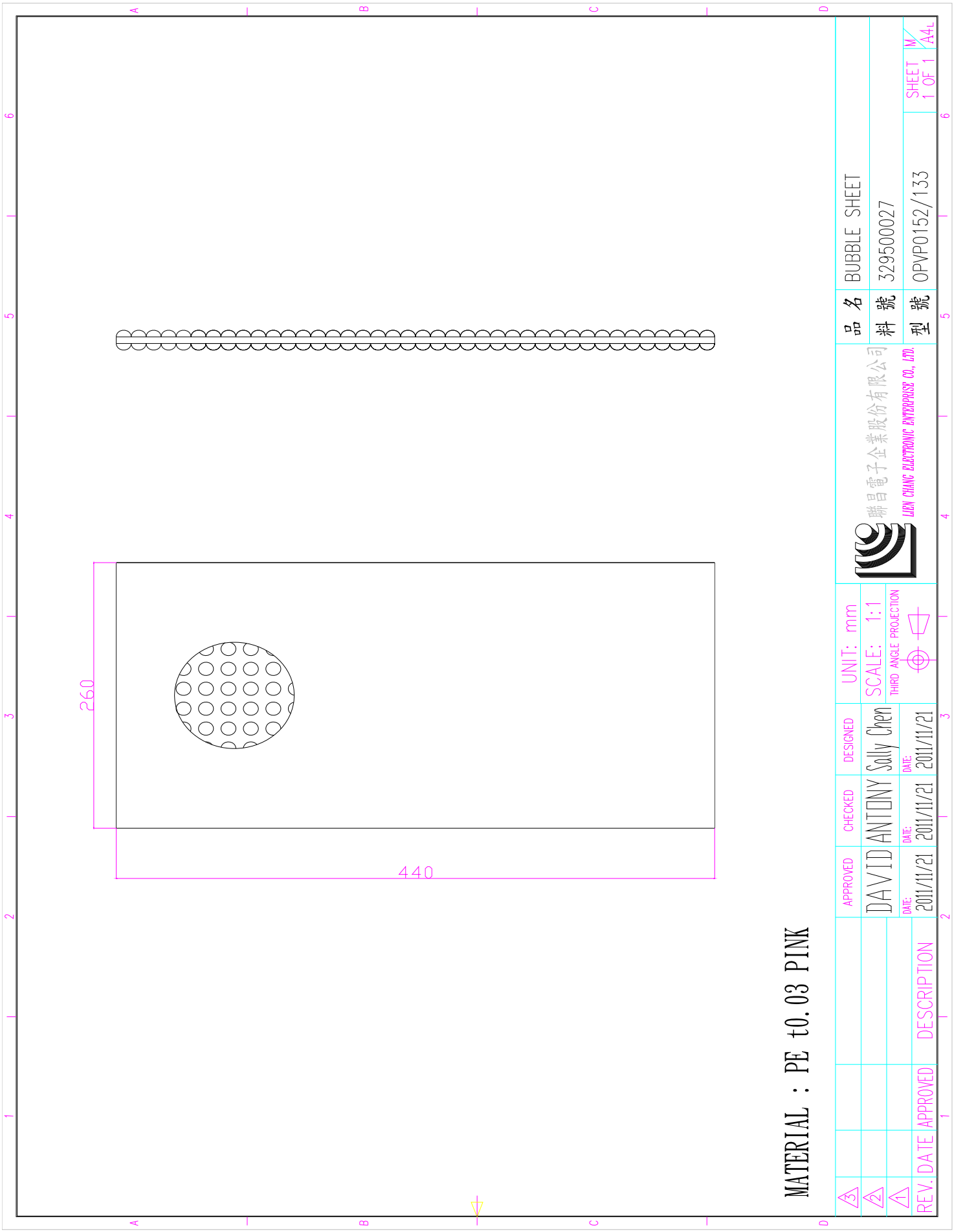




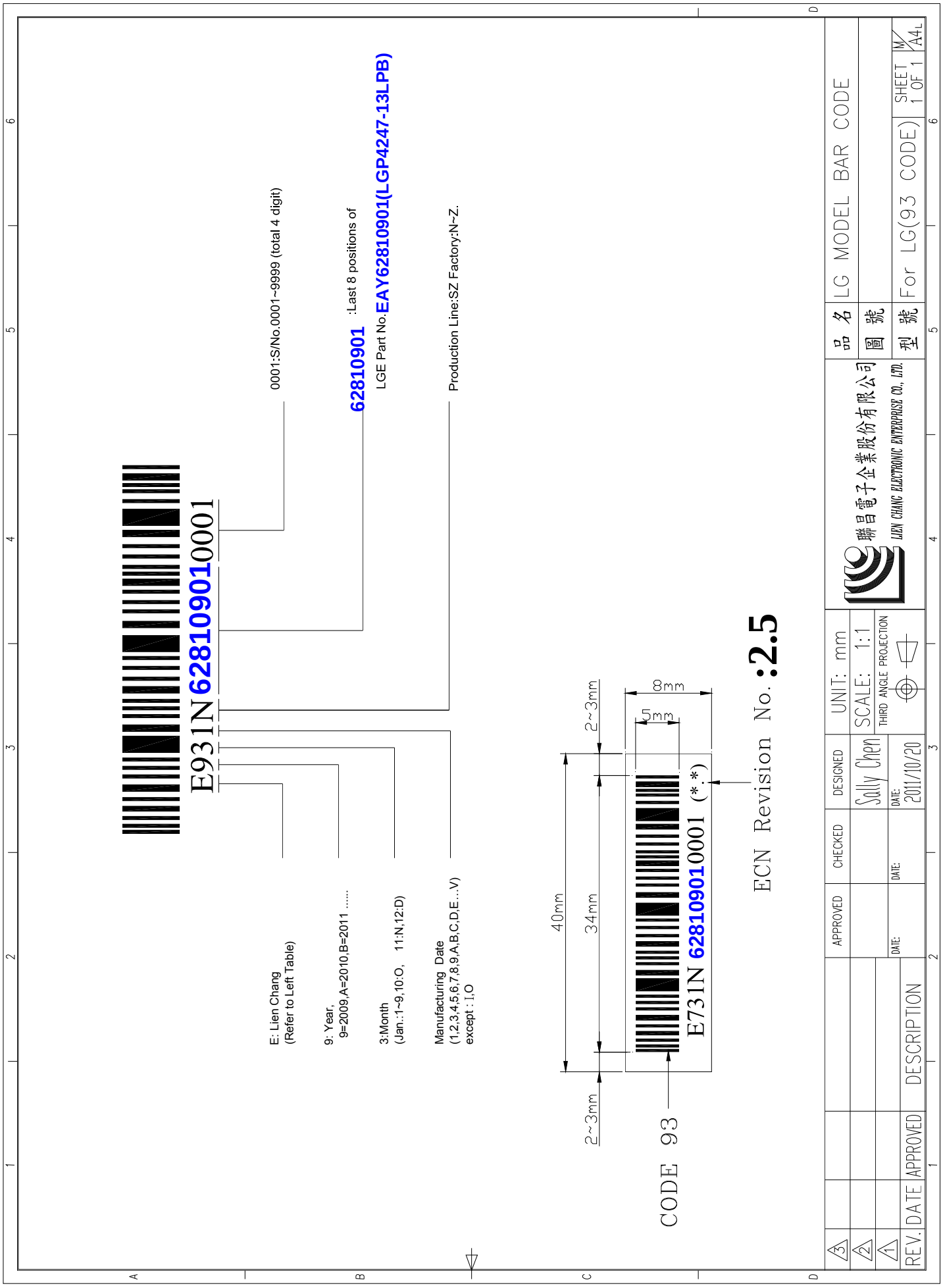






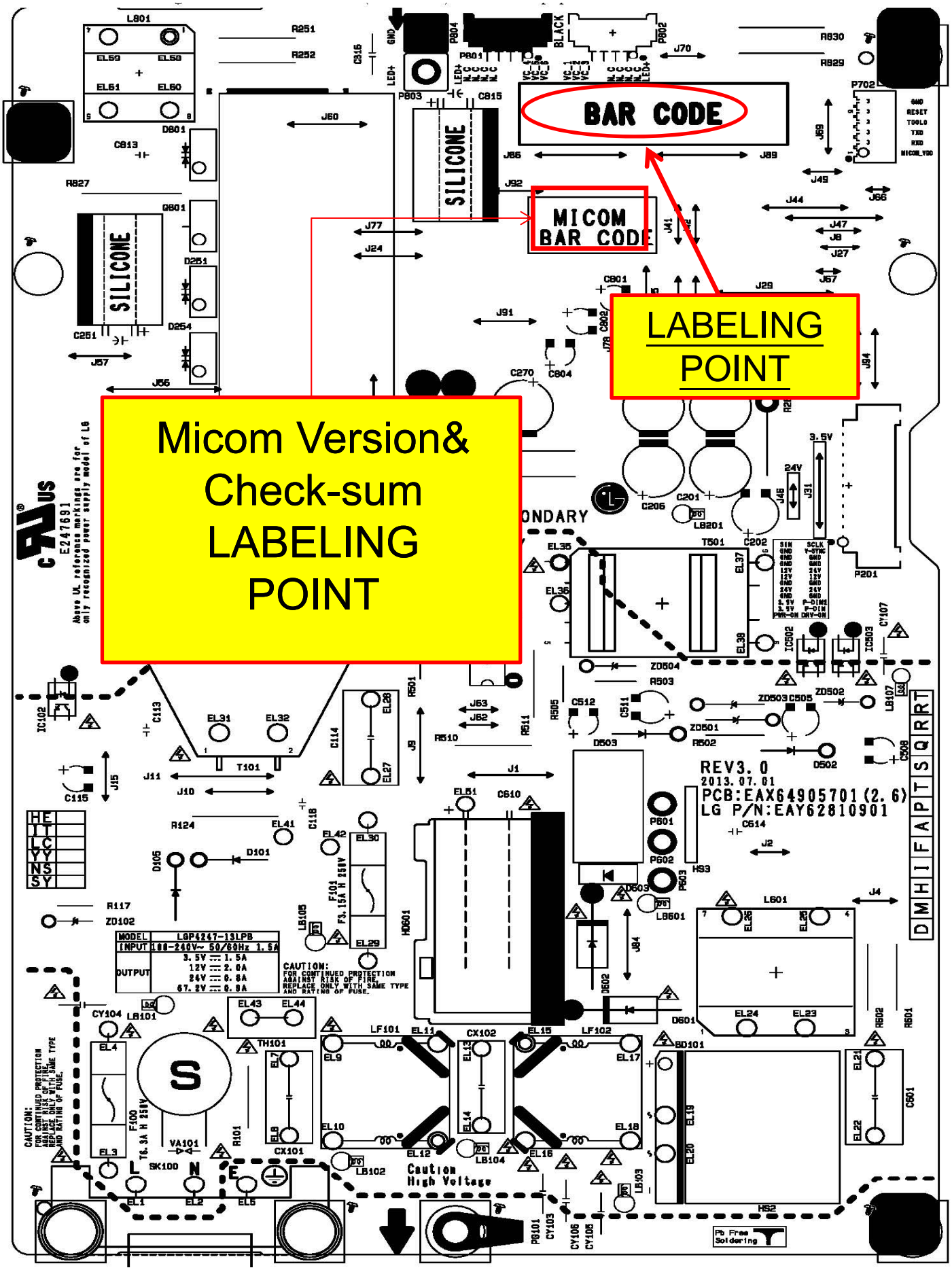


# Bar-Code
# Label Drawing



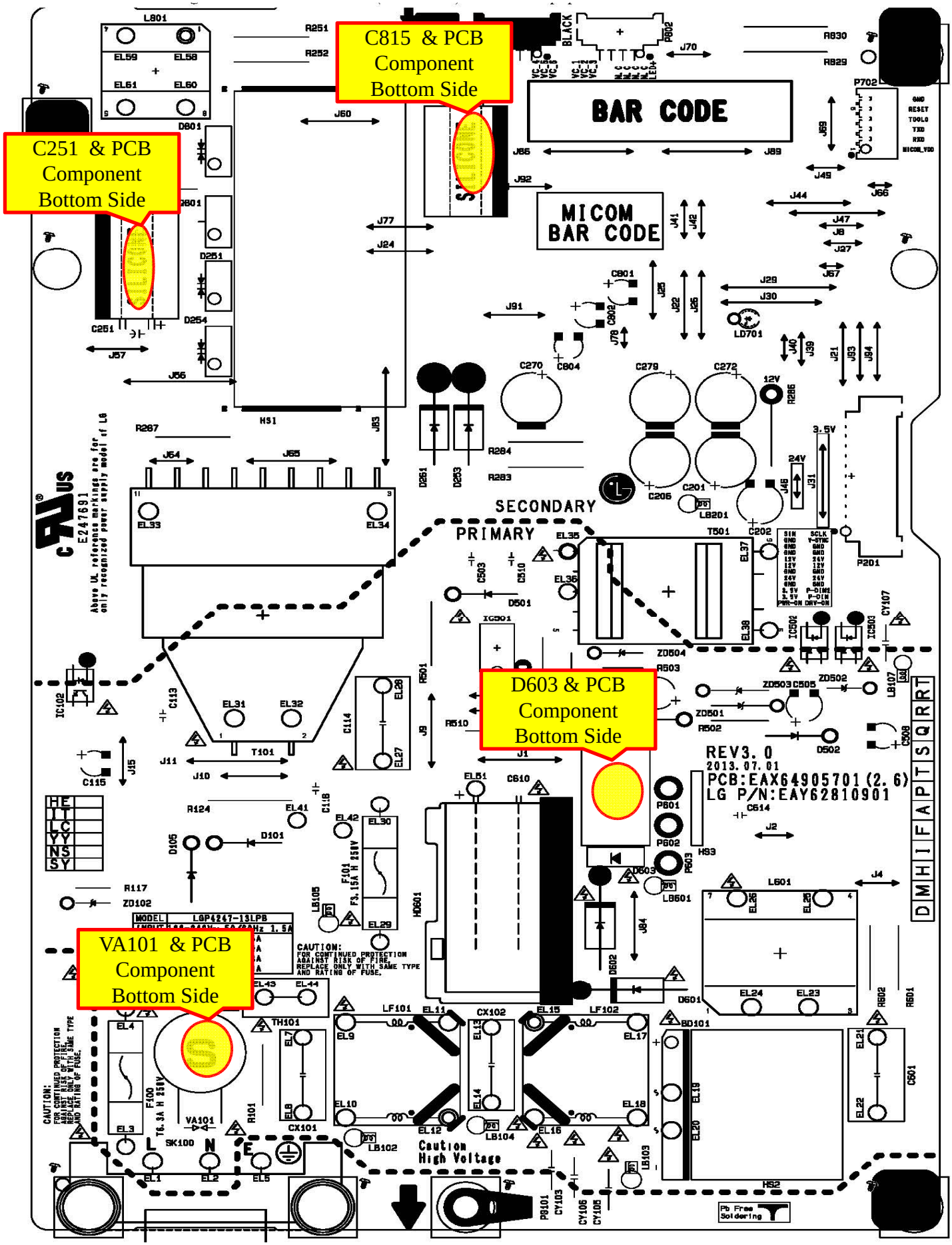
# Labeling Point

# LABELING POINT



# Workmanship Point

## Silicone Bonding Point ( )



# Manufacturing Process

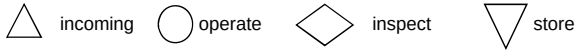
# 4M QC Flow Chart

| Process no. | QC Flow | Process name | Work content | Mag. Frequency | 4M | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Man(사람) | Machine(장비) | Material(재료) | Method(방법) | |
| 1 | △ | Purchasing | Raw material purchase | Every P/O | Ping Lang | PC/ FAX/TEL | / | 1. Part/No、Part Name、Spec.、Q'ty、Delivery。<br>2. Suppliers' Magt.。 | Production mamagement procedure<br>BOM |
| 2 | ◯ | Warehouse | Receive material | Every accept datasheet | Jincheng Guo | Balance<br>Couter | / | 1. Check the material box's layer。<br>2. Check P/No.、Spec.、Part name、Q'ty、Validity-period。 | Incoming receiving procedure<br>Products protection procedure |
| 3 | ◇ | IQC | Incoming material inspection | MIL-STD-105E(II)<br>AQL=0.25 | David Zhang | Diode tester<br>LCR meter<br>Hi-pot equipment<br>solder oven | Raw material | 1. Check the Brand,P/N0, Spec.Q'ty,Validity-period,Lot No。<br>2. Check the appearance。 | Incoming inscpection procedure |
| 4 | ◯ | Eyelet | PCBA eyelet | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | Eyelet M/C | Eyelet | 1. Check the program of M/C<br>2. | 1.AI first article inspection records<br>2.Part date code check<br>(SEB3R24) |
| 5 | ◯ | Jump Wire | PCBA Jump wire insertion | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | Jump Wire M/C | Jump Wire | 1.Check the program of M/C<br>2.Check | 1.AI first article inspection records<br>2.Part date code check<br>(SEB3R24) |
| 6 | ◯ | Axial | Axial parts auto insertion | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | Axial M/C | Axial parts | 1.Check the program of M/C<br>2.Check | 1.AI first article inspection records<br>2.Part date code check<br>(SEB3R24) |
| 7 | ◯ | Radial | Radial parts auto insertion | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | Radial M/C<br>barcode scanner | Radial parts | 1.Check the program of M/C<br>2.Check | 1.AI first article inspection records<br>2.Part date code check(SEB3R24)<br>3.MES system |
| 8 | ◇ | QA inspection | Sampling check | transfer shift<br>change model<br>ECN<br>one time/2 hrs | Caselin Sun | magnifier LCR meter | / | 1. check parts<br>2. Checking the PCBA<br>3. Checking the Quality of SMD-process | 1. QA inspection form in SMT area (SEB1R34)<br>2. SMD capacitor measure in SMT area (SEP5R02)<br>3. Push-pull force data for SMT part (SEP5R01) |
