

UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 2nd Ed, 2014-12-01 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1-14, 2nd Ed (Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Component Recognition
CCN:	QQJQ2, QQJQ8 (Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	POWER SUPPLY
Model:	GB130QZYY where Z, Z represents A, C, D, E or P, due to different output voltages. YY represents any number from 00 to 99 or blank, which only for market purpose, not influence safety function.
Rating:	Input: 100-240 Vac, 50-60 Hz, 2.0A Output: For convection, V5: 5Vdc/1.0A, Max. total power of 100W for V1, V2, V3 and V4 outputs. See model difference for detail. For 200LFM, V5: 5Vdc/1.0A, Max. total power of 130W for V1, V2, V3 and V4 outputs. See model difference for detail
Applicant Name and Address:	SL POWER ELECTRONICS CORP BLDG A 6050 KING DR VENTURA CA 93003 UNITED STATES

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

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Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared By: Xing Liu/ Jie Qian / Handler

Reviewed By: Marshal Zhang / Reviewer

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

A. Authorization - The Authorization page may include additional Factory Identification Code markings.

B. Generic Inspection Instructions -

- i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
- ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
- iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

POWER SUPPLY utilizing a transformer for reinforced isolation between input and output, intended for building in. A suitable input/output connector is provided for internal connection in the end use product.

Model Differences

Model GB130QA, GB130QC, GB130QD, GB130QE, GB130QP are similar to each other except some secondary components and the output voltage and current, see enclosure 7-03 for details

Test Item Particulars

Classification of use by	Ordinary person
Supply Connection	AC Mains
Supply % Tolerance	+10%/-10%
Supply Connection – Type	mating connector
Considered current rating of protective device as part of building or equipment installation	20 A; building;
Equipment mobility	for building-in
Over voltage category (OVC)	OVC II
Class of equipment	Class I
Access location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified maximum operating ambient (°C)	Max. 50
IP protection class	IPX0
Power Systems	TN
Altitude during operation (m)	5000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	0.302 max

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : Max. 50 degree C
- The product is intended for use on the following power systems : TN
- Considered current rating of protective device as part of the building installation (A) : 20
- Mains supply tolerance (%) or absolute mains supply values : +10%/-10%
- The equipment disconnect device is considered to be : evaluated in end use product

Engineering Conditions of Acceptability

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- The following product-line tests are conducted for this product : Electric Strength
- The end-product Electric Strength Test is to be based upon a maximum working voltage of : Primary-Earthed Dead Metal: 347 Vrms, 588 Vpk, Primary-SELV: 347 Vrms, 588 Vpk, ,
- The following output circuits are at ES1 energy levels : All output ports
- The following output circuits are at PS3 energy levels : All output ports
- The maximum investigated branch circuit rating is : 20 A
- The investigated Pollution Degree is : 2
- Proper bonding to the end-product main protective earthing termination is : Required
- An investigation of the protective bonding terminals has : not been conducted
- The following input terminals/connectors must be connected to the end-product supply neutral : N
- The following end-product enclosures are required : Mechanical, Electrical, Fire
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105°C) : T1(Class F) , T2(Class F)
- The equipment is suitable for direct connection to : AC mains supply
- The power supply was evaluated to be used at altitudes up to : "5,000 m"
- •Clause 5.6.4 and shall be evaluated in end products.

- - Different output loading based on convection and 200LFM, see model difference for details.

- An instructional safeguard shall state in end use product that the fuse is in the neutral, and that the mains shall be disconnected to de-energize the phase conductors

Additional Information

N/A

Additional Standards

The product fulfills the requirements of: EN 62368-1:2014 + A11:2017

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listees or Recognized companys name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number

Equipment rating marking – ratings	"Input Ratings (voltage, frequency/dc, current/power)", "Output Ratings (voltage, frequency/dc, current/power)"
Fuses – replaceable by ordinary or instructed person	(component ID:F11), "250V T12AH" located on or adjacent to fuse or fuseholder or in service manual.
Special Instructions to UL Representative Inspect the transformer(s) listed in table "Electric Strength Test Special Constructions" per AA1.1- (C): When the tests are conducted at other location, inspect test record and specification sheet provided by the component manufacturer. Verify the specification sheet indicates 100% routine test specified in the table be conducted at the component manufacturer.	

BD1.0						
TABLE: Production-Line Testing Requirements						
BD1.1						
Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.						
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
GB130QZYY where Z, Z represents A, C, D, E or P, due to different output voltages. YY represents any number from 00 to 99 or blank, which only for market purpose, not influence safety function.	T1, T2	--	Primary to Secondary	3000	4242	1s
BD1.2						
Earthing Continuity Test Exemptions – This test is not required for the following models:						
BD1.3						
Electric Strength Test Exemptions – This test is not required for the following models:						
BD1.4						
Electric Strength Test Component Exemptions – The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test.						
-						

BE1.0					
Sample and Test Specifics for Follow-Up Tests at UL					
Model	Component	Material	Test	Sample (s)	Test Specifics

4.1.2	TABLE: List of critical components					Pass
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Product Category CCN(s)	Mark(s) of conformity	Supplement ID
1. Printed wiring board (including Main board, A2 board, V1 DC to DC control board, V3 DC to DC control board and V4 DC to DC control board)	Interchangeable	Interchangeable	Min V-1, Min. 130degree C	ZPMV2	UL	
2. Connectors (primary) J100	TYCO ELECTRONICS CORP	MTA 156 series	Rated Min.600Vac, 7A, 105 degree C	ECBT2, RTRT2	UL (E28476)	
3. Connector (Secondary) J102, J3	Interchangeable	Interchangeable	Min. 60V	ECBT2, RTRT2	UL	
3-1 Connector (Secondary) J102, J3 – Alternate	Interchangeable	Interchangeable	Copper alloy pins or housed in bodies of plastic rated V-2 minimum	QMFZ2	UL	
4. Fuse (F1, F2)	SUZHOU WALTER ELECTRONIC CO LTD	ICP series	T3.15A 250Vac	JDYX/7	UL/cUL (E56092)	
5. X Capacitor, Filter (C145)	MERITEK ELECTRONICS CORP	MEX	Max.0.22uF,Min. 250Vac,Min. 100 degreeC, X2 type.	FOWX2/8	UL/cUL (E197475)	
5-1. X Capacitor, Filter (C145) – Alternate	XIAMEN FARATRONIC CO LTD	MKP62	Max.0.22uF,Min. 250Vac,Min. 100 degreeC, X2 type.	FOWX2/8	UL/cUL (E186600)	
5-2. X Capacitor, Filter (C145) – Alternate	VISHAY ELECTRONICA PORTUGAL LDA	339	Max.0.22uF,Min. 250Vac,Min. 100 degreeC, X2 type.	FOWX2/8	UL/cUL (E354331)	
5-3. X Capacitor, Filter (C145) – Alternate	OKAYA ELECTRIC INDUSTRIES CO LTD	LE	Max.0.22uF,Min. 250Vac,Min. 100 degreeC, X2 type.	FOWX2/8	UL/cUL (E47474)	

5-4. X Capacitor, Filter (C145) – Alternate	KEMET ELECTRONICS OY	PHE840 series	Max.0.22uF,Min. 250Vac,Min. 100 degreeC, X2 type.	FOWX2/8	UL/cUL (E73869)	
6. X Capacitor, Filter (C49)	XIAMEN FARATRONIC CO LTD	MKP62	Max.0.68uF,Min. 250Vac,Min. 100 degreeC, X2 type.	FOWX2/8	UL/cUL (E186600)	
6-1. X Capacitor, Filter (C49) – Alternate	MERITEK ELECTRONICS CORP	MEX	Max.0.68uF,Min. 250Vac,Min. 100 degreeC, X2 type.	FOWX2/8	UL/cUL (E197475)	
6-2. X Capacitor, Filter (C49) – Alternate	DAIN ELECTRONICS CO LTD	MPX	Max.0.68uF,Min. 250Vac,Min. 100 degreeC, X2 type	FOWX2/8	UL/cUL (E147776)	
7. Inductor (L1)	--	--	Min. 130 degree C	--	--	
7-1. Inductor (L1) – Core	--	--	Material: Iron powderSee Enclosure - Diagram (4-01) for detailed dimension	--	--	
7-2. Inductor (L1) – Tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT	130 degree C	OANZ2	UL (E165111)	
7-2a. Inductor (L1) – Tape – Alternate	Interchangeable	Interchangeable	Min. 130 degree C	OANZ2	UL	
7-3. Inductor (L1) – Enamel wire	Interchangeable	Interchangeable	Min. 130 degree C	OBMW2	UL	
7-4. Inductor (L1) - Epoxy	Interchangeable	Interchangeable	Min. 130 degree C	QMFZ2	UL	
8. Inductor (L2)	-	-	Min. 130 degree C	--	--	
8-1. Inductor (L2) – Base	CHANG CHUN PLASTICS CO LTD	T375J	Phenolic, V-0, Min. 130 degree C, 3.3 mm thickness	QMFZ2/8	UL/cUL (E59481)	
8-2. Inductor (L2) – Enamel wire	Interchangeable	Interchangeable	Min. 130 degree C	OBMW2	UL	

8-3. Inductor (L2) – Core	-	-	Material: MnZnSee Enclosure - Diagram (4-02) for detailed dimension.	--	--	
8-4. Inductor (L2) – PCB	Interchangeable	Interchangeable	Min V-1, Min. 130degree C	ZPMV2	UL	
8-5. Inductor (L2) – Epoxy	Interchangeable	Interchangeable	Min. 130degree C	QMFZ2	UL	
9. Choke(L4)	-	-	Min. 130degree C	--	--	
9-2. Choke(L4) – Core	-	-	Material: MnZnSee Enclosure - Diagram (4-03) for details	--	--	
9-3. Choke(L4) – Bobbin	SUMITOMO BAKELITE CO LTD	PM-9820	Phenolic, V-0, 150 degree C, Min. 0.6 mm thickness.	QMFZ2/8	UL/cUL (E41429)	
9-4 Choke(L4) - Insulation tape	Interchangeable	Interchangeable	Min. 130 degree C;	OANZ2	UL (E165111)	
9-5 Choke(L4) - Magnet wire	Interchangeable	Interchangeable	Min. 130 degree	OBMW2	UL	
9-6 Choke(L4) - Copper foil	-	-	See Enclosure - Diagram (4-03) for details	--	--	
9-7 Choke(L4) - Insulation tube	GREAT HOLDING INDUSTRIAL CO LTD	TFL	200 degree C, VW-1	YDPU2	UL (E156256)	
9-7a Choke(L4) - Insulation tube – Alternate	Interchangeable	Interchangeable	Min. 130 degree C, VW-1	YDPU2	UL	
9-8 Choke(L4) - Vanish	Interchangeable	Interchangeable	Min. 130 degree C,	OBOR2	UL (E75225)	
9-9 Choke(L4) - PCB	Interchangeable	Interchangeable	Min V-1, Min. 130degree C	ZPMV2	UL	

10. Resistor, bleeding (R5, R6, R7, R10)	--	--	Each rated max. 4.7M Ω , 0.25W	--	--	
11. Resistor, bleeding (R27, R44, R88, R89)	--	--	Each rated max. 0.2M Ω , 0.25W	--	--	
12. Discharge IC (U10)	ON SEMICONDUCTOR	NCP4810	Min. 300Vac, Min. 0.85mA	--	--	
12-1. Discharge IC (U10) – Alternate	POWER INTERGRATIONS CROP.	CAP200DG	Min. 300Vac, Min. 0.85mA	--	--	
13. MOV (R87)	THINKING ELECTRONIC INDUSTRIAL CO LTD	TVR10471K	300Vac, 105 degree C, V-1	VZCA2/8	UL/cUL (E314979)	
13-1 MOV (R87) – Alternate	MERITEK ELECTRONICS CORP	MVR10D471K	300Vac, 105 degree C, V-1	VZCA2/8	UL/cUL (E326004)	
13-2 MOV (R87) – Alternate	VISHAY RESISTORS BELGIUM BVBA	VDRH(#)10S300[%]	300Vac, 85 degree C, V-1	VZCA2/8	UL/cUL (E332800)	
14. Y Capacitor, Filter (C10, C18, C54, C57, C59)	WALSIN TECHNOLOGY CORP	AH series	Min. 250V, Max. 1000pF, Min. 125 degree C, Y1 type	FOWX2/8	UL/cUL (E146544)	
14-1. Y Capacitor, Filter (C10, C18, C54, C57, C59) – Alternate	MURATA MFG CO LTD	KX	Min. 250V, Max. 1000pF, Min. 125 degree C, Y1 type	FOWX2/8	UL/cUL (E37921)	
14-2. Y Capacitor, Filter (C10, C18, C54, C57, C59) – Alternate	SUCCESS ELECTRONICS CO LTD	SE Series	Min. 250V, Max. 1000pF, Min. 125 degree C, Y1 type	FOWX2/8	UL/cUL (E114280)	
14-3. Y Capacitor, Filter (C10, C18, C54, C57, C59) – Alternate	MERITEK ELECTRONICS CORP	MCH Series or AH Series	Min. 250V, Max. 1000pF, Min. 125 degree C, Y1 type	FOWX2/8	UL/cUL (E197475)	

14-4. Y Capacitor, Filter (C10, C18, C54, C57, C59) – Alternate	JYH HSU (JEC) ELECTRONICS LTD	JD Series	Min. 250V, Max. 1000PF, Min. 125 degree C, Y1 type	FOWX2/8	UL/cUL (E356696)	
15. Y Capacitor, Filter (C22)	SUCCESS ELECTRONICS CO LTD	SE Series	Min. 250V, Max. 3300pF, Min. 125 degree C, Y1 type	FOWX2/8	UL/cUL (E114280)	
15. Y Capacitor, Filter (C22) – Alternate	WALSIN TECHNOLOGY CORP	AH series	Min. 250V, Max. 3300pF, Min. 125 degree C, Y1 type	FOWX2/8	UL/cUL (E146544)	
15-1. Y Capacitor, Filter (C22) – Alternate	MURATA MFG CO LTD	KX	Min. 250V, Max. 3300PF, Min. 125 degree C, Y1 type	FOWX2/8	UL/cUL (E37921)	
15-2. Y Capacitor, Filter (C22) – Alternate	MERITEK ELECTRONICS CORP	MCH Series or AH Series	Min. 250V, Max. 3300PF, Min. 125 degree C, Y1 type	FOWX2/8	UL/cUL (E197475)	
16. NTC(R32)	Thinking	SCK	5 Ohm at 25 degree C.	--	--	
16-1. NTC(R32) – Alternate	Meritek	SCK	5 Ohm at 25 degree C.	--	--	
17. Bridge Diode (D1)	--	--	Min. 800V, Min.4A	--	--	
18. Electrolytic Capacitor (C2)	--	--	Min.450V, Max.150uF. Min. 105degree C	--	--	
19. MOS (Q3)	--	--	Min.16A, Min 600V	--	--	
20. MOS (Q4)	--	--	Min. 9A, Min. 600V	--	--	
21. MOS (Q5)	--	--	Min. 9A, Min. 600V	--	--	
22. Thermistor (R198)	THINKING ELECTRONIC INDUSTRIAL CO LTDINDUSTRIAL CO LTD	TSM2A204	200K Ohm at 25 degree C.	XGPU2/8	UL/cUL (E138827)	

