

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Listing
CCN:	QQGQ, QQGQ7 (Power Supplies for Information Technology Equipment Including Electrical Business Equipment)
Product:	ITE POWER SUPPLY
Model:	- Direct Plug in power supply with non-detachable plug GT-46120-WWVV-X.XX-W2***** WW is the standard output wattage, with a maximum value of 12. VV is the standard rated output voltage designation, which can be 05, 06, 12, 24, 48. -X.XX denote the output voltage differentiator, subtracting volts from standard output voltage , which can be -0.05 or blank. Each * = 0-9 or A-Z or () - or blank for marketing purposes. - Direct Plug in power supply with detachable plug GT-46120-WWVV-X.XX***** WW is the standard output wattage, with a maximum value of 12. VV is the standard rated output voltage designation, which can be 05, 06, 12, 24, 48. -X.XX denote the output voltage differentiator, subtracting volts from standard output voltage , which can be -0.05 or blank. Each * = 0-9 or A-Z or () - or blank for marketing purposes.
Rating:	Input: 100-240V ~, 50-60Hz, 0.6A Output: See Miscellaneous 7-01 for details.
Applicant Name and Address:	GLOBTEK (HONG KONG) LTD UNIT 1402, BENSON TOWER 74 HUNG TO RD KWUN TONG KOWLOON HONG KONG

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.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

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

Prepared by: Nat Liu/ Amos Chen

Reviewed by: Katy Chen

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

The unit is a direct plug-in AC adapter intend for ITE equipment. All electrical components are mounted on PWB and housed within plastic enclosure which secured by ultrasonic welding. The direct plug-in unit employs input plug (NEMA 1-15P) and output cable.

Model Differences

All models in GT-46120-WWVV-X.XX-W2 and GT-46120-WWVV-X.XX series are identical to each other except for model designation, output rating, secondary winding of transformer and secondary components. Model GT-46120-WWVV-X.XX is detachable plug, GT-46120-WWVV-X.XX-W2 is integral plug. See supplement ID 7-01 Model list for details.

Technical Considerations


- Equipment mobility : direct plug-in
- Connection to the mains : pluggable A
- Operating condition : continuous
- Access location : operator accessible
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : +10%, -10% (manufacturer declared)
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Class II (double insulated)
- Considered current rating of protective device as part of the building installation (A) : 20A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : up to 2000 meters
- Altitude of test laboratory (m) : less than 2000 meters
- Mass of equipment (kg) : Approx. 0.0726kg
- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of: 40°C

- The means of connection to the mains supply is: Pluggable A (DPIU)
- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Plug
- The product was investigated to the following additional standards: The blade dimension was evaluated to be complied with NEMA configurations in accordance with Wiring Devices - Dimensional Specifications, ANSI/NEMA WD6.
- The following accessible locations (with circuit/schematic designation) are within a limited current circuit: CY1 secondary
- The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS): Output terminal
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual

Additional Information

N/A

Markings and instructions

Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Power rating - Class II symbol	Symbol for Class II construction  (60417-2-IEC-5172)
LPS Mark (Optional)	LPS or Limited Power Source

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.

Production-Line Testing Requirements						
<u>Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.</u>						
Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
All models	T1	--	Primary/ secondary	300 0	4242	1
<u>Earthing Continuity Test Exemptions - This test is not required for the following models:</u>						
All models						
<u>Electric Strength Test Exemptions - This test is not required for the following models:</u>						
None						
<u>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:</u>						
--						
<u>Sample and Test Specifics for Follow-Up Tests at UL</u>						
Model	Component	Material	Test	Sample(s)	Test Specifics	
--	--	--	--	--	--	

1.5.1	TABLE: list of critical components					Pass
Object/part or Description	Manufacturer/ trademark	type/model	technical data	Product Category CCN(s)	Required Marks of Conformity	Supplement ID
01. Enclosure and plug holder material	SABIC INNOVATIVE PLASTICS B V (E45329)	SE1X(GG)(f1)	Rated V-1, 105 degree C min. Minimum 1.7 mm thickness. Two pieces construction, secured together by ultrasonic welding, See Enclosure/Diagram ID 4-02 for details.	QMFZ2	UL	4-02
02. Input Blades	--	--	Non-polarized, solid copper or copper alloy, NEMA plug type 1-15P, integrally molded on plug holder, from any point of either blade to the plug face section of the edge is spaced minimum 5.1 mm perimeter, see supplement 4-04 For details.	--	--	4-04
03. Label	Interchangeable	Interchangeable	Minimum 65 degree C. Suitable for its application surface.	PGDQ2, PGJ12	UL	
04. Output Cable	Interchangeable	Interchangeable	Non-detachable, VW-1 or FT-1, minimum 18 AWG, Rated minimum 80 degree C, minimum 30V, maximum 3.05 m, maximum 30 mm inside enclosure.	AVLV2	UL	
05. Strain Relief of Output Cable	Interchangeable	Interchangeable	Minimum V-2, PVC bushing integrally molded on output cord. See Enclosure - Diagrams 4-10 for dimensions details.	QMFZ2	UL	4-10
06. PWB	Interchangeable	Interchangeable	V-0, minimum 130 degree C.	ZPMV2	UL	
07. Fuse Resistor (RF1)	Shenzhen Great Electronics Co Ltd (E301541)	RXF-1W	Rated 2ohm, 1W	FPEW2	UL	

07a. Fuse Resistor (RF1) (Alternate)	Anhui Changsheng Electronics Co Ltd (E306095)	RXF-1W	Rated 2ohm,1W	FPEW2	UL	
08. Varistor (MOV1) (optional)	CENTRA SCIENCE CORP (E316325)	CNR-10D471K	Rated minimum 300 Vac, min. V-1 coating .	VZCA2	UL	
08a. Varistor (MOV1) (optional) (Alternate)	JOYIN CO LTD (E325508)	10N471K	Rated minimum 300 Vac, min. V-1 coating	VZCA2	UL	
08b. Varistor (MOV1) (optional) (Alternate)	THINKING ELECTRONIC INDUSTRIAL CO LTD (E314979)	TVR10471	Rated minimum 300 Vac, min. V-1 coating	VZCA2	UL	
08c. Varistor (MOV1) (optional) (Alternate)	CERAMATE TECHNICAL CO LTD (E315429)	GNR 10D471K	Rated minimum 300 Vac, min. V-1 coating.	VZCA2	UL	
09. Bridge Diode (BD1)	Interchangeable	Interchangeable	Rated minimum 1A, minimum 800 V.	--	--	
10. Storage Capacitor (C1,C2)	Interchangeable	Interchangeable	Rated 400 V, max. 10uF, min. 105 degree C	--	--	
11. Transformer (T1) (for GT-46120-1005, GT-46120-1206-0.05, GT-46120-1205-W2, GT-46120-1206-0.05-W2)		XF00950	Class B, See Enclosure / Diagram ID 4-08 for construction details.	--	--	4-08
11a. Transformer (T1) (For GT-46120-1212, GT-46120-1212-W2)		XF00924	Class B, See Enclosure / Diagram ID 4-01 for construction details	--	--	4-01
11b. Transformer (T1) (For GT-46120-1224, GT-46120-1224-W2)		XF00939	Class B, See Enclosure / Diagram ID 4-06 for construction details.	--	--	4-06
11c. Transformer (T1) (For GT-46120-1248, GT-46120-1248-W2)		XF00940	Class B, See Enclosure / Diagram ID 4-07 for construction details.	--	--	4-07
11-01. Insulation system for Transformer (T1)		130-1	Insulation system Class B	OBJY2	UL	
11-02. Core	--	--	EE type, Ferrite, approx. dimension 13.5 mm by 12.5mm	--	--	