| 9 | ◯ | Apply red glue | Apply red glue on pcb | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | Apply gule machine | red glue | 1. Progarm Editing<br>2. Checking the Progarm File<br>3. "Red-glue" store-condition: 5~10℃/6months。 | 1.Store temp. of Tin paste / red gule (SEB8R02)<br>2.Take out/off records of Tin paste and red gule (SDM5P04)<br>4. process check form in SMT area (SEB3R28) |
| 10 | ◯ | SMT mounting | SMD mounted on PCB | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | Yamaha Mounting machine | SMD parts | 1. Progarm Editing<br>2. Checking the Progarm File<br>3. Material's checking | 1.Part station in SMT area<br>2.Bom list |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 11 |  | Visual inspection | check parts | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | nipper magnifier | / | 1. “FAI”-checking &<br>"Sample"-checking<br>2. Check the Part (Missing;<br>inverse-insertion; damaged…) | 1.Inspection form in SMT area (SEB3R28)<br>2. QA first samples check in SMT area (SEB1R33) |
| 12 |  | Reflow | PCBA reflow | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | profile measure requipment reflow | / | Control the temperature of "Reflow"-M/C. | 1. Profile of reflow<br>2. Temp. control records of SMT (SEM9R04) |
| 13 |  | SMT inspection | check appearance | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | nipper magnifier<br>barcode scanner | / | 1. Checking the PCB with magnify<br>2. Checing the Quality of SMD-process | 1. Self-inspection in SMT area<br>( SEB1R36) |
| 14 |  | QA inspection | Sampling check | transfer shift<br>change model<br>ECN<br>one time/2 hrs | Caselin Sun | magnifier LCR meter Push-pull meter | / | 1. Every 2hrs, testing the capacity of "SMD-Capacitor"<br>2. Every 2hrs, testing the "bonding"-strength<br>3. Checking the PCB with magnify<br>4. Checking | 1. QA inspection form in SMT area (SEB1R34)<br>2. SMD capacitor measure in SMT area (SEP5R02)<br>3. Push-pull force data for SMT part (SEP5R01) |
| 15 |  | component prepare | processing material | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | processing jig | prepared material | Sample Checking | 1.Self-inspection<br>2.check datasheet for component prepare |
| 16 |  | M/I | Manual insert material | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | NG box<br>tray<br>fixture<br>barcode scanner | common parts | 1. Checking the brand、P/N0、Spec.、Name、Q'ty、Lot No。<br>2. Checking the quality of MI | 1.Self-inspection<br>2. Check form of part<br>date code<br>2. check form of PCBA in process |
| 17 |  |  <br>CTP<br>Double wave solder | soldering | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | DIP TEST equipment<br>auto wave-solder | solder bar flux | 1.Pre-heat: 350℃+/-20℃。<br>2.Soldering-M/C : 255℃~260℃<br>3.Flux : 0.8 | 1. Monthly maintain form of wave solder (SDR1R23)<br>2.Daily/weekly maintain form of wave solder (SDR1R22) |
| 18 |  | Touch up | manual soldering | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | IRon-soder | solder wire | Repair the "Poor-soldering" point (including cold-soldering, warp-soldering, solder-short) | 1.Self-inspection<br>2. Inspection form of PCBA in process (SEB3R19) |