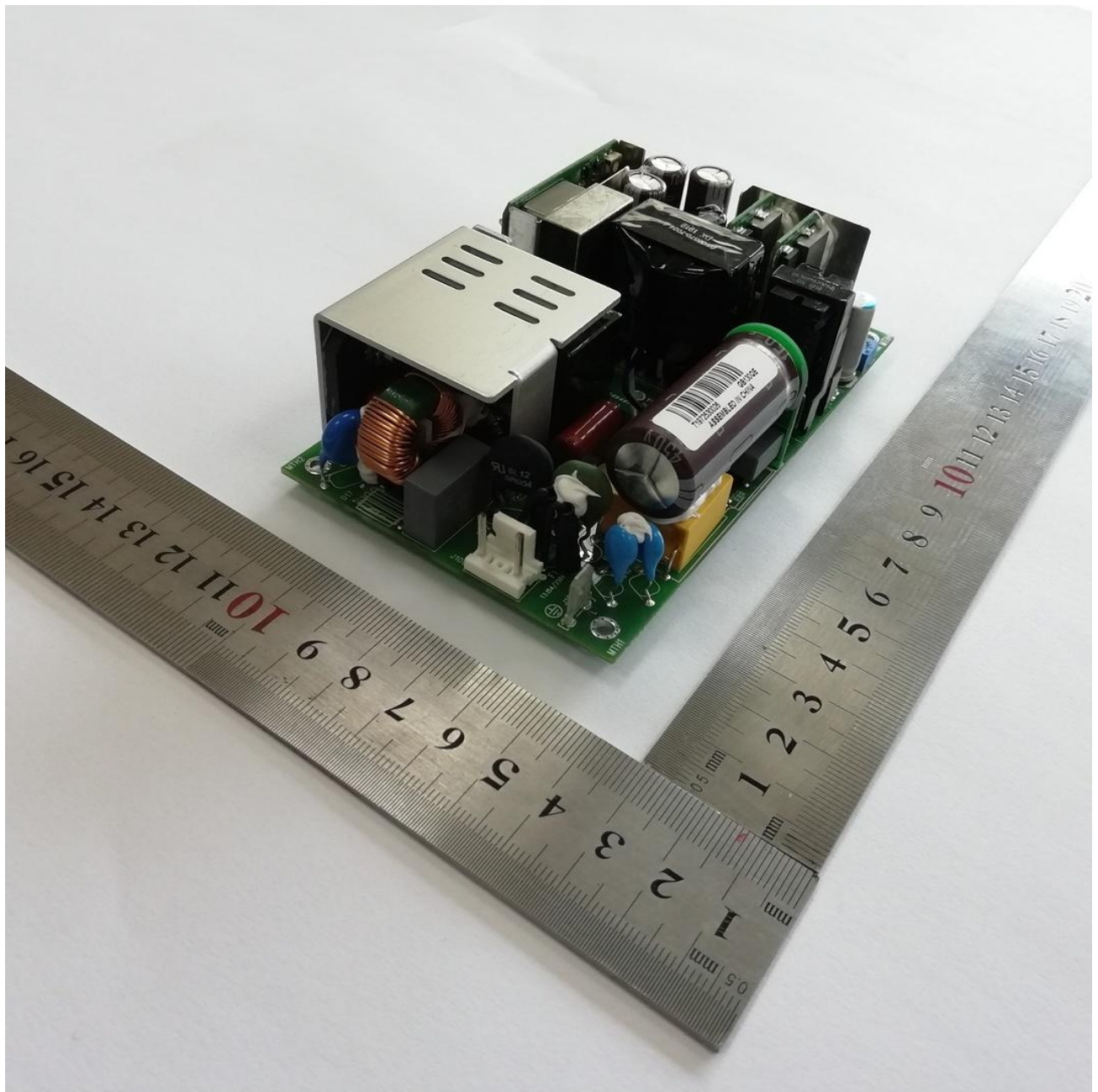
23. Transformer (T1)	WEIHAI DONGXING ELECTRONICS CO LTD	5-36570-7012 (for GB130QC), 5-36570-7024(for GB130QE), 5-36570-7112 (for GB130QA), 5-36570-7124 (for GB130QD and GB130QP)	Class F, See Enclosure - Diagram (4-04), (4-05), (4-06) and (4-07) for details	--	--	
23-1. Insulation System (T1)	WEIHAI DONGXING ELECTRONICS CO LTD	Viking F-2 (ELANTAS/ Viking F-2)	Class F, details see the material list of diagram (4-04), (4-05), (4-06) and (4-07).	OBJY2/8	UL/cUL (E230776)	
23a. Transformer (T1) - Alternate	HAINING LIANFENG DONGJIN ELECTRONICS CO LTD	5-36570-7012 (for GB130QC), 5-36570-7024 (for GB130QE), 5-36570-7112 (for GB130QA), 5-36570-7124 (for GB130QD and GB130QP)	Class F, See Enclosure - Diagram (4-04), (4-05), (4-06) and (4-07) for details	--	--	
23a-1. Insulation System (T1) - Alternate	HAINING LIANFENG DONGJIN ELECTRONICS CO LTD	F81 (SUMITOMO/SBI5.1)	Class F, details see the material list of diagram (4-04), (4-05), (4-06) and (4-07).	OBJY2/8	UL/cUL (E235381)	
24. Transformer (T2)	WEIHAI DONGXING ELECTRONICS CO LTD	5-36570-7001	Class F, See Enclosure - Diagram (4-08) for details	--	--	
24-1. Insulation System (T2)	WEIHAI DONGXING ELECTRONICS CO LTD	Viking F-2 (ELANTAS/ Viking F-2)	Class F , details see the material list of diagram (4-08)	OBJY2/8	UL/cUL (E230776)	

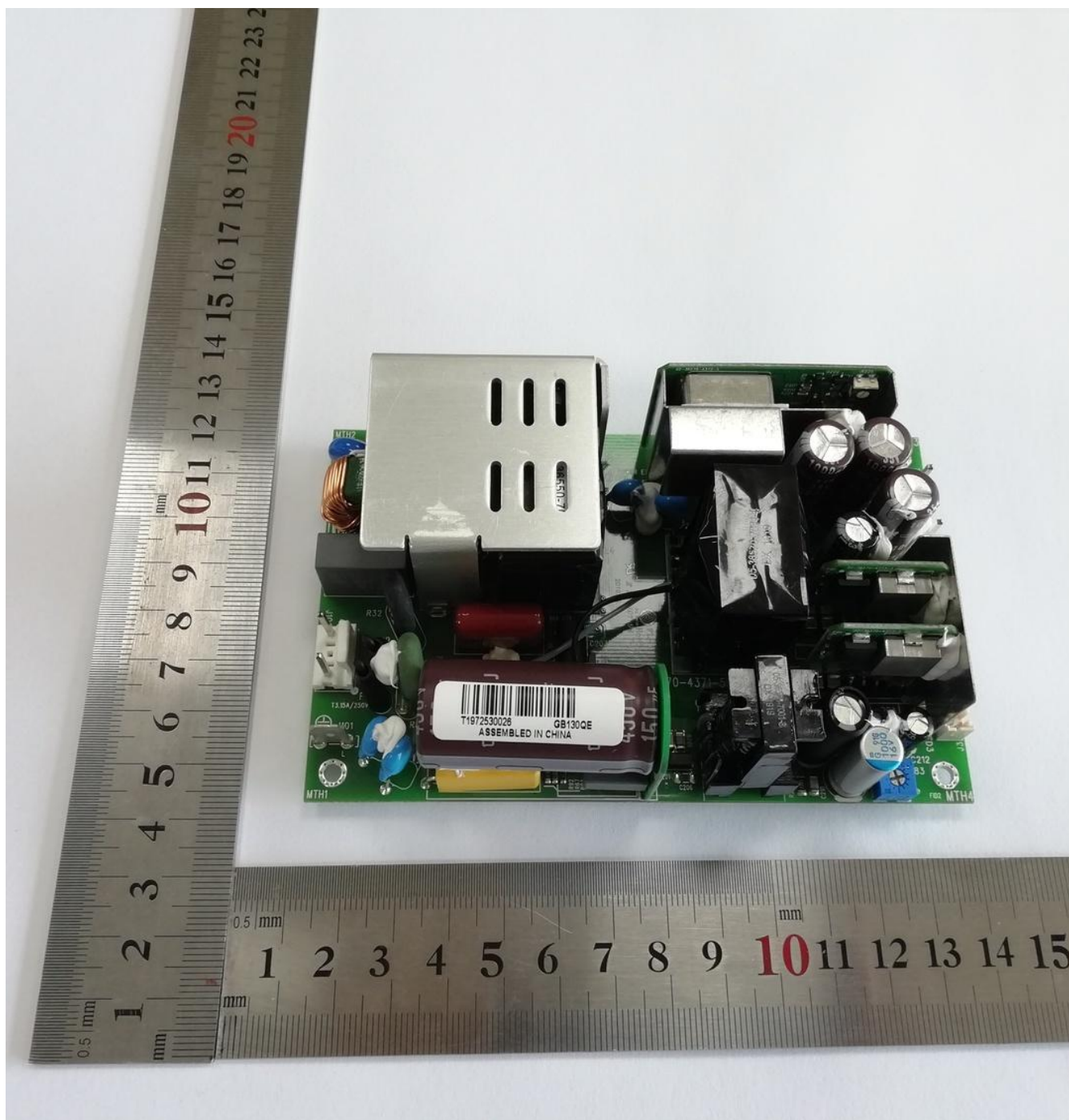
24a. Transformer (T2) - Alternate	HAINING LIANFENG DONGJIN ELECTRONICS CO LTD	5-36570-7001	Class F, See Enclosure - Diagram (4-08) for details	--	--	
24a-1. Insulation System (T2) – Alternate	HAINING LIANFENG DONGJIN ELECTRONICS CO LTD	F81 (SUMITOMO/SBI5.1)	Class F , details see the material list of diagram (4-08)	OBJY2/8	UL/cUL (E235381)	
25. Optical isolator (U13, U202, U203, U205, U206, U4)	COSMO ELECTRONICS CORP	K1010	5000Vac isolation, Min. 110 degree C	FPQU2/8	UL/cUL (E169586)	
25-1. Optical isolator (U13, U202, U203, U205, U206, U4) – Alternate	LITE-ON TECHNOLOGY CORP	LTV-816	5000Vac isolation, Min. 110 degree C	FPQU2/8	UL/cUL (E113898)	
25-2. Optical isolator (U13, U202, U203, U205, U206, U4) – Alternate	VISHAY SEMICONDUCTOR GMBH	TCLT1008	5000Vac isolation, Min. 110 degree C	FPQU2/8	UL/cUL (E76222)	
26. GAP PAD for L200	Interchangeable	Interchangeable	V-0, 1.0mm thickness	QMFZ2	UL	
27. Heatsink (HS1)	Interchangeable	Interchangeable	Aluminum See Enclosure - Diagram (4-09) for details.	--	--	
28. Heatsink (HS200)	Interchangeable	Interchangeable	Copper See Enclosure - Diagram (4-10) for details.	--	--	
29. Heatsink (HS2)	Interchangeable	Interchangeable	Copper See Enclosure - Diagram (4-11) for details.	--	--	
30. Insulating Tubing/Sleeving (for F1, F2, C203)	Interchangeable	Interchangeable	Min. 125°C, Min. 300Vac, VW-1	YDPU2	UL	
31. RTV/Glue	Interchangeable	Interchangeable	Min. V-2	QMFZ2	UL	

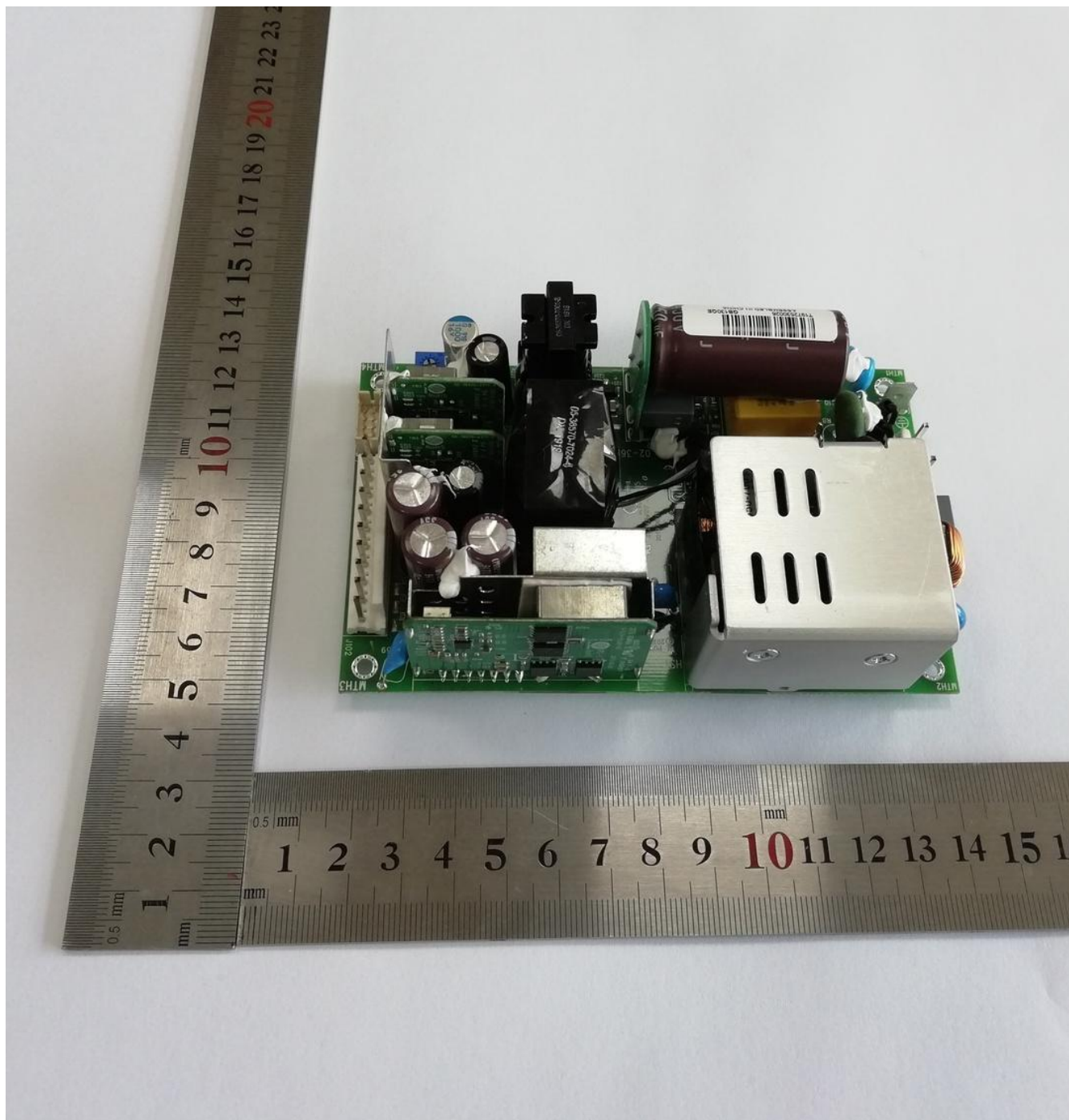
32. Insulating Tubing (for C36)	CHANGYUAN ELECTRONICS GROUP CO LTD	CB-HFT	Min. 125°C, Min. 300Vac, VW-1,	YDPU2	UL	
32. Insulating Tubing (for C36)- Alternate	SUMITOMO ELECTRIC FINE POLYMER INC	Sumitube F2(Z)	Min. 125°C, Min. 300Vac, VW-1,	YDPU2	UL	

Enclosures

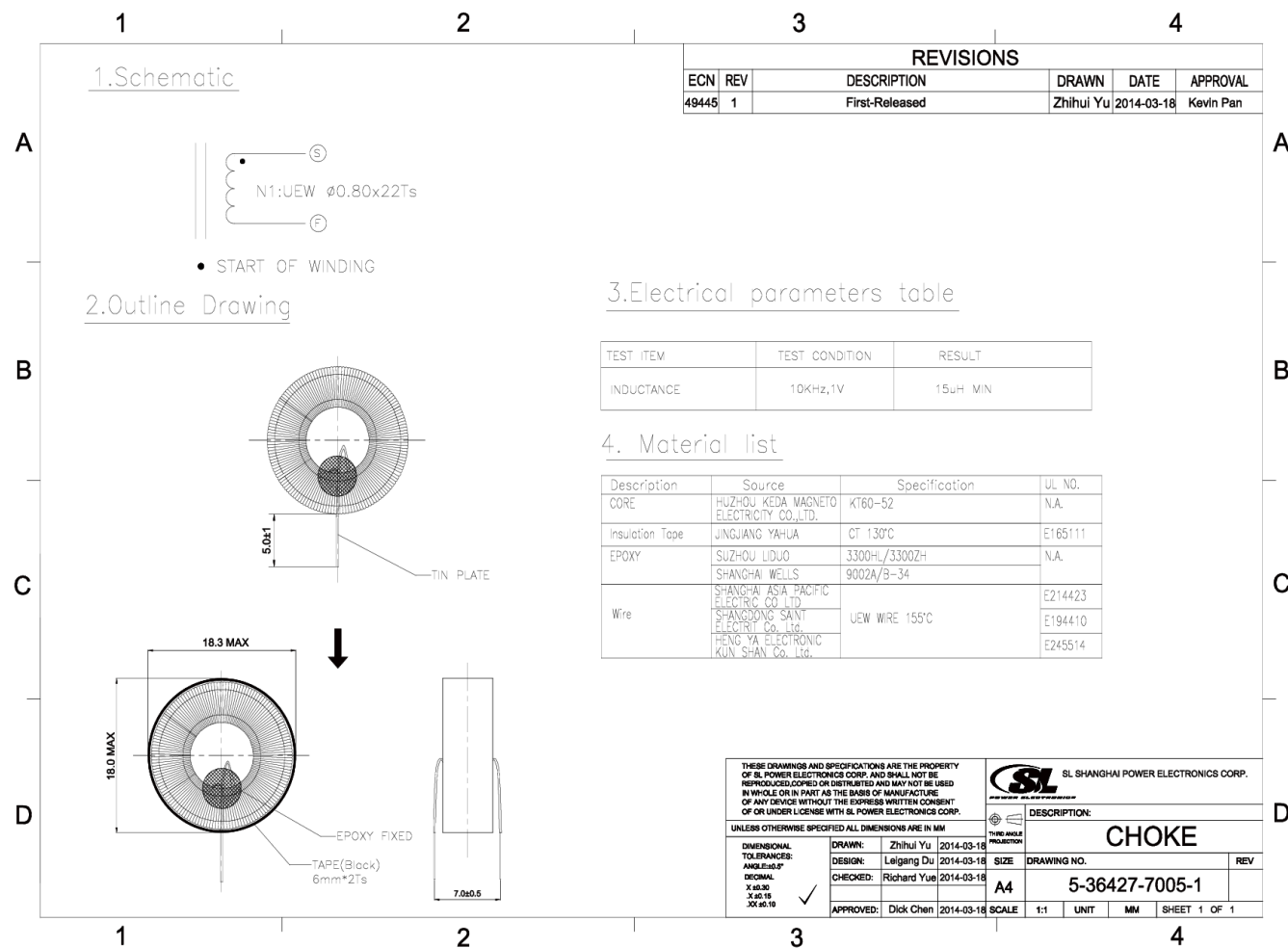
Type	Supplement Id	Description
Photographs	03-01	Overall view 1
Photographs	03-02	Overall view 2
Photographs	03-03	Overall view 3
Photographs	03-04	Back view
Diagrams	04-01	L1 spec
Diagrams	04-02	L2 spec
Diagrams	04-03	L4 spec
Diagrams	04-04	T1 spec of model GB130QA
Diagrams	04-05	T1 spec of model GB130QC
Diagrams	04-06	T1 spec of model GB130QD/ GB130QP
Diagrams	04-07	T1 spec of model GB130QE
Diagrams	04-08	T2 spec
Diagrams	04-09	HS1 spec
Diagrams	04-10	HS200 spec
Diagrams	04-11	HS2 spec
Diagrams	04-12	Gap pad spec
Schematics + PWB	05-01	PWB layout of A2 board
Schematics + PWB	05-02	PWB layout of main board
Schematics + PWB	05-03	PWB layout of V1 DC to DC control board
Schematics + PWB	05-04	PWB layout of V3&V4 DC to DC control board
Miscellaneous	07-01	Working vlotage data
Miscellaneous	07-02	CB declaration letter
Miscellaneous	07-03	Output rating of all models









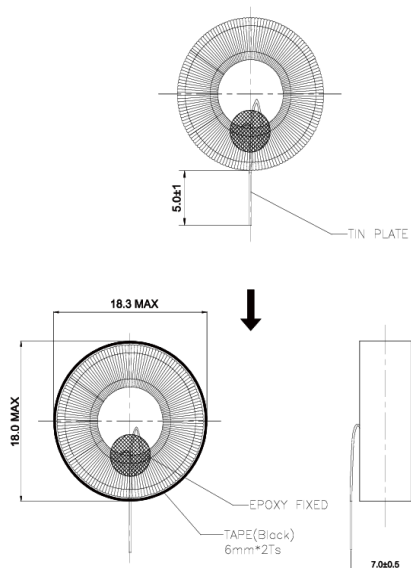


1.Schematic



• START OF WINDING

2.Outline Drawing



3.Electrical parameters table

TEST ITEM	TEST CONDITION	RESULT
INDUCTANCE	10KHz,1V	15uH MIN

4. Material list

Description	Source	Specification	UL NO.
CORE	HUZHOU KEDA MAGNETO ELECTRICITY CO.,LTD.	KT60-52	N.A.
Insulation Tape	JINGJIANG YAHUA	CT 130°C	E165111
EPOXY	SUZHOU LIUJIO	3300HL/3300ZH	N.A.
	SHANGHAI WELLS	9002A/B-34	
Wire	SHANGHAI ASIA PACIFIC ELECTRIC CO.,LTD.	UEW WIRE 155°C	E214423
	SHANGDONG SANTI ELECTRIC Co. Ltd.		E194410
	HENG YA ELECTRONIC KUN SHAN Co. Ltd.		E245514

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UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MM

THIRD ANGLE PROJECTION

SL SHANGHAI POWER ELECTRONICS CORP.