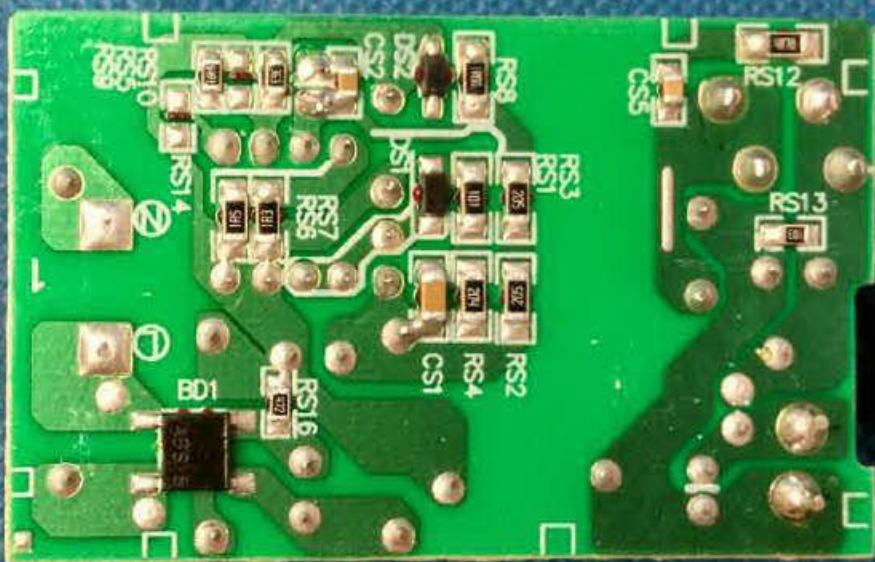
			by 6.0mm			
11-03. Coil	Interchangeable	Interchangeable	Min. 130 degree C	OBMW2	UL	
11-04. Bobbin	Chang Chun Plastics Co., Ltd. (E59481)	T375J	V-0, 150 degree C, Phenolic, thickness 0.75mm minimum	QMFZ2	UL	
11-05. Tubing/Sleeving	Great Holding Industrial Co. Ltd. (E156256)	TFL, TFS, TFT	Rated 200 degree C, VW-1.	YDPU2	UL	
11-06. Triple Insulated Wire	Great Leoflon Industrial Co. Ltd. (E211989)	TRW(B)	130 degree C	OBJT2	UL	
11-07. Varnish	John C. Dolph Co. (E317427)	BC-346A	Rated minimum 130 degree C.	OBOR2	UL	
11-07a. Varnish (Alternate)	Elantas Electrical Insulation Elantas Pdg Inc (E75225)	V1630FS	Rated minimum 155 degree C.	OBOR2	UL	
11-08. Insulation Tape	3M COMPANY ELECTRICAL MARKETS DIV (EMD) (E17385)	1350T-1 (b)	130 degree C.	OANZ2	UL	
11-08a. Insulation Tape (alternate)	BONDTEC PACIFIC CO LTD (E175868)	370S (b)	130 degree C.	OANZ2	UL	
12. Internal Glue Materials (around transformer, and between the transformer and enclosure)	Interchangeable	Interchangeable	Rated V-2 minimum.	QMFZ2	UL	
13.IC(U1)	--	--	2A, Min 620V	--	--	
14. Current sense resistor (RS6,RS7)	--	--	Rated max. 1.5 ohm, 1/4 W±5%	--	--	
15.Inductor (L1,L2)	--	--	330 uH, min. 130 degree C.	--	--	
16. Bridge Capacitors (CY1) (Except for 48V model) (optional)	Success Electronics Co Ltd (E114280)	SE, SB	Max. 1000pF, min. 250 Vac, 125 degree C, Y1 type	FOWX2	UL	
16b. Bridge Capacitors	Walsin Technology	AH Series	Max. 1000pF, min. 250 Vac,	FOWX2	UL	

(CY1) (Except for 48V model) (optional) (Alternate)	Corp (E146544)		125 degree C, Y1 type.			
16c. Bridge Capacitors (CY1) (Except for 48V model) (optional) (Alternate)	JUHONG ELE CO (E253194)	JB	Max. 1000pF, min. 400 Vac, 125degree C, Y1 type.	FOWX2	UL	
16e. Bridge Capacitors (CY1) (Except for 48V model) (optional) (Alternate)	XIANGTAI ELECTRONIC (SHENZHEN) CO LTD (E319473)	YOF	Max. 1000pF, min. 400 Vac, 125 degree C, Y1 type.	FOWX2	UL	
17. Bridge Capacitors (CY1) (Only for 48V model) (optional)	Success Electronics Co Ltd (E114280)	SE, SB	Max. 2200pF, min. 250 Vac, 125 degree C, Y1 type	FOWX2	UL	
17b. Bridge Capacitors (CY1) (Only for 48V model) (optional) (Alternate)	Walsin Technology Corp (E146544)	AH Series	Max. 2200pF, min. 250 Vac, 125 degree C, Y1 type.	FOWX2	UL	
17c. Bridge Capacitors (CY1) (Only for 48V model) (optional) (Alternate)	JUHONG ELE CO (E253194)	JB	Max. 2200pF, min. 400 Vac, 125degree C, Y1 type.	FOWX2	UL	
17e. Bridge Capacitors (CY1) (Only for 48V model) (optional) (Alternate)	XIANGTAI ELECTRONIC (SHENZHEN) CO LTD (E319473)	YOF	Max. 2200pF, min. 400 Vac, 125 degree C, Y1 type.	FOWX2	UL	

Enclosures

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	3-01	Overall view (GT-46120-WWVV-X.XX*****)
Photographs	3-02	Overall view (GT-46120-WWVV-X.XX*****)
Photographs	3-03	Internal view
Photographs	3-04	PCB component view
Photographs	3-05	PCB trace view
Photographs	3-06	Transformer top view
Photographs	3-07	Transformer bottom view
Photographs	3-08	Overall view (GT-46120-WWVV-X.XX-W2*****)
Photographs	3-09	Overall view (GT-46120-WWVV-X.XX-W2*****)
Diagrams	4-01	Transformer T1 specification(XF00924)
Diagrams	4-02	Enclosure drawing (unit: mm)
Diagrams	4-04	Input blade specification
Diagrams	4-06	Transformer T1 specification(XF00939)
Diagrams	4-07	Transformer T1 specification(XF00940)
Diagrams	4-08	Transformer T1 specification(XF00950)
Diagrams	4-10	Strain Relief
Schematics + PWB	5-01	PWB layout
Miscellaneous	7-01	Model difference