| 19 |  | AOI inspection | automatic optical inspection | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | AOI M/C | / | 1. Checking the Test-program<br>2.Checking the quality of Soldering surface | 1. AOI daily test report (SEB3R27)<br>2.Inspection form of PCBA in process (SEB3R19) |
| 20 |  | PCBA inspection | check appearance | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | magnifier | / | 1. Materials' checking<br>2. Soldering-"Q" Checking<br>3. Checking the quality of Soldering surface | 1.Daily report of AI/INVERTER QC (SEB3R21)<br>2. Inspection form of PCBA in process (SEB3R19) |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 21 |  | ICT | ICT test | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | ICT test M/C | / | 1. Checking the Test-program<br>2. Checking the Part's Spec. | 1. ICT daily test report (SEB3R27)<br>2.Inspection form of PCBA in process (SEB3R19) |
| 22 |  | Initial test | first function test | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | DC load<br>AC power source<br>test jig FLUKE-45<br>barcode Scanner | / | 1.check test condition meet the SPEC<br>2.For ok products, scan and flow to the next station. If It is NG, stick NG label and put into NG box | 1. Check data form (SEB3R23)<br>2.equipment adjust (SDS S1R03) |
| 23 |  | apply glue | Apply RTV bond | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Yuxing Tang | apply glue M/C | RTV bond | 1. Check the P/N and Spec of sillicone<br>2.Check the glue quantity which locates on the right place<br>3. Check if there is miss of applying glue | 1.Self-inspection<br>2. Inspection form of products in process |
| 24 |  | PCBA sampling check | samping check appearance | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Caselin Sun | magnifier | / | 1. Material's checking<br>2. Checking the soldering-quality | 1.PCBA inspection form (SEB1R26)<br>2.PCBA rejection form (SEB1R30) |
| 25 |  |  <br>Aging | burn in | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Xian Xu | Power source<br>aging tools<br>aging load | / | 1.Aging Load:meet the SPEC。<br>2.aging time : 2hrs。 Temp : 45℃ +/-5℃。 | 1.records of AI/INVERTER aging(SDR9R19)<br>2.Aging input check form (SDR9D20) |
| 26 |  | Visual inspection | check appearance | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Xian Xu | magnifier | / | 1. Check if the part was damaged and the other fails<br>2. Check if there was miss of applying gule<br>3. Do marking on the good products and flow out<br>4. Stick the NG label on the NG product and put into the box, at the same time, record the related information | 1. Daily visual inspection form (SEB3R21)<br>2.Inspection form of PCBA in process(SEB3R19)<br>LIPS/INVERTER Final test records of finished products in process(SEB3R31) |