DESCRIPTION: **CHOKE**


DRAWN: Zhihui Yu 2014-03-18
 DESIGN: Leigang Du 2014-03-18
 CHECKED: Richard Yue 2014-03-18
 APPROVED: Dick Chen 2014-03-18

SIZE: A4
 DRAWING NO.: 5-36427-7005-1
 SCALE: 1:1 UNIT: MM SHEET 1 OF 1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVAL
1	New release	2010.4.9	ECN:45993

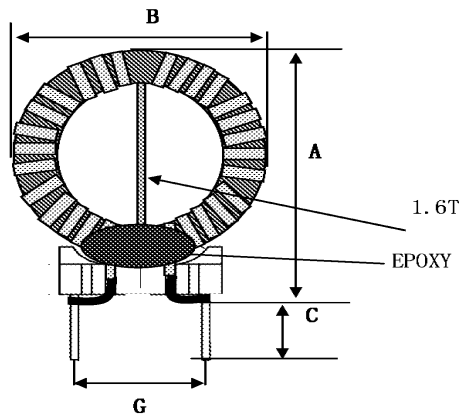
Choke

P/N: 5-36247-0012

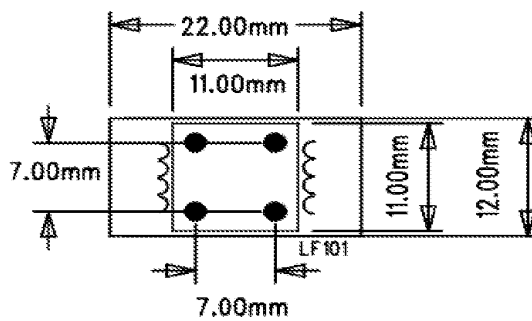
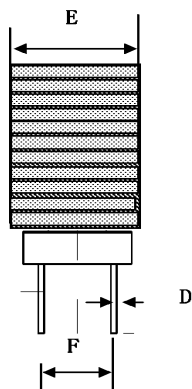
SUPPLEMENTARY INFORMATION FIRST USED		Choke			
DO NOT SCALE DRAWING					
DRAWN BY			SIZE	DRAWING NO.	REV
CHECK BY			A4	5-36247-0012	1
APPROVED			SHEET 1 OF 4		

规格书 SPECIFICATION SHEET		页号 Sheet No.:	2 OF 4
		日期 Date:	2010.4.9
品名 Part Name:	Choke	版本 REV:	1
型号 PART NO.:	5-36247-0012	规格 Type:	T18*10*8C

1. 外形尺寸(单位:mm)
SCHEMATIC DIAGRAM (UNIT:mm)



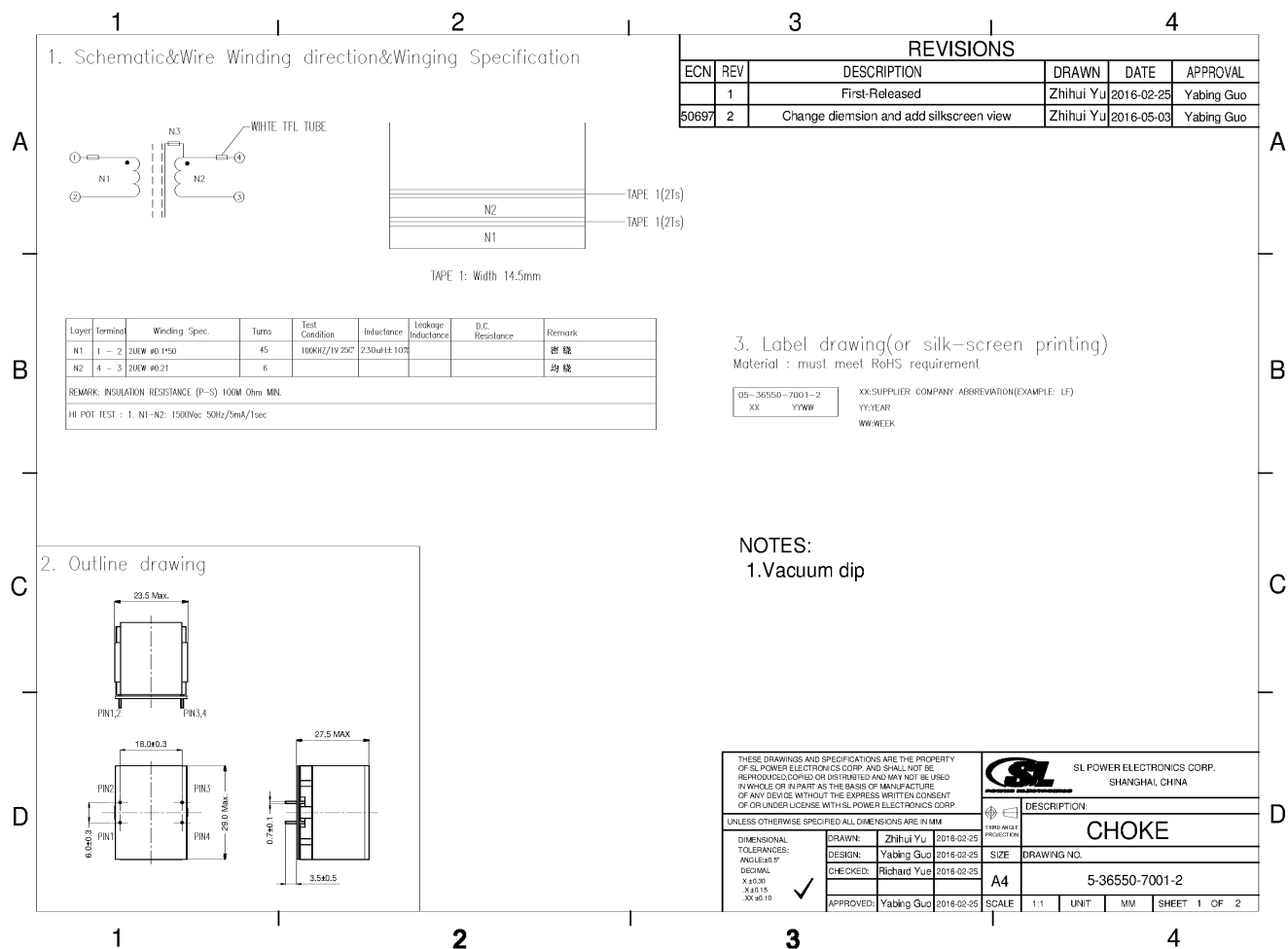
尺寸及公差 dimension and tolerance		
A	26.0	MAX
B	21.5	MAX
C	4.0	±1.0
D	0.6	±0.1
E	12.0	MAX
F	7.0	±0.3
G	7.0	±0.3

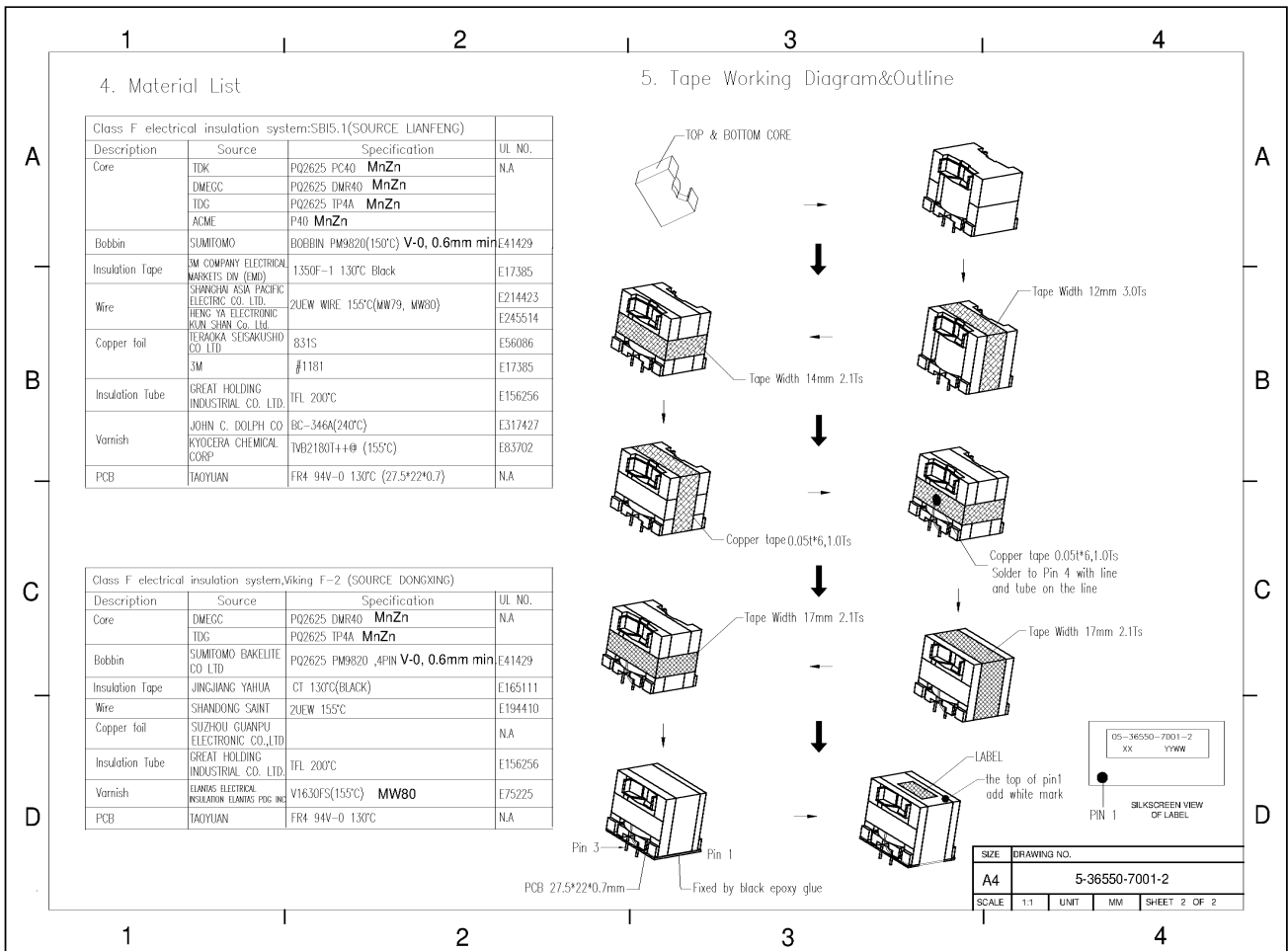


PCB LAYOUT

规格书 SPECIFICATION SHEET		页号 Sheet No.:	3 OF 4					
		日期Date:	2010.4.9					
品名 Part Name:	Choke	版本 REV:	1					
型号 PART NO.:	5-36247-0012	规格Type:	T18*10*8C					
2. 电路原理图 CONSTRUCTION.								
"●" 相同起点 Mean same start								
3. 绕线图 WINDING TABLE								
No	S 开始 F 结束 S-F	铜线及其它 wire or other	圈数 turns	边带 margin	套管 tube	绕线方式 winding way	胶带及圈数 wind tape turns	备注 remark
W1	1---2	UEW 0.65Φ	26 REF	L) R)		密绕close		
W2	4---3	UEW 0.65Φ	26 REF	L) R)		密绕close		
4. 电气特性 ELECTRICAL CHARACTERISTIC								
NO.	项目 ITEM	起始 TERMINAL	范围 SPEC.	其它 REMARK				
1	电感 Inductance	1---2/4---3	7mH MIN	LCR-3302 1KHz, 1V				
2	耐压 Electrical Strength	初级-次级 PCOII-SCOIL	AC1.5KV/S	AN9632W 50Hz 5mA				

规格书 SPECIFICATION SHEET			页号 Sheet No.:	4 OF 4
品名 Part Name:		Choke	日期Date:	2010.4.9
型号 PART NO.:		5-36247-0012	版本 REV:	1
			规格Type:	T18*10*8C
5.材料清单 MATERIALS LIST				
NO.	材料COMPONENT	原料MATERIALS	制造商MANUFACTURES	其它REMARKS
1	磁环 CORE	T18*10*8C ZR12K	LINYI ZHONGRUI ELECTRONICS CO.,LTD.	N/A
2	铜线 WIRE	UEW	SHANDONG SAINT ELECTRIC CO., LTD	E194410
			KUNSHAN DELICOMM ELECTRONICAL SCIENCE & TECHNOLOGY CO LTD	E250708
3	胶 EPOXY	9002A/B-34 BLACK	WELLS ELECTRONIC MATERIALS (SHANGHAI)CO., LTD	N/A
4	底座 BASE	T375J	CHANG CHUN PLASTICS CO.,LTD	E59481
5	PCB	FR4 1.6T	KINGBOARD LAMINATES LTD.	E123995


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1. Schematic & Wire Winding direction & Winding Specification

Start of winding

Layer	Terminal	Winding Spec.	Turns	Test Condition	Inductance	Leakage Inductance	D.C. Resistance	Remark
P1	FL1 - FL2	TW #0.35*1P	50	100kHz, IV	880uH±5%	150uH±12% 3000 PPM 5k10		Winding tight & flat 密绕并平绕
S1	8 - 6	LITZ #0.1*100	3	100kHz, IV				Winding tight 密绕
S2	7 - 10	LITZ #0.1*100	3	100kHz, IV				Winding tight 密绕
S3	4 - 3	LITZ #0.1*20	5					双线并绕
S4	3 - 5	LITZ #0.1*20	5					双线并绕
S5	1 - 9	LITZ #0.1*20	4.5					双线并绕
S6	9 - 2	LITZ #0.1*20	4.5					双线并绕

REMARK: INSULATION RESISTANCE(P-S) 100M Ohm MIN
HI POT TEST: 1. P-S: 4500Vdc 50Hz/5mA/3sec

REVISIONS					
ECO	REV	DESCRIPTION	DRAWN	DATE	APPROVAL
	1	PRE - RELEASE	Zhihui Yu	2018-12-10	Dick Chen
55259	2	Change Leakage Inductance	Zhihui Yu	2019-01-11	Dick Chen
55754	3	Change information	Zhihui Yu	2019-04-23	Dick Chen

3. Label drawing (or silk-screen printing)

Material : must meet RoHS requirement

05-36570-7112-3 XX: SUPPLIER COMPANY ABBREVIATION (EXAMPLE: LF)
XX YYWW YY: YEAR
WW: WEEK

2. Outline drawing

For twist S1&S2,
The distance of twist as below

NOTES:

- Vacuum dip
- Add EPOXY in the middle of core's air gap.

