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SPECIFICATION FOR APPROVAL

• **CUSTOMER** : LG Electronics inc.

• **ITEM** : Power Supply Unit.

• **P/NO**

Model Name	Customer	Supplier
LGP42P-12LPB	EAY62713701	OPVP-0172

• **DATE** : 2012.12.11

• **Revision** : REV 2.3

• **Remark** : MP (PCB REV 1.0)

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)

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Documentation For Approval

Model Name	Customer	Supplier
LGP42P-12LPB	EAY62713701	OPVP-0172

Written	Checked	Approved
Miki Lung	Dorn Huang	CT.Chen



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Revision History

Rev No.	Contents	Date of Approval	Checked	Remark
1.0	<p>Apply to MP (PCB REV 1.0) PCB P/No : EAX64770201(1.8)</p> <p>1.MP - Add UL Mark</p>	12.06.11	Dorn	
2.0	<p>P801 Material of the Header : PA66 (A60G1V25) change to LCP (RX323), Color : Natural change to white</p>	12.08.11	Dorn	
2.1	SENSITRON MUR460 delete	12.10.19	Dorn	
2.2	<p>Clover trans flux change : -.Flux(KOKI SANEI) -> Flux(Alpha metal or SOLUX) -.Trans dry time : 2hrs -.Power aging time : 2hrs RTV glue working method change : -.D251 RTV glue delete -.C110 ~ C112 RTV glue quantity decrease 3.234g -> 1.538g</p>	12.11.09	Dorn	
2.2	After exhausting 22,000pcs finished goods stock, will delete Suscon Cap (C262, SG 100uF 35V M P5 Φ6.3*11).	12.11.14	Dorn	
2.3	<p>Apply to MP (PCB REV 1.0) PCB P/No : EAX64770201(1.8)</p> <p>1. Delete CHIP-RESISTOR vender is "Samsung" Dead Line : 2013.1.1</p>	12.12.11	Dorn	



CTQ Management

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2	2.2 Power Output Characteristics	8
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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 inch LGE LED TV.

1.2 Customers product related items

Product : Power Supply Unit
Part code : EAY62713701

1.3 Product name

Product name : **LGP42P-12LPB**
Revision code : 2.3

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 1.8Arms . (at 100Vac & Nominal Load) Under 0.9Arms . (at 240Vac & Nominal Load)
Nominal Frequency	50 / 60 Hz
Frequency Variation Range	47 Hz to 63 Hz
Phase	Single
Leakage Current	0.7mA_peak. (100Vac ~ 240Vac)
Surge Immunity	± 4kV / 1000ns / 0° to 360°
Hold-up Time	More than 20ms at 100Vac and maximum output load
Lightning Surge	2kA Normal, Common Mode
Inrush Current	80A zero-peak max at cold start and any specified line, load, temperature conditions.

2.1.1 Power Factor

over than 0.40 at 90 – 264Vac & max load condition



2.2 Power Output Characteristics

Output	Voltage Variable range [V]	Rated Current (Min, Max) [Amean]	Voltage Regulation [V]	Ripple Voltage [mVp_p]
3.5V (STBY)	3.3V ~ 3.7V	0.3W Under(15mA)	-	-
		1.3 (0.1~1.3)(ON condition)	± 5%	250 mVp_p
12V	11.4V ~ 12.6V	0.6 (0.1~0.6)	± 5%	350 mVp_p
24	21.6V ~ 27.0V	0.8 (0.1 ~ 0.8)	± 10%	500 mVp_p
LED B+	170.5~203.5	0.260 *1CH (0.247~0.273)	-	-

* 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.

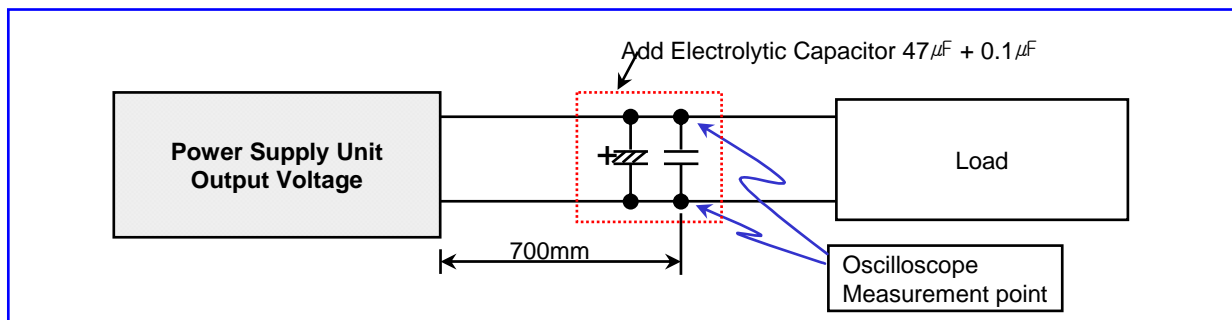
Do not turn "Power_ON" Signal on at the load condition of 3.5V output, more than 40mA.

* 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°C to 40°C (60°C :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 %
MTBF (Mean Time Between Failure)	50,000 hour
Cooling Condition	Natural Air
Shock	98 m/s ² Shock test consists of pivoting the power supply, from one edge of it's bottom side, on a flat surface (such as wood having thickness of 10mm or more) and allowing the opposite edge to fall from a height of 50mm to this surface. 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 Strength Voltage	AC 3KV or DC 4240V 1 Min 10 mA (Test Spec) AC 3.6KV 1 Sec 10 mA (PSU Mass Production) Between Primary and All Secondary Circuits.
Insulation Resistance	Insulation resistance shall be more than 8M ohm (at DC 500V) 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°C (±5°C), Normal input voltage.
AC on/off must be test 1 time after burn-in.
80% Load (except LED String current : 260mA) of specification.



2.6 Interface

Appellation	Explanation	Signal Direction	Action
POWER ON	Vcc Circuit ON/OFF	Input	High : Vcc ON Low : Vcc OFF

2.7 Product Safety



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

2.8 Construction

Weight	Less than 400g
Unit Size	155(W) X 196(D) X 25.9 (H)

2.9 Function of protection

Protection	Output Circuit	Trip point		Notes
		Min	Max	
Over Current	STBY 3.5V	6A	18A	Auto Re-start
	12V	1.5A	3A	Auto Re-start
	24V	1.2A	3.5A	Auto Re-start
Short Circuit	STBY 3.5V	-	-	Auto Re-start
	12V	-	-	Auto Re-start
	24V	-	-	Auto Re-start

- * 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

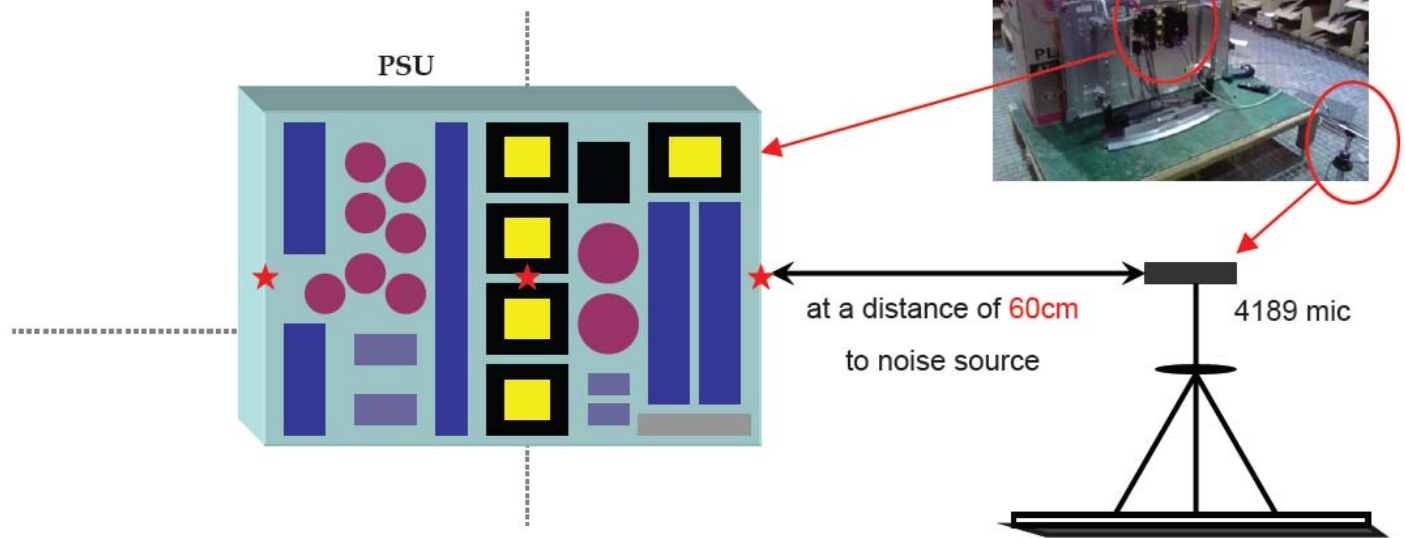
Measure Condition : At a distance of 60cm mic

Full white pattern, at AC 110V/220V

The max specification

(measure 3 points, at PSU center and left & right on the side)

PSU NOISE MEASURE POINT





2.11 Connector Specification

2.11.1 Connectors Usage

SK101 (DAC-18D3A) (Black angle Type)

SK101	
Pin No.	Signal
1	LIVE
2	NEUTRAL

P801 (1502-65502)

P801	
Pin No.	Signal
1	LED-
2	LED+

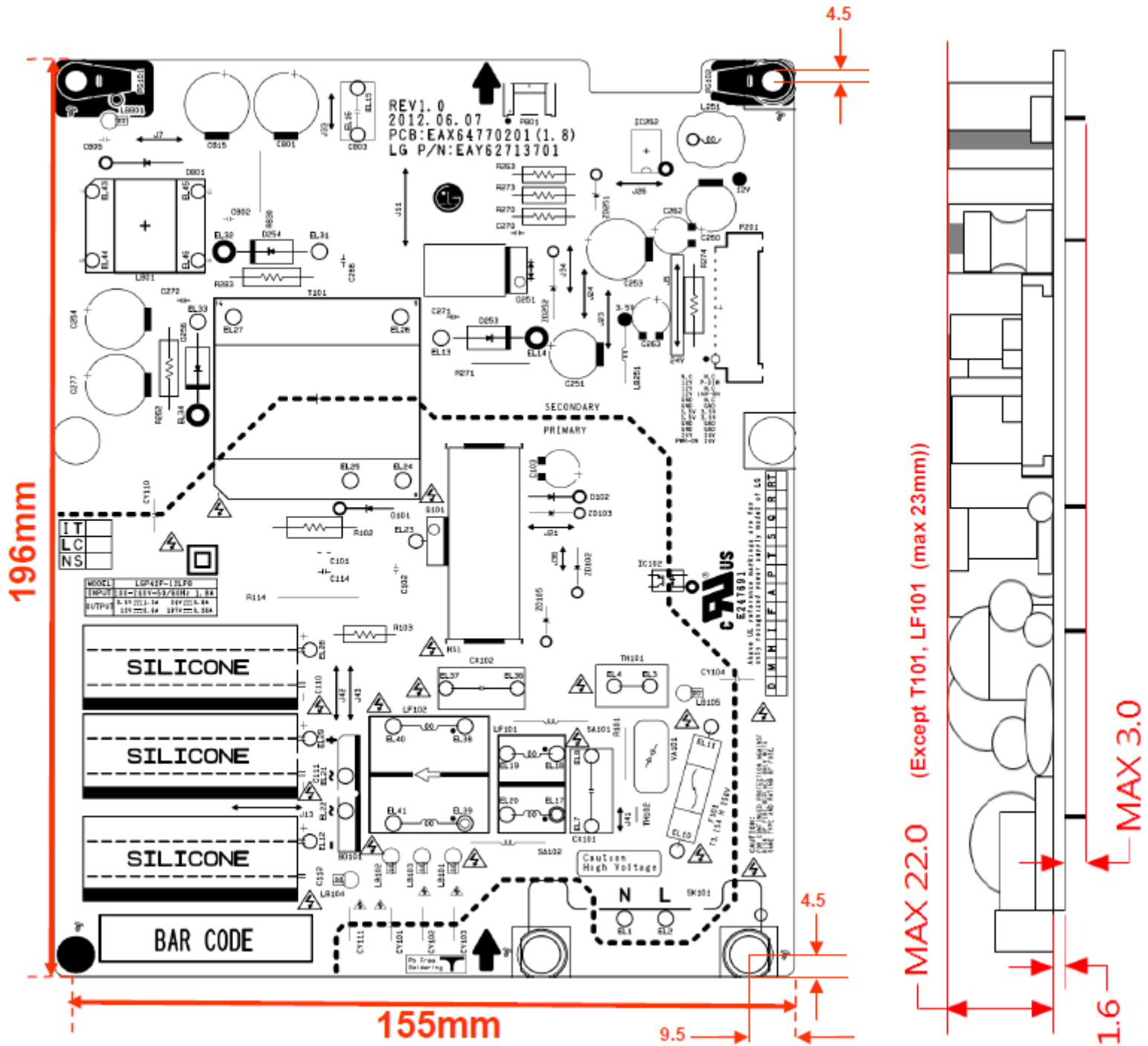
P201 (SMAW200-H24S2)

P201			
Pin No.	Signal	Pin No.	Signal
1	PWR-ON	2	24V
3	24V	4	24V
5	GND	6	GND
7	GND	8	GND
9	3.5V	10	3.5V
11	3.5V	12	3.5V
13	GND	14	GND
15	GND	16	N.C
17	12V	18	INV-ON
19	12V	20	N.C
21	12V	22	P-DIM
23	N.C	24	N.C



2.12 PCB Dimension.

- 1) Power board PCB : 196mm × 155mm × 1.6(T)mm
- 2) Component height : Max 22.0mm (Except T101, LF101(max 23mm))
- 3) Lead Cutting : Max 3.0mm
- 4) PCB Material : FR-1 KB,DS,L,R-8700 CTI-600