| 28 |  |  <br>HI-POT | safety test | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Xian Xu | HI-POT test M/C<br>barcode Scanner | / | 1.check HI-POT test condition meet the SPEC<br>2. .For ok products, scan and flow to the next station. If It is NG, stick NG label and put into NG box | 1. Inspection form (SEB3R23)<br>2. Equipment adjust before production (SDS1R03)<br>3.Inspection form of finished products (SEB3R19)<br>4.MES system |
| 29 |  |  <br>Final test<br>(ATE) | Final function test | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Xian Xu | ATE<br>barcode Scanner | / | 1.check ATE test condition meet the SPEC<br>2. For ok products, scan and flow to the next station. If It is NG, stick NG label and put into NG box | 1.Daily visual form(SEB3R21)<br>2. Inspection form of PCBA in process (SEB3R19)<br>3. Adjust equipment before production(SDS1R03)<br>4.MES system |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 30 |  | SET | test SET | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Xian Xu | SET /Panel jig | / | 1. Check the model of lamp or panel<br>2. Check if the lamp or PANEL brightness is the same, and shift B/L to check the brightness | electrical check form(SEB3R23) |
| 31 |  | 100% inspection | check appearance | 100%<br>transfer shift<br>change model<br>ECN<br>one time/2 hrs | Xian Xu | barcode Scanner | / | 1.Carefully check the solder status, for example: empty solder、wrap solder、cold solder、PCB<br>2. Check the PIN is damaged in connector | 1. Visual daily form(SEB3R21)<br>2. LIPS/INVERTER inspection form(SEB3R31)<br>3.MES system |
| 32 |  | Package | pack PCBA into box | 100%<br>transfer shift<br>change model<br>one time/2 hrs | Xian Xu | Tape M/C<br>Pen | box<br>bubble sheet | 1. Check the P/N、Model name、date、label、carton<br>2. Put the products in the right place and stick label | 1.Records of products traking s/n (SEB3R22)<br>2. Records of tracing the Inverter S/N<br>Inspection finished products form (SEB3R19) |
| 33 |  | OQC | Sampling finished products | MIL-STD-105E(II)<br>AQL=0.25 | Caselin Sun | DC load<br>AC/DC SOURCE<br>FLUKE-45<br>barcode Scanner | / | 1. Check the part, soldering status, part damage, and so on<br>2. Measure the dimension of the product<br>3. Test the electrical parameter<br>4. Stick the NG label on the NG product and put into the NG box, at the same open the reject note<br>5. NG product must be re | 1.Finished products inspection procedure 2.Adjust equipment before production (SDS1R03)<br>3.outgoing inspection data of finished pr |
| 34 |  | Warehouse | Store product | Every store datasheet | Jincheng Guo | Trailler<br>barcode Scanner | / | 1. Check P/N, Model, Quanitity<br>2. Check the heigh of stock and carton<br>3. cHeck the QA pass seal | 1.Finished product store procedure 2.Store datasheet<br>3.MES system |