1
2
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2. Outline drawing

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MM	
DIMENSIONAL TOLERANCES	ANGLE ±0.5°
DECIMAL	±0.20
	±0.30
	±0.15

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SL POWER ELECTRONICS CORP.
SHANGHAI, CHINA

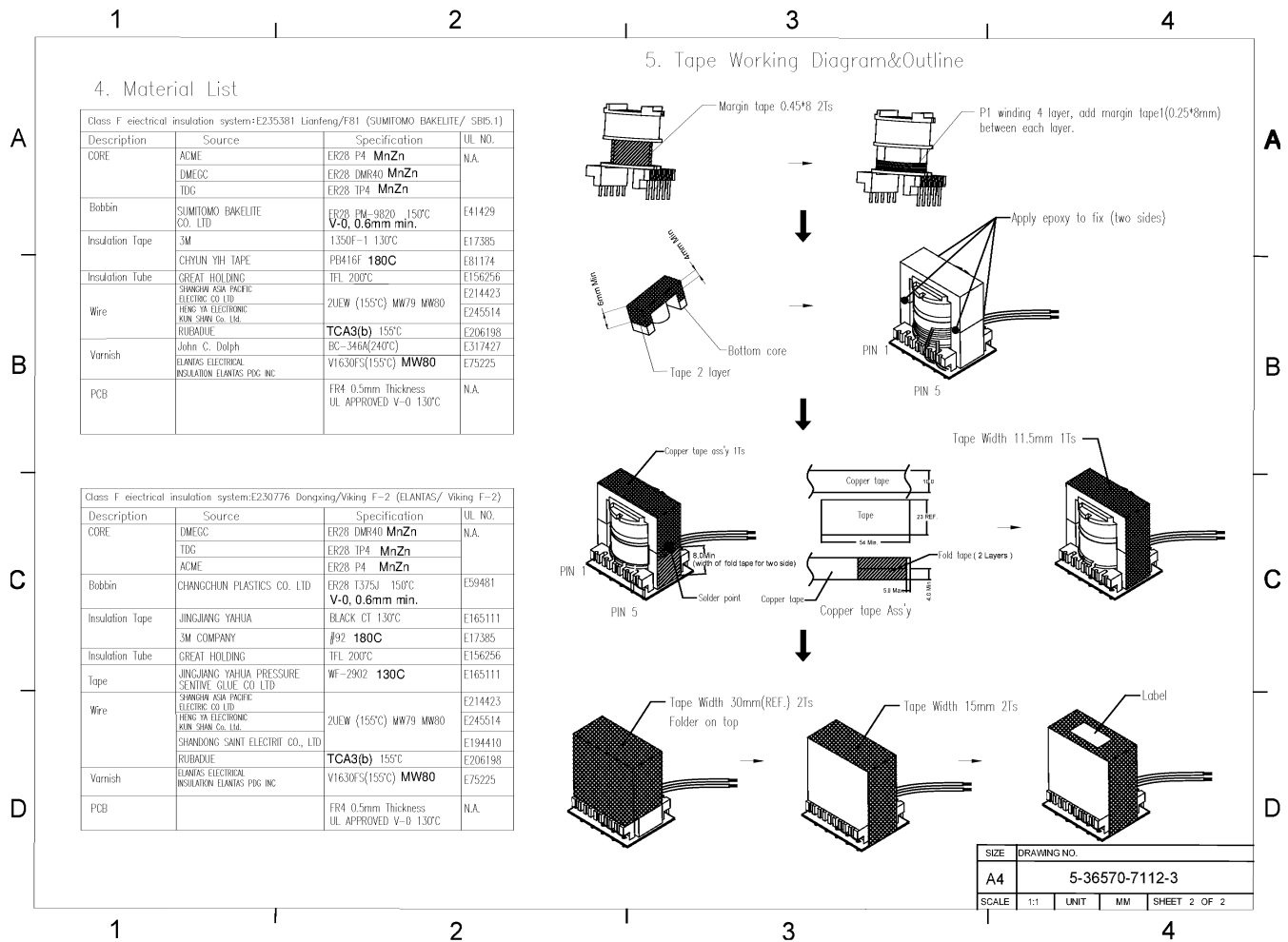
DESCRIPTION
Transformer

DRAWN	DESIGN	CHECKED	APPROVED
Zhihui Yu	Zhihui Yu	Yabing Guo	Dick Chen

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DATE	SIZE	DRAWING NO.
2018-09-28	A4	5-36570-7112-3

SCALE	UNIT	MM	SHEET	1 OF 2
1:1	MM		1	2



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1. Schematic & Wire Winding direction & Winding Specification

PB416F OR #92 TAPE

Start of winding

Layer	Terminal	Winding Spec.	Turns	Test Condition	Inductance	Leakage Inductance	D.C. Resistance	Remark
P1	FL1 - FL2	1W 40.35*1P	50	100kHz, 1V	880uH±5%	150uH±10% SHORT PIN S&S		Winding tight & flat 密绕并平整
S1	8 - 6	1U7 40.1*100	3	100kHz, 1V				Winding tight 密绕
S2	7 - 10	1U7 40.1*100	3	100kHz, 1V				Winding tight 密绕
S3	4 - 3	1U7 40.1*20	5					双线并绕
S4	3 - 5	1U7 40.1*20	5					双线并绕
S5	1 - 9	1U7 40.1*20	5.5					双线并绕
S6	9 - 2	1U7 40.1*20	5.5					双线并绕

REMARK: INSULATION RESISTANCE(P-S) 100M Ohm MIN
HI POT TEST: 1. P-S: 4500Vac 50Hz/5mA/5sec

2. Outline drawing

For twist S1&S2,
The distance of twist as below

3. Label drawing (or silk-screen printing)

Material: must meet RoHS requirement

05-36570-7012-4	XX-SUPPLIER COMPANY ABBREVIATION (EXAMPLE: LF)
XX YYWW	YY: YEAR
	WW: WEEK

REVISIONS

ECO	REV	DESCRIPTION	DRAWN	DATE	APPROVAL
	1	PRE - RELEASE	Zhihui Yu	2018-08-28	Dick Chen
	2	Change S5 ,S6 turns and Lr	Zhihui Yu	2018-12-10	Dick Chen
55259	3	Change Leakage Inductance	Zhihui Yu	2019-01-11	Dick Chen
55754	4	Change information	Zhihui Yu	2019-04-23	Dick Chen

3. Label drawing (or silk-screen printing)

Material: must meet RoHS requirement

05-36570-7012-4	XX-SUPPLIER COMPANY ABBREVIATION (EXAMPLE: LF)
XX YYWW	YY: YEAR
	WW: WEEK

NOTES:

- Vacuum dip
- Add EPOXY in the middle of core's air gap.

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UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MM		DESCRIPTION: Transformer	
DIMENSIONAL TOLERANCES ANGLE±0.5° DECIMAL: X±0.50 X±0.50 XX±0.15	DRAWN: Zhihui Yu 2018-08-28 DESIGN: Zhihui Yu 2018-08-28 CHECKED: Yabing Guo 2018-08-28 APPROVED: Dick Chen 2018-08-28	SIZE: A4 DRAWING NO.: 5-36570-7012-4	SCALE: 1:1 UNIT: MM SHEET 1 OF 2

	1	2	3	4																																																		
A	<h3 style="text-align: center;">4. Material List</h3> <p>Class F electrical insulation system:E235381 Lianfeng/F81 (SUMITOMO BAKELITE/ SBI5.1)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Description</th> <th>Source</th> <th>Specification</th> <th>UL NO.</th> </tr> </thead> <tbody> <tr> <td rowspan="3">CORE</td> <td>ACME</td> <td>ER28 P4 MnZn</td> <td rowspan="3">N.A.</td> </tr> <tr> <td>DMECC</td> <td>ER28 DMR40 MnZn</td> </tr> <tr> <td>IDG</td> <td>ER28 TP4 MnZn</td> </tr> <tr> <td>Bobbin</td> <td>SUMITOMO BAKELITE CO. LTD</td> <td>EP28 PM-9820 150°C V-0, 0.6mm min.</td> <td>E41429</td> </tr> <tr> <td rowspan="2">Insulation Tape</td> <td>3M</td> <td>1350F-1 130°C</td> <td>E17385</td> </tr> <tr> <td>CHUN YH TAPE</td> <td>PB416F 180C</td> <td>E81174</td> </tr> <tr> <td>Insulation Tube</td> <td>GREAT HOLDING</td> <td>ITL 200°C</td> <td>E156256</td> </tr> <tr> <td rowspan="3">Wire</td> <td>SHANGHAI ASIA PACIFIC ELECTRIC CO.LTD</td> <td>2UEW (155°C) MW79 MW80</td> <td>E214423</td> </tr> <tr> <td>HENG YA ELECTRONIC KUN SHAN Co. Ltd.</td> <td></td> <td>E245514</td> </tr> <tr> <td>RURADJIE</td> <td>TCA3(b) 155°C</td> <td>E206198</td> </tr> <tr> <td rowspan="2">Varnish</td> <td>John C. Dolph</td> <td>BC-346A(240°C)</td> <td>E317427</td> </tr> <tr> <td>ELANTAS ELECTRICAL INSULATION ELANTAS PDC INC</td> <td>V1630FS(155°C) MW80</td> <td>E75225</td> </tr> <tr> <td>PCB</td> <td></td> <td>FR4 0.5mm Thickness UL APPROVED V-0 130°C</td> <td>N.A.</td> </tr> </tbody> </table>		Description	Source	Specification	UL NO.	CORE	ACME	ER28 P4 MnZn	N.A.	DMECC	ER28 DMR40 MnZn	IDG	ER28 TP4 MnZn	Bobbin	SUMITOMO BAKELITE CO. LTD	EP28 PM-9820 150°C V-0, 0.6mm min.	E41429	Insulation Tape	3M	1350F-1 130°C	E17385	CHUN YH TAPE	PB416F 180C	E81174	Insulation Tube	GREAT HOLDING	ITL 200°C	E156256	Wire	SHANGHAI ASIA PACIFIC ELECTRIC CO.LTD	2UEW (155°C) MW79 MW80	E214423	HENG YA ELECTRONIC KUN SHAN Co. Ltd.		E245514	RURADJIE	TCA3(b) 155°C	E206198	Varnish	John C. Dolph	BC-346A(240°C)	E317427	ELANTAS ELECTRICAL INSULATION ELANTAS PDC INC	V1630FS(155°C) MW80	E75225	PCB		FR4 0.5mm Thickness UL APPROVED V-0 130°C	N.A.	<h3 style="text-align: center;">5. Tape Working Diagram&Outline</h3>			A
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SCALE	1:1	UNIT	MM	SHEET 2 OF 2																																																		

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1. Schematic&Wire Winding direction&Winging Specification

• Start of winding

Layer	Terminal	Winding Spec.	Turns	Test Condition	Inductance	Leakage Inductance	D.C. Resistance	Remark
P1	FL1 - FL2	TEX-EKTW-M #0.35*1P	50	100kHz,1V	880μH±5%	140μH±10% 2400Ω PIN 5&6 140μH±10% 2400Ω PIN 1&10		Winding tight & flat 密绕并平绕
S1	8 - 6	LITZ #0.1*60	6	100kHz,1V				Winding tight密绕
S2	7 - 10	LITZ #0.1*60	6	100kHz,1V				Winding tight密绕
S3	4 - 3	LITZ #0.1*20	5					双线并绕
S4	3 - 5	LITZ #0.1*20	5					双线并绕
S5	1 - 9	LITZ #0.1*20	4.5					双线并绕
S6	9 - 2	LITZ #0.1*20	4.5					双线并绕

REMARK: INSULATION RESISTANCE(P-S) 100M Ohm MIN
HI POT TEST : 1. P-S: 4500Vac 50Hz/5mA/3sec

2. Outline drawing

For twist S1&S2,
The distance of twist as below

3. Label drawing(or silk-screen printing)

Material : must meet RoHS requirement

05-36570-7124-3 XX YYWW	XX: SUPPLIER COMPANY ABBREVIATION(EXAMPLE: LIT) YY: YEAR WW: WEEK
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REVISIONS

ECO	REV	DESCRIPTION	DRAWN	DATE	APPROVAL
	1	PRE - RELEASE	Zhihui Yu	2018-12-10	Dick Chen
55259	2	Change short pin	Zhihui Yu	2019-01-11	Dick Chen
55754	3	Change inforation	Zhihui Yu	2019-04-23	Dick Chen

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3. Label drawing(or silk-screen printing)

Material : must meet RoHS requirement

05-36570-7124-3 XX YYWW	XX: SUPPLIER COMPANY ABBREVIATION(EXAMPLE: LIT) YY: YEAR WW: WEEK
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4. Transformer Specifications

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UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MM		DESCRIPTION: Transformer	
DIMENSIONAL TOLERANCES ANGLE±0.5°	DRAWN: Zhihui Yu 2018-12-10	SIZE	DRAWING NO.
DECIMAL: X ±0.50 X ±0.30 X ±0.15	DESIGN: Zhihui Yu 2018-12-10	A4	5-36570-7124-3
	CHECKED: Yabing Guo 2018-12-10	SCALE	1:1 UNIT MM SHEET 1 OF 2
	APPROVED: Dick Chen 2018-12-10		

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	1	2	3	4																
A	4. Material List																			
	Class F electrical insulation system:E235381 Lianfeng/F81 (SUMITOMO BAKELITE/ SBI5.1)																			
	Description	Source	Specification	UL NO.																
	CORE	ACME	ER28 P4 MnZn	N.A.																
		DMECC	ER28 DMR40 MnZn																	
		TDC	ER28 TP4 MnZn																	
	Bobbin	SUMITOMO BAKELITE CO. LTD	ER28 PM-9020 150°C V-0, 0.6mm min.	E41429																
	Insulation Tape	SM	1350F-1 130°C	E17385																
		CHYUN YIH TAPE	PB416F 180C	E81174																
	Insulation Tube	GREAT HOLDING	TFL 200°C	E156256																
	Wire	SUNBEAR K&R PACIFIC ELECTRIC CO. LTD	2UEW (155°C) MW79 MW80	E214423																
		HENG YA ELECTRONIC HON SHUN Co. Ltd		E245514																
		RIUBAOLIE	TCA3(b) 155°C	E206198																
	Varnish	John C. Dajiph	DC-346A(240°C)	E317427																
		ELANTAS ELECTRICAL INSULATION ELANTAS PDC INC	V1630FS(155°C) MW80	E75225																
	PCB		FR4 0.5mm Thickness UL APPROVED V-0 130°C	N.A.																
B	5. Tape Working Diagram&Outline																			
C	Class F electrical insulation system:E230776 Dongqing/Viking F-2 (ELANTAS/ Viking F-2)																			
	Description	Source	Specification	UL NO.																
	CORE	DMECC	ER28 DMR40 MnZn	N.A.																
		TDC	ER28 TP4 MnZn																	
		ACME	ER28 P4 MnZn																	
	Bobbin	CHANGCHUN PLASTICS CO. LTD	ER28 T375J 150°C V-0, 0.6mm min.	E59481																
	Insulation Tape	JINGJIANG YAHUA	BLACK CT 130°C	E165111																
		SM COMPANY	#92 180C	E17385																
	Insulation Tube	GREAT HOLDING	TFL 200°C	E156256																
	Tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	WF-2902 130C	E165111																
	Wire	SUNBEAR K&R PACIFIC ELECTRIC CO. LTD		E214423																
		HENG YA ELECTRONIC HON SHUN Co. Ltd	2UEW (155°C) MW79 MW80	E245514																
		SHANDONG SAINT ELECTRIC CO., LTD	TCA3(b) 155°C	E194410																
	Varnish	ELANTAS ELECTRICAL INSULATION ELANTAS PDC INC	V1630FS(155°C) MW80	E75225																
	PCB		FR4 0.5mm Thickness UL APPROVED V-0 130°C	N.A.																
D	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">SIZE</td> <td colspan="3">DRAWING NO.</td> </tr> <tr> <td>A4</td> <td colspan="3">5-36570-7124-3</td> </tr> <tr> <td>SCALE</td> <td>1:1</td> <td>UNIT</td> <td>MM</td> </tr> <tr> <td></td> <td></td> <td></td> <td>SHEET 2 OF 2</td> </tr> </table>				SIZE	DRAWING NO.			A4	5-36570-7124-3			SCALE	1:1	UNIT	MM				SHEET 2 OF 2
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SCALE	1:1	UNIT	MM																	
			SHEET 2 OF 2																	

1
2
3
4

1. Schematic & Wire Winding direction & Winding Specification

PB416F OR #92 TAPE

• Start of winding

Layer	Terminal	Winding Spec.	Turns	Test Condition	Inductance	Leakage Inductance	D.C. Resistance	Remark
P1	FL1 - FL2	DM #0.35*1P	50	100KHz, IV	880uH±5%	Material for SWIFT PW 5as 140uH±12% SWIFT PW 2a10		Winding tight & flat 密绕并平绕
S1	8 - 6	LUT #0.1*50	6	100KHz, IV				Winding tight 密绕
S2	7 - 10	LUT #0.1*50	6	100KHz, IV				Winding tight 密绕
S3	4 - 3	LUT #0.1*20	5					双线并绕
S4	3 - 5	LUT #0.1*20	5					双线并绕
S5	1 - 9	LUT #0.1*20	5.5					双线并绕
S6	9 - 2	LUT #0.1*20	5.5					双线并绕

REMARK: INSULATION RESISTANCE(P-S) 100M Ohm MIN
HI POT TEST: 1. P-S: 4500Vac, 50Hz/5mA/3sec.