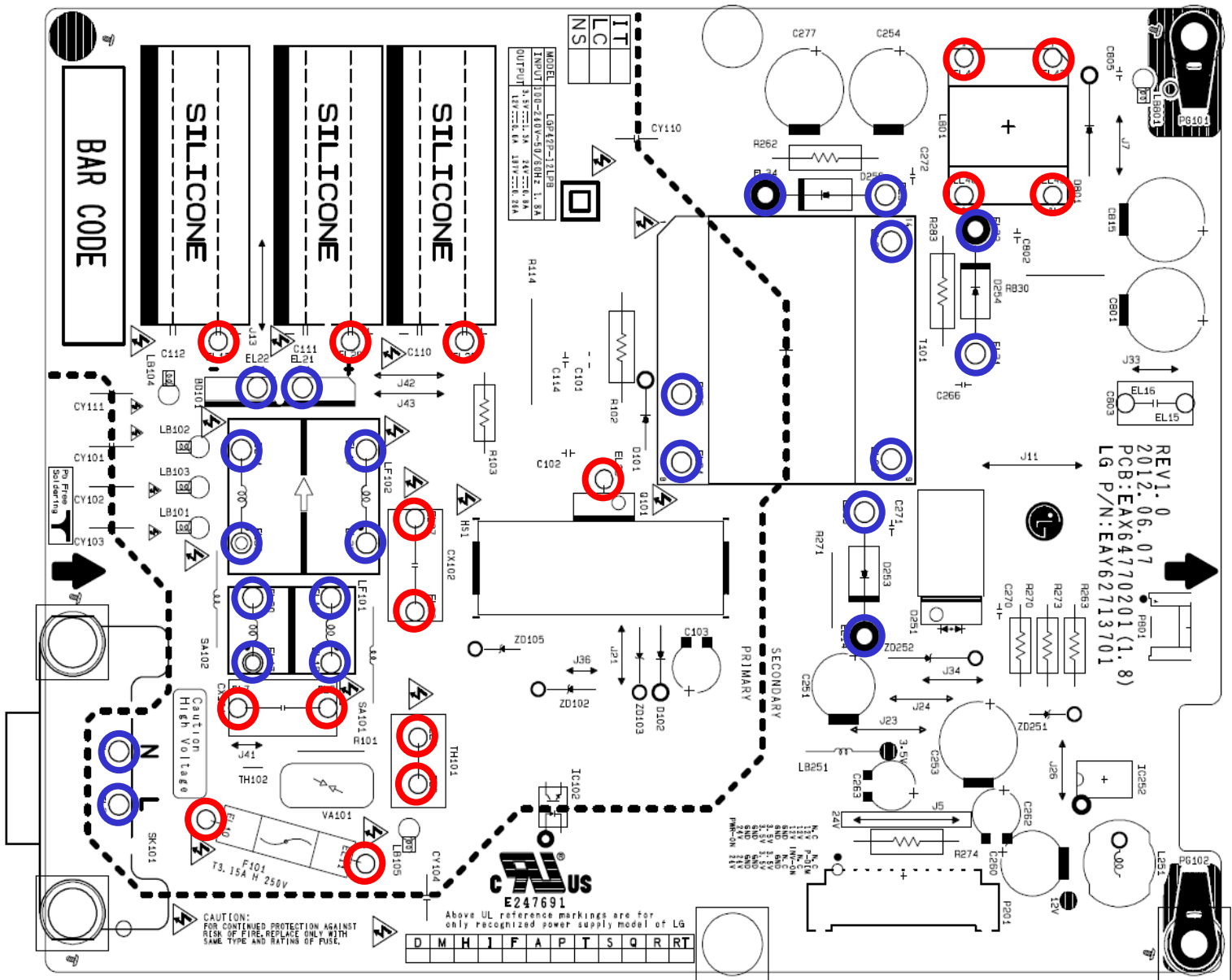




2.13 Apply to the Eyelet point 1.6/2.0 (LGP42P-12LPB)

Apply to the Eyelet point 2.0Φ : EL1,EL2,EL13,EL14,EL17,EL18,EL19,EL20,EL21,EL22,EL24,EL25,EL26,EL27,EL31,EL32
EL33,EL34,EL38,EL39,EL40,EL41(22EA)

Apply to the small Eyelet point 1.6Φ : EL3,EL4,EL7,EL8,EL10,EL11,EL12,EL23,EL28,EL29,EL36,EL37,EL43,
EL44,EL45,EL46(16EA)





2.14 Electrical Characteristics

No.	Test Item	Test method																		
1	Intermittent Operation stability Test	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.																		
2	Low temperature operation	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.																		
3	Low temperature Storage test Leave At low temperature	The switching regulator is left at minimum storage Temperature for 96 hours or more. Then the switching regulator is left at a room temperature and humidity for 1 hour or more, after that electrical characteristics shall be satisfied.																		
4	Heat cycle storage test	<p>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. After that, electrical characteristics shall be satisfied.</p> <table border="1"> <thead> <tr> <th>Time</th> <th>Temperature</th> </tr> </thead> <tbody> <tr> <td>30 minutes</td> <td>25°C</td> </tr> <tr> <td>30 minutes</td> <td>25°C -> -20°C</td> </tr> <tr> <td>60 minutes</td> <td>Minimum storage temperature (-20°C)</td> </tr> <tr> <td>30 minutes</td> <td>-20°C -> 25°C</td> </tr> <tr> <td>30 minutes</td> <td>25°C</td> </tr> <tr> <td>30 minutes</td> <td>25°C -> 70°C</td> </tr> <tr> <td>60 minutes</td> <td>Maximum storage temperature (70°C)</td> </tr> <tr> <td>30 minutes</td> <td>70°C -> 25°C</td> </tr> </tbody> </table>	Time	Temperature	30 minutes	25°C	30 minutes	25°C -> -20°C	60 minutes	Minimum storage temperature (-20°C)	30 minutes	-20°C -> 25°C	30 minutes	25°C	30 minutes	25°C -> 70°C	60 minutes	Maximum storage temperature (70°C)	30 minutes	70°C -> 25°C
Time	Temperature																			
30 minutes	25°C																			
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60 minutes	Minimum storage temperature (-20°C)																			
30 minutes	-20°C -> 25°C																			
30 minutes	25°C																			
30 minutes	25°C -> 70°C																			
60 minutes	Maximum storage temperature (70°C)																			
30 minutes	70°C -> 25°C																			
5	Heat shock test	<p>Heat shock test performed under following conditions without applying electricity and then leave them at room temperature and humidity for 1 hour or more. After that, electrical characteristics shall be satisfied.</p> <p>Condition : -45°C (30minutes), 120°C (30minutes), Switching time : Less than 5 minutes, 200 cycles.</p>																		

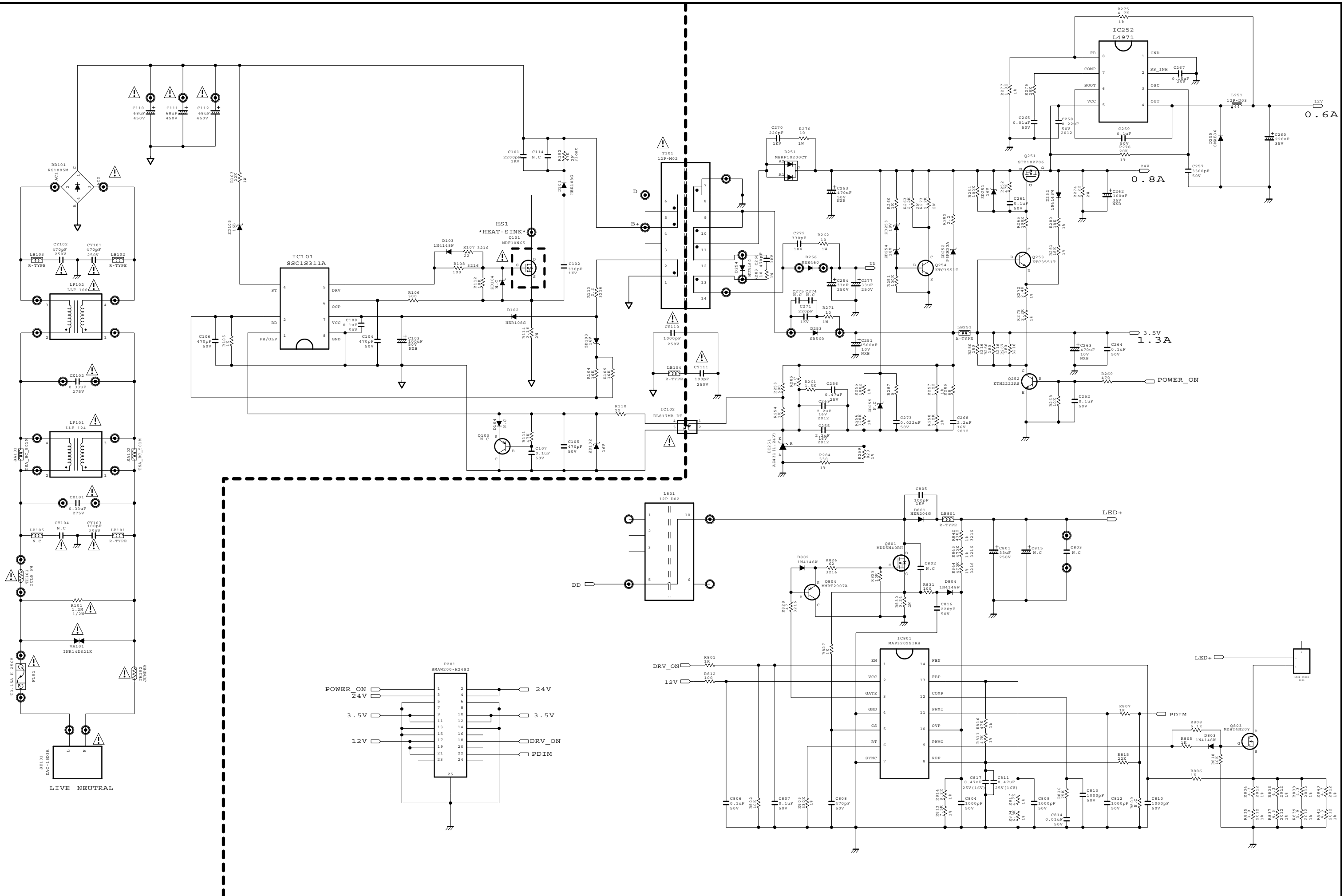


2.15 Mechanical Characteristics

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. There shall be no excessive unevenness or scratches on the plated or painted surface.
2	Vibration	While applying electricity : Vibration frequency : 5 ~ 100Hz Acceleration : 4.9 m/s ² Vibration in X,Y,Z direction for 30 minutes While applying electricity : Vibration frequency : 5 ~ 100Hz Acceleration : 14.7 m/s ² Vibration in X,Y,Z direction for 30 minutes After that electrical characteristics shall be satisfied. There shall be no damage to appearance and construction.
3	Shock	Shock : 98 m/s ² On the oak more than 10mm thickness with the flat face, raise the one side for 50mm, and it carries out each side free fall for three sides. There shall be no damage to appearance and construction.



Schematic Diagram



THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILTR AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.

SECRET
LGElectronics

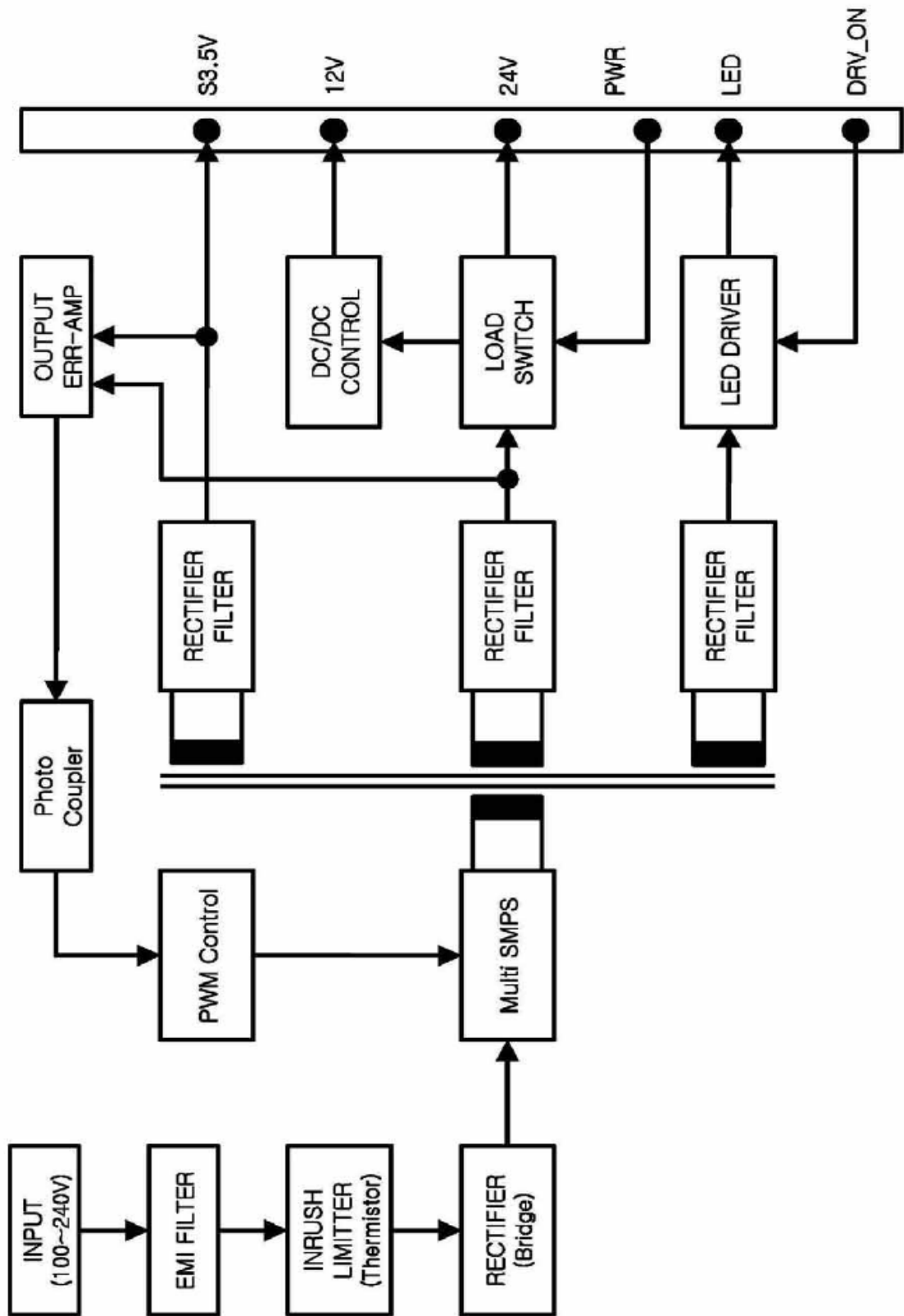


MODEL	LGP42P-12LPB	DATE	'12.06.07
BLOCK	MULTI/LED DRIVE	SHEET	1 / 1

REV 1.0



Block Diagram





Parts List



No	Level	Q'ty	Unit	Location	Specification	Description	Maker
1	MI	1	EA	HS1	MULTI FET ASS'Y	HEAT SINK ASS'Y	
2	MI	1	EA	HS1	LGP42-12LPB HS1 (41 X 15 X 18.3)	HEAT SINK	CHENG CHIA MINGXUE YAOFENG BAOCHENG INNO D&C YUWON NRT HUAGUANG HUAPENG GUOTAI Ohsung Pampas
3	MI	1	EA	Q101	PFF10N65B 650V 10A TO-220FP MDF10N65B 650V 10A TO-220FP	FET	POWER DEVICE MAGNACHIP
4	MI	1	EA	FOR Q101	+ Φ3.0 PLATE HEAD	SCREW	JUNGWOO SEOUL METAL ASIA BOLT SUNG HO METAL KUOFEI HUIYU MACHINERY DELIKANG DONG HAIKANG RUI YOU TANJIN METAL
5	MI	0.5	GR	FOR Q101	G746 OKC-5500 YG6111	SILICON GREASE	CHANG AMLS OKONG SHINETSU MOMENTIVE DONGYANG SILICON SUNNICO TAIZBOND SHIN WEI
6	MI	1	EA		LGP42P-12LPB MI & AI COMPONENTS	MI & AI ASS'Y	
7	MI	1	EA	SK101	DAC-18D3A 250V 2.5A 43.5*12*12.5	AC INLET	DONGIL TECH
8	MI	3	EA	C110,C111,C112	SK 68 uF 450V M RB P7.5 Φ18*30 KMF 68 uF 450V M RB P7.5 Φ18*31.5	CAPACITOR, ALUMINUM	SUSCON SAMYOUNG
9	MI	2	EA	CX101,CX102	MPX 0.33 uF 275V K P15 PCX2 337 S 0.33 uF 275V K P15	CAPACITOR, FILM	EUROPTRONIC PILKOR
10	MI	1	EA	BD101	KBJ1006G 600V 10A RS1005M 600V 10A D10XB60 600V 10A	DIODE	LITEON RECTRON DACHANG
11	MI	1	EA	D251	MBRF10U200CT 200V 10A TO-220FP MBRF10200CT 200V 10A TO-220FP	DIODE	KEC SENSITRON
12	MI	2	EA	D254,D256	MUR460 600V 4A P20	DIODE	LITEON
13	MI	1	EA	D253	SB560 60V 5A P20 SB560 60V 5A P20	DIODE	LITEON SENSITRON
14	MI	1	EA	F101	T3.15A H 250V 50CT VIOLET(1-LINE) T3.15A H 250V 215 VIOLET(1-LINE)	FUSE, TIME LAG	DAIN LITTELFUSE
15	MI	1	EA	IC252	L4971 DIP-8	IC	STMICRO
16	MI	1	EA	IC102	LTV817M-BN EL817M(DT) B	IC	LITEON EVERLIGHT
17	MI	1	EA	L251	12P-D03	INDUCTOR, COIL	DONGYANG TELECOM CLOVER
18	MI	1	EA	L801	12P-D02	INDUCTOR, COIL	DONGYANG TELECOM CLOVER
19	MI	1	EA	LF101	CV620280SH 28 mH LLF-124 28 mH	LINE FILTER	TNC DONGYANG TELECOM
20	MI	1	EA	LF102	LLF-100(SQE2424)	LINE FILTER	CLOVER
21	MI	2	EA	PG101,PG102	JS-12-75-04 SPCC 0.4T GND PIN	GND REINFORCE	SAMSUNG JS ST TELECOM PINGOOD DIHUA HUAKANG KANG YAUNG SERVEONE
22	MI	1	EA	R102	MORS 47 KΩ 2W J SMALL FLOATING RSD 47 KΩ 2W J SMALL FLOATING	RESISTOR, FIXED METAL OXIDE FILM	ABCO SMART
23	MI	1	EA	T101	12P-M02	TRANSFORMER	SOOJUNG CLOVER
24	MI	1	EA	VA101	WMR14D621K 620V Φ14 TUBE INR14D621K-CAP 620V Φ14 TUBE	VARISTOR	WMEC AMOTECH
25	MI	1	EA	P801	1502-65502 2PIN WHITE	WAFER	CNPLUS
26	MI	1	EA	P201	SMAW200-H24S2 24PIN WHITE	WAFER	YEONHO