# # Appendix List

| No. | Contents | Total Page number |
|---|---|---|
| 1 | Power Check list | 11 Page |
| 2 | Warranty letter | 3 page |

# # Appendix 1.

# POWER CHECK LIST

| | Revision History | Rev | DATE | REMARK |
|---|---|---|---|---|
| 1 | Format changed PCB Check Sheet Ver1.9 to<br>Power Check Sheet Ver1.0 | 1.0 | 2011.06.02 | |
| 2 | 1. Essentiality Marking items – Add No. 14<br>Input Standard Mark for 2 pin in Bare PCB<br>2. Compoment –Add No. 13<br>If you use choke coil lying,<br>You can use after appoint test item for poor prevention. | 1.1 | 2012.05.23 | |
| 3 | PCB Pattern Space – Add No. 9<br>Add 8.5mm (thickness of GND Pattern) or<br>Insert of Jump Wire For use Together (IT and TV) | 1.2 | 2012.10.30 | |

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ **Components LOCATION NO.** | | **OK** | **NG** | |
| 1 | Power Primary section circuit Location No. : 100 series (Including Multi primary) | OK | | |
| 2 | Power Secondary section circuit Location No. : 200 series (Including Stand by & Multi Secondary) | OK | | |
| 3 | Inverter Primary section circuit Location No. : 300 series | - | | |
| 4 | Inverter Secondary section (Including F/B,OVP circuit) circuit Location No. : 400 series | - | | |
| 5 | Stand by Primary section circuit Location No. : 500 series | OK | | |
| 6 | PFC section circuit Location No. : 600 series | OK | | |
| 7 | MICOM section circuit Location No. : 700 series | - | | |
| 8 | LCD : LED Driver section circuit Location No. : 800 series | OK | | This content only applies to LCD |
| 9 | PDP : Stand by Primary and Secondary section circuit Location No. : 300 series | - | | This content only applies to PDP |
| 10 | PDP : Va Secondary section circuit Location No. : 500 series | - | | This content only applies to PDP |
| 11 | PDP : Vs Secondary section circuit Location No. : 900 series | - | | This content only applies to PDP |
| 12 | PDP : Vs,Va Primary section circuit Location No. : 800 series | - | | This content only applies to PDP |
| 13 | CTV : Power Block section circuit Location No. : 800 series | - | | This content only applies to CTV |