2. Outline drawing

For twist S1&S2,
The distance of twist as below

3. Label drawing (or silk-screen printing)

Material: must meet RoHS requirement

05-36570-7024-4 XX: SUPPLIER COMPANY ABBREVIATION (EXAMPLE: LF)
XX YY: YEAR WW: WEEK

REVISIONS

ECO	REV	DESCRIPTION	DRAWN	DATE	APPROVAL
	1	PRE - RELEASE	Zhihui Yu	2018-10-18	Dick Chen
	2	Change Lr	Zhihui Yu	2018-12-10	Dick Chen
55259	3	Change short pin	Zhihui Yu	2019-01-11	Dick Chen
55754	4	Change information	Zhihui Yu	2019-04-23	Dick Chen

1
2
3
4

2. Outline drawing

For twist S1&S2,
The distance of twist as below

3. Label drawing (or silk-screen printing)

Material: must meet RoHS requirement

05-36570-7024-4 XX: SUPPLIER COMPANY ABBREVIATION (EXAMPLE: LF)
XX YY: YEAR WW: WEEK

NOTES:

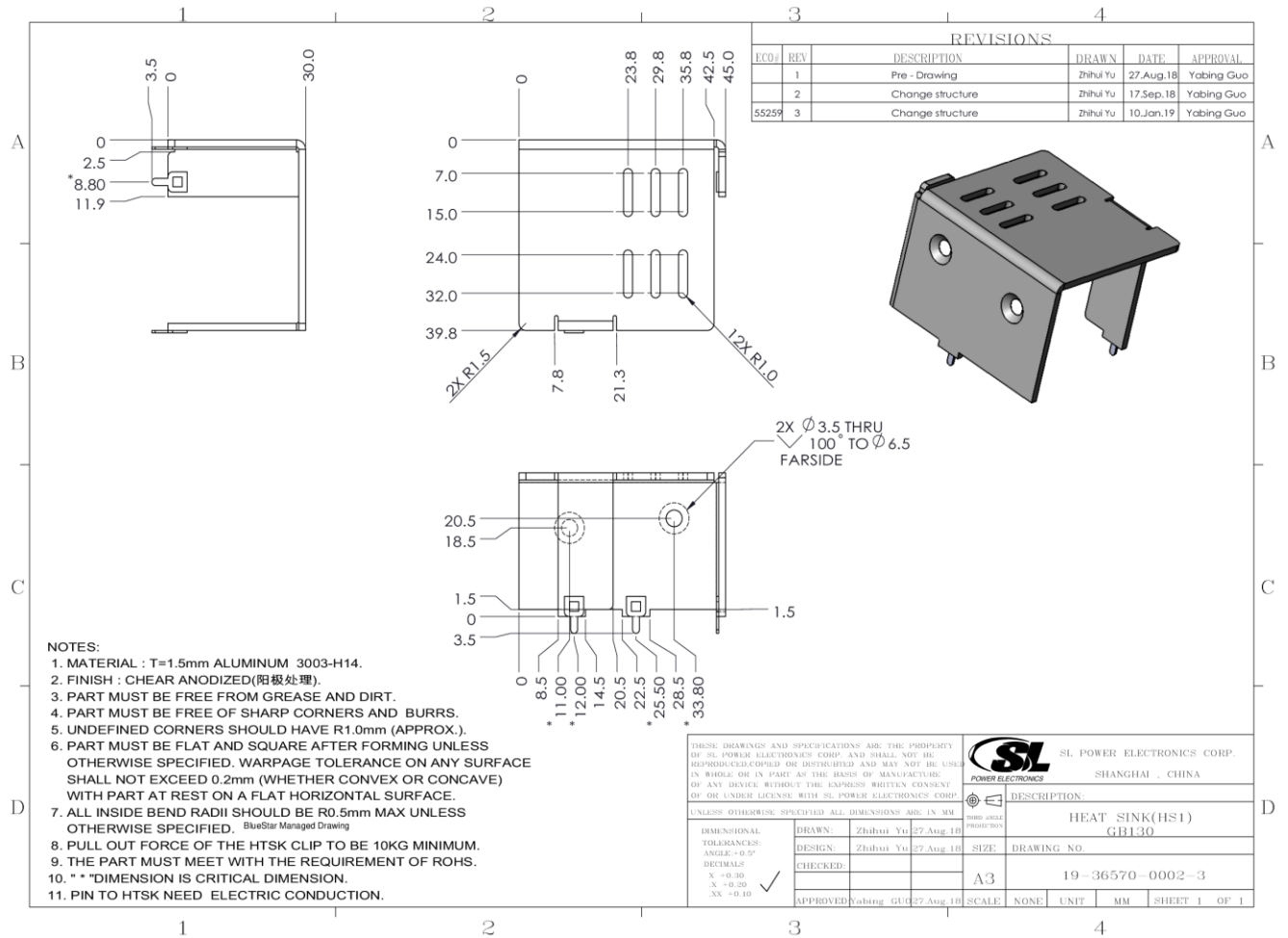
- Vacuum dip
- Add EPOXY in the middle of core's air gap.

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UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MM

DRAWN: Zhihui Yu	2018-10-18	THIRD ANGLE PERSPECTIVE	DESCRIPTION: Transformer
DESIGN: Zhihui Yu	2018-10-18	SIZE: A4	DRAWING NO. 5-36570-7024-4
CHECKED: Yabing Guo	2018-10-18	SCALE: 1:1	UNIT: MM
APPROVED: Dick Chen	2018-10-18	SHEET: 1 OF 2	

1	2	3	4																																																																																																			
<p>4. Material List</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Class F electrical insulation system E235381 Lianfeng/F81(SUMITOMO BAKELITE/SBIS.1)</th> </tr> <tr> <th>Description</th> <th>Source</th> <th>Specification</th> <th>UL NO.</th> </tr> </thead> <tbody> <tr> <td rowspan="3">CORE</td> <td>ACME</td> <td>EEL16 P40 MnZn</td> <td rowspan="3">N.A.</td> </tr> <tr> <td>DMECC</td> <td>EEL16 DMR40 MnZn</td> </tr> <tr> <td>TDC</td> <td>EEL16 TP4 MnZn</td> </tr> <tr> <td>Bobbin</td> <td>SUMITOMO BAKELITE CO. LTD</td> <td>EEL16 PM-9820 150°C V-0; 0.5mm min.</td> <td>E41429</td> </tr> <tr> <td>Insulation Tape</td> <td>3M COMPANY</td> <td>1350F-1(b) Black 130C</td> <td>E17385</td> </tr> <tr> <td>Insulation Tube</td> <td>GREAT HOLDING</td> <td>TFL 200°C</td> <td>E156256</td> </tr> <tr> <td rowspan="3">Wire</td> <td>SHANGHAI FOR PACIFIC ELECTRIC CO. LTD.</td> <td rowspan="3">WIRE 155°C MW79 MW80</td> <td>E214423</td> </tr> <tr> <td>HENG YA ELECTRONIC IRON SUPPLY Co. Ltd.</td> <td>E245514</td> </tr> <tr> <td>Rubadue</td> <td>TCA3(b) 155°C</td> <td>E206198</td> </tr> <tr> <td rowspan="2">Varnish</td> <td>John C. Dolph</td> <td>BC-346A(240°C)</td> <td>E317427</td> </tr> <tr> <td>ELNANG ELECTRICAL INSULATION ELANTAS PDC INC</td> <td>V1630FS(155°C) MW80</td> <td>E75225</td> </tr> <tr> <td>Margin Tape</td> <td>3M COMPANY</td> <td>#44(130°C)</td> <td>E17385</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Class F electrical insulation system E230776 Dongxing Viking F-2(ELANTAS/ Viking F-2)</th> </tr> <tr> <th>Description</th> <th>Source</th> <th>Specification</th> <th>UL NO.</th> </tr> </thead> <tbody> <tr> <td rowspan="3">CORE</td> <td>DMECC</td> <td>EEL16 DMR40 MnZn</td> <td rowspan="3">N.A.</td> </tr> <tr> <td>TDC</td> <td>EEL16 TP4 MnZn</td> </tr> <tr> <td>ACME</td> <td>EEL16 P40 MnZn</td> </tr> <tr> <td>Bobbin</td> <td>CHANGCHUN PLASTICS CO. LTD</td> <td>EEL16 T375J 150°C V-0; 0.5mm Min.</td> <td>E59481</td> </tr> <tr> <td>Insulation Tape</td> <td>JINGJIANG YAHUA</td> <td>CI 130°C BLACK</td> <td>E165111</td> </tr> <tr> <td>Insulation Tube</td> <td>GREAT HOLDING</td> <td>TFL 200°C</td> <td>E156256</td> </tr> <tr> <td rowspan="2">Wire</td> <td>SHANDONG SAINT</td> <td>MW79 MW80 155°C</td> <td>E194410</td> </tr> <tr> <td>Rubadue</td> <td>TCA3(b) 155°C</td> <td>E206198</td> </tr> <tr> <td rowspan="2">Varnish</td> <td>ELNANG ELECTRICAL INSULATION ELANTAS PDC INC</td> <td>V1630FS(155°C) MW80</td> <td>E75225</td> </tr> <tr> <td>JINGJIANG YAHUA</td> <td>WF 130C</td> <td>E165111</td> </tr> <tr> <td>Margin Tape</td> <td>3M COMPANY</td> <td>#44(130°C)</td> <td>E17385</td> </tr> </tbody> </table>	Class F electrical insulation system E235381 Lianfeng/F81(SUMITOMO BAKELITE/SBIS.1)				Description	Source	Specification	UL NO.	CORE	ACME	EEL16 P40 MnZn	N.A.	DMECC	EEL16 DMR40 MnZn	TDC	EEL16 TP4 MnZn	Bobbin	SUMITOMO BAKELITE CO. LTD	EEL16 PM-9820 150°C V-0; 0.5mm min.	E41429	Insulation Tape	3M COMPANY	1350F-1(b) Black 130C	E17385	Insulation Tube	GREAT HOLDING	TFL 200°C	E156256	Wire	SHANGHAI FOR PACIFIC ELECTRIC CO. LTD.	WIRE 155°C MW79 MW80	E214423	HENG YA ELECTRONIC IRON SUPPLY Co. Ltd.	E245514	Rubadue	TCA3(b) 155°C	E206198	Varnish	John C. Dolph	BC-346A(240°C)	E317427	ELNANG ELECTRICAL INSULATION ELANTAS PDC INC	V1630FS(155°C) MW80	E75225	Margin Tape	3M COMPANY	#44(130°C)	E17385	Class F electrical insulation system E230776 Dongxing Viking F-2(ELANTAS/ Viking F-2)				Description	Source	Specification	UL NO.	CORE	DMECC	EEL16 DMR40 MnZn	N.A.	TDC	EEL16 TP4 MnZn	ACME	EEL16 P40 MnZn	Bobbin	CHANGCHUN PLASTICS CO. LTD	EEL16 T375J 150°C V-0; 0.5mm Min.	E59481	Insulation Tape	JINGJIANG YAHUA	CI 130°C BLACK	E165111	Insulation Tube	GREAT HOLDING	TFL 200°C	E156256	Wire	SHANDONG SAINT	MW79 MW80 155°C	E194410	Rubadue	TCA3(b) 155°C	E206198	Varnish	ELNANG ELECTRICAL INSULATION ELANTAS PDC INC	V1630FS(155°C) MW80	E75225	JINGJIANG YAHUA	WF 130C	E165111	Margin Tape	3M COMPANY	#44(130°C)	E17385	<p>5. Tape Working Diagram&Outline</p> <p>1. Material: Valox FRI White 2. Thickness: 0.25±0.05mm 3. UL Flame Class: 94VIM-0</p> <p>Mylar Sheet View(REF.)</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>SIZE</th> <th>DRAWING NO.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>5-36570-7001-3</td> </tr> <tr> <td>SCALE</td> <td>NONE UNIT MM SHEET 2 OF 2</td> </tr> </tbody> </table>	SIZE	DRAWING NO.	A	5-36570-7001-3	SCALE	NONE UNIT MM SHEET 2 OF 2
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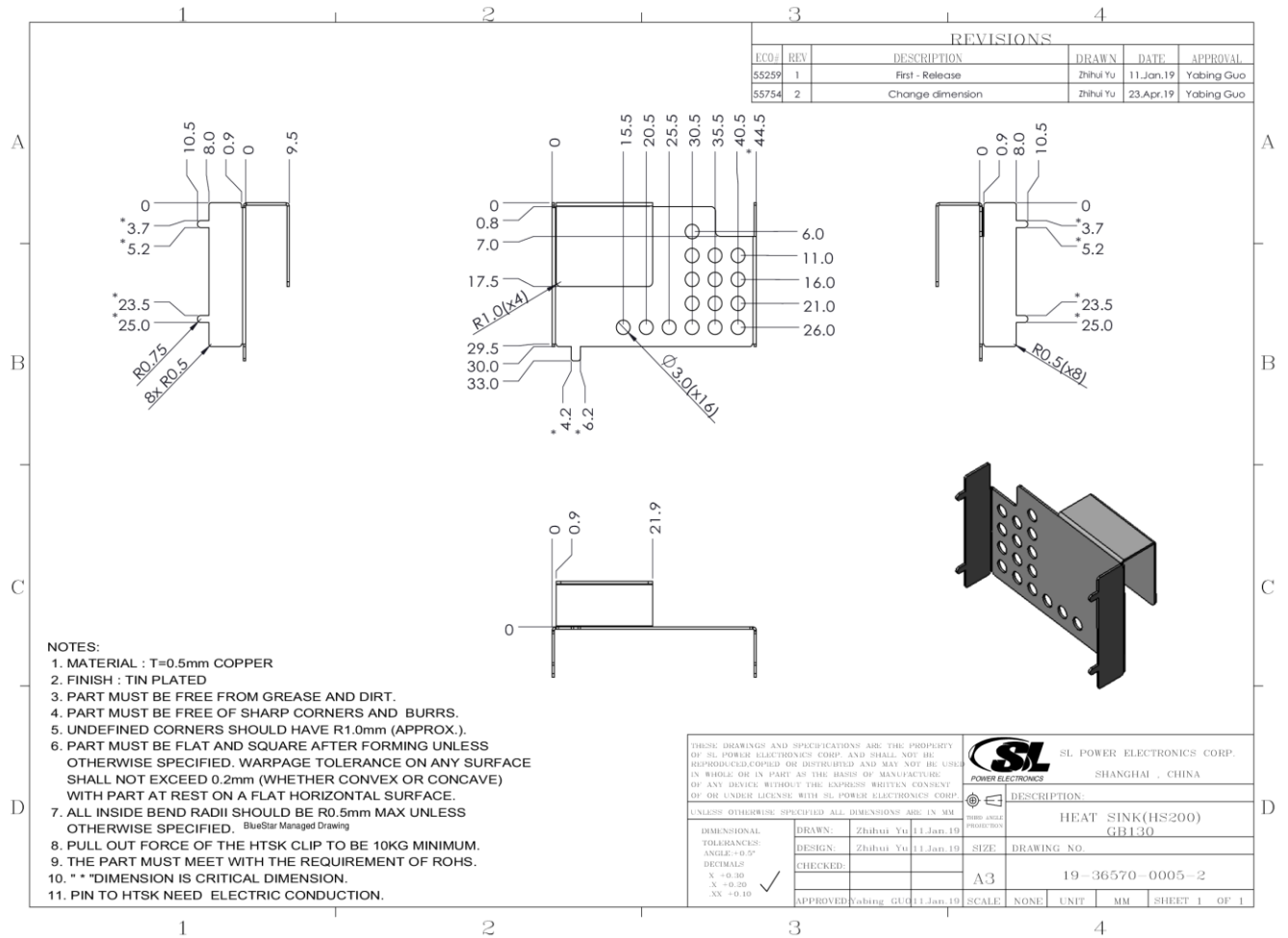
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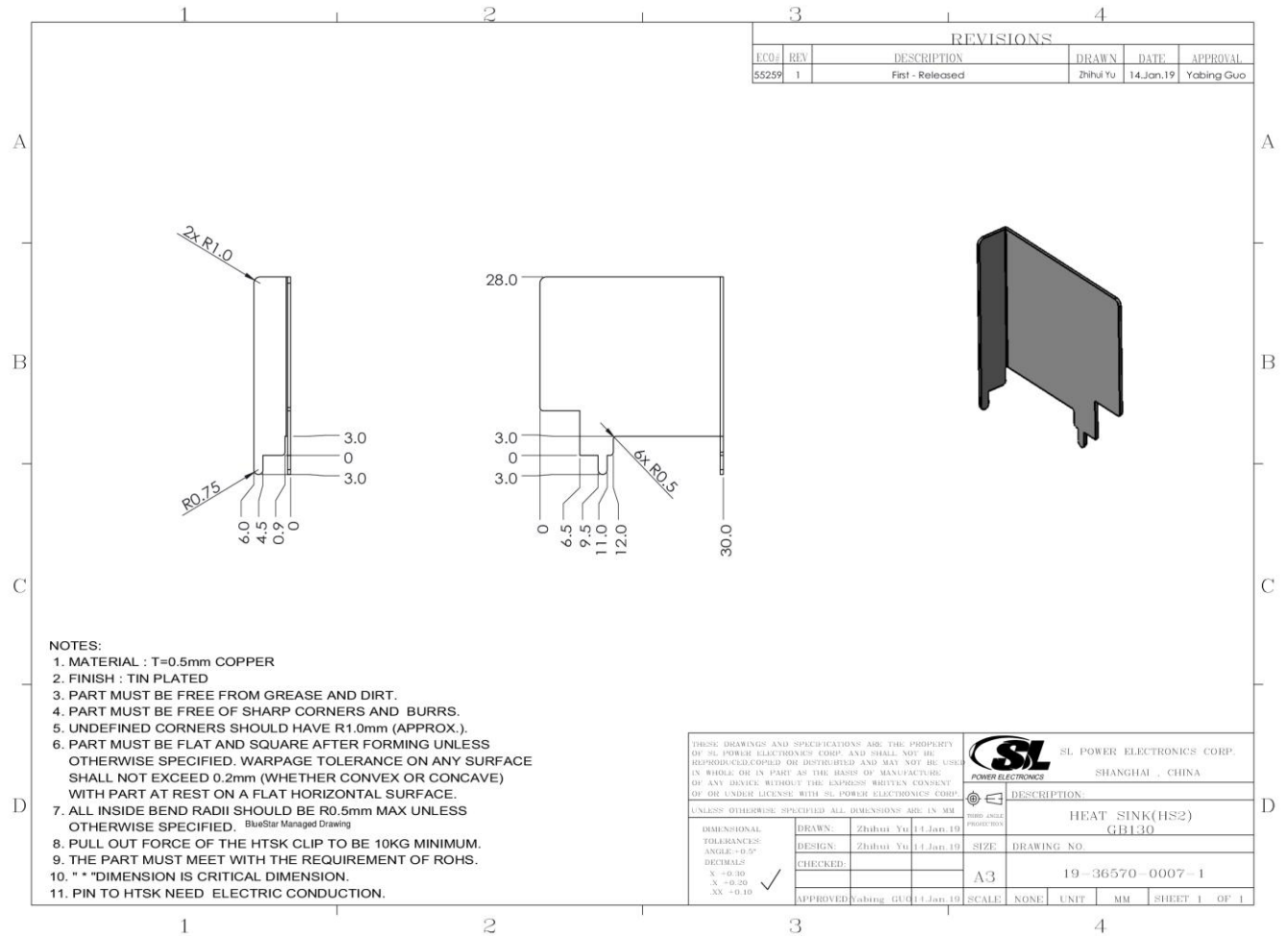
- MATERIAL : T=1.5mm ALUMINUM 3003-H14.
- FINISH : CHEAR ANODIZED(阳极处理).
- PART MUST BE FREE FROM GREASE AND DIRT.
- PART MUST BE FREE OF SHARP CORNERS AND BURRS.
- UNDEFINED CORNERS SHOULD HAVE R1.0mm (APPROX.).
- PART MUST BE FLAT AND SQUARE AFTER FORMING UNLESS OTHERWISE SPECIFIED. WARPAGE TOLERANCE ON ANY SURFACE SHALL NOT EXCEED 0.2mm (WHETHER CONVEX OR CONCAVE) WITH PART AT REST ON A FLAT HORIZONTAL SURFACE.
- ALL INSIDE BEND RADII SHOULD BE R0.5mm MAX UNLESS OTHERWISE SPECIFIED. BlueStar Managed Drawing
- PULL OUT FORCE OF THE HTSK CLIP TO BE 10KG MINIMUM.
- THE PART MUST MEET WITH THE REQUIREMENT OF ROHS.
- ** DIMENSION IS CRITICAL DIMENSION.
- PIN TO HTSK NEED ELECTRIC CONDUCTION.