LGP42P-12LPB SMT COMPONENTS								
27	SMT	1	EA					
28	SMT	5	EA	C804,C809,C810,C812,C813	0.001 uF 50V K SMT 1608 X7R	CAPACITOR, CHIP	MURATA PILKOR SAMWHA TAIYOYUDEN TDK YAGEO HEC	
29	SMT	1	EA	C257	0.0033 uF 50V K SMT 1608 X7R	CAPACITOR, CHIP		
30	SMT	2	EA	C265,C814	0.01 uF 50V K SMT 1608 X7R	CAPACITOR, CHIP		
31	SMT	1	EA	C273	0.022 uF 50V K SMT 1608 X7R	CAPACITOR, CHIP		
32	SMT	8	EA	C107,C108,C252,C259,C261 C264,C806,C807	0.1 uF 50V K SMT 1608 X7R	CAPACITOR, CHIP		
33	SMT	1	EA	C267	0.15 uF 25V K SMT 1608 X7R	CAPACITOR, CHIP		
34	SMT	3	EA	C256,C811,C817	0.47 uF 16V(25V) K SMT 1608 X7R	CAPACITOR, CHIP		
35	SMT	1	EA	C258	0.22 uF 50V K SMT 2012 X7R	CAPACITOR, CHIP		
36	SMT	1	EA	C816	220 pF 50V J SMT 1608 COG or X7R	CAPACITOR, CHIP		
37	SMT	4	EA	C104,C105,C106,C808	470 pF 50V J SMT 1608 COG	CAPACITOR, CHIP		
38	SMT	3	EA	C255,C268,C269	2.2 uF 10V(16V) K SMT 2012 X7R	CAPACITOR, CHIP		MURATA TDK
39	SMT	5	EA	D103,D252,D802,D803,D804	MMSD4148T1G 100V 200mA SOD-123 1N4148W 100V 150mA SOD-123	DIODE		ONSEMI DIODES
40	SMT	1	EA	D255	SMAB36 60V 3A SMA SK36A 60V 3A SMA	DIODE		KEC SENSITRON
41	SMT	2	EA	ZD253,ZD254	KDZ18V 18V 0.2W USC UDZS18B 18V SOD-323 BZT52C18S 18V SOD-323	DIODE, ZENER	KEC ROHM RECTRON	
42	SMT	1	EA	Q801	FDD5N50NZ 500V 4A D-PAK MDD5N40RH 400V 3.4A D-PAK	FET	FAIRCHILD MAGNACHIP	
43	SMT	1	EA	Q803	MDHT4N20Y 200V 1A SOT-223 STN4NF20L 200V 1A SOT-223	FET	MAGNACHIP STMICRO	
44	SMT	1	EA	Q251	STD10PF06T4 60V 10A D-PAK FDD5614P 60V 15A D-PAK	FET	STMICRO FAIRCHILD	
45	SMT	1	EA	IC801	MAP3202SIRH SOIC-14	IC	MAGNACHIP	
46	SMT	1	EA	IC101	SSC1S311A PWM SOIC-7	IC	SANKEN	
47	SMT	1	EA	IC251	TLV431BSN1T1G 1.24V ±0.5% SOT-23-3 AZ431LANTR-E1 1.24V ±0.5% SOT-23	IC	ONSEMI BCD	
48	SMT	2	EA	J38,J39	0 Ω J SMT 3216	RESISTOR, CHIP	KAMAYA PILKOR ROHM YAGEO TZAI YUAN HEC	
49	SMT	1	EA	R287	0 Ω J SMT 1608	RESISTOR, CHIP		
50	SMT	8	EA	R105,R254,R260,R801,R805 R806,R807,R827	1 KΩ J SMT 1608	RESISTOR, CHIP		
51	SMT	2	EA	R257,R258	1.2 KΩ F SMT 1608	RESISTOR, CHIP		
52	SMT	1	EA	R261	1.5 KΩ J SMT 1608	RESISTOR, CHIP		
53	SMT	5	EA	R112,R268,R802,R818,R829	10 KΩ J SMT 1608	RESISTOR, CHIP		
54	SMT	1	EA	R255	100 KΩ F SMT 1608	RESISTOR, CHIP		
55	SMT	3	EA	R251,R264,R265	100 KΩ J SMT 1608	RESISTOR, CHIP		
56	SMT	2	EA	R812,R831	100 Ω J SMT 1608	RESISTOR, CHIP		
57	SMT	1	EA	R108	100 Ω J SMT 3216	RESISTOR, CHIP		
58	SMT	3	EA	R250,R266,R267	180 Ω J SMT 3216	RESISTOR, CHIP		
59	SMT	1	EA	R256	120 KΩ F SMT 1608	RESISTOR, CHIP		
60	SMT	2	EA	R104, R109	16 KΩ J SMT 1608	RESISTOR, CHIP		
61	SMT	1	EA	R278	20 KΩ F SMT 1608	RESISTOR, CHIP		
62	SMT	1	EA	R276	20 KΩ J SMT 1608	RESISTOR, CHIP		
63	SMT	1	EA	R282	2.2 Ω J SMT 1608	RESISTOR, CHIP		
64	SMT	1	EA	R107	22 Ω J SMT 3216	RESISTOR, CHIP		
65	SMT	1	EA	R277	1.8 KΩ F SMT 1608	RESISTOR, CHIP		
66	SMT	2	EA	R280,R281	18 KΩ F SMT 1608	RESISTOR, CHIP		
67	SMT	1	EA	R113	2.2 Ω J SMT 3216	RESISTOR, CHIP		
68	SMT	1	EA	R272	2.4 KΩ F SMT 1608	RESISTOR, CHIP		
69	SMT	1	EA	R815	22 KΩ J SMT 1608	RESISTOR, CHIP		
70	SMT	1	EA	R279	2.2 KΩ F SMT 1608	RESISTOR, CHIP		
71	SMT	1	EA	R110	22 Ω J SMT 1608	RESISTOR, CHIP		
72	SMT	2	EA	R835,R839	3.9 Ω F SMT 2012	RESISTOR, CHIP		
73	SMT	1	EA	R803	330 KΩ F SMT 1608	RESISTOR, CHIP		
74	SMT	1	EA	R106	300 Ω J SMT 1608	RESISTOR, CHIP		
75	SMT	1	EA	R253	680 Ω J SMT 1608	RESISTOR, CHIP		
76	SMT	1	EA	R284	330 Ω F SMT 1608	RESISTOR, CHIP		
77	SMT	6	EA	R834,R836,R837,R838,R840 R841	4.3Ω F SMT 2012	RESISTOR, CHIP		
78	SMT	1	EA	R842	430 KΩ F SMT 3216	RESISTOR, CHIP		
79	SMT	2	EA	R817,R275	4.7 KΩ F SMT 1608	RESISTOR, CHIP		
80	SMT	2	EA	R111,R252	47 KΩ J SMT 1608	RESISTOR, CHIP		
81	SMT	2	EA	R811,R816	47 KΩ F SMT 1608	RESISTOR, CHIP		
82	SMT	1	EA	R269	470 Ω J SMT 1608	RESISTOR, CHIP		
83	SMT	1	EA	R828	47Ω J SMT 3216	RESISTOR, CHIP		
84	SMT	2	EA	R843,R844	470 KΩ F SMT 3216	RESISTOR, CHIP		
85	SMT	1	EA	R808	5.1 KΩ J SMT 1608	RESISTOR, CHIP		
86	SMT	1	EA	R826	62Ω J SMT 3216	RESISTOR, CHIP		



87	SMT	1	EA	R804	6.8 KΩ F SMT 1608	RESISTOR, CHIP	KAMAYA
88	SMT	1	EA	R286	68Ω J SMT 1608	RESISTOR, CHIP	PILKOR
89	SMT	1	EA	R813	7.5 KΩ F SMT 1608	RESISTOR, CHIP	ROHM
90	SMT	1	EA	R810	75 KΩ J SMT 1608	RESISTOR, CHIP	YAGEO
91	SMT	1	EA	R259	820Ω F SMT 1608	RESISTOR, CHIP	TZAI YUAN
92	SMT	1	EA	R814	8.2 KΩ F SMT 1608	RESISTOR, CHIP	HEC
93	SMT	1	EA	Q252	KTN2222AS 0.6A 40V NPN SBT2222A 0.6A 40V NPN MMBT2222ALT 0.6A 40V NPN	TRANSISTOR	KEC AUK ON Semi
94	SMT	2	EA	Q253,Q254	KTC3551T 80V 1A TSM NPN 2SC5865TL 60V 1A TSMT3 NPN BCW66GLT1G 45V 0.8A NPN	TRANSISTOR	KEC ROHM ON Semi
95	SMT	1	EA	Q804	MMBT2907A -60V -600mA SOT-23 PNP KTN2907AS -60V -600mA SOT-23 PNP SBT2907A -60V -600mA SOT-23 PNP	TRANSISTOR	ONSEMI KEC AUK
96	SMT	0.5	GR		HT-130A-106 HT-130D-7 LOCTITE 3609 NE8800T	BOND (SMD)	HITECH KOREA HITECH KOREA LOCTITE FUJI
97	AI	1	EA		LGP42P-12LPB AI COMPONENTS		
98	AI	3	EA	C254,C277,C801	CFX 33 uF 250V M P5 Φ12*20 NFK 33 uF 250V M P5 Φ12.5*20.5	CAPACITOR, ALUMINUM	RUBYCON SAMYOUNG
99	AI	1	EA	C262	NXB 100 uF 35V M P5 Φ6.3*11	CAPACITOR, ALUMINUM	SAMYOUNG
100	AI	1	EA	C260	SG 220 uF 35V M P5 Φ10*12 NXB 220 uF 35V M P5 Φ10*12.5	CAPACITOR, ALUMINUM	SUSCON SAMYOUNG
101	AI	1	EA	C103	SG 100 uF 50V M P5 Φ8*12 NXB 100 uF 50V M P5 Φ8*11.5	CAPACITOR, ALUMINUM	SUSCON SAMYOUNG
102	AI	1	EA	C251	ZLH 1500 uF 10V M P5 Φ10*20 NXB 1500 uF 10V M P5 Φ10*20	CAPACITOR, ALUMINUM	RUBYCON SAMYOUNG
103	AI	1	EA	C263	ZL 470 uF 10V M P5 Φ8*12 NXB 470 uF 10V M P5 Φ8*11.5	CAPACITOR, ALUMINUM	RUBYCON SAMYOUNG
104	AI	1	EA	C253	SG 470 uF 50V M P5 Φ13*21 NXB 470 uF 50V M P5 Φ12.5*20	CAPACITOR, ALUMINUM	SUSCON SAMYOUNG
105	AI	1	EA	C805	DG 100 pF 1KV K P5 125℃ CT81 100 pF 1KV K P5 125℃	CAPACITOR, CERAMIC	APEX INTEC YINANDON
106	AI	2	EA	C270,C271	DG 220 pF 1KV K P5 125℃ CT81 220 pF 1KV K P5 125℃	CAPACITOR, CERAMIC	APEX INTEC YINANDON
107	AI	2	EA	C102,C272	DG 330 pF 1KV K P5 125℃ CT81 330 pF 1KV K P5 125℃	CAPACITOR, CERAMIC	APEX INTEC YINANDON
108	AI	1	EA	C266	DG 470 pF 1KV K P5 125℃ CT81 470 pF 1KV K P5 125℃	CAPACITOR, CERAMIC	APEX INTEC YINANDON
109	AI	1	EA	C101	DG 0.0022 uF 1KV K P5 125℃ CT81 0.0022 uF 1KV K P5 125℃	CAPACITOR, CERAMIC	APEX INTEC YINANDON
110	AI	2	EA	CY103,CY111	DA 100 pF 400V K 105℃ CT81 100 pF 400V K 105℃	CAPACITOR, CERAMIC	APEX INTEC YINANDON
111	AI	2	EA	CY101,CY102	DA 470 pF 400V K 105℃ CT81 470 pF 400V K 105℃	CAPACITOR, CERAMIC	APEX INTEC YINANDON
112	AI	1	EA	CY110	DA 0.001 uF 400V M 105℃ CT81 0.001 uF 400V M 105℃	CAPACITOR, CERAMIC	APEX INTEC YINANDON
113	AI	2	EA	D101,D102	HER108G 1KV 1A DO-41 UF1007 1KV 1A DO-41	DIODE	RECTRON DIODES
114	AI	1	EA	D801	HER204G 300V 2A DO-15 HER204G 300V 2A DO-15	DIODE	TSC RECTRON
115	AI	4	EA	ZD102,ZD103,ZD105,ZD251	1N5246B 16V DO-35 1N5246B 16V DO-35	DIODE, ZENER	RECTRON VISHAY
116	AI	1	EA	ZD252	P6KE33A	DIODE, ZENER	TSC LITTELFUSE
117	AI	16	EA	EL10,EL11,EL12,EL23,EL28,EL29,EL3,EL36,EL37,EL4,EL43,EL44,EL45,EL46,EL7,EL8	1.6X3.0	EYELET	SAMSUNG JS DOSUNG DAERIN HUAKANG DELIKANG SEJIN LEZHI Avico
118	AI	22	EA	EL1,EL13,EL14,EL17,EL18,EL19,EL2,EL20,EL21,EL22,EL24,EL25,EL26,EL27,EL31,EL32,EL33,EL34,EL38,EL39,EL40,EL41	2.0X3.0	EYELET	SAMSUNG JS DOSUNG DAERIN HUAKANG DELIKANG SEJIN LEZHI Avico
119	AI	5	EA	LB101,LB102,LB103,LB104,LB801	SER 35X50 SINGLE TPR P5 BF 35X50 SINGLE TPR P5	INDUCTOR, BEAD FILTER LEAD	HANBACK SAMWHA
120	AI	1	EA	LB251	BF 35X50 SINGLE TPA HBA 35X50 SINGLE TPA	INDUCTOR, BEAD FILTER LEAD	HANBACK SAMWHA