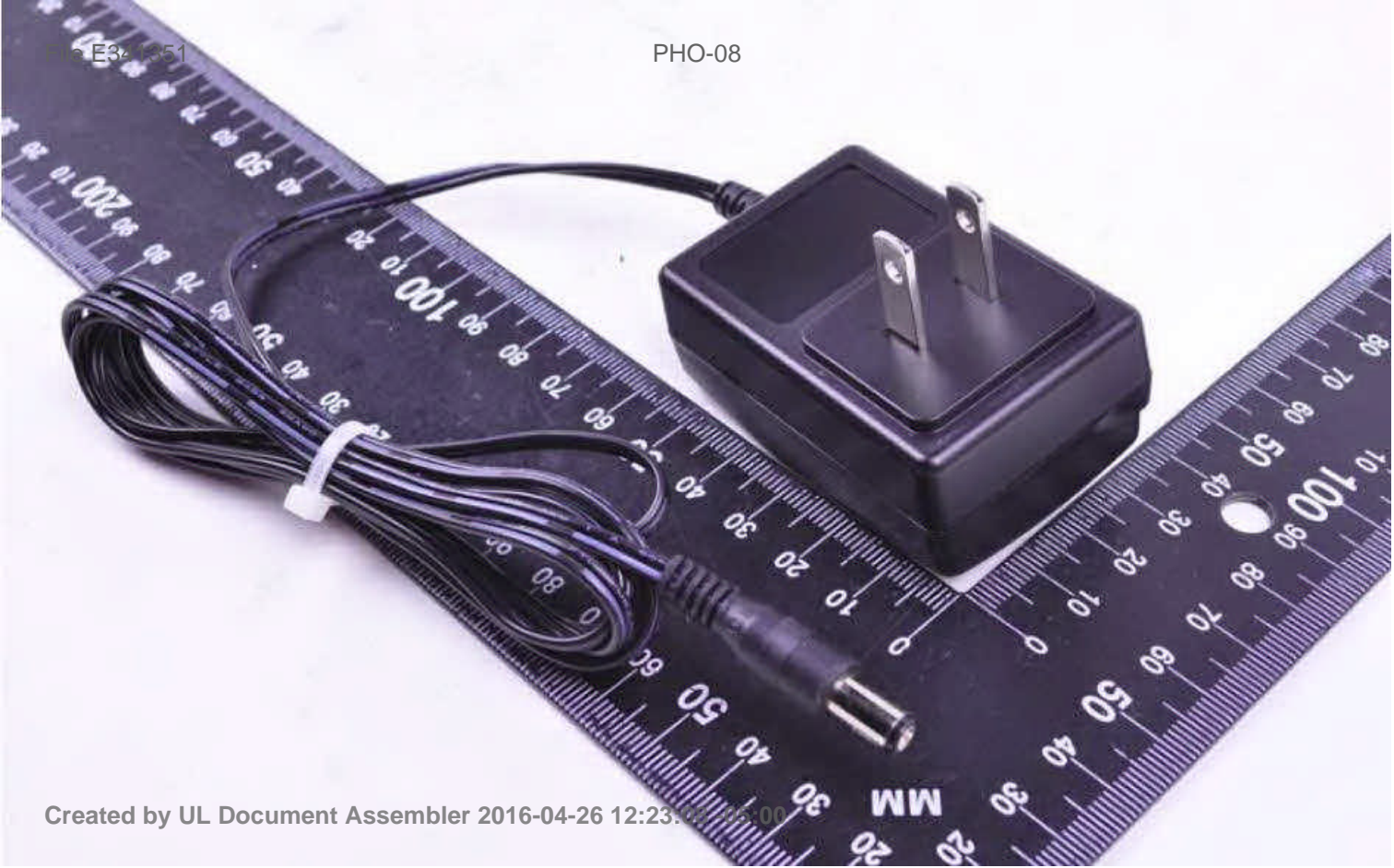






File E341351

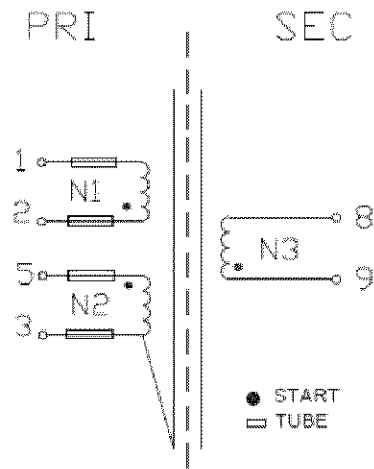
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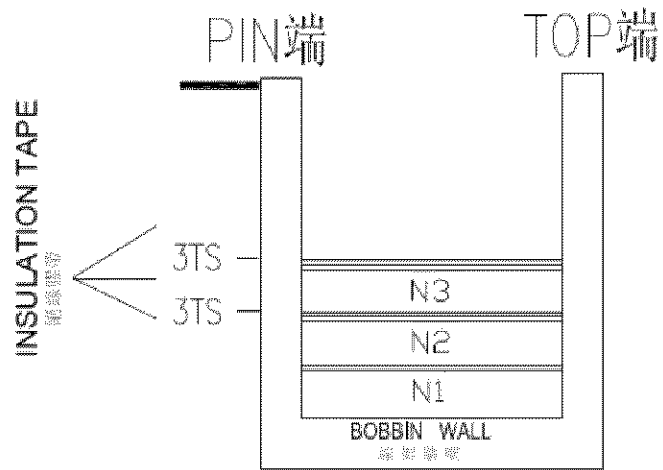


SPECIFICATION

SCHEMATIC:



WINDING CONSTRUCTION:

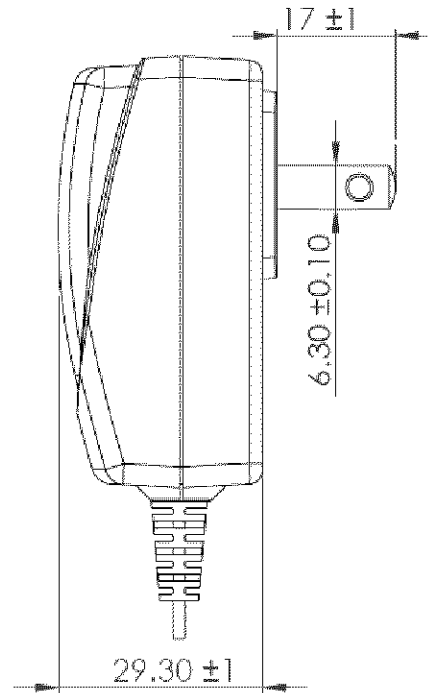
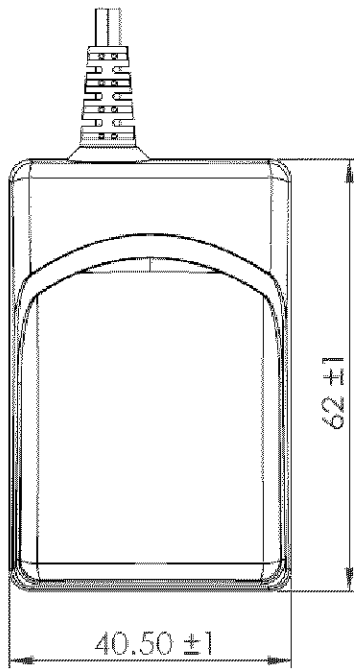
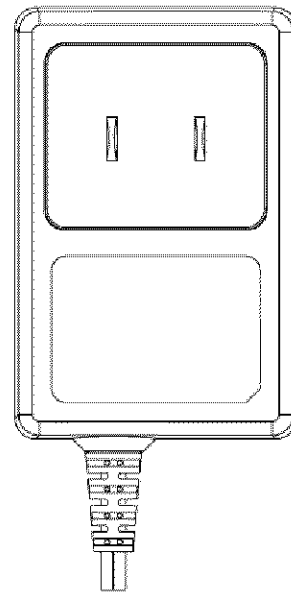
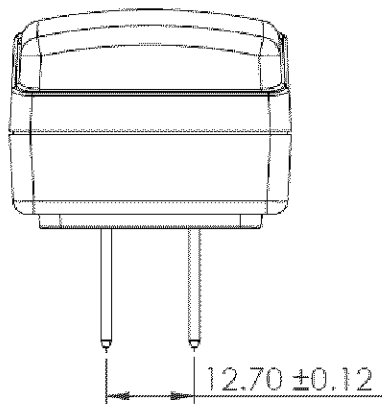


4. WINDING TABLE

WINDING 繞組	線號		線號		WIRE 用線線徑 1UEW	WDG. TURNS 圈數	漆層膠帶規格		鐵氟龍套管		線間線距膠帶 (mm) 線距規格: 0.025*7mm	TAPE 膠帶	REMARK 備註
	PIN	位置	PIN	位置			S	F					
N1	2		1		0.25mm*1P	70Ts			#28L	#28L			密繞
N2	5		3		0.25mm*1P	8Ts			#28L	#28L		3Ts	疏繞 1層
N3	9		8		TRW(B)0.5mm*1P	8Ts						3Ts	密繞

DESCRIPTION	TRANSFORMER	Customer P/N	XF00924	DATE	2015/12/14
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Att.5

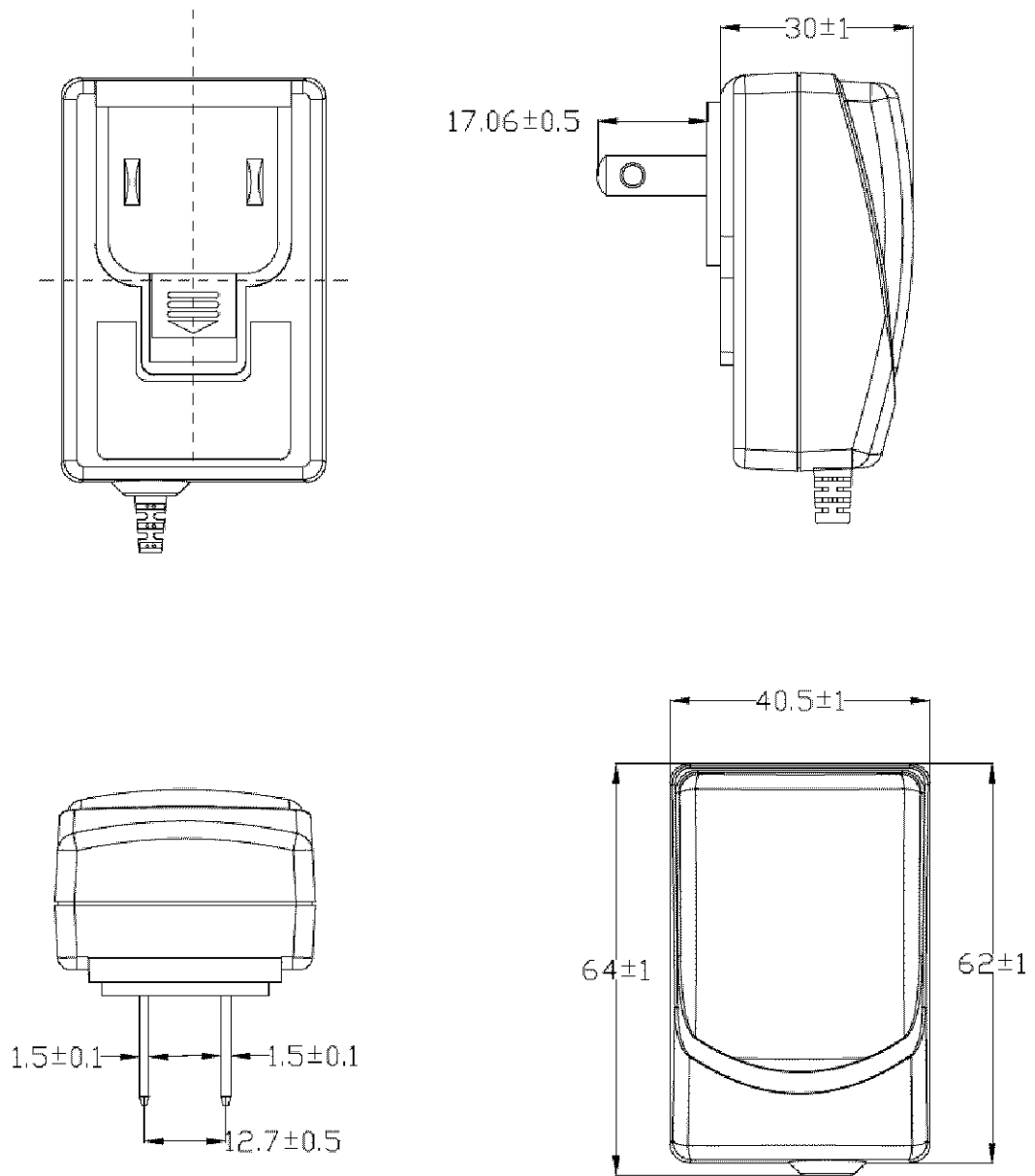


材質和顏色以BOM為準，帶*為重點尺寸

TOLERANCE				
>0.5~<3.0	3.0~<6.0	6.0~<30	30~<120	120~<400
±0.05	±0.1	±0.15	±0.2	±0.3

DESIGNED	CHECKED	APPROVED		TITLE		
				UNITS	mm	OUTDRAWING
			SCALE	1:1	DRAWING No.	DATE
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Att.2