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DRAWN:	Zhihui Yu	27.Aug.18
DESIGN:	Zhihui Yu	27.Aug.18
CHECKED:		
APPROVED:	Yabing Guo	27.Aug.18

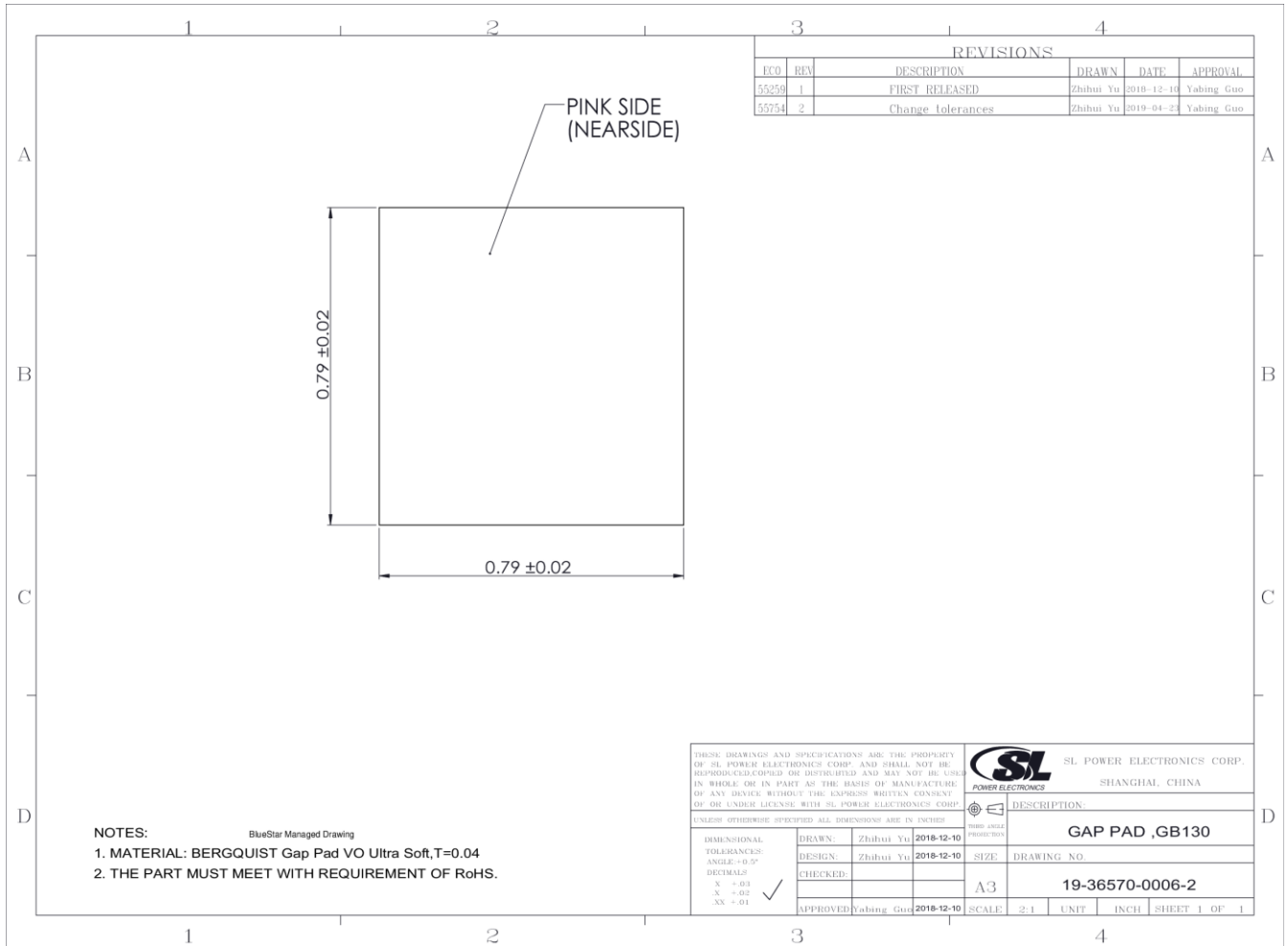
DESCRIPTION:	
HEAT SINK(HS1) G1130	
SIZE:	DRAWING NO.
A3	19-36570-0002-3
SCALE:	NONE UNIT MM SHEET 1 OF 1





- NOTES:
1. MATERIAL : T=0.5mm COPPER
 2. FINISH : TIN PLATED
 3. PART MUST BE FREE FROM GREASE AND DIRT.
 4. PART MUST BE FREE OF SHARP CORNERS AND BURRS.
 5. UNDEFINED CORNERS SHOULD HAVE R1.0mm (APPROX.).
 6. PART MUST BE FLAT AND SQUARE AFTER FORMING UNLESS OTHERWISE SPECIFIED. WARPAGE TOLERANCE ON ANY SURFACE SHALL NOT EXCEED 0.2mm (WHETHER CONVEX OR CONCAVE) WITH PART AT REST ON A FLAT HORIZONTAL SURFACE.
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 11. PIN TO HTSK NEED ELECTRIC CONDUCTION.

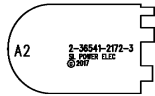
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DIMENSIONAL TOLERANCES: ANGLE: +0.5° DECIMALS: X: +0.20 Y: +0.20 XX: +0.10		DRAWN: Zhibin Yu (11.Jan.19) DESIGN: Zhibin Yu (11.Jan.19) CHECKED: APPROVED: Yabing GUO (11.Jan.19)	DESCRIPTION: HEAT SINK(HS2) GB130 DRAWING NO. 19-36570-0007-1 SCALE: NONE UNIT: MM SHEET 1 OF 1



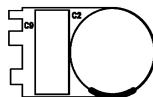
REVISIONS					
ECO	REV	DESCRIPTION	DRAWN	DATE	APPROVAL
55259	1	FIRST RELEASED	Zhibai Yu	2018-12-10	Yabing Guo
55754	2	Change tolerances	Zhibai Yu	2019-04-24	Yabing Guo

NOTES: BlueStar Managed Drawing
 1. MATERIAL: BERGQUIST Gap Pad VO Ultra Soft, T=0.04
 2. THE PART MUST MEET WITH REQUIREMENT OF RoHS.

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DIMENSIONAL TOLERANCES: ANGLE: +0.5° DECIMALS X +0.1 X -0.2 XX +0.1		DRAWN: Zhibai Yu 2018-12-10 DESIGN: Zhibai Yu 2018-12-10 CHECKED: <input checked="" type="checkbox"/> APPROVED: Yabing Guo 2018-12-10	DESCRIPTION: GAP PAD ,GB130 DRAWING NO. 19-36570-0006-2
		SIZE: A3 SCALE: 2:1 UNIT: INCH	SHEET 1 OF 1



REVISIONS		APPROVALS	DATE	TITLE	MATERIAL: FR-4		THICKNESS: 1.0MM	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCH / MM TOLERANCES ARE:
ECR	DESCRIPTION	DATE	BY/NO	2018-7-26	LU225 Family	COLOR: NATURAL	UL APPROVED BOARDS: YES	
2004	REV: 1 Power	2018-7-26	CHK	Ligang Liu	CAP BOARD	COPPER WEIGHT: 2/2 OZ.	SILKSCREEN: WHITE	
ECR	-	-	CHK	XXX	DRG NO. 2-36541-2172 -3	WEIGHT: 2/2 OZ.	SIDE TO BE 1 TOP SILKSCREENED / BOTTOM	ANGLES: _____
ECR	-	-	CHK	Yabing Guo	SCALE 1:1	ANY GOLD WEIGHT: NO	BOARD TYPE: SMOBC LEAD FREE HASL	FRACTIONS: _____
DATE APPROVED: 2018-7-26 BY: Yabing Guo <small>THIS DRAWING AND SPECIFICATION REMAIN THE PROPERTY OF SLS. NO PARTS THEREOF ARE TO BE REPRODUCED, COPIED OR USED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF SLS. THIS DRAWING IS UNCLASSIFIED.</small>				SHEETS: INCH / MM		SHEET: 1 OF 7		DO NOT SCALE DRAWING
NOTES: 1. MANUFACTURE PER SLPE PROCESS SPECIFICATION 41-31327-0001 2. VENDOR TO BE UL APPROVED TO A UL MINIMUM CATEGORY OF 94V-0 3. FABRICATION MUST BE ROHS COMPLIANT. LEAD FREE HASL.								



DRWG NO.	2-36541-2172	-3	LAYER	SILKSCREEN BOTTOM
UNITS:	INCH / MM	SCALE	1 : 1	SHEET: 2 OF 7



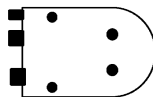
DRAWING NO.	2-36541-2172 -3	SHEET	CIRCUIT TOP	
UNITS	INCH / MM	SCALE	1 : 1	SHEET: 3 OF 7



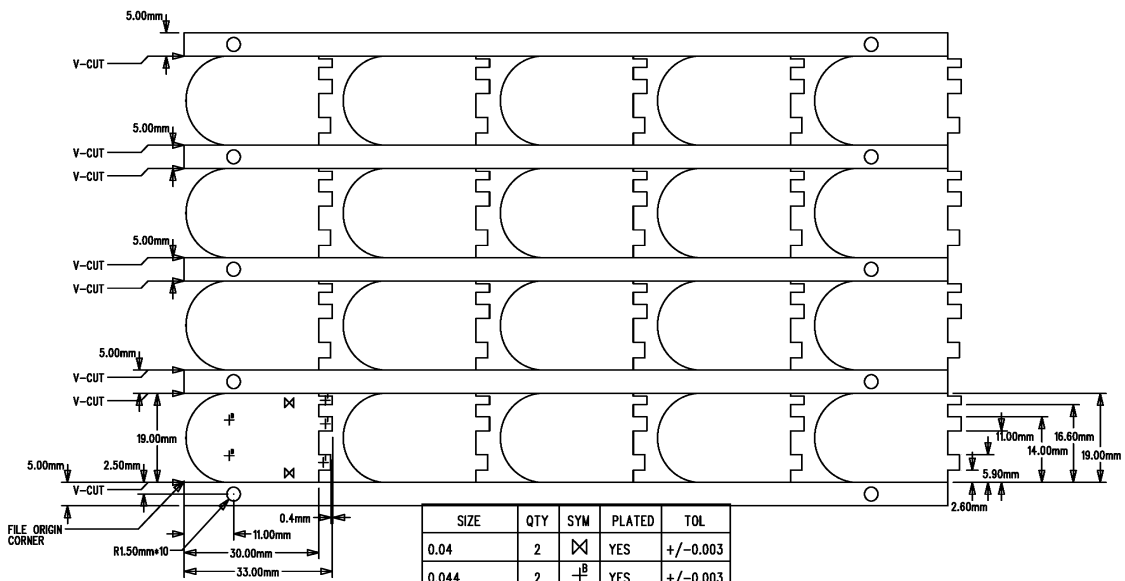
DRWG NO	2-36541-2172	-3	1-107	CIRCUIT BOTTOM
UNITS	INCH / MM	SCALE	1 : 1	SHEET: 4 OF 7



DRAWING NO.	2-38541-2172 -3	SHEET	SOLDER MASK TOP
UNITS	INCH / MM	SCALE	1 : 1
		SHEET:	5 OF 7



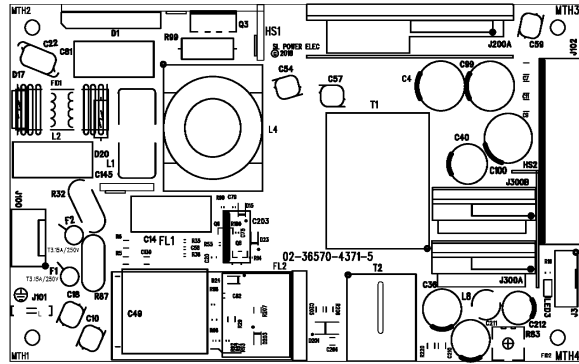
DRWG NO	2-36541-2172	-3	1-107	SOLDER MASK BOTTOM
UNITS	INCH / MM	SCALE	1 : 1	SHEET: 6 OF 7



SIZE	QTY	SYM	PLATED	TOL
0.04	2	☒	YES	+/-0.003
0.044	2	☒ ^B	YES	+/-0.003
0.01969	3	☒ ¹	YES	+/-0.003

REVISIONS		APPROVALS		DATE		TITLE		MATERIAL: FR-4		THICKNESS: 1.0MM		UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCH / MM	
ECR	DESCRIPTION	DATE	DATE	DATE	DATE	LU225 Family		COLOR: NATURAL		UL APPROVED BOARDS: YES		SPECIFIED, DIMENSIONS ARE IN INCH / MM	
2004	REV: 3 Release	2008-1-25	2008-7-26	2008-7-26	2008-7-26	CAP BOARD		COPPER WEIGHT: 2/2 OZ.		SILKSCREEN: WHITE		TOLERANCES ARE:	
ECR	-	-	-	-	-	DR-0000000000		WEIGHT: 2/2 OZ.		SIDE TO BE: TOP		DECIMALS INCH: MM	
ECR	-	-	-	-	-	DR-0000000000		NUMBER OF FINGERS: 0		SILKSCREENED BOTTOM		XX ±.01 ±.13	
ECR	-	-	-	-	-	DR-0000000000		ANY GOLD WEIGHT: NO		BOARD TYPE: SMOBC LEAD FREE HASL		.XXX ±.005	
						DR-0000000000		SOLDERMASK: BOTH SIDES		SOLDER MASK: LPI WET MASK		ANGLES: _____	
						DR-0000000000		IPC-SM-840, CLASS: 2		BOARD TYPE: DOUBLE-SIDED		FRACTIONS: _____	
						DR-0000000000		SHEET: 7 OF 7				DO NOT SCALE DRAWING	

- NOTES:
1. MANUFACTURE PER SLPE PROCESS SPECIFICATION 41-31327-0001
 2. VENDOR TO BE UL APPROVED TO A UL MINIMUM CATEGORY OF 94V-0
 3. FABRICATION MUST BE ROHS COMPLIANT. LEAD FREE HASL.

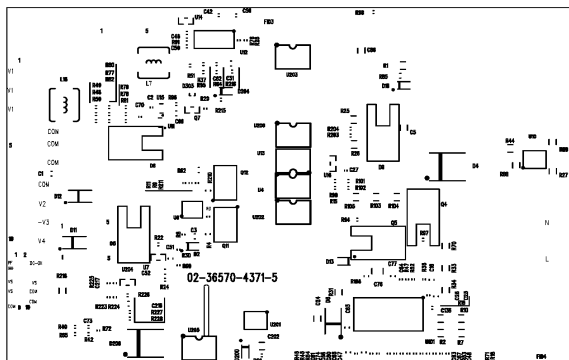


REVISIONS		APPROVALS	DATE	DATE	DESCRIPTION
E00	release	Janet	2019-6-4		
5329	update				
5374	update				
5383	update	Yabing Guo	2019-6-4		

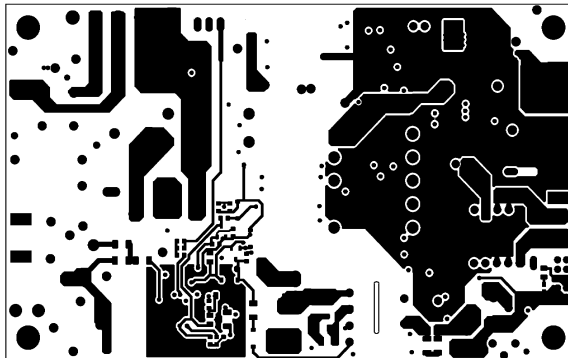
MATERIAL: FR-4 1g=13g		THICKNESS: 1.6mm		UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCH / MM	
COLOR: NATURAL		UL APPROVED BOARDS YES		TOLERANCES ARE:	
COPPER: 2/2/2/2 02		SILKSCREEN: WHITE		DECIMALS INCH MM	
WEIGHT: 2/2/2/2 02		SIDE TO BE TOP SILKSCREENED / BOTTOM		.XX ±.01 ±.13	
NUMBER OF FINGERS: 0		BOARD TYPE: SMOBC LEAD FREE HASL		.XXX ±.005	
ANY GOLD WEIGHT: NO		SOLDER MASK: BOTH SIDES SOLDER MASK: IPC-SM-840, CLASS: 2 LPI WET MASK		ANGLES: _____	
SOLDERMASK: BOTH SIDES		BOARD TYPE: 4 LAYERS		FRACTIONS: _____	
SOLDER MASK: LPI WET MASK				DO NOT SCALE DRAWING	

NOTES:

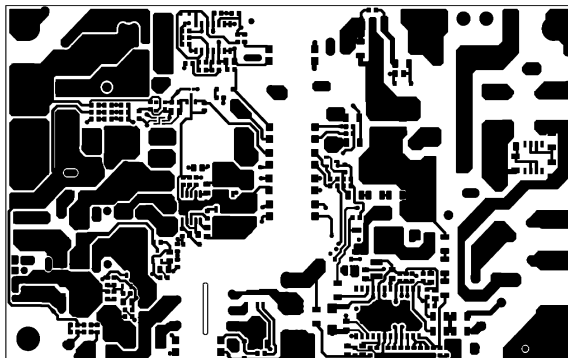
1. MANUFACTURE PER SLPE PROCESS SPECIFICATION 41-31327-0001
2. VENDOR TO BE UL APPROVED TO A UL MINIMUM CATEGORY OF 94V-0
3. FABRICATION MUST BE ROHS COMPLIANT. LEAD FREE HASL.