121	AI	15	EA	J11,J13,J21,J23,J24 J26,J33,J34,J36,J41 J42,J43,J5,J7,TH102	Φ0.6	JUMPER WIRE	DIELEC DAPcsLPcsD TPI TZAI YUAN UNI-OHM ILKWANG DM Seungwon RLC
122	AI	1	EA	TH101	ICL-5W 5R00MSMT DSC5D15MSOC	NTC THERMISTOR	SMART DSC
123	AI	1	EA	PCB	EAX64770201(1.8) LGP42P-12LPB 196*155*1.6T 1oz FR-1 BLACK CTI-600 REV 1.0	PCB	DUCK SUNG HT CIRCUIT(QINGDAO) DONGMYUNG CIR SHANGHAI WANZHENG Wan Yuan Tong SHENG KHUANG NEW TRIUNION TIANJIN DEA DUCK HUIHO HSIANG KUO TIAN FENG TIS KOREA Wellbest Cosmotech Kyosha
124	AI	1	EA	R101	PRC 1.2 MΩ 1/2W J TPA SURGE MSR37 1.2 MΩ 1/2W J TPA SURGE	RESISTOR, FIXED CARBON COMPOSITION	SMART PILKOR
125	AI	3	EA	R263,R273,R274	MORS 2.2 KΩ 2W J TPA SMALL RSD 2.2 KΩ 2W J TPA SMALL	RESISTOR, METAL OXIDE FILM	ABCO SMART
126	AI	1	EA	R103	MORS 22 KΩ 1W J TPA SMALL RSD 22 KΩ 1W J TPA SMALL	RESISTOR, METAL OXIDE FILM	ABCO SMART
127	AI	4	EA	R262,R270,R271,R283	MORS 10 Ω 1W J TPA SMALL RSD 10 Ω 1W J TPA SMALL	RESISTOR, METAL OXIDE FILM	ABCO SMART
128	AI	1	EA	R830	WNPS 0.24 Ω 2W J TPA SMALL PRN 0.24 Ω 2W J TPA	RESISTOR, WIRE WOUND	ABCO SMART
129	AI	1	EA	R114	WNPS 0.18 Ω 2W J TPA SMALL PRN 0.18 Ω 2W J TPA	RESISTOR, WIRE WOUND	ABCO SMART
130	AI	2	EA	SA101,SA102	TSA-BC-501M	SURGE ABSORBER	SMART
131					SUBSIDIARY MATERIALS		
132	ETC	0.071	EA		630*425*240 8T	BOX CARTON	NAEWAY IND DAESAN. HANYEONG JAEIL QXBW TAILI PACKING HUAXING PACK SOONGSAN WUJIANG ZHENLONG SUZHOU JIADELONG KUNSHAN KUNHONG Dongju Yumi
133	ETC	0.0571	EA		415*200 8T (Cross Board A)	BOX PARTITION	NAEWAY IND DAESAN. HANYEONG JAEIL QXBW TAILI PACKING HUAXING PACK SOONGSAN WUJIANG ZHENLONG SUZHOU JIADELONG KUNSHAN KUNHONG Dongju Yumi
134	ETC	0.0357	EA		620*200 8T (Cross Board B)	BOX PARTITION	NAEWAY IND DAESAN. HANYEONG JAEIL QXBW TAILI PACKING HUAXING PACK SOONGSAN WUJIANG ZHENLONG SUZHOU JIADELONG KUNSHAN KUNHONG Dongju Yumi



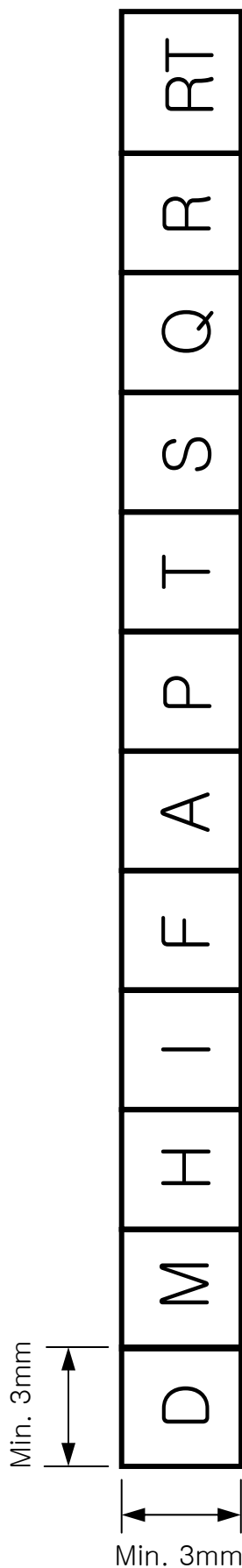
135	ETC	0.2140	EA		506*341 8T	BOX PAD	NAEWAY IND DAESAN. HANYEONG JAEIL QXBW TAILI PACKING HUAXING PACK SOONGSAN WUJIANG ZHENLONG SUZHOU JIADELONG KUNSHAN KUNHONG Dongju Yumi
136	ETC	1.000	EA		220*440	BUBBLE SHEET	DUCKJIN S&P JAEIL QXBW CHUMDAN A-TEK KUNSHANKUNHONG LIYUANG SERVEONE
137	ETC	0.0714	EA		BOX ART PAPER(150*100)	LABEL	SUNJIN. HANA. AIT SERVEONE WUJIANG SUNGLING GUNGGAOQI ZHI XIN
138	ETC	0.0066	M		RIBBON B220A 110mm BLACK	RIBBON	SUNJIN. AIT SERVEONE WUJIANG SUNGLING GUNGGAOQI ZHI XIN
139	ETC	1.0000	EA		42*8 NY WHITE 125℃	BAR CODE	SUNJIN. HANA. AIT SERVEONE WUJIANG SUNGLING GUNGGAOQI ZHI XIN
140	ETC	30.0	GR		EF-9301(g) ILF-714(kg) DF243U	FLUX	ALPHA ION ELEC DOOSUNG
141	ETC	8.0	GR		HSE-11 B20 BAR (SN:99%,AG:0.3%,CU:0.7%) SN:99%, AG:0.3%, CU:0.7% SAC0307 A+ SN:99%, AG:0.3%, CU:0.7% YW9-0307 SN:99%, AG:0.3%, CU:0.7% M35E-BAR SN:99%, AG:0.3%, CU:0.7%	SOLDER	HEESUNG METAL SEOUL ALLOYMETAL DYFENCO YUNNAN TIN SOLNET
142	ETC	2.0	GR		HSE-11 B20 BAR (SN:99%,AG:0.3%,CU:0.7%) SN:99%, AG:0.3%, CU:0.7% SAC0307 A+ SN:99%, AG:0.3%, CU:0.7% YW9-0307 SN:99%, AG:0.3%, CU:0.7% M35E-BAR SN:99%, AG:0.3%, CU:0.7%	SOLDER	HEESUNG METAL SEOUL ALLOYMETAL DYFENCO YUNNAN TIN SOLNET
143	ETC	4.0	GR		H-828W OKE-410 QS9112 RTV SS7945W TSE3854DS-W BN707 RTV KE402RTV ES 2044H & ES2482W UB-5601 EA-4100 DS-818	BOND(RTV)	OKONG OKONG KCC KCC MOMENTIVE BONIC SHINETSU CANADA U-BOND DOW CORNING DONGYANG



Process Marking



공정표시 MARK (PCB SILK)



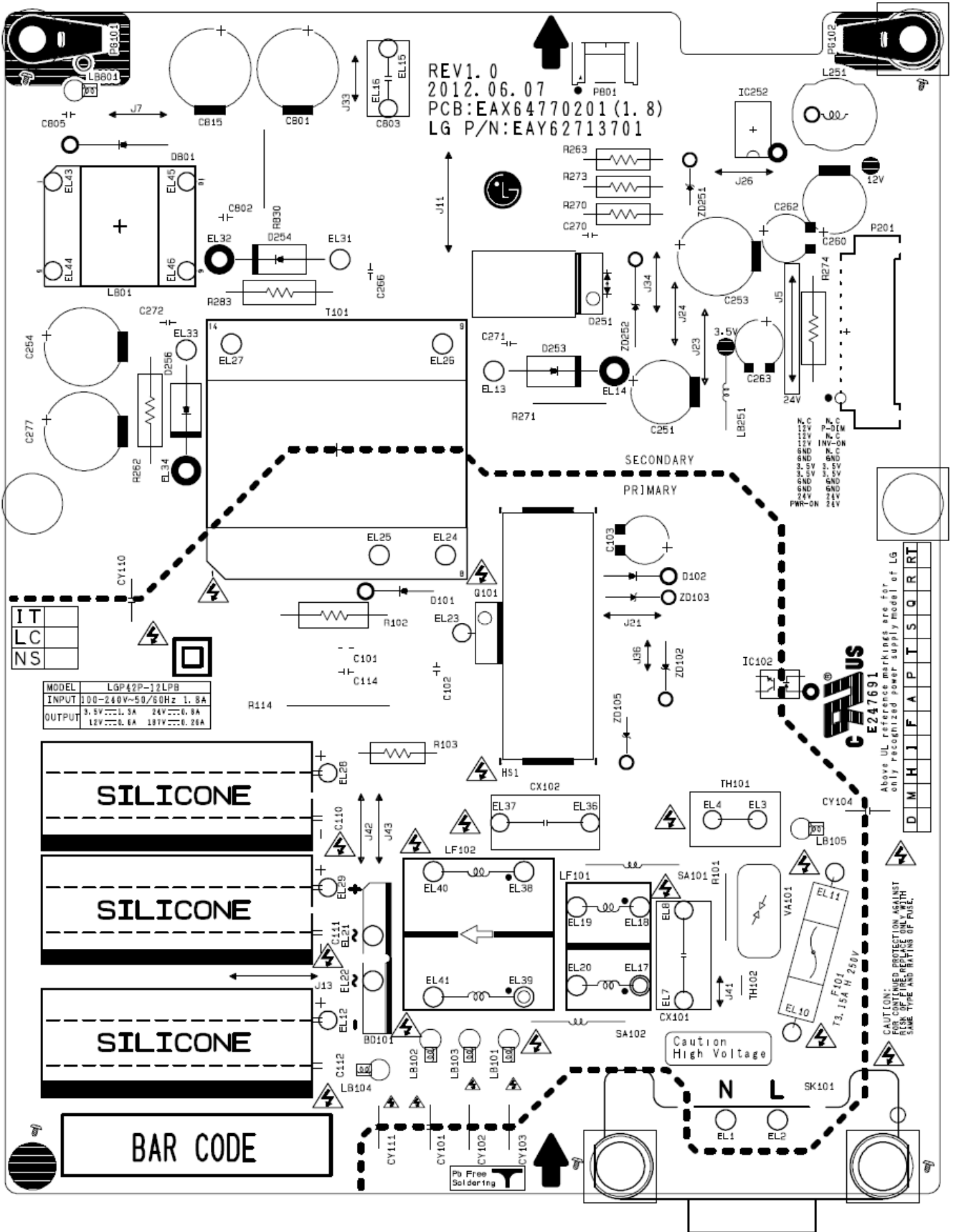
- D : 자삽
- M : SMD
- H : 수삽 최종
- I : ICT
- F : 1차 성능
- A : AGING
- P : HI-POT
- T : 최종 검사 (ATE)
- S : SET 검사
- Q : QC 검사
- R : 불량 수리
- RT : 양산 보증 시험