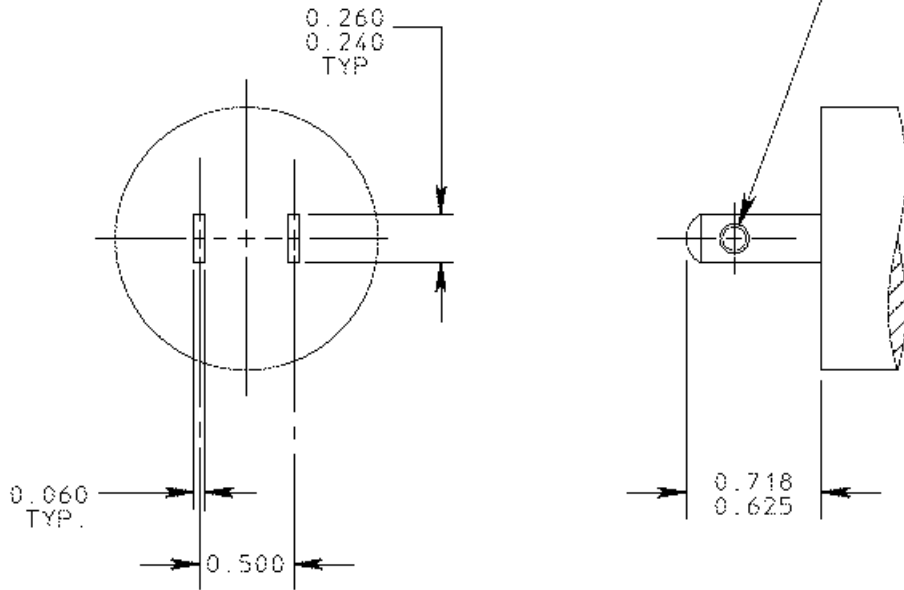
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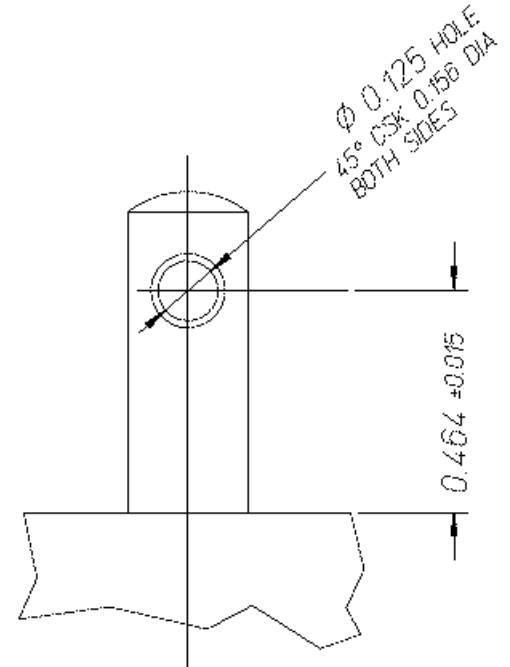
FIGURE 1-15P

UNIT: INCH

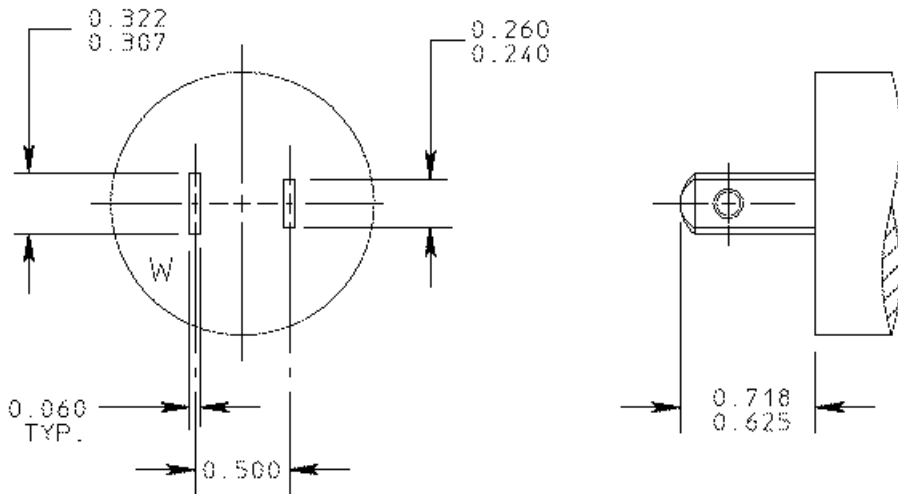
HOLE ON 2 (TWO) BLADES
(SEE LOCATION NO. 1, PAGE 17)



NON-POLARIZED PLUG



LOCATION # 1



POLARIZED PLUG

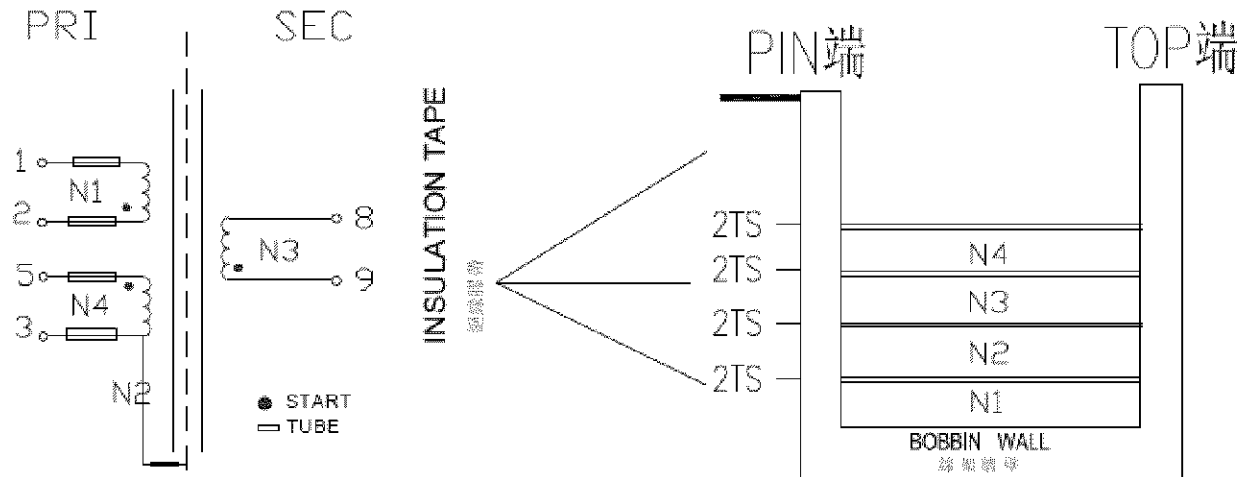
NOTES:

- 1- HOLE IN FLAT BLADE IS OPTIONAL, AND IT IS INTENDED FOR MANUFACTURING PURPOSES ONLY. HOWEVER IF USED IT MUST BE LOCATED AS PER DIMENSIONS SHOWN ABOVE.