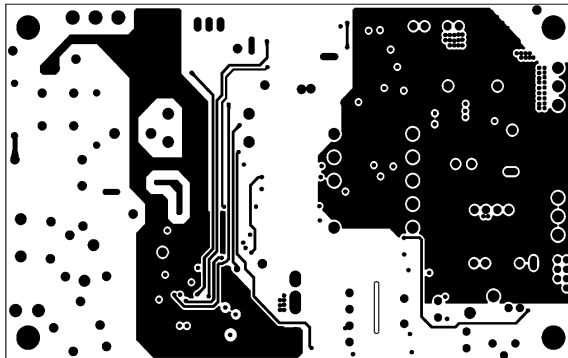
REVISED NO.	2-36570-4371	-5	LAYER	SILKSCREEN BOTTOM
UNITS :	MM	SCALE	1 : 1	SHEET: 2 OF 9



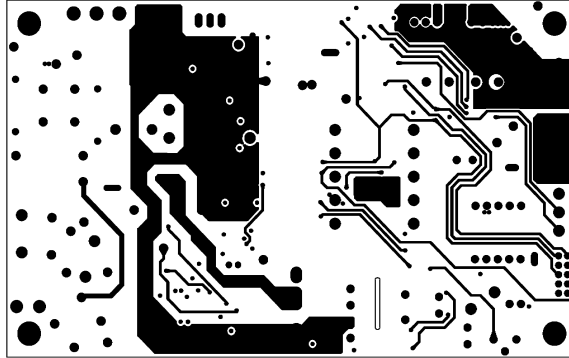
DESIGN NO.	2-36570-4371-5	LAYER	CIRCUIT TOP
UNITS:	MM	SCALE	1 : 1
		SHEET:	3 OF 9



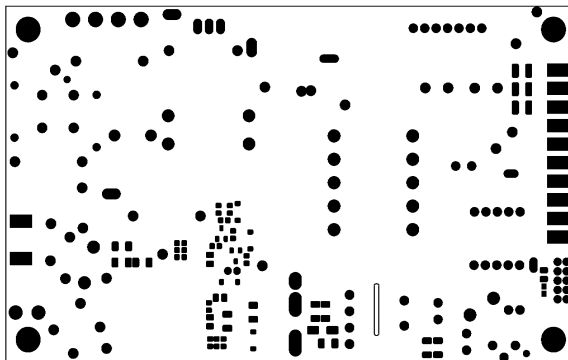
DWG NO.	2-36570-4371	-5	LAYER	CIRCUIT BOTTOM
UNITS :	MM	SCALE	1 : 1	SHEET: 4 OF 9



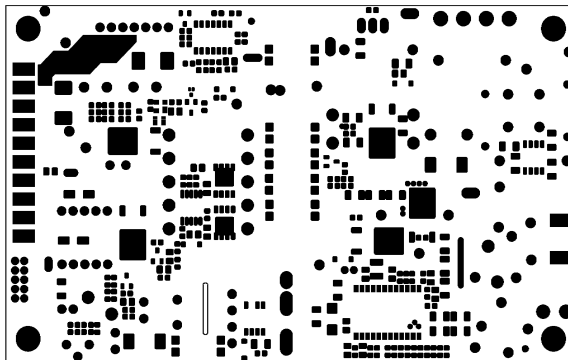
DESIGN NO.	2-36570-4371-5	LAYER	INNER LAYER 1
UNITS:	MM	SCALE	1 : 1
		SHEET:	5 OF 9



DESIGN NO.	2-36570-4371-5	LAYER	INNER LAYER2
UNITS:	MM	SCALE	1 : 1
		SHEET:	6 OF 9

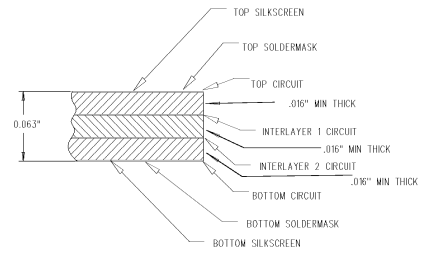
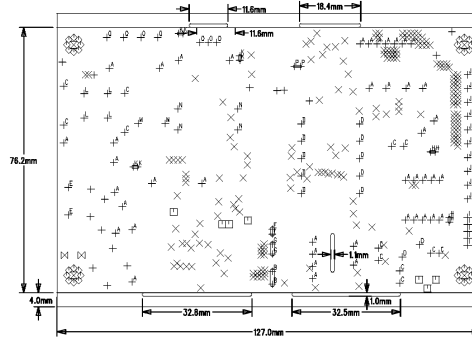


REVISED NO.	2-36570-4371-5	LAYER	SOLDER MASK TOP
UNITS:	MM	SCALE	1 : 1
		SHEET:	7 OF 9



SYNOPSIS NO.	2-36570-4371	-5	LAYER	SOLDER MASK BOTTOM
UNITS :	MM	SCALE	1 : 1	SHEET: 8 OF 9

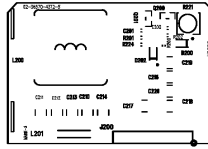
SIZE	QTY	SYM	PLATED	TOL
0.9144	16	+	YES	+/-0.075
0.4064	168	X	YES	+/-0.075
0.7112	7	□	YES	+/-0.075
0.4	32	◇	YES	+/-0.075
3.3004	4	X	YES	+/-0.075
1.3308	2	D	YES	+/-0.075
1.016	43	+	YES	+/-0.075
1.3 x 5	1	+	YES	+/-0.15
0.8128	12	+	YES	+/-0.075
1.2192	12	+	YES	+/-0.075
1.778	2	+	YES	+/-0.075
1.2 x 2.6	1	+	YES	+/-0.15
1.2 x 4	1	+	YES	+/-0.15
0.7 x 2	2	+	YES	+/-0.15
0.7	10	+	YES	+/-0.075
1.6256	10	+	YES	+/-0.075
0.8128 x 2.032	3	+	YES	+/-0.15
1	4	+	YES	+/-0.075
1.928	2	+	YES	+/-0.075
1.2	4	+	YES	+/-0.075
1.1176	3	+	YES	+/-0.075
0.7 x 2.5	1	+	YES	+/-0.15
1.4224	4	+	YES	+/-0.075



REV	DESCRIPTION	DATE	APPROVALS	DATE	TITLE
001	ISSUE	2019-08-04	Johnet	2019-08-04	GR130 MAN PCB
002	ISSUE	2019-08-04			
003	ISSUE	2019-08-04	Yahing Guo	2019-08-04	DRILL DRAWING
004	ISSUE	2019-08-04			

MATERIAL: R6-4 1g-15W	THICKNESS: 1.6mm	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCH / MM
COLOR: NATURAL	UL APPROVED BOARDS	TOLERANCES ARE:
COPPER	YES	DECIMALS INCH MM
WEIGHT: 2/12/12 OZ	SILKSCREEN: WHITE	XX ±.01 ±.13
	SIDE TO BE 1 TOP SILKSCREENED / BOTTOM	XXX ±.005
NUMBER OF FINGERS: 0	BOARD TYPE: SMOBC	ANGLES: _____
ANY GOLD WEIGHT: NO	LEAD FREE HASL	FRACTIONS: _____
SOLDERMASK: BOTH SIDES	SOLDER MASK: 1PT WET MASK	DO NOT SCALE DRAWING
IPC-5M-84D CLASS: 2	BOARD TYPE: 4 LAYERS	

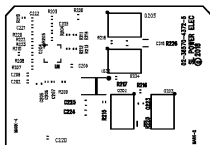
NOTES:
 1. MANUFACTURE PER SLPE PROCESS SPECIFICATION 41-31327-0001
 2. VENDOR TO BE UL APPROVED TO A UL MINIMUM CATEGORY OF 94V-0
 3. FABRICATION MUST BE ROHS COMPLIANT. LEAD FREE HASL.



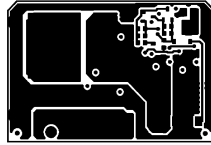
REVISIONS		APPROVALS		DATE	TITLE	MATERIAL		THICKNESS	UNLESS OTHERWISE
ECO	DESCRIPTION	DATE	BY	DATE	GB130	MATERIAL: FR-4 Tg150	THICKNESS: 1.0 MM. ± 0.1MM		SPECIFIED, DIMENSIONS
0000	Release	2019-4-25	Janet Zhang	2019-4-25	DC TO DC CONTROL CARD	COLOR: NATURAL	UL APPROVED BOARDS	YES	ARE IN INCH / MM
0074	Revised	2019-4-25	Yabing Guo	2019-4-25	DC TO DC CONTROL CARD	FINISHED D272/27207	SILKSCREEN: WHITE	SIDE TO BE TOP	TOLERANCES ARE:
00						COPPER WEIGHT:	SILKSCREENED BOTTOM	DECIMALS INCH MM	
						NUMBER OF FINGERS: 0	BOARD TYPE: SMOBC	.XX ± .01 ± .13	
						ANY GOLD WEIGHT: NO	IMMERSION GOLD	.XXX ± .005	
						SOLDERMASK: BOTH SIDES	SOLDER MASK: LPI WET MASK	ANGLES:	
						IPC-SM-840, CLASS: 2	BOARD TYPE: 4 LAYERS	FRACTIONS:	
								DO NOT SCALE DRAWING	

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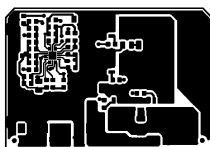
NOTES:
 1. MANUFACTURE PER SLPF PROCESS SPECIFICATION 41-31327-0001
 2. VENDOR TO BE UL APPROVED TO A UL MINIMUM CATEGORY OF 94V-0
 3. FABRICATION MUST BE ROHS COMPLIANT. IMMERSION GOLD.



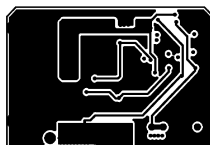
DR-REV. NO.	2-36570-4372	-5	L10P	SILKSCREEN BOTTOM
UNITS:	INCH / MM	SCALE	1 : 1	SHEET: 2 OF 9



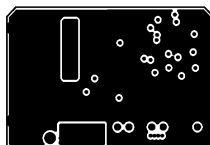
SP-REQ NO.	2-36570-4372	-5	LAYER	CIRCUIT TOP
UNITS:	INCH / MM	SCALE	1 : 1	SHEET: 3 OF 9



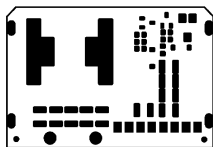
DRWING NO.	2-36570-4372	-5	LAYER	CIRCUIT BOTTOM
UNITS :	INCH / MM	SCALE	1 : 1	SHEET: 4 OF 9



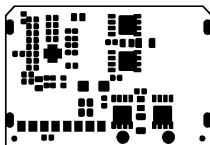
SPRINTER NO.	2-36570-4372	-5	LAYER	INNER LAYER 1
UNITS:	INCH / MM	SCALE	1 : 1	SHEET: 5 OF 9



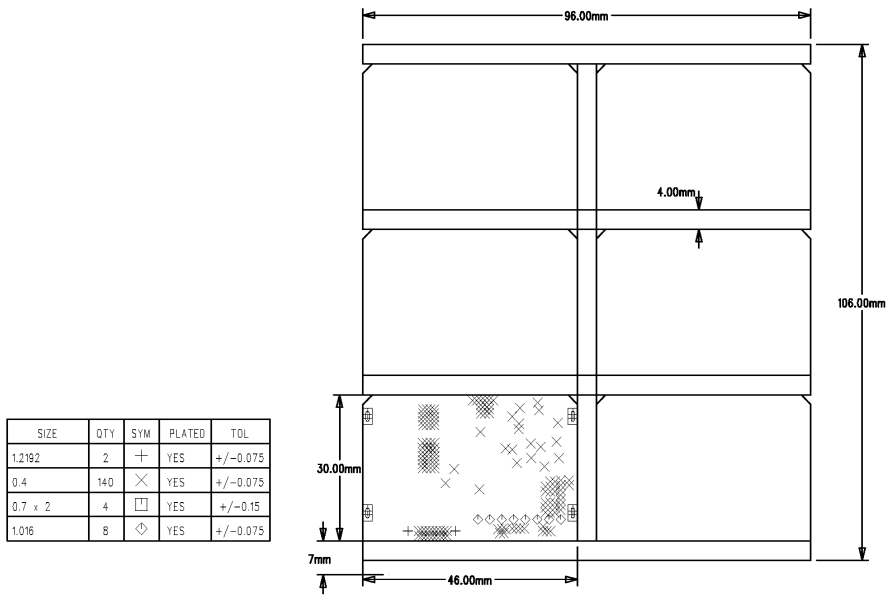
SPRINT NO.	2-36570-4372	-5	LAYER	INNER LAYER2
UNITS:	INCH / MM	SCALE	1 : 1	SHEET: 6 OF 9



DATE: 2-36570-4372 -5	LAYER: SOLDER MASK TOP
UNITS: INCH / MM	SCALE: 1 : 1 SHEET: 7 OF 9



DATE: 2-36570-4372	-5	L10P	SOLDER MASK BOTTOM
UNITS: INCH / MM	SCALE: 1 : 1	SHEET: 8 OF 9	



SIZE	QTY	SYM	PLATED	TOL
1.2192	2	+	YES	+/-0.075
0.4	140	X	YES	+/-0.075
0.7 x 2	4	□	YES	+/-0.15
1.016	8	◇	YES	+/-0.075

REVISIONS		APPROVALS		DATE		TITLE	
ECO	DESCRIPTION	DATE	DRAWN	DATE	GB130		
0029	Released	2019-4-25	Janet Zhang	2019-4-25	DC TO DC CONTROL CARD		
0074	Updated	2019-4-25	Yabing Guo	2019-4-25	DRILL DRAWING		
00					SHEET: 9 OF 9		

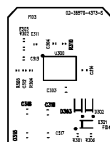
MATERIAL: FR-4 Tg130	THICKNESS: 1.0 MM +/- 0.1MM	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCH / MM
COLOR: NATURAL	UL APPROVED BOARDS: YES	TOLERANCES ARE:
FINISHED: 2/2/2/2/202	SILKSCREEN: WHITE	DECIMALS INCH MM
COPPER WEIGHT:	SIDE TO BE: TOP	.XX ±.01 ±.13
NUMBER OF FINGERS: 0	SILKSCREENED: BOTTOM	.XXX ±.005
ANY GOLD WEIGHT: NO	BOARD TYPE: SMOBC	ANGLES: _____
SOLDERMASK: BOTH SIDES	IMMERSION GOLD	FRACTIONS: _____
IPC-SM-840, CLASS: 2	SOLDER MASK: LPI WET MASK	DO NOT SCALE DRAWING
BOARD TYPE: 4 LAYERS		

NOTES:
 1. MANUFACTURE PER SLPE PROCESS SPECIFICATION 41-31327-0001
 2. VENDOR TO BE UL APPROVED TO A UL MINIMUM CATEGORY OF 94V-0
 3. FABRICATION MUST BE ROHS COMPLIANT. IMMERSION GOLD.

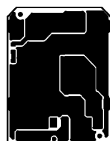


REVISIONS		APPROVALS	DATE	TITLE	MATERIAL: FR-4 Ig=136		THICKNESS: 1.0mm	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCH / MM TOLERANCES ARE: DECIMALS INCH MM .XX ±.01 ±.13 .XXX ±.005
EOB	DESCRIPTION	DATE	APPROVED	PCB DRAWING	COLOR: NATURAL		UL APPROVED BOARDS YES	
35159	Updated	2019-4-21	Janet	GB130 PCB DC-DC V3&V4	COPPER: 2/2/2/2 OZ		SILKSCREEN: WHITE	
35754	Updated	2019-4-21			WEIGHT: 2/2/2/2 OZ		SIDE TO BE TOP SILKSCREENED BOTTOM	
35882	Updated	2019-4-21			NUMBER OF FINGERS: 0		BOARD TYPE: SMOBC LEAD FREE HASL	
				2-36570-4373 -5	SILKSCREEN TOP		ANY GOLD: NO	
				INCH / MM	SCALE: 1:1	SHEET: 1 OF 9		
				SOLDERMASK: BOTH SIDES		SOLDER MASK: LPI WET MASK		
				IPC-SM-840, CLASS: 2		BOARD TYPE: 4 LAYERS		DO NOT SCALE DRAWING

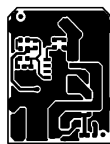
NOTES:
 1. MANUFACTURE PER SLPF PROCESS SPECIFICATION 41-31327-0001
 2. VENDOR TO BE UL APPROVED TO A UL MINIMUM CATEGORY OF 94V-0
 3. FABRICATION MUST BE ROHS COMPLIANT. LEAD FREE HASL.