PCB Layout

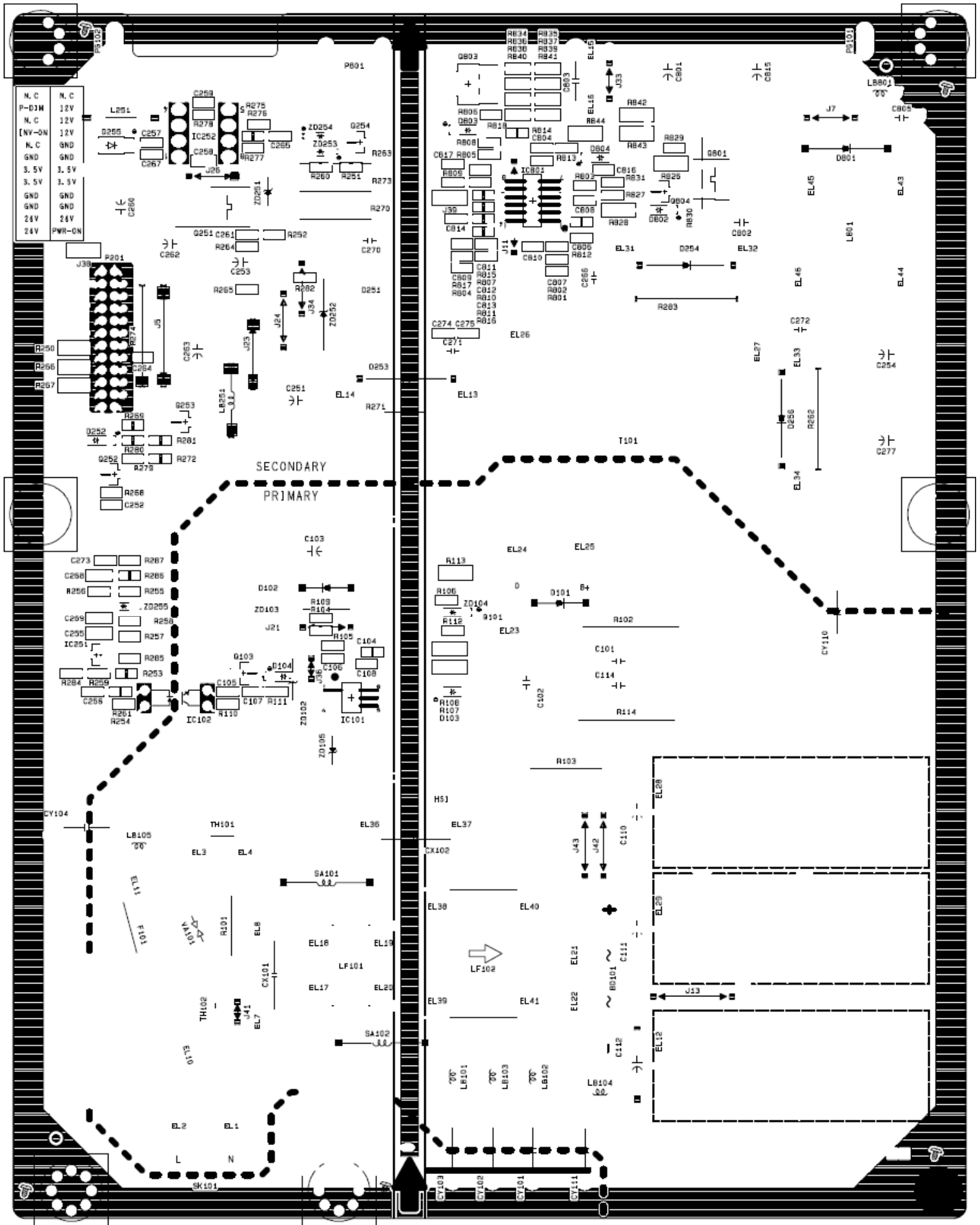


Top Silk



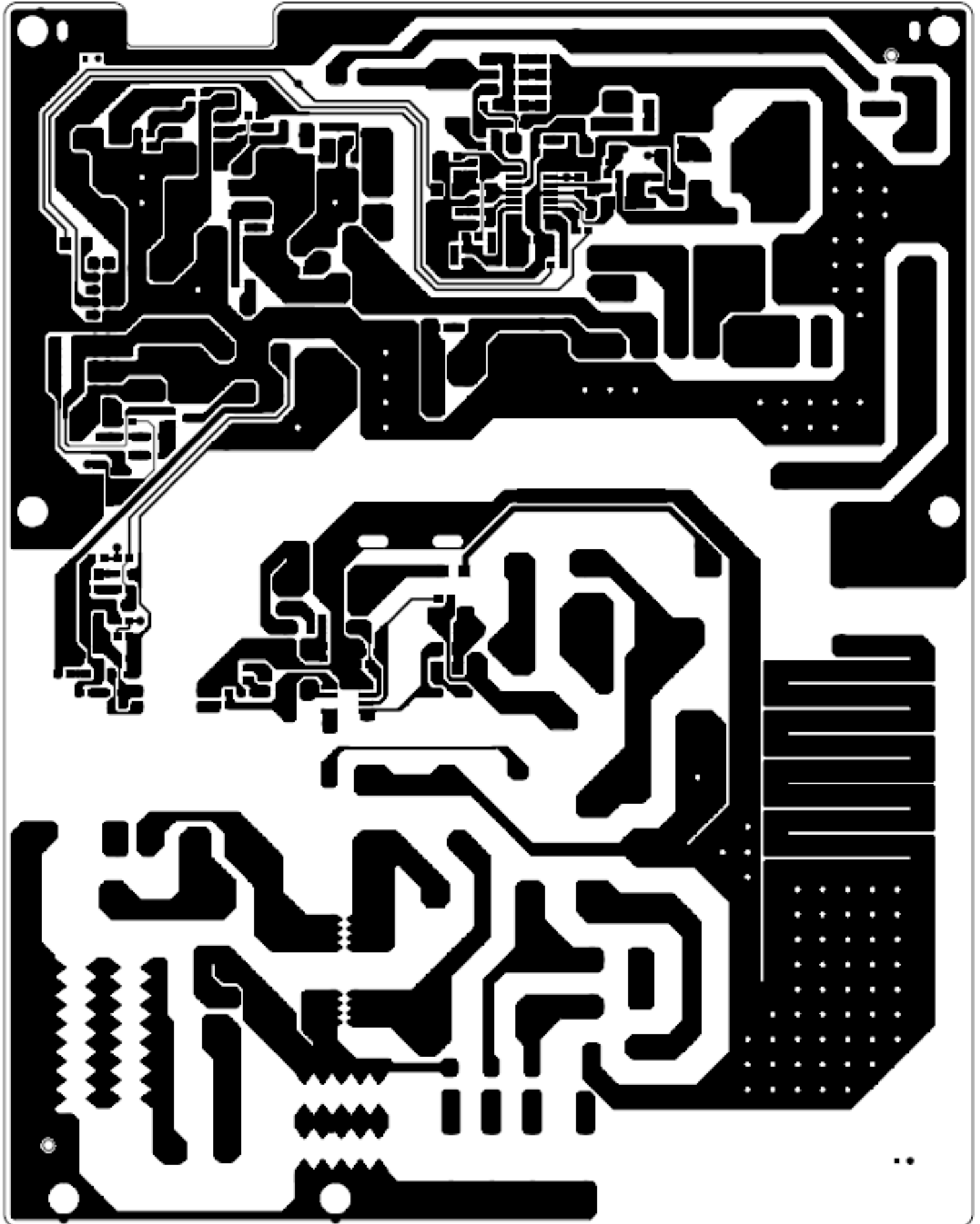


Bottom Silk



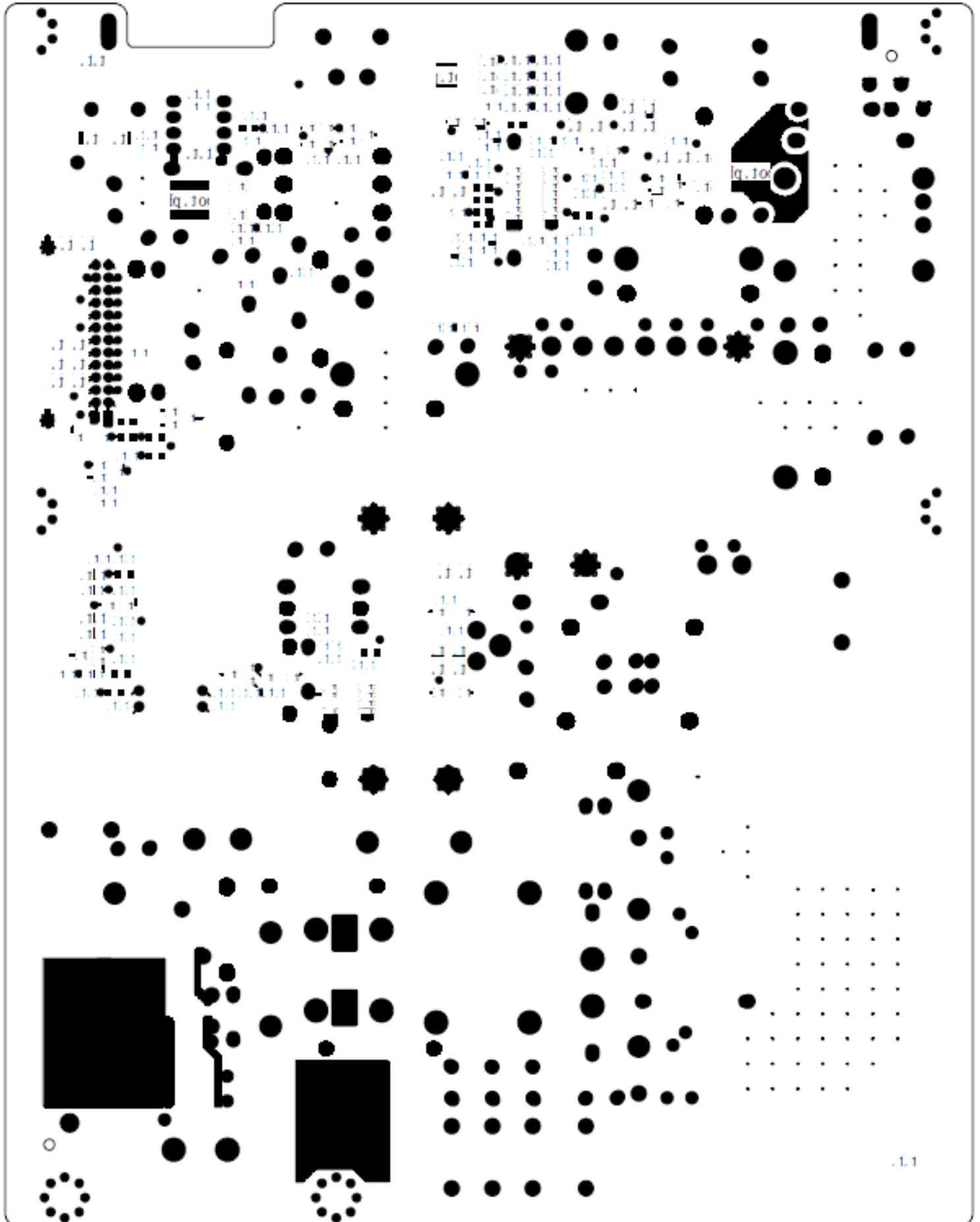


Bottom Pattern





Bottom Solder Mask





Safety Parts



Object/part No.	Manufacturer / Trademark	Type / Model	Value / Rating	부품 Marking (필수)	standard	mark(s) of conformity1)	
AC input connector, (SK101)	Dongil Tech	DAC-18D3A	250V / 2.5A		IEC 60320-1		
	HUAJIE	SA-4S	250V/10A/15A		IEC 60320-1		
	Shenzhen Delikang Electronics	CDJ-8	250V / 2.5A		IEC60320-1		
Fuse, (F101)	Littelfuse Inc.	215 Series	T3.15AH / 250V	LF.T3.15AH250V	IEC 60127-1		
	WALTER FUSE	TSC		TSC3.15A250V(P)	IEC 60127		
	BUSSMANN	S505		T3.15AH250V	IEC 60127		
	Dainfuse	50CT		T3.15AH250V	IEC 60127		
Line Filter, (LF101)	TNC	CV620280SH	Rated 130 ℃	620280 S3	IEC 60065	Test in appliance	
	FEELUX	LLF-124		LLF-124			
	DONG YANG TELECOM CO., LTD						
	SOOJUNG						
	JIANGSU CHANNELON ELECTRONIC GROUP						
	JIANGSU TAICHANG ELECTRONICS Co.,LTD.						
	Dongil Tech	LSD020280		020280			
Line Filter, (LF102)	TNC	LLF-100	Rated 130 ℃	LLF-100	IEC 60065	Test in appliance	
	FEELUX						
	DONG YANG TELECOM CO., LTD						
	Clover hi-tech Co., Ltd.						
	JIANGSU CHANNELON ELECTRONIC GROUP						
	JIANGSU TAICHANG ELECTRONICS Co.,LTD.						
Varistor, (VA101)	Samwha	SVC621D-14	620V,Min.	SVC621-14	IEC61051-2		
	Amotech Co., Ltd.	INR 14D621		INR 14D621			
	Xiamen Wanming Electronics Co.,Ltd	WMR14D621K		WMR 14D621K			
Bridge Diode, (BD101)	Lite-on	KBJ1006G	Min. 600V / 10A	KBJ1006G	E95060	Test in appliance	
	DACHANG	D10XB60		D10XB60			
	TSC	TS10B05G		TS10B05G			E96005
	SHINDENGEN	D10XB60		D10XB60			E142422
	GULF	G10XB60		G10XB60			
	Rectron	RS1005M		RS1005M			E94233
X-cap. (CX101,CX102)	Pilkor	PCX2 337	275V Max 0.33uF	PCX2 337	IEC 60384-14 UL1414		
	SUNGHO	CMPP		CMPP	IEC 60384-14 UL1414/UL1283		
	Okaya	LE		LE	IEC 60384-14 UL1414		
	CHENG TUNG	CTX		CTX	IEC 60384-14 UL1414		
	EUROPTRONIC	MPX		MPX	E199061/E311052 IEC 60384-14-2'nd edition		
Surge Absorber (SA101,SA102)	SMART Electronics Inc.	TSA-BC-501M	500V / ±20%		E208475		
Thermistor. (TH101)	SMART ELECTRONICS INC	ICL-5W	5ohm at 25 ℃	ICL-05 5R00MSMT	IEC 60065		
	DSC	DSC 5D-15		DSC 5D-15			
	JIANGSU XINGSHUN ELECTRONICS CO., LTD	5D2-15		5D2-15			
	NANJING SHIHENG ELECTRONICS CO., LTD	MF72 5D15		MF72 5D15			
	Xiamen Wanming Electronics Co.,Ltd	WTR 15D050		WTR 15D050			
Thermistor. (TH102)	Xiamen Wanming Electronics Co.,Ltd	WTR08D030	3ohm/25 ℃ (Option)	WTR08D030	IEC 60065		
	DSC	DSC3D09		DSC3D-9			
Elec.Cap., (C110, C111,C112)	SAMYOUNG	KMF	450V / Max 68uF / 105 ℃	KMF450V68uF	IEC 60950-1	Test in appliance	
	SUSCON	SK		SK450V68uF			
Switching TR, (Q101)	POWER DEVICE	PF10N65	Min. 650V/ Min 9.5A	PF10N65		Test in appliance	
	MAGNACHIP	MDF10N65B		MDF10N65			
	ST	STF11N65K3		STF11N65K3			

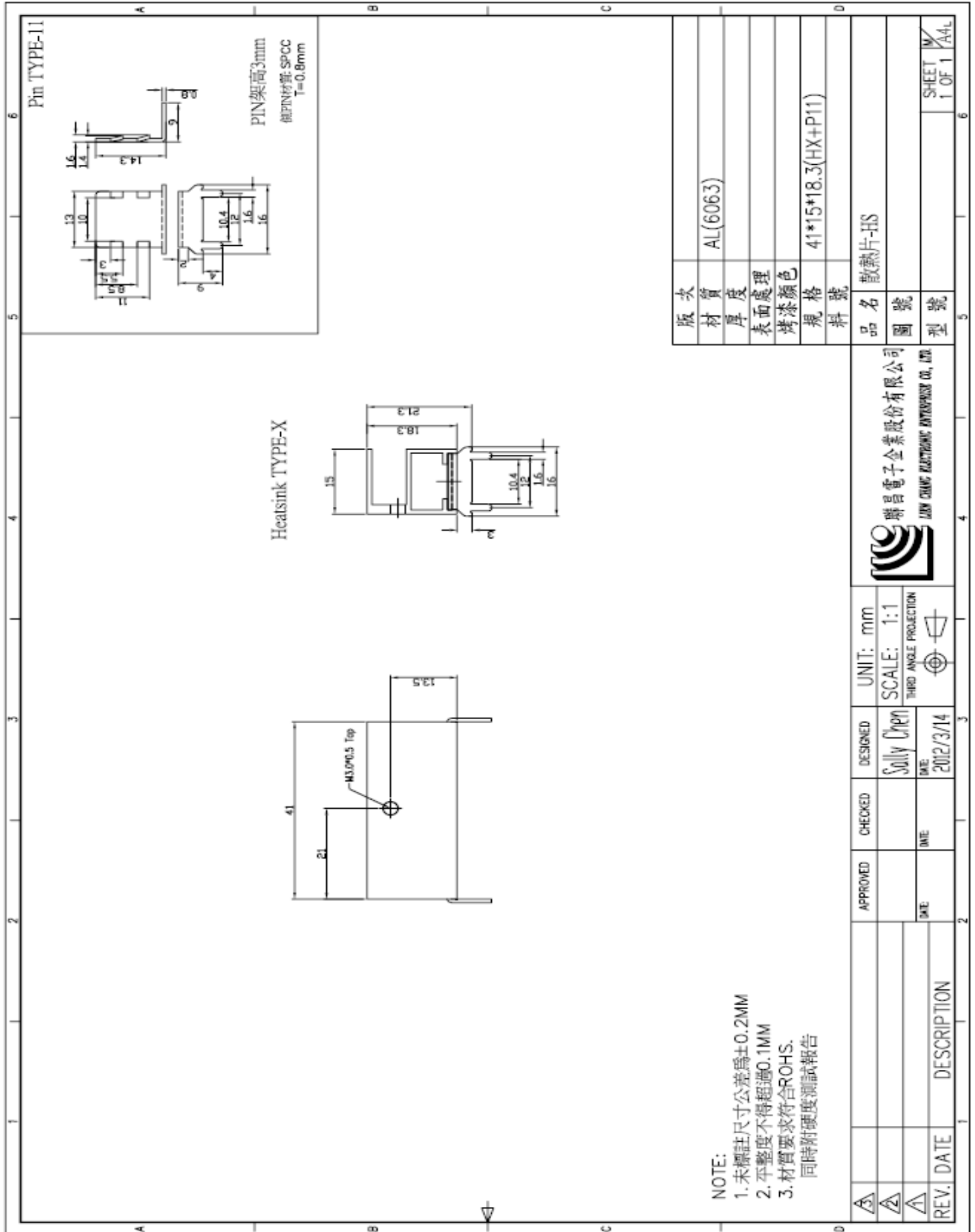


Y Cap., (CY101,CY102)	ANSHAN KEI FAT	Y1 / CT7	Min 250V/ Max 470pF (CY101 = 470pF, CY102 = 470pF)	CT7 471K	IEC 60384-14	
	Kunshan Wansheng	Y1 / CT7		CT7 471K		
	Apexintec	Y1 / NK		NK471K		
	DONG IL	Y1 / DA		DA471K		
	YINANDON	Y1 / CT81		CT81 471K		
	SAMWHA	Y1 / SD		SD471K		
	JYA-NAY	Y1 / JN		JN471K		
	GUANGDONG SOUTH HONGMING	Y1 / F		F471K		
TDK	Y1 / CD	CD471K				
Y Cap., (CY103,CY111)	ANSHAN KEI FAT	Y1 / CT7	Min 250V/ Max 100pF (CY103 = 100pF, CY111 = 100pF)	CT7 101K	IEC 60384-14	
	Kunshan Wansheng	Y1 / CT7		CT7 101K		
	Apexintec	Y1 / NK		NK101K		
	DONG IL	Y1 / DA		DA101K		
	YINANDON	Y1 / CT81		CT81 101K		
	SAMWHA	Y1 / SD		SD101K		
	JYA-NAY	Y1 / JN		JN101K		
	GUANGDONG SOUTH HONGMING	Y1 / F		F101K		
TDK	Y1 / CD	CD101K				
Bridging Cap., (CY110)	ANSHAN KEI FAT	Y1 / CT7	Min 250V/ Max 1000pF	CT7 102M	IEC 60384-14	
	Kunshan Wansheng	Y1 / CT7		CT7 102M		
	Apexintec	Y1 / NK		NK102M		
	DONG IL	Y1 / DA		DA102M		
	YINANDON	Y1 / CT81		CT81 102M		
	SAMWHA	Y1 / SD		SD102M		
	JYA-NAY	Y1 / JN		JN102M		
	GUANGDONG SOUTH HONGMING	Y1 / F		F102M		
TDK	Y1 / CD	CD102M				
Switching Transformer, (T101)	DONGYANG TELECOM	EED4020	Class B	12P-M02	IEC 60065	Test in appliance
	JIANGSU CHANNELON ELECTRONIC GROUP					
	Clover hi-tech Co., Ltd.					
	SOOJUNG					
	FEELUX					
Opto-coupler, (IC102)	Everlight	EL817	>0.4mm / Rated 6000Vac	EL817	IEC 60065 UL 1577	
	Lite-on	LTV817...		817BN		
Discharge Resistor, (R101)	Smart	PRC	1/2W, 1.2Mohm, 5%		IEC 60065	
	Pilkor	SR37,MSR37				
PCB	DONGMYUNG CIR.	DM5-V-0	94V-0			
	SHANGHAI WANZHENG	SWZ-2	94V-0			
	SHANGHAI AREX	02V0	94V-0			
	NEW TRIUNION	TU-3	94V-0			
	CHIN POON	E5	94V-0			
	TIANJIN DEADUCK	DC-1 DC-2	94V-0			
	HUIHO	4B-5	94V-0			
	HSIANG KUO	07V0	94V-0			
	SAMHAN	SH7	94V-0			
	HT CIRCUIT(QINGDAO)	1994V0	94V-0			
	WONK YUNG	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			
	Cosmotech	GS2-V-0-1 CJ2-V-0-1 CJ2-V-0-2	94V-0			
	Wan Yuan Tong	SWZ-2	94V-0			
Wellbest	MTV0-01	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