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ Components LOCATION NO. | | OK | NG | |
| 14 | Resistor circuit Location No.<br>: From beginning to R***. | OK | | |
| 15 | Capacitor circuit Location No.<br>: From beginning to C***. | OK | | |
| 16 | Diode circuit Location No.<br>: From beginning to D***. | OK | | |
| 17 | Zener Diode circuit Location No.<br>: From beginning to ZD***. | OK | | |
| 18 | Coil circuit Location No.<br>: From beginning to L***.(Including PFC section) | OK | | |
| 19 | Transformer circuit Location No.<br>: From beginning to T***.(Including Drive Trans) | OK | | |
| 20 | Bead circuit Location No.<br>: From beginning to LB***. | OK | | |
| 21 | Fuse circuit Location No.<br>: From beginning to F***. | OK | | |
| 22 | TR/FET/Thyristor circuit Location No.<br>: From beginning to Q***. | OK | | |
| 23 | Varistor circuit Location No.<br>: From beginning to VA***. | OK | | |
| 24 | Volume Resistor circuit Location No.<br>: From beginning to VR***. | - | | Variable Resistance |
| 25 | Jumper circuit Location No.<br>: From beginning to J***. | OK | | |
| 26 | H/S circuit Location No.<br>: From beginning to HS***. | OK | | |
| 27 | IC circuit Location No.<br>: From beginning to IC***. | OK | | 2007.04.16 DDC Standard |
| 28 | Connector wafer / Ass`y(Board in type) circuit Location No.: From beginning to P***. | OK | | |
| 29 | Eyelet circuit Location No.<br>: From beginning to EL***. | OK | | |
| 30 | Gripper circuit Location No.<br>: From beginning to G***. | - | | |
| 31 | Holder circuit Location No.<br>: From beginning to HD***. | - | | |
| 32 | Thermistor circuit Location No.<br>: From beginning to TH***. | OK | | |

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ Components LOCATION NO. | | OK | NG | |
| 33 | Metal Ground circuit Location No.<br>: From beginning to PG***. | OK | | |
| 34 | Line Filter circuit Location No.<br>: From beginning to L***. | OK | | |
| 35 | AC Socket(Inlet) circuit Location No.<br>: From beginning to SK***. (Including AC Power supply wafer for Docking) | OK | | 2007.04.16 DDC Standard |
| 36 | Photo Coupler circuit Location No.<br>: From beginning to IC***. | OK | | 2007.04.16 DDC Standard |
| 37 | Relay circuit Location No. : From beginning to RL***. | - | | |
| 38 | Y-Capacitor circuit Location No.<br>: From beginning to CY***. | OK | | |
| 39 | X-Capacitor circuit Location No.<br>: From beginning to CX***. | OK | | |
| 40 | Fuseble Resistor Location No.<br>: From beginning to R***. | – | | |
| ▶ PCB Pattern Space ( Keep a Safety distance) | | OK | NG | |
| 1 | Primary ⇔ Secondary(GND,Y-Cap,Photo Coupler)<br>: A space(Gap) of at least 6.5mm.<br>( But, Working Voltage is more than 350V,<br>Comply with the space of the safety request.) | OK | | Refer to the Attached File<br>NOTE 0  <br>Creepage |
| 2 | Primary(L,N) ⇔ Safety GND<br>: A space of at least 3mm.<br>(But, In the case of Two Pin, A space of at least 6mm) | OK | | |
| 3 | Live ⇔ Neutral : A space of at least 3mm. | OK | | |
| 4 | Primary⇔Secondary components (Clearance)<br>: A space of at least 6mm.<br>(if space is below 6mm, it must add insulation sheet) | OK | | |
| 5 | (Power Primary section) Main Current loop is made more than 3mm on Pattern thickness(width).<br>(B/Diode ↔ Primary Main cap : Very important ) | OK | | |
| 6 | Don't pass small signal line under PFC Coil.<br>DC is no problem. | OK | | |
| 7 | When It Connects Main GND (AC smooth Capacitor Cap. GND) to IC GND, separate pattern after consideration for pattern impedance. | OK | | |
| 8 | In the case of Stand by IC of the Dip type,<br>secure safety distance between pin of the high voltage and pin of the low voltage.<br>(Only, use N.A or Bare Pin near Drain pin) | - | | |

| | Details Check Item | RESULT | | REMARK |
|---|---|---|---|---|
| | ▶ PCB Pattern Space ( Keep a Safety distance) | OK | NG | |
| 9 | Satisfy Continuity TEST of the grounding about FG GND (40A / 2Minute)<br>➔ Add 8.5mm (thickness of GND Pattern) or<br>Insert of Jump Wire For use Together (IT and TV)<br>(But, If EMI Issue occur, we don't apply.) | OK | | |