SPECIFICATION

SCHEMATIC:

WINDING CONSTRUCTION:



4. WINDING TABLE

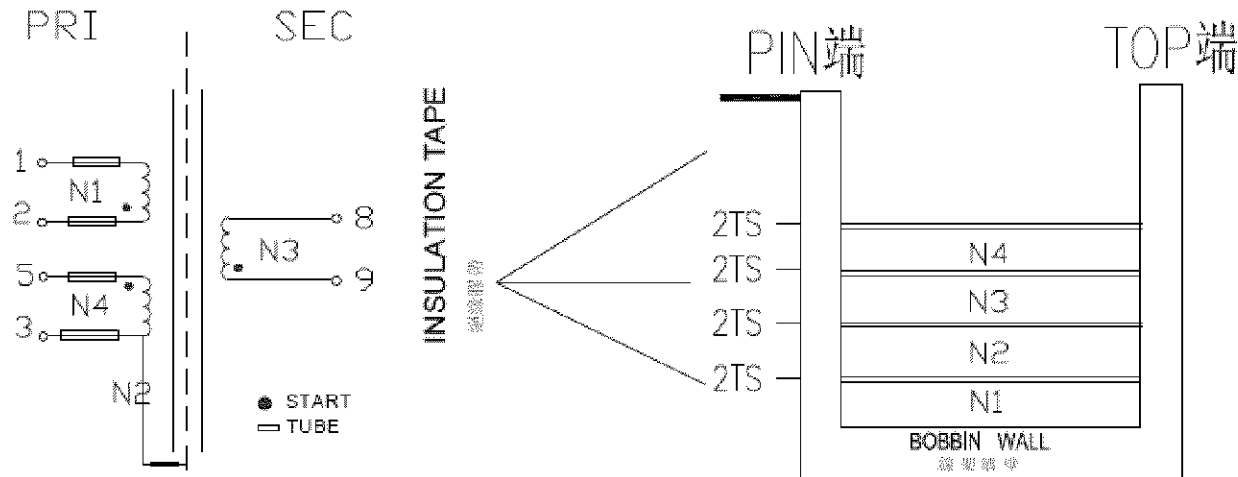
WINDING 繞組	原副		原副		WIRE 銅線線徑 1UEW	WDG. TURNS 匝數	檢軸膠帶規格		鐵氟龍套筒		細油線絕緣層 (mm) 絕緣層厚: 0.025~7mm	TAPES 膠帶	REMARK 備註
	PIN	匝數	PIN	匝數			S	F					
N1	2		1		0.25mm*1P	70Ts			#28L	#28L		2Ts	密繞
N2	3				0.25mm*5mmCU	1.1Ts			#28L			2Ts	居中繞
N3	9		8		TRW(B)0.45mm*1P	17Ts						2Ts	密繞
N4	5		3		0.25mm*1P	10Ts			#28L	#28L		2Ts	居中密繞

DESCRIPTION	TRANSFORMER	Customer P/N	XF00939	DATE	2015/12/14
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SPECIFICATION

SCHEMATIC:

WINDING CONSTRUCTION:



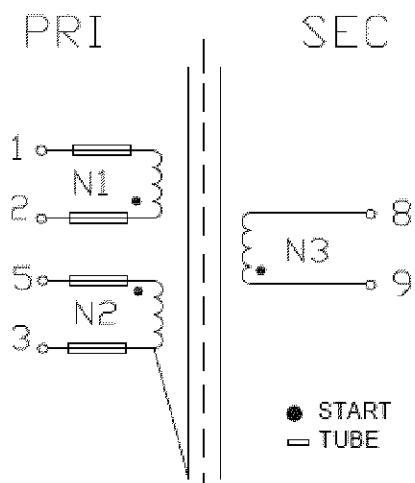
4. WINDING TABLE

WINDING 繞組	始端		終端		WIRE 線徑線徑 1UEW	WDG. TURNS 圈數圈數	橋膠帶規格		鐵氟龍套管		線頭線尾膠帶 (mm)		TAPE 膠帶	REMARK 備註
	PIN	位置	PIN	位置			S	F	附註規格: 0.025*7mm					
N1	2		1		0.25mm*1P	70Ts			#28L	#28L			2Ts	密繞
N2	3				0.25mm*5mmCU	1.1Ts			#28L				2Ts	居中繞
N3	9		8		TRW(B) 0.3mm*1P	23Ts							2Ts	密繞
N4	5		3		0.25mm*1P	6Ts			#28L	#28L			2Ts	居中密繞

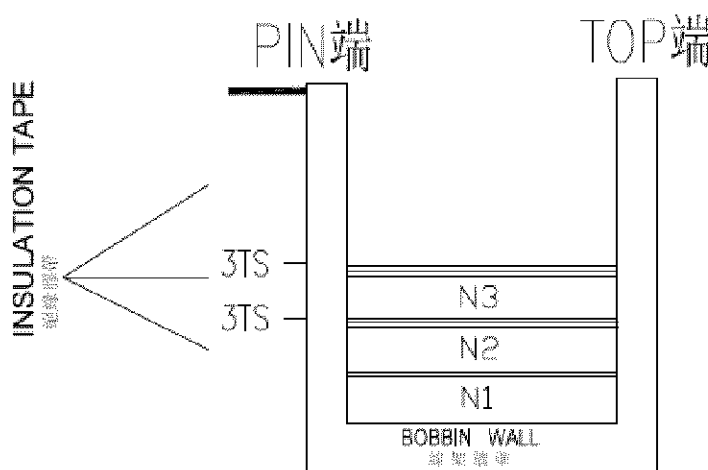
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SPECIFICATION

SCHEMATIC:



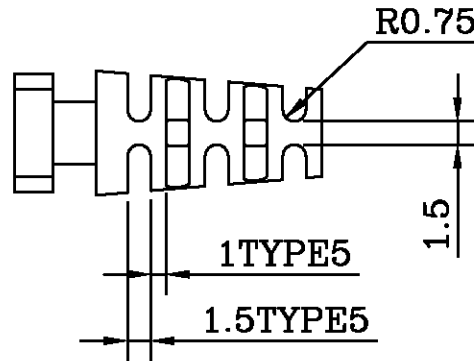
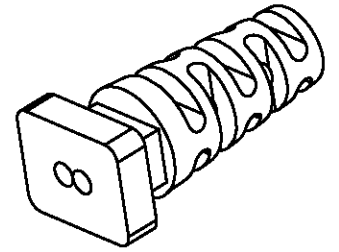
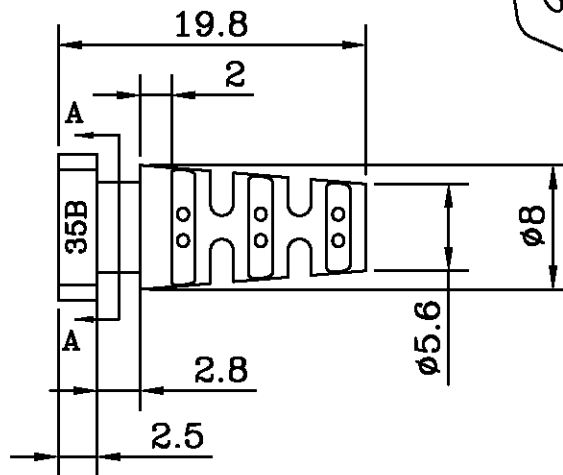
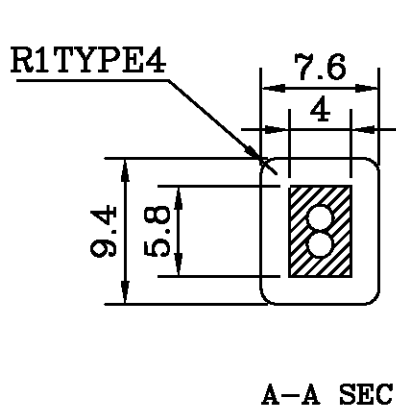
WINDING CONSTRUCTION:



4. WINDING TABLE

WINDING 線號	始端		終端		WIRE 銅線線徑 1UEW	WDG. TURNS 每層圈數	漆層膠帶規格		鐵氟龍套管		線頭線尾膠帶 (mm) 規格可選 0.025*7mm	TAPE 膠帶	REMARK 備註
	PIN	位置	PIN	位置			S	F					
N1	2		1		0.25mm*1P	70Ts			#28L	#28L			密繞
N2	5		3		0.25mm*1P	13Ts			#28L	#28L		3Ts	疏繞一層
N3	9		8		TRW(B)0.8mm*1P	5Ts						3Ts	密繞