版次	
材質	AL(6063)
厚度	
表面處理	
烤漆顏色	
規格	41*15*18.3(HX+P11)
料號	
品名	散熱片-HS
圖號	
型號	
	SHEET 1 OF 1
	AA/L

聯昌電子企業股份有限公司 LIEN CHANG ELECTRONIC ENTERPRISE CO., LTD.	UNIT: mm	DESIGNED	CHECKED	APPROVED	REV. DATE	DESCRIPTION
	SCALE: 1:1 THIRD ANGLE PROJECTION	Solly Chen				
		DATE: 2012/3/14	DATE:	DATE:		



Packing Drawing



NO.	DESCRIPTION	QTY	MATERIAL	Remark
1	CORTON BOX	1 / 26	630x425x240x18	
2	PAD	2 / 26	615x410x18	
3	PARTITION A	14 / 26	415x200x18	
4	PARTITION B	3 / 26	620x200x18	
5	PARTITION C	4 / 26	160x180x20	
6	BUBBLE SHEET	26 / 26	165x600mm	
7	POWER BOARD	26 / 26	200x155x26.6mm	

IN →

QTY: 32 BOX * 26 SET = 832 SETS
MAX 8 Tire

GUIDE 50*50(1400~2000)
PALLET: 1070*1100*150mm

3/	2/	1/	UNIT: mm	DESIGNED	DATE
△	DAVID	ANTONY	SCALE: 1:1	Sally Chen	2011/11/21
△	DATE	DATE	THIRD ANGLE PROJECTION	DATE	DATE
△	2011/11/21	2011/11/21	←	2011/11/21	2011/11/21
REV.	DATE	APPROVED	DESCRIPTION		
1			DESCRIPTION		

品名: PACKING DWG 630x425x240mm

料號: [Blank]

型號: OPVP-0137

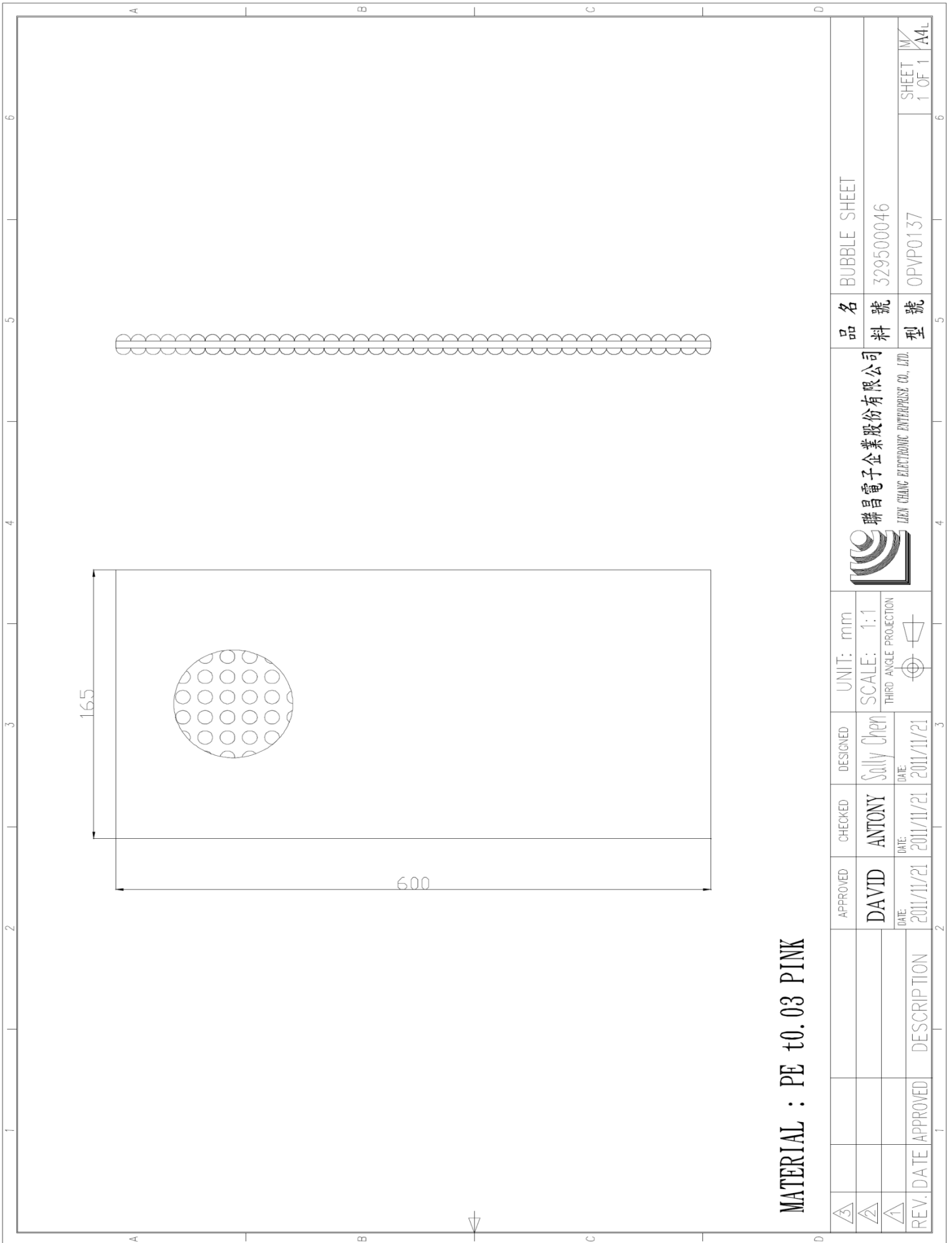
聯昌電子企業股份有限公司
LIEN CHANG ELECTRONIC ENTERPRISE CO., LTD.

品名: [Blank]

料號: [Blank]

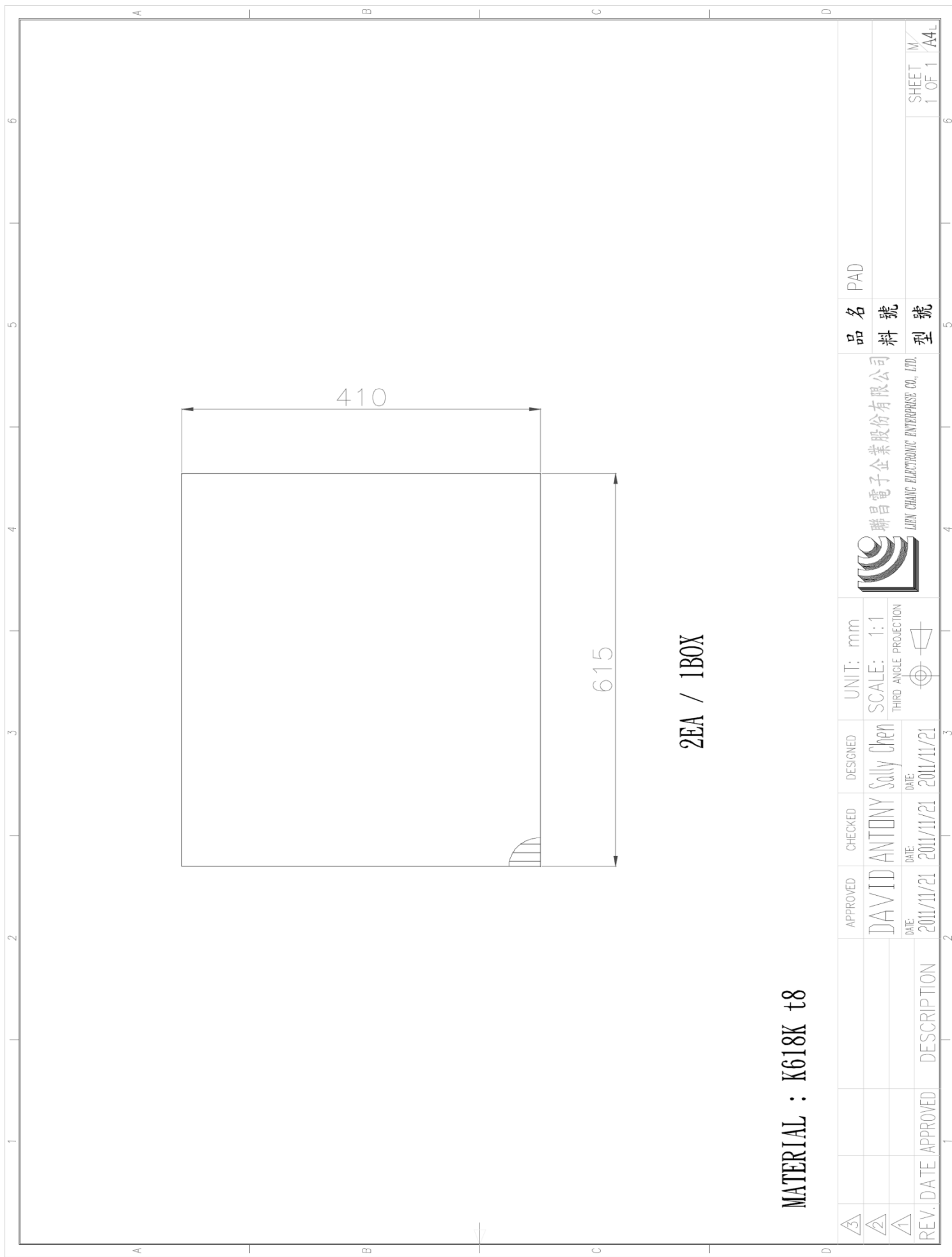
型號: [Blank]

SHEET 1 OF 1



MATERIAL : PE t0.03 PINK

△3								UNIT: mm	 聯昌電子企業股份有限公司 LIEN CHANG ELECTRONIC ENTERPRISE CO., LTD.	品名	BUBBLE SHEET	SHEET NO. 1 OF 1 A4L
△2							SCALE: 1:1 THIRD ANGLE PROJECTION	料號		329500046		
△1										型號	OPVP0137	
REV.	DATE	APPROVED	CHECKED	DESIGNED	UNIT: mm SCALE: 1:1 THIRD ANGLE PROJECTION 							



2EA / 1BOX

MATERIAL : K618K t8

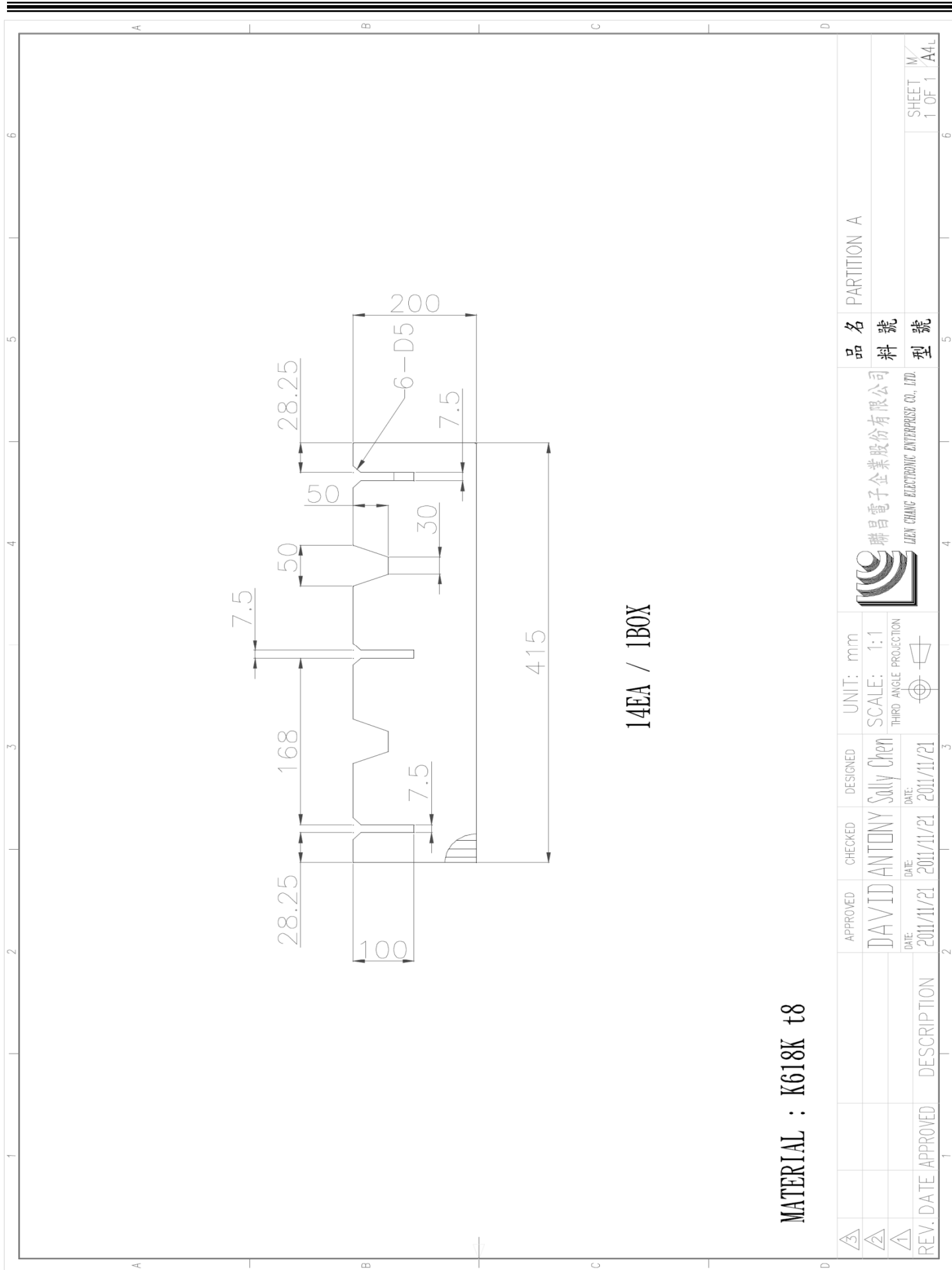
△3									PAD	品名
△2										料號
△1										型號
REV. DATE	APPROVED	DESCRIPTION								SHEET / 1 OF 1
										A4