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ **Component** | | **OK** | **NG** | |
| 1 | When surge test, Between Primary and Secondary space have to gap of at least 6mm.<br>{ Distinguish between safety GND and secondary GND (Use Y-cap with insulation) , need Space, need Insulation Sheet } | OK | | ※<br>3 Pin : A space of at least 3mm<br>2 Pin : A space of at least 6mm |
| 2 | Beside Primary smooth cap. component is separated a heating component over 3mm. ( clearance) | OK | | |
| 3 | Primary smooth cap. component is separate as below<br>- Upper area : over 1mm<br>- Bottom area : over 5mm<br>( Only, Vertical type Capacitor) (Note 1) | OK | | |
| 4 | Don't pass the pattern under 3mm area on primary smooth cap. ( Only top side pattern of Epoxy) | OK | | |
| 5 | If use short-height core, you must use insulation tape. ( To add the space distance with PCB) | OK | | This content only applies to Insulation Trans of first, secondary |
| 6 | In case of trans, use Barrier of at least 7mm(6.4 + 3.2) by 300V (Standard).<br>(Wire's Tube can be use for reduce Barrier tape height)<br>Safety Gr. is sure to check the item. (Note 0) | OK | | |
| 7 | In case of AC Inlet, Screw of Yellow-Green wire is use more than 3.5Φ.<br>* if it don't use Y/G wire.<br>When only PCB pattern use, it must have pass the 200A test.<br>* Safety GND is role of independence GND.<br>UL Test Request<br>If it use only Pattern, Safety is certainly check. | OK | | |
| 8 | The component is pushed by force, The Clearance is need to at least 6mm between Primary and Secondary components.<br>Don't touch the core by another parts. | OK | | |
| 9 | When use Box type Capacitor, apply to Forming type with RTV Bond. (Including X-capacitor)<br>(Only Sony PDP Model) | - | | |

NOTE 0 
Creepage

NOTE 1 
CAPACITOR

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ **Component** | | **OK** | **NG** | |
| 10 | All of parts should be separated more than 2mm around CORE (Including all Trans type).<br>•In case of Inducted Voltage 1kV (peak to peak) should be separated more than 4mm.<br>(based on 1000:1 Probe) | OK | | |
| 11 | Between Inverter Trans and Metal Frame(shield) is separated more than 4mm.<br>( if it is difficult, surely add Insulation sheet) | - | | |
| 12 | Output wafer of the secondary use add type of a fixed pin.<br>(But, except for the wafer of LPB using for Micom Debugging) | OK | | |
| 13 | If you use choke coil lying,<br>You can use after appoint test item for poor prevention (Note 2) | OK | | |

NOTE 2

Choke coil

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ **Essentiality Marking items** | | **OK** | **NG** | |
| 1 | AC Socket, AC inlet Wafer must be marked "L"/"N". Also docking Type is marked.(QA Request),<br>: Top & Bottom side (Note 3-2) | OK | | ※ Fuse is located on Live |
| 2 | When Safety GND is separated from Chassis, Worker should be located by confirmation. (Note 2)<br>• PCB top & bottom side is all marking,<br>Please Check the attached file in detail Content.<br>And, Certainly receive the final confirm by safety Gr. | OK | | ※ But, except for 2 pin |
| 3 | Fuse rating(Voltage,T, Current,H), caution(Safety title), UL Mark should be input.<br>Ex) T5A H 250V<br>* Caution: Don't change the words based on UL's sentence.<br>(For ~ , Replace ~ ) | OK | | |
| 4 | Fuse must locate very ease finding scope.<br>(Fuse Marking is the same) | OK | | |
| 5 | High Voltage warning mark have to be input.<br>- Inverter Output : Only LIPS.<br>- Primary section Metal.(H/Sink), High Voltage opened location. (Fuse) : All Model | OK | | |
| 6 | To mark the Input/Output Voltage &, Current Spec. (Note 3) | OK | | |
| 7 | Classify Primary and Secondary section have to be marked for separation of Area.<br>(Top side/Bottom side)<br>- Power side Primary & Secondary<br>- to mark the Only the Inverter output. | OK | | |
| 8 | Each component circuit No. have to be shown | OK | | |
| 9 | Don't overlap the Bottom circuit No. in solder pattern/ Components shape etc. | OK | | |
| 10 | Draw PCB marking, Considering Dead Space of Tool structure.<br>Add Metal area mark for PCB fixing. | OK | | |
| 11 | Check CTI spec in PCB specification<br>Check Marking in Bare PCB<br>- Marking : CTI 600 (More than 600V) | OK | | |
| 12 | Input Caution Mark in a Circuit diagram<br>(CCL standards)  | OK | | |
| 13 | Input Screw Mark in Bare PCB  | OK | | |
| 14 | Input Standard Mark for 2 pin in Bare PCB  | - | | ※ Only, apply to 2 pin |

NOTE 2 
Safety GND 규정

NOTE 3 
Input/Output

NOTE 3-2 
B/D-in socket

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ **EMI** | | **OK** | **NG** | |
| 1 | When Lightning Surge is L/N Test, Varistor must use more than 14Φ 620V. | OK | | |
| 2 | Lightning Surge to L/G & G/N : 3KV over Y-Cap. (Use Y1 Class) | OK | | |
| 3 | In case of lightning surge, only Fuse Dead is OK, only. (Countermeasure : Protect to arcing. Varistor is closely located Fuse.) | OK | | |
| 4 | GND Arcing pattern Slit size is 1.2mm. Both ends distance of the Arcing Pattern is 3.0mm by safety role. (Between L and N) | OK | | |
| 5 | Conducted Emission Test Condition : 110Vac/220Vac & 50Hz/60Hz TV Model : GND Connect / No connect VIVID/STANDARD, HDMI/ANTENNA | OK | | |
| ▶ **INVERTER (only LIPS)** | | **OK** | **NG** | |
| 1 | Do use Ballaster capacitor. | | | |
| 2 | When small signal AC pattern pass around to 4mm from Inverter Trans, it is no problem after confirmed OVP/OLP and etc Worst condition. ( Including Feed Back Line) [ For the reduce of inverter noise from AC Input, Power FET's Heat sink's form can change for using shield between AC input and Inverter Trans. (CE restriction item) – Consider design] | - | | |
| 3 | The Lead of high voltage ceramic CAP applied at inverter output part must keep insulation distance or be applied RTV bonding, even though the article force is applied. | - | | |
| 4 | Check size around Gripper or Eyelet of Inverter Trans. -Size of the copper around Gripper or Eyelet : More than 5.5mm -Pattern Size around Gripper or Eyelet : More than 6mm (But, only apply LIPS of more than 32Inch) | - | | |
| 5 | Inverter wafer use horizontality type. | - | | |