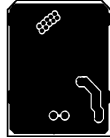
REF: 2-36570-4373	-5	LAYER	SILKSCREEN BOTTOM
UNITS: INCH / MM	SCALE	1 : 1	SHEET: 2 OF 9



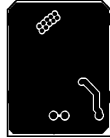
DATE: 2-28-2019	2-36570-4373	-5	LAYER	CIRCUIT TOP
UNITS: INCH / MM	SCALE	1 : 1	SHEET:	3 OF 9



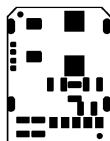
DRG NO.	2-36570-4373	-5	LAYER	CIRCUIT BOTTOM
UNITS:	INCH / MM	SCALE	1 : 1	SHEET: 4 OF 9



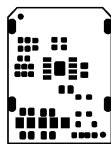
REF ID: A6	2-36570-4373	-5	LAYER	INNER LAYER 1
UNITS:	INCH / MM	SCALE	1 : 1	SHEET: 5 OF 9



DRWG NO.	2-36570-4373	-5	LAYER	INNER LAYER2
UNITS :	INCH / MM	SCALE	1 : 1	SHEET: 6 OF 9



DRG NO.	2-36570-4373	-5	LAYER	SOLDER MASK TOP	
UNITS:	INCH / MM	SCALE	1 : 1	SHEET:	7 OF 9



DRG NO.	2-36570-4373	-5	L10P	SOLDER MASK BOTTOM	
UNITS:	INCH / MM	SCALE	1 : 1	SHEET:	8 OF 9

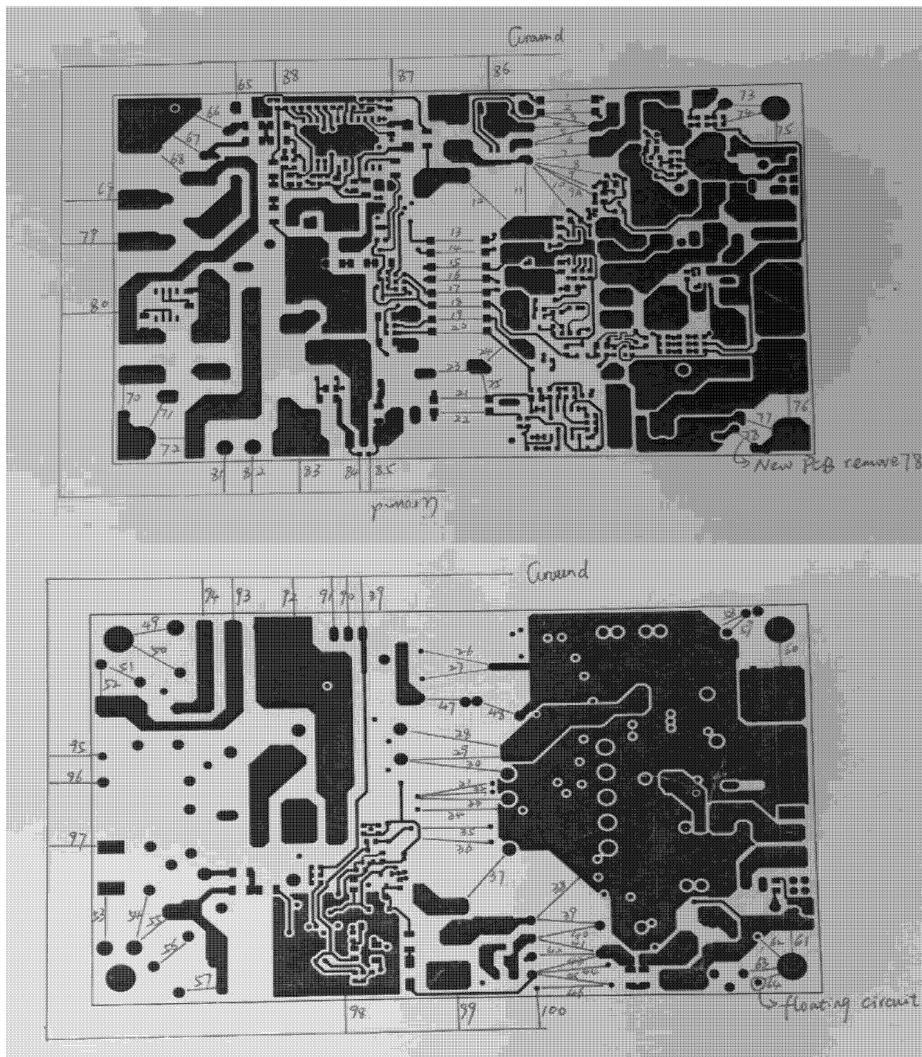
5.4.1.8		Table: Working Voltage Measurement			
Location	RMS voltage (V)	Peak voltage (V)	Frequency (Hz)	Comments	
GB130QE	--	--	--	The unit was tested with V1/16.0A, V2/2.09A, V3/0A, V4/0A, 5V/1.0A	
T1 primary to secondary	--	--	--	--	
FL1 to 1	231	438	72.4K	--	
FL1 to 2	266	434	72.4K	--	
FL1 to 3	253	436	72.4K	--	
FL1 to 4	239	456	72.4K	--	
FL1 to 5	270	446	72.4K	--	
FL1 to 6, 7	241	398	72.4K	--	
FL1 to 8	223	424	72.4K	--	
FL1 to 9	248	422	72.4K	--	
FL1 to 10	261	412	72.4K	--	
FL2 to 1	165	290	72.4K	--	
FL2 to 2	159	282	72.4K	--	
FL2 to 3	168	282	72.4K	--	
FL2 to 4	172	302	72.4K	--	
FL2 to 5	167	292	72.4K	--	
FL2 to 6, 7	149	242	72.4K	--	
FL2 to 8	154	268	72.4K	--	
FL2 to 9	160	266	72.4K	--	
FL2 to 10	148	258	72.4K	--	
T2 primary to secondary	--	--	--	--	
1-7	306	434	133K	--	
2-7	330	580	133K	--	
3-7	172	352	133K	--	
4-7	174	442	133K	--	
1-9	306	404	60	--	
2-9	346	588	133K	--	
3-9	172	346	60	--	
4-9	176	482	133K	--	
GB130QE	--	--	--	The unit was tested with V1/16.0A, V2/0.59A, V3/1.2A, V4/1.2A, 5V/1.0A	
T1 primary to secondary	--	--	--	--	
FL1 to 1	232	440	72.4K	--	
FL1 to 2	265	432	72.4K	--	
FL1 to 3	253	436	72.4K	--	
FL1 to 4	239	458	72.4K	--	
FL1 to 5	269	444	72.4K	--	
FL1 to 6, 7	241	400	72.4K	--	
FL1 to 8	223	426	72.4K	--	
FL1 to 9	248	422	72.4K	--	
FL1 to 10	261	410	72.4K	--	

FL2 to 1	165	290	72.4K	--
FL2 to 2	159	278	72.4K	--
FL2 to 3	169	284	72.4K	--
FL2 to 4	173	306	72.4K	--
FL2 to 5	167	292	72.4K	--
FL2 to 6, 7	150	246	72.4K	--
FL2 to 8	155	272	72.4K	--
FL2 to 9	161	270	72.4K	--
FL2 to 10	148	260	72.4K	--
T2 primary to secondary	--	--	--	--
1-7	306	434	133K	--
2-7	330	562	133K	--
3-7	172	354	133K	--
4-7	174	446	133K	--
1-9	306	404	60	--
2-9	346	588	133K	MAX PEAK=588V
3-9	172	346	60	--
4-9	176	478	133K	--
GB130QE	--	--	--	The unit was tested with V1/4.4A, V2/3.0A, V3/1.2A, V4/1.2A, 5V/1.0A
T1 primary to secondary	--	--	--	--
FL1 to 1	232	440	72.4K	--
FL1 to 2	266	436	72.4K	--
FL1 to 3	254	438	72.4K	--
FL1 to 4	239	460	72.4K	--
FL1 to 5	269	444	72.4K	--
FL1 to 6, 7	241	400	72.4K	--
FL1 to 8	223	424	72.4K	--
FL1 to 9	248	424	72.4K	--
FL1 to 10	261	410	72.4K	--
FL2 to 1	165	290	72.4K	--
FL2 to 2	159	280	72.4K	--
FL2 to 3	169	284	72.4K	--
FL2 to 4	172	306	72.4K	--
FL2 to 5	167	292	72.4K	--
FL2 to 6, 7	149	244	72.4K	--
FL2 to 8	155	268	72.4K	--
FL2 to 9	160	268	72.4K	--
FL2 to 10	148	256	72.4K	--
T2 primary to secondary	--	--	--	--
1-7	306	434	133K	--
2-7	330	562	133K	--
3-7	172	352	133K	--
4-7	173	442	133K	--
1-9	306	404	60	--
2-9	347	584	133K	MAX RMS=347V
3-9	171	346	60	--
4-9	176	478	133K	--

Optocoupler primary to secondary	--	--	--	--
U203 pin 1 to 4	166	338	60	--
U203 pin 2 to 3	178	376	60	--
U203 pin 1 to 3	174	350	60	--
U203 pin 2 to 4	171	364	60	--
U206 pin 1 to 4	158	324	60	--
U206 pin 2 to 3	167	338	60	--
U206 pin 1 to 3	167	338	60	--
U206 pin 2 to 4	158	324	60	--
U13 pin 1 to 4	172	346	60	--
U13 pin 2 to 3	172	346	60	--
U13 pin 1 to 3	172	346	60	--
U13 pin 2 to 4	173	346	60	--
U4 pin 1 to 4	159	326	60	--
U4 pin 2 to 3	158	326	60	--
U4 pin 1 to 3	159	326	60	--
U4 pin 2 to 4	158	326	60	--
U202 pin 1 to 4	181	358	60	--
U202 pin 2 to 3	185	364	60	--
U202 pin 1 to 3	186	366	60	--
U202 pin 2 to 4	181	358	60	--
U205 pin 1 to 4	174	348	60	--
U205 pin 2 to 3	174	348	60	--
U205 pin 1 to 3	174	348	60	--
U205 pin 2 to 4	174	348	60	--
Y-cap	--	--	--	--
C10	240	354	60	--
C18	2.1	3.7	60	--
C22	166	336	60	--
C54	78.5	174	60	--
C57	67.4	176	60	--
C59	0.19	1.5	60	--


supplementary information:
 The following terminals were connected to earth: "V-", G
 "@" indicates that a 5000 Ω resistor was connected between instrument leads

Required Voltage, V	Required Frequency, Hz	Required Configuration (Single/Three Phase, Line-to-Line, Line-to-Neutral)	Measured Voltage (V)	Supply Frequency (Hz)
240	60	Single Phase	240.0	60.0



DRAFT CB TEST CERTIFICATE INFORMATION

Generated by BlueBox Publisher on: 2019/08/01

Product	POWER SUPPLY
Name and address of the Applicant	SL POWER ELECTRONICS CORP BLDG A 6050 KING DR VENTURA CA 93003 UNITED STATES
Name and address of the Manufacturer	SL POWER ELECTRONICS CORP BLDG A 6050 KING DR VENTURA CA 93003 UNITED STATES
Name and address of the Factory(ies)	SL XIANGHE POWER ELECTRONICS CORP NO.B-02-03,NORTH SIDE OF LANDSCAPE AVE, QIBU DISTRICT, ENVIRONMENTAL INDUSTRIAL PARK XIANGHE HEBEI 065400 CHINA INDUSTRIAS S L S A DE C V CIRCUITO SIGLO XXI 2055 COL PARQUE INDUSTRIAL EX-XXI 21254 MEXICALI BC MEXICO
Rating and principal characteristics	Input: 100-240 Vac, 50-60 Hz, 2.0A Output: For convection, V5: 5Vdc/1.0A, Max. total power of 100W for V1, V2, V3 and V4 outputs. See model difference for detail. For 200LFM, V5: 5Vdc/1.0A, Max. total power of 130W for V1, V2, V3 and V4 outputs. See model difference for detail
Trademarks (if any)	
Model / Type ref.	GB130QZYY where Z, Z represents A, C, D, E or P, due to different output voltages. YY represents any number from 00 to 99 or blank, which only for market purpose, not influence safety function.
Additional information (if necessary)	

A sample of the product was tested and found to be in conformity with IEC 62368-1:2014 (Second Edition)

As shown in the Test Report Ref. No. E135803-A6002
which forms part of this Certificate

Client Representative Richard Yue
Client email (or fax) richard.yue@slpower.com

This form is to acknowledge that the above information has been reviewed and the material has been found to be accurate as stated. This is also to record client's confirmation that above factories manufacture product(s) that are equal to those submitted for testing and certification. (Refer to IECEE 02, Sub-clause 4.2.5: "When the application covers more than one factory, the address of each factory shall be stated in the CB Test Certificate and the NCB shall take steps to ensure that the products from all the factories are equal. That shall be confirmed in the Test Report.")

Signed: Richard Yue Dated: 2019-08-01

*Definitions per IECEE 02 (<http://www.iecee.com/cbscheme/pdf/IECEE02.pdf>):
Applicant: A firm or a person who applies to an NCB for obtaining a CB Test Certificate.
Manufacturer: An organization, situated at a stated location or locations, that carries out or controls such stages in the manufacture, assessment, handling and storage of a product that enables it to accept responsibility for continued compliance of the product with the relevant requirements and undertakes all obligations in that connection.
Factory: The location(s) at which the product is produced or assembled and follow-up service is established by the NCB.

Model GB130QA, GB130QC, GB130QD, GB130QE, GB130QP are similar to each other except some secondary components and the output voltage and current.

For GB130QA

For convection

V1: 5Vdc/12.0A Max.

V2 12Vdc/3.0A Max.

V3: -12Vdc/1.0A Max.

V4: 12Vdc/1.0A Max.

V5: 5Vdc/1.0A

Total max.100W for V1, V2, V3 and V4

For 200LFM

V1: 5Vdc/16.0A Max.

V2: 12Vdc/4.0A Max

V3: -12Vdc/1.2A Max.

V4: 12Vdc/1.2A Max.

V5: 5Vdc/1.0A

Total max.130W for V1, V2, V3 and V4

For GB130QC

For convection

V1: 5Vdc/12.0A Max.

V2: 12Vdc/3.0A Max.

V3: -15Vdc/1.0A Max.

V4: 15Vdc/1.0A Max.

V5: 5Vdc/1.0A

Total max.100W for V1, V2, V3 and V4

For 200LFM

V1: 5Vdc/16.0A Max.

V2: 12Vdc/4.0A Max.

V3: -15Vdc/1.2A Max.

V4: 15Vdc/1.2A Max.

V5: 5Vdc/1.0A

Total max.130W for V1, V2, V3 and V4

For GB130QD

For convection

V1: 5Vdc/12.0A Max.

V2: 24Vdc/2.0A Max.

V3: -12Vdc/1.0A Max.

V4: 12Vdc/1.0A Max.

V5: 5Vdc/1.0A

Total max.100W for V1, V2, V3 and V4

For 200LFM

V1: 5Vdc/16.0A Max.

V2: 24Vdc/3.0A Max.

V3: -12Vdc/1.2A Max.

V4: 12Vdc/1.2A Max.

V5: 5Vdc/1.0A

Total max.130W for V1, V2, V3 and V4

For GB130QE

For convection

V1: 5Vdc/12.0A Max.

V2: 24Vdc/2.0A Max.

V3: -15Vdc/1.0A Max.

V4: 15Vdc/1.0A Max.

V5: 5Vdc/1.0A

Total max.100W for V1, V2, V3 and V4

For 200LFM

V1: 5Vdc/16.0A Max.

V2: 24Vdc/3.0A Max.

V3: -15Vdc/1.2A Max.

V4: 15Vdc/1.2A Max.

V5: 5Vdc/1.0A

Total max.130W for V1, V2, V3 and V4

For GB130QP

For convection

V1: 5Vdc/10.0A Max.

V2: 24Vdc/4.0A Max.

V3: -12Vdc/1.0A Max.

V4: 12Vdc/2.0A Max.

V5: 5Vdc/1.0A

Total max.100W for V1, V2, V3 and V4

For 200LFM

V1: 5Vdc/16.0A Max.

V2: 24Vdc/5.0A Max.

V3: -12Vdc/1.2A Max.

V4: 12Vdc/2.0A Max.

V5: 5Vdc/1.0A

Total max.130W for V1, V2, V3 and V4

Test Record No. 1

- The manufacturer submitted representative production samples of POWER SUPPLY, Models GB130QZYY for examination and test.
- Unless otherwise indicated, all tests were conducted in SL Shanghai Power Electronics Corp (4th Floor, Bldg 53, 1089 Qinzhou North Road, Shanghai, 200233, China) under DAP (WTDP) Program.
- Unless otherwise indicated, all tests were conducted on Model GB130QA, GB130QC, GB130QD, GB130QE, GB130QP.
- Tests performed on Model GB130QA, GB130QC, GB130QD, GB130QE, GB130QP were considered to be representative of Model GB130QZYY.
- Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

The following tests were conducted:

Tests performed (name of test and test clause):	Testing location:
CLASSIFICATION OF ELECTRICAL ENERGY SOURCES (5.2, 5.7)	
MAXIMUM OPERATING TEMPERATURE FOR MATERIALS, COMPONENTS AND SYSTEMS (5.4.1.4, 6.2, 9.2.5 ANNEX B.2)	
DETERMINATION OF WORKING VOLTAGE (5.4.1.8)	
HUMIDITY CONDITIONING (5.4.8)	
ELECTRIC STRENGTH TEST (5.4.9)	
SAFEGUARDS AGAINST CAPACITOR DISCHARGE AFTER DISCONNECTION OF A CONNECTOR (5.5.2.2)	
PROSPECTIVE TOUCH VOLTAGE AND TOUCH CURRENT MEASUREMENT (5.7)	
INPUT TEST: SINGLE PHASE (B.2.5)	
SIMULATED ABNORMAL OPERATING CONDITIONS (B.3)	
SIMULATED SINGLE FAULT CONDITIONS (B.4)	
TRANSFORMER OVERLOAD – ALTERNATIVE TEST METHOD (G.5.3.3.3)	
The following tests were waived:	Rationale for Waiving

Test results are valid only for the tested equipment. These tests are considered representative of the products covered by this Test Report. The test methods and results of the above tests have been reviewed and found to be in accordance with the requirements in the Standard(s) referenced at the beginning of this Test Report.

The following supplements are provided as part of this Test Record. NOTE: These supplements are only available to the Applicant via the myUL™ Client Portal.

Type	Supplement Id	Description
Datasheet	02-01	DS1
Attachment	02-02	CRD
Datasheet	02-03	DS2