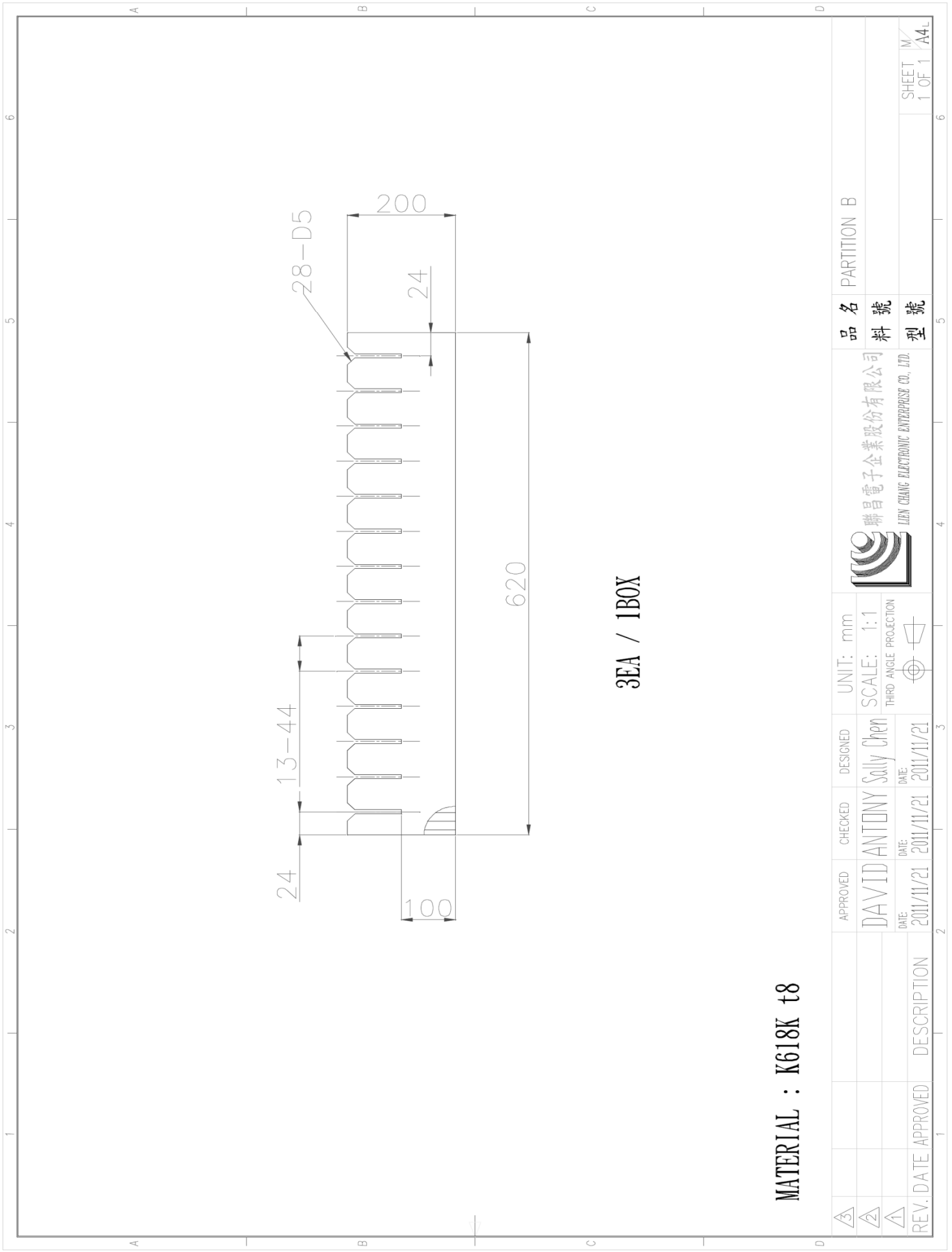
聯昌電子企業股份有限公司
LIEN CHANG ELECTRONIC ENTERPRISE CO., LTD.

UNIT: mm	SCALE: 1:1
THIRD ANGLE PROJECTION	

APPROVED	CHECKED	DESIGNED	UNIT: mm
DAVID ANTONY	ANTONY	Sally Chen	SCALE: 1:1
DATE: 2011/11/21	DATE: 2011/11/21	DATE: 2011/11/21	THIRD ANGLE PROJECTION

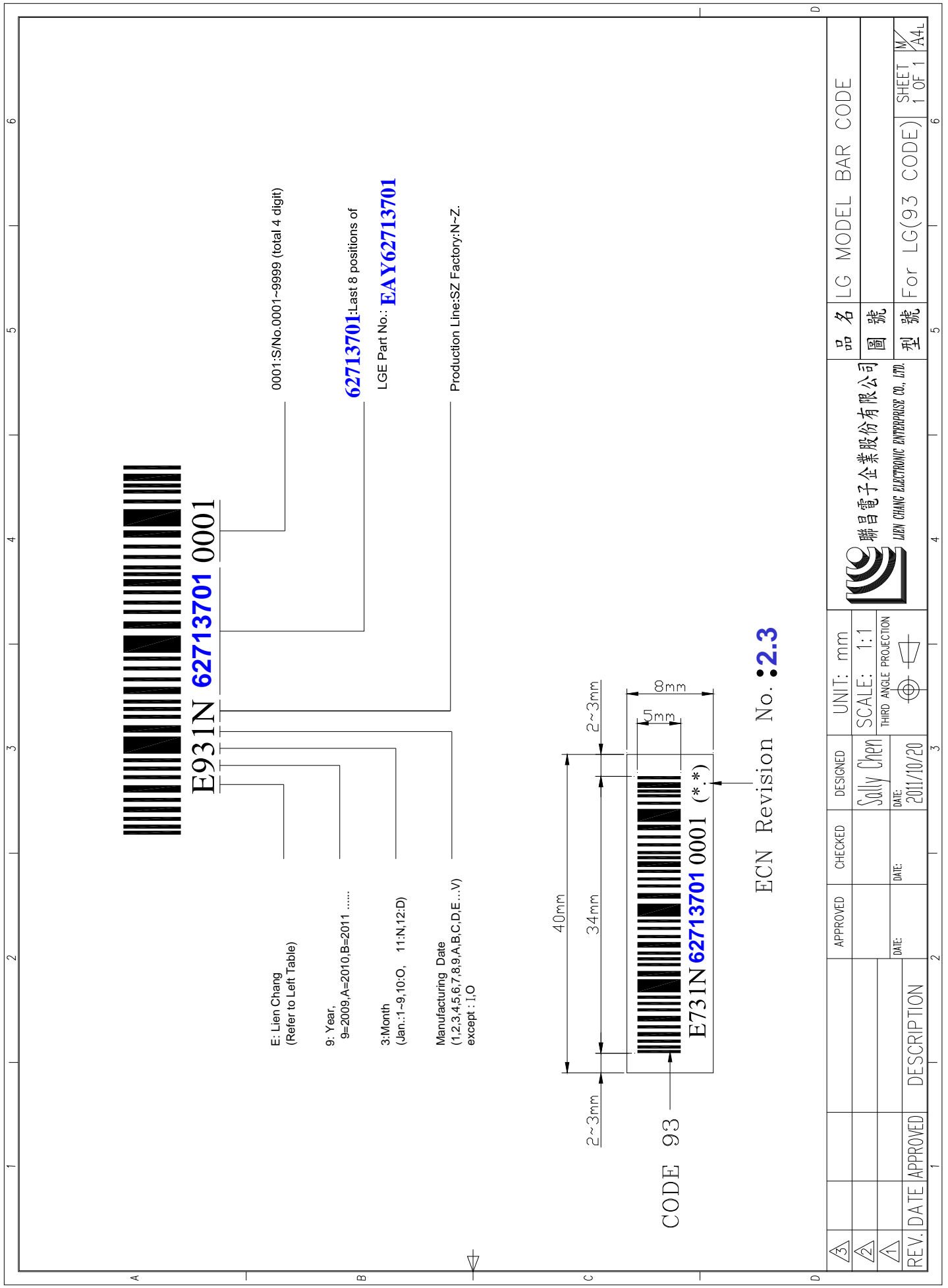


③	APPROVED	CHECKED	DESIGNED	UNIT: mm	PARTITION A
②	DAVID	ANTONY	Sally Chen	SCALE: 1:1	品名
①	DATE: 2011/11/21	DATE: 2011/11/21	DATE: 2011/11/21	THIRD ANGLE PROJECTION	料號
REV. DATE APPROVED	DESCRIPTION				型號
					M/
					SHEET
					1 OF 1
					A4L





Bar-Code Label Drawing

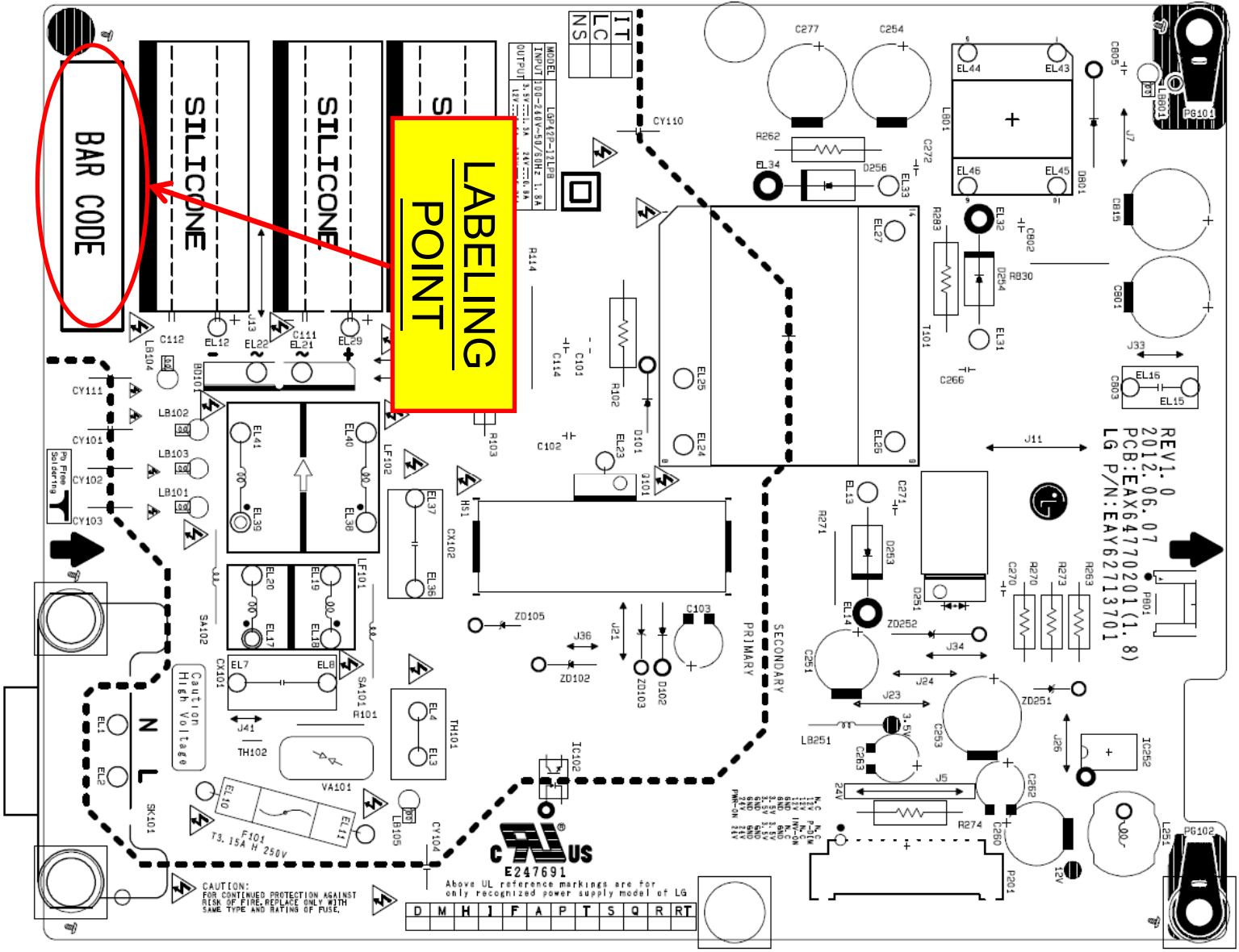




Labeling Point



LABELING POINT



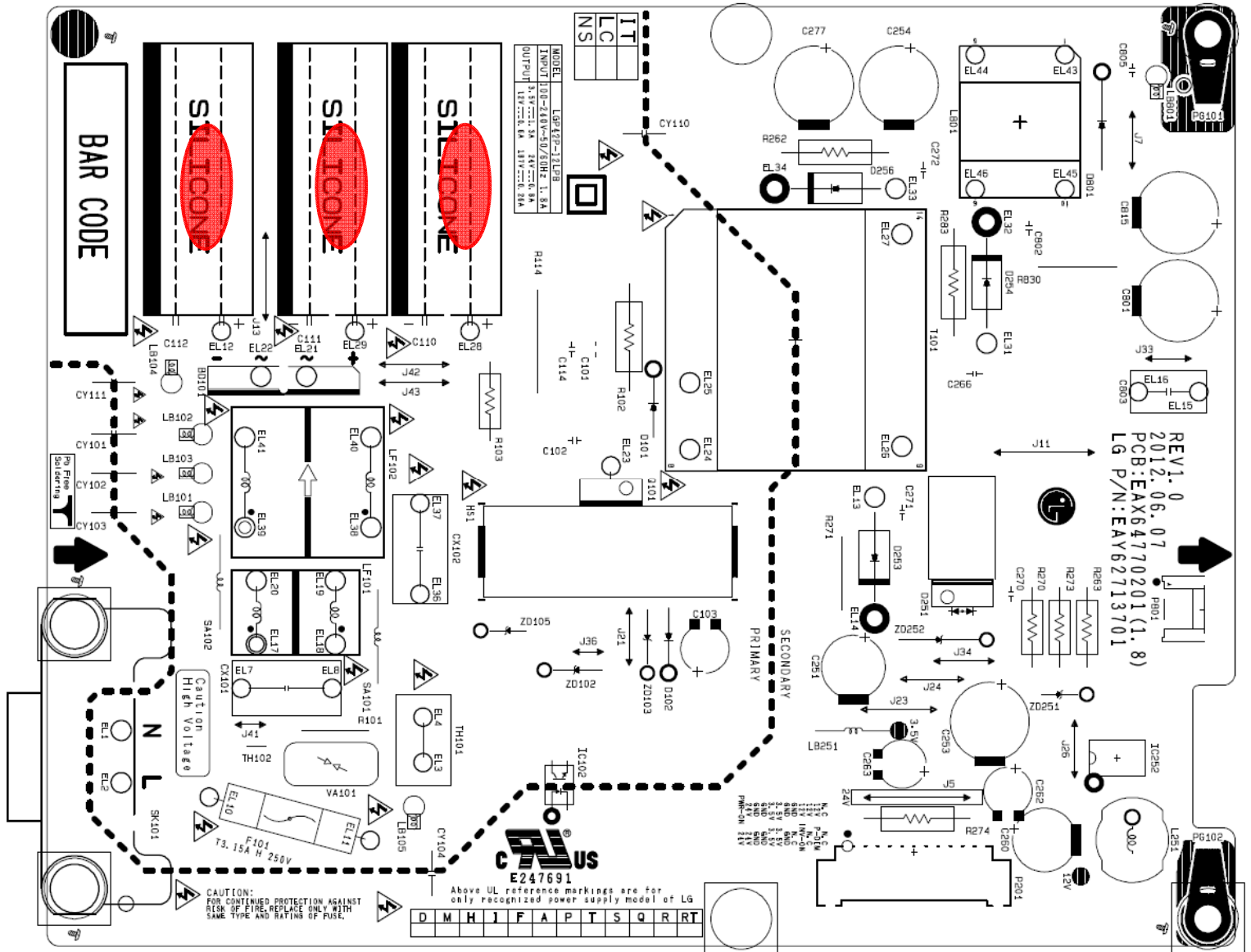


Workmanship Point



Silicone Bonding Point (●)