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ ETC | | OK | NG | |
| 1 | Don't use CAN Type Fuse. | OK | | |
| 2 | Housing`s Maker of Connector what Main Board /Power Board (LIPS) have to be same with Wafer Maker.<br>If they are differ, You have to check the spec./Drawing or request the component test to IQC(in case Board in type connector, Also Terminal type must be checked | OK | | |
| 3 | Don't use Litz Wire. | OK | | USTC |
| 4 | Apply to PFC Bypass Diode. (Note 4) | - | | See attached file(Bypass) |
| 5 | When use Relay, apply to Fusing Resistor. (Note 5)<br>(But, when Fusing Resister don't apply,<br>Check Relay Open Test – Check PL Condition) | - | | See attached file(Relay) |
| 6 | Use of High Ripple & Low Impedance type's rectification CAP at primary control IC VCC. | OK | | |
| 7 | Don't use RN Type (Metal Film Type) Resistor over 100kohm. | OK | | In June 26th 08, We have had problem about this at MP for LGEND. |
| 8 | When apply TO-220, TO-3P type FET, Diode, IC,<br>Lead length is shorted because of cutting after forming.<br>So, Lead length and pitch must have checked by Heat-sink, Approval sheet on PDM, Actual Component.<br>(Take conference previously with LGEAZ, LGEND about this issue, LGEND wants forming type in all TO-220, TO-3P type's components) | OK | | In March 08 for LGEAZ CKD PQ event , We have history responded to the emergency issues |
| 9 | Check the Lead length of PCB bottom side, when use H/sink, wafer and other component at special type model which manages Lead length. | OK | | |
| 10 | In this case, Component in Critical Component List.<br>Check Marking on component. | OK | | |
| 11 | If discharge resistance is used model sold to the Japanese market,<br>Use Resister of the Dip Type certified standard.<br>(Only, Use model sold to the Japanese market) | OK | | |

NOTE 4  Bypass-Diode

NOTE 5  Relay

| Details Check Item | | RESULT | | REMARK |
|---|---|---|---|---|
| ▶ Attachment | | OK | NG | |
| 1 | PL check List  PL Safety Check List Ver3.7 | OK | | |
| | | | | |
| | | | | |
| | | | | |

# # Appendix 2

## Warranty letter

# Non-use certificate

| Description | For approval / For mass production | Submitting date | 2012 . 07 . 31 |
|---|---|---|---|

| **Cooperating suppliers** | | | | |
|---|---|---|---|---|
| Company name | Lien Chang Electronic | Approval | Person in charge | Head of department |
| Contact | Tel: (886-2) 22035100 | Name | Alan Wang | Sales Dept. |
| e-Mail | alanwang@lienchang.com.tw | Signature |  |  |

| | | | |
|---|---|---|---|
| LGE Part No. | EAY62810901 | Part production date | filling the sheet in case of mass production |
| Maker Part No. | OPVP-0182 | Production plant | filling the sheet in case of mass production |
| Part name | LGP4247-13LPB | | |

**This is to certify that materials used and contained in the products and components that we supply to your company, meet the standards of the checked items listed below.**

**———— below ————**

☑ We meet the standards of LG Electronics for six major substances (Pb, Cd, $Cr^{6+}$, Hg, PBBs, PBDEs) as designated by RoHS for control.

* Records are requested if they are parts to be actually installed on the PCB (Printed Circuit Board)

Soldering Type: ☑ Flow ☐ Reflow (Requirement : 250℃ /10 sec)

1. Maximum heat-resisting temperature : 260 ℃
2. Time within actual Peak time : 10 sec.

☑ Pb-Free Soldering (all solder cream, Bar, Wires included) is available to apply.

**Note.**

1. All the contents written on these documents must be created on the basis of facts, and cooperating suppliers must submit the data immediately whenever LG Electronics requests.

2. In the case that these documents are used for approval purposes, cooperating suppliers must submit the sample on the request. For the purpose of mass production, it must be submitted at the time of delivering the first product.

LG Electronics

# Control list of environment-related substances

| Description | Substances | Contained | | Remark |
|---|---|---|---|---|
| | | YES | NO | |
| Level A-Ⅰ | Lead(Pb) and its compounds | | ✓ | |
| | Cadmium(Cd) and its compounds | | ✓ | |
| | Mercury(Hg) and its compounds | | ✓ | |
| | Hexavalent chromium and its compounds | | ✓ | |
| | Polybrominated biphenyls(PBB) | | ✓ | |
| | Polybrominated diphenylethers(PBDE) | | ✓ | |
| Level A-Ⅱ | Polychlorinated biphenyls (PCB) | | ✓ | |
| | Polychlorinated naphthalenes (PCN) | | ✓ | |
| | Polychlorinated terphenyls (PCT) | | ✓ | |
| | Short-chain Chlorinated paraffins (SCCP) | | ✓ | |
| | Asbestos and its compounds | | ✓ | |
| | Ozone Depleting Substances | | ✓ | |
| | Azo compounds | | ✓ | |
| | Nickel(Ni) and its compounds | | ✓ | |
| | Specific Organic tin compounds | | ✓ | |
| | Arsenic(As) and its compounds | | ✓ | |
| | Formaldehydes | | ✓ | |
| Level B | Polyvinyl chloride (PVC) | | ✓ | |
| | Phthalates | | ✓ | |
| | Beryllium(Be) and its compounds | | ✓ | |
| | Antimony(Sb) and its compounds | | ✓ | |
| | Selenium(Se) and its compounds | | ✓ | |
| | Palladium amd its compounds | | ✓ | |
| | Bismuth and its compounds | | ✓ | |
| | Other Chlorinated flame retardants | | ✓ | |
| | Other brominated flame retardants | | ✓ | |