42" Polar
















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. 2. Suppliers' Magt..	Production management procedure BOM
2		Warehouse	Receive material	Every accept datasheet	Jincheng Guo	Balance Couter	/	1. Check the material box's layer. 2. Check P/No., Spec., Part name, Q'ty, Validity-period.	Incoming receiving procedure Products protection procedure
3		IQC	Incoming material inspection	MIL-STD-105E(II) AQL=0.25	David Zhang	Diode tester LCR meter Hi-pot equipment solder oven	Raw material	1. Check the Brand,P/N0, Spec.Q'ty,Validity-period,Lot No ° 2. Check the appearance °	Incoming inspection procedure
4		Eyelet	PCBA eyelet	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	Eyelet M/C	Eyelet	1. Check the program of M/C 2. Check parts of BOM 3. Check lead angle:20° ~40°	1.AI first article inspection records 2.Part date code check (SEB3R24)
5		Jump Wire	PCBA Jump wire insertion	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	Jump Wire M/C	Jump Wire	1.Check the program of M/C 2.Check parts of BOM 3.Check lead angle:15° ~30° 4.Check lead lenth:1.2~1.8mm	1.AI first article inspection records 2.Part date code check (SEB3R24)
6		Axial	Axial parts auto insertion	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	Axial M/C	Axial parts	1.Check the program of M/C 2.Check parts of BOM 3.Check lead angle:15° ~30° 4.Check lead lenth:1.2~1.8mm	1.AI first article inspection records 2.Part date code check (SEB3R24)
7		Radial	Radial parts auto insertion	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	Radial M/C barcode scanner	Radial parts	1.Check the program of M/C 2.Check parts of BOM 3.Check lead angle:15° ~45° 4.Check lead lenth:1.2~1.8mm	1.AI first article inspection records 2.Part date code check(SEB3R24) 3.MES system
8		QA inspection	Sampling check	transfer shift change model ECN one time/2 hrs	Caselin Sun	magnifier LCR meter	/	1. check parts 2. Checking the PCBA 3. Checking the Quality of SMD-process	1. QA inspection form in SMT area (SEB1R34) 2. SMD capacitor measure in SMT area (SEP5R02) 3. Push-pull force data for SMT part (SEP5R01)
9		Apply red glue	Apply red glue on pcb	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	Apply gule machine	red glue	1. Program Editing 2. Checking the Program File 3. "Red-glue" store-condition: 5~10°C /6months.	1.Store temp. of Tin paste / red gule (SEB8R02) 2.Take out/off records of Tin paste and red gule (SDM5P04) 4. process check form in SMT area (SEB3R28)
10		SMT mounting	SMD mounted on PCB	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	Yamaha Mounting machine	SMD parts	1. Program Editing 2. Checking the Program File 3. Material's checking	1.Part station in SMT area 2.Bom list
11		Visual inspection	check parts	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	nipper magnifier	/	1. "FAI"-checking & "Sample"-checking 2. Check the Part (Missing; inverse-insertion; damaged...)	1.Inspection form in SMT area (SEB3R28) 2. QA first samples check in SMT area (SEB1R33)
12		Reflow	PCBA reflow	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	profile measure equipment reflow	/	Control the temperature of "Reflow"-M/C.	1. Profile of reflow 2. Temp. control records of SMT (SEM9R04)

13		SMT inspection	check appearance	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	nipper magnifier barcode scanner	/	1. Checking the PCB with magnify 2. Checng the Quality of SMD-process	1. Self-inspection in SMT area (SEB1R36) 2. Check form in SMT 3.MES system
14		QA inspection	Sampling check	transfer shift change model ECN one time/2 hrs	Caselin Sun	magnifier LCR meter Push-pull meter	/	1. Every 2hrs, testing the capacity of "SMD-Capacitor" 2. Every 2hrs, testing the "bonding"-strength 3. Checking the PCB with magnify 4. Checking the Quality of SMD-process	1. QA inspection form in SMT area (SEB1R34) 2. SMD capacitor measure in SMT area (SEP5R02) 3. Push-pull force data for SMT part (SEP5R01)
15		component prepare	processing material	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	processing jig	prepared material	Sample Checking	1.Self-inspection 2.check datasheet for component prepare
16		M/I	Manual insert material	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	NG box tray fixture barcode scanner	common parts	1. Checking the brand, P/N0, Spec., Name, Q'ty, Lot No. 2. Checking the quality of MI	1.Self-inspection 2. Check form of part date code 2. check form of PCBA in process
17		Double wave solder	soldering	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	DIP TEST equipment auto wave-solder	solder bar flux	1.Pre-heat: 350℃ +/-20℃。 2.Soldering-M/C : 255℃~260℃。 3.Flux : 0.80+/-0.02g/cm3, Soldering Speed : 1.20 ~ 1.60m/Min.	1. Monthly maintain form of wave solder (SDR1R23) 2.Daily/weekly maintain form of wave solder (SDR1R22)
18		Touch up	manual soldering	100% transfer shift change model ECN 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 2. Inspection form of PCBA in process (SEB3R19)
19		AOI inspection	automatic optical inspection	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	AOI M/C	/	1. Checking the Test-program 2.Checking the quality of Soldering surface	1. AOI daily test report (SEB3R27) 2.Inspection form of PCBA in process (SEB3R19)
20		PCBA inspection	check appearance	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	magnifier	/	1. Materials' checking 2. Soldering-"Q" Checking 3. Checking the quality of Soldering surface	1.Daily report of AI/INVERTER QC (SEB3R21) 2. Inspection form of PCBA in process (SEB3R19)
21		ICT	ICT test	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	ICT test M/C	/	1. Checking the Test-program 2. Checking the Part's Spec.	1. ICT daily test report (SEB3R27) 2.Inspection form of PCBA in process (SEB3R19)
22		Initial test	first function test	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	DC load AC power source test jig FLUKE-45 barcode Scanner	/	1.check test condition meet the SPEC 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) 2.equipment adjust (SDS S1R03) 3.MES system
23		apply glue	Apply RTV bond	100% transfer shift change model ECN one time/2 hrs	Yuxing Tang	apply glue M/C	RTV bond	1. Check the P/N and Spec of silicone 2.Check the glue quantity which locates on the right place 3. Check if there is miss of applying glue	1.Self-inspection 2. Inspection form of products in process
24		PCBA sampling check	samping check appearance	100% transfer shift change model ECN one time/2 hrs	Caselin Sun	magnifier	/	1. Material's checking 2. Checking the soldering-quality 3. Checking the quality of PCB-print	1.PCBA inspection form (SEB1R26) 2.PCBA rejection form (SEB1R30)
25		Aging	burn in	100% transfer shift change model ECN one time/2 hrs	Xian Xu	Power source aging tools aging load	/	1.Aging Load:condition meet the SPEC. 2.aging time : 2hrs. Temp : 45℃ +/-5℃。	1.records of AI/INVERTER aging(SDR9R19) 2.Aging input check form (SDR9D20)

26		Visual inspection	check appearance	100% transfer shift change model ECN one time/2 hrs	Xian Xu	magnifier	/	<ol style="list-style-type: none"> 1. Check if the part was damaged and the other fails 2. Check if there was miss of applying gule 3. Do marking on the good products and flow out 4. Stick the NG label on the NG product and put into the box, at the same time, record the related information 	<ol style="list-style-type: none"> 1. Daily visual inspection form (SEB3R21) 2. Inspection form of PCBA in process (SEB3R19) LIPS/INVERTER Final test records of finished products in process(SEB3R31)
27		HI-POT	safety test	100% transfer shift change model ECN one time/2 hrs	Xian Xu	HI-POT test M/C barcode Scanner	/	<ol style="list-style-type: none"> 1. check HI-POT test condition meet the SPEC 2. .For ok products, scan and flow to the next station. If It is NG, stick NG label and put into NG box 	<ol style="list-style-type: none"> 1. Inspection form (SEB3R23) 2. Equipment adjust before production (SDS1R03) 3. Inspection form of finished products (SEB3R19) 4. MES system
28		Final test (ATE)	Final function test	100% transfer shift change model ECN one time/2 hrs	Xian Xu	ATE barcode Scanner	/	<ol style="list-style-type: none"> 1. check ATE test condition meet the SPEC 2. For ok products, scan and flow to the next station. If It is NG, stick NG label and put into NG box 	<ol style="list-style-type: none"> 1. Daily visual form(SEB3R21) 2. Inspection form of PCBA in process (SEB3R19) 3. Adjust equipment before production(SDS1R03) 4. MES system
29		SET	test SET	100% transfer shift change model ECN one time/2 hrs	Xian Xu	SET /Panel jig	/	<ol style="list-style-type: none"> 1. Check the model of lamp or panel 2. Check if the lamp or PANEL brightness is the same, and shift B/L to check the brightness 	electrical check form(SEB3R23)
30		100% inspection	check appearance	100% transfer shift change model ECN one time/2 hrs	Xian Xu	barcode Scanner	/	<ol style="list-style-type: none"> 1. Carefully check the solder status, for example: empty solder, wrap solder, cold solder. PCB 2. Check the PIN is damaged in connector 	<ol style="list-style-type: none"> 1. Visual daily form(SEB3R21) 2. LIPS/INVERTER inspection form(SEB3R31) 3. MES system
31		Package	pack PCBA into box	100% transfer shift change model ECN one time/2 hrs	Xian Xu	Tape M/C Pen	box bubble sheet	<ol style="list-style-type: none"> 1. Check the P/N, Model name, date, label, carton 2. Put the products in the right place and stick label 	<ol style="list-style-type: none"> 1. Records of products traking s/n (SEB3R22) 2. Records of tracing the Inverter S/N Inspection finished products form (SEB3R19)
32		OQC	Sampling finished products	MIL-STD-105E(II) AQL=0.25	Caselin Sun	DC load AC/DC SOURCE FLUKE-45 barcode Scanner	/	<ol style="list-style-type: none"> 1. Check the part, soldering status, part damage, and so on 2. Measure the dimension of the product 3. Test the electrical parameter 4. Stick the NG label on the NG product and put into the NG box, at the same open the reject note 5. NG product must be rework 	<ol style="list-style-type: none"> 1. Finished products inspection procedure 2. Adjust equipment before production (SDS1R03) 3. outgoing inspection data of finished products (SEB1R28) 4. MES system
33		Warehouse	Store product	Every store datasheet	Jincheng Guo	Trailer barcode Scanner	/	<ol style="list-style-type: none"> 1. Check P/N, Model, Quantity 2. Check the heigh of stock and carton 3. cHeck the QA pass seal 	<ol style="list-style-type: none"> 1. Finished product store procedure 2. Store datasheet 3. MES system



Appendix List

No.	Contents
1	POWER Check list
2	Warranty letter



Appendix 1

POWER CHECKING LIST



POWER CHECK LIST

Version 1.0 (2011. 6. 02)

Revision History		Rev	DATE	REMARK
1	Format changed PCB Check Sheet Ver1.9 to Power Check Sheet Ver1.0	1.0	2011.06.02	




Version 1.0 (2011. 6. 02)

Details Check Item		RESULT		REMARK
		OK	NG	
▶ Components LOCATION NO.				
1	Power Primary section circuit Location No. : 100 series (Including Multi primary)	V		
2	Power Secondary section circuit Location No. : 200 series (Including Stand by & Multi Secondary)	V		
3	Inverter Primary section circuit Location No. : 300 series			NA
4	Inverter Secondary section (Including F/B,OVP circuit) circuit Location No. : 400 series			NA
5	Stand by Primary section circuit Location No. : 500 series	V		
6	PFC section circuit Location No. : 600 series	V		
7	MICOM section circuit Location No. : 700 series	V		
8	LCD : LED Driver section circuit Location No. : 800 series	V		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
		OK	NG	
▶ Components LOCATION NO.		OK	NG	
14	Resistor circuit Location No. : From beginning to R***.	V		
15	Capacitor circuit Location No. : From beginning to C***.	V		
16	Diode circuit Location No. : From beginning to D***.	V		
17	Zener Diode circuit Location No. : From beginning to ZD***.	V		
18	Coil circuit Location No. : From beginning to L***.(Including PFC section)	V		
19	Transformer circuit Location No. : From beginning to T***.(Including Drive Trans)	V		
20	Bead circuit Location No. : From beginning to LB***.	V		
21	Fuse circuit Location No. : From beginning to F***.	V		
22	TR/FET/Thyristor circuit Location No. : From beginning to Q***.	V		
23	Varistor circuit Location No. : From beginning to VA***.	V		
24	Volume Resistor circuit Location No. : From beginning to VR***.			Variable Resistance NA
25	Jumper circuit Location No. : From beginning to J***.	V		
26	H/S circuit Location No. : From beginning to HS***.	V		
27	IC circuit Location No. : From beginning to IC***.	V		2007.04.16 DDC Standard
28	Connector wafer / Ass`y(Board in type) circuit Location No.: From beginning to P***.	V		
29	Eyelet circuit Location No. : From beginning to EL***.	V		
30	Gripper circuit Location No. : From beginning to G***.			NA
31	Holder circuit Location No. : From beginning to HD***.	v		Should be HD101 or HD601 notHD1
32	Thermistor circuit Location No. : From beginning to TH***.	V		



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



Version 1.0 (2011. 6. 02)

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

NOTE 0



Creepage

NOTE 1





CAPACITOR



Version 1.0 (2011. 6. 02)

Details Check Item		RESULT		REMARK
		OK	NG	
▶ Component				
10	All of parts should be separated more than 2mm around CORE (Including all Trans type). •In case of Inducted Voltage 1kV (peak to peak) should be separated more than 4mm. (based on 1000:1 Probe)	V		
11	Between Inverter Trans and Metal Frame(shield) is separated more than 4mm. (if it is difficult, surely add Insulation sheet)	V		
12	Output wafer of the secondary use add type of a fixed pin. (But, except for the wafer of LPB using for Micom Debugging)	V		N/A



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

NOTE 2



Safety GND 규정

NOTE 3



Input/Output

NOTE 3-2



B/D-in socket



Version 1.0 (2011. 6. 02)

Details Check Item		RESULT		REMARK
		OK	NG	
▶ EMI		OK	NG	
1	When Lightning Surge is L/N Test, Varistor must use more than 14Φ 620V.	V		
2	Lightning Surge to L/G & G/N : 3KV over Y-Cap. (Use Y1 Class)	V		
3	In case of lightning surge, only Fuse Dead is OK, only. (Countermeasure : Protect to arcing. Varistor is closely located Fuse.)	V		
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)	V		
5	Conducted Emission Test Condition : 110Vac/220Vac & 50Hz/60Hz TV Model : GND Connect / No connect VIVID/STANDARD, HDMI/ANTENNA	V		
▶ INVERTER (only LIPS)		OK	NG	
1	Do use Ballaster capacitor.	V		N/A
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]	V		N/A
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.	V		N/A
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)	V		N/A
5	Inverter wafer use horizontality type.	V		N/A



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

NOTE 4



Bypass-Diode


NOTE 5



Relay



Version 1.0 (2011. 6. 02)

Details Check Item		RESULT		REMARK
▶ Attachment		OK	NG	
1	 PL check List PL_280119	V		




Appendix 2

Warranty letter



Non-use certificate

Description	For approval / For mass production	Submitting date	2012 . 06 . 11
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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.	EAY62713701	Part production date	filling the sheet in case of mass production	
Maker Part No.	LGP42P-12LPB [OPVP-0172]	Production plant	filling the sheet in case of mass production	
Part name	LGP42P-12LPB [OPVP-0172]			

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, Cr⁶⁺, 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: low reflow (Requirement : 250°C /10 sec)

1. Maximum heat-resisting temperature : 260 °C 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.



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		✓	