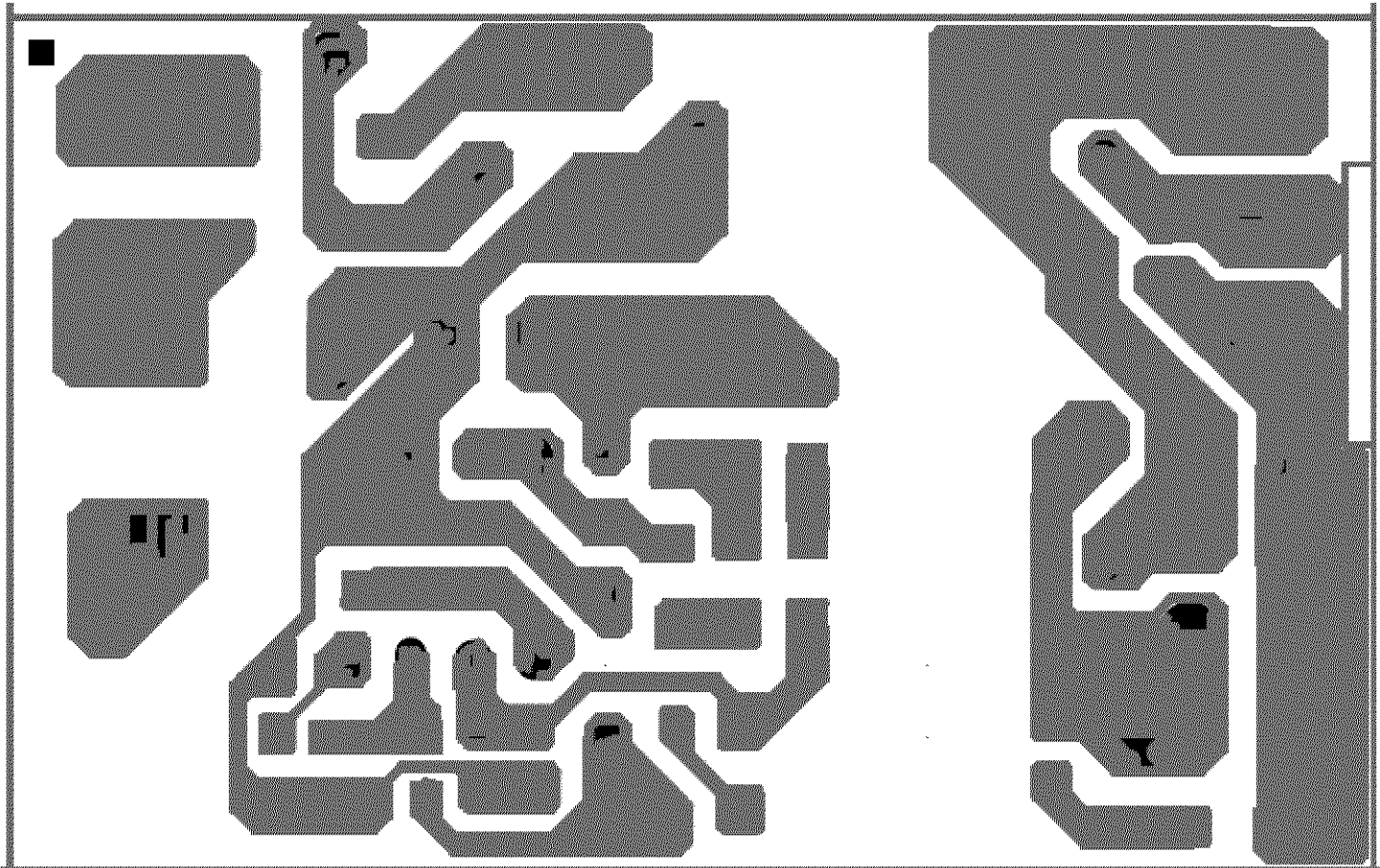
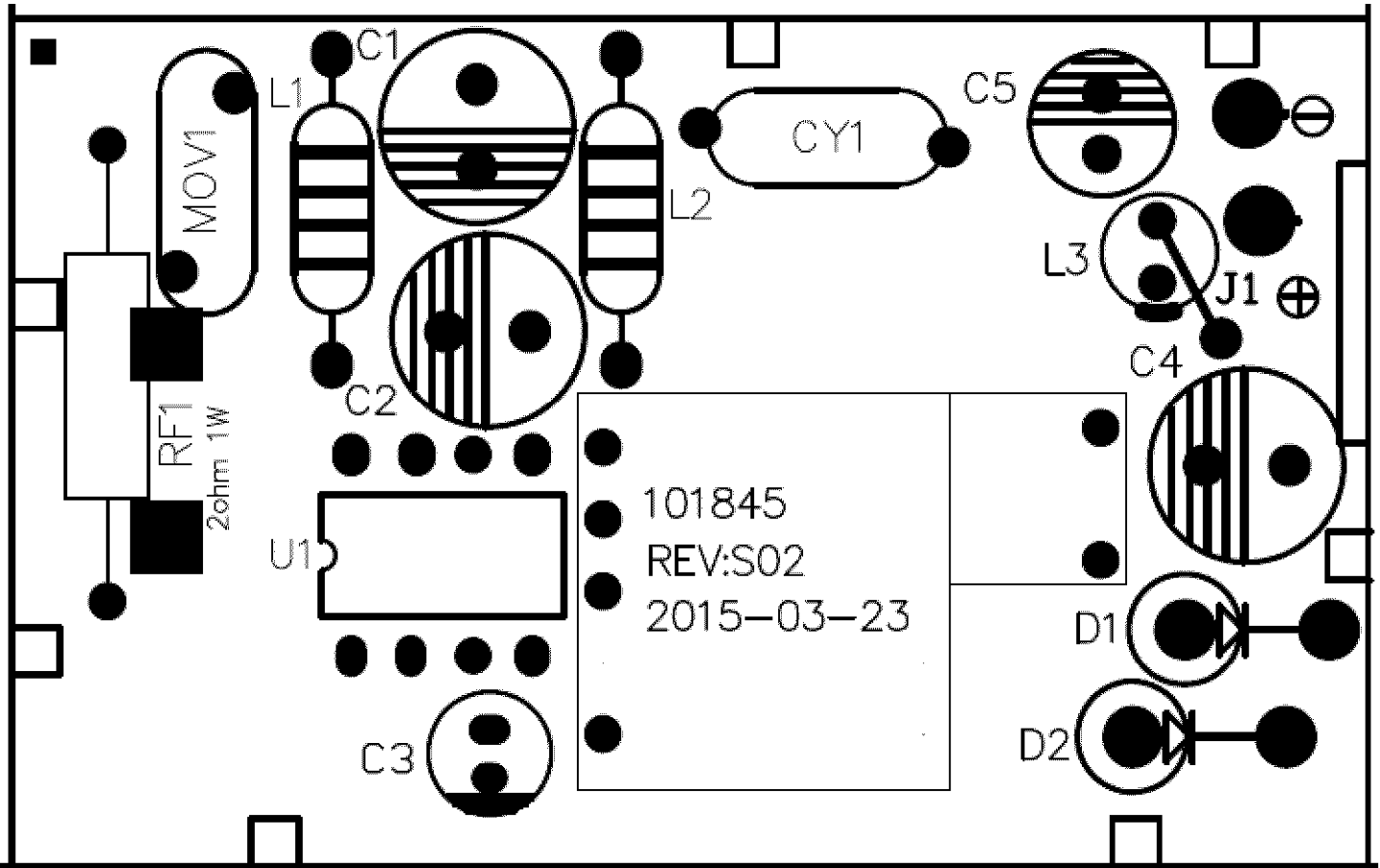
DESCRIPTION	TRANSFORMER	Customer P/N	XF00950	DATE	2015/12/14
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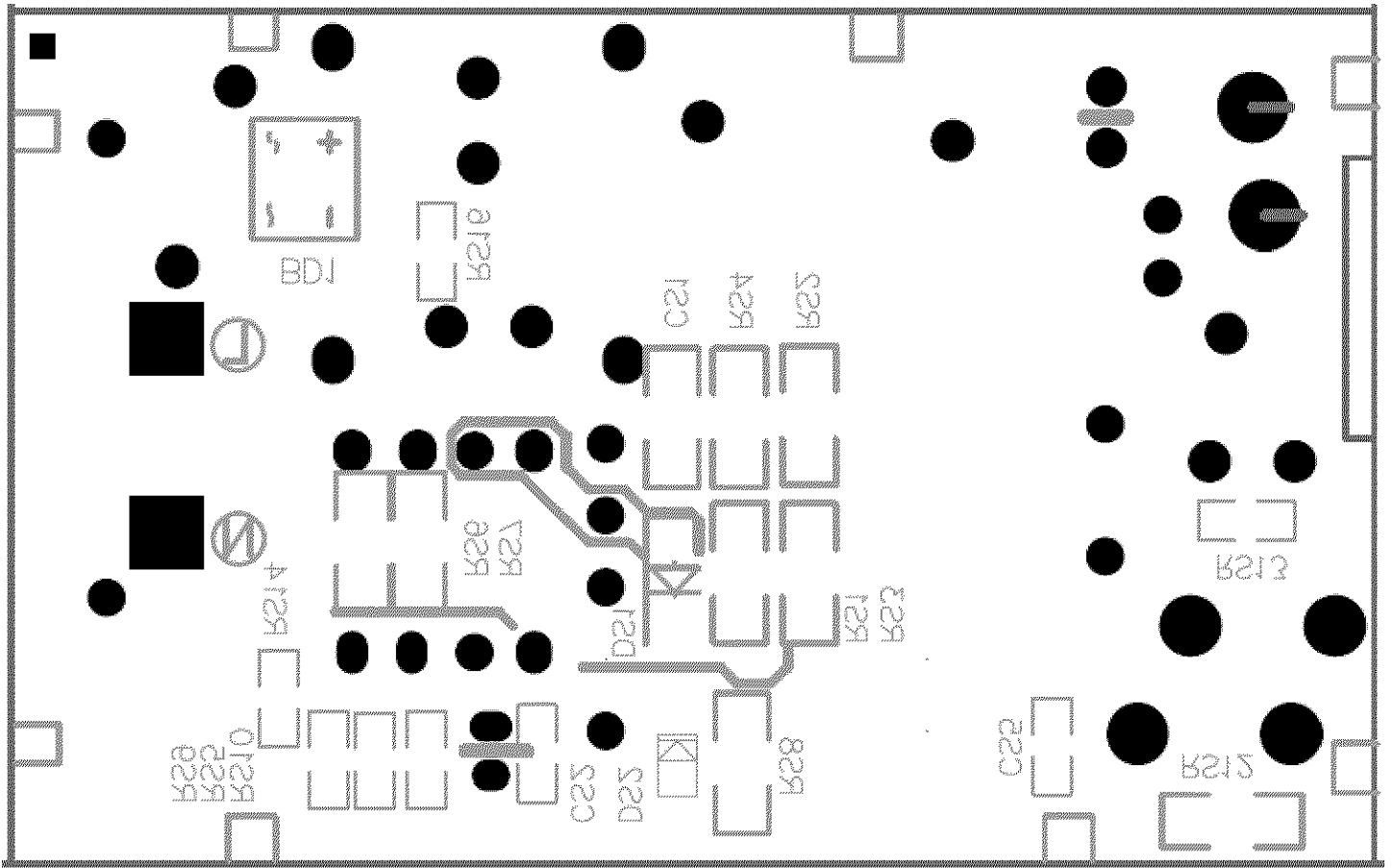


線材OD: ø1.5X3.0;ø1.7X3.4 ;ø1.8X3.6 ;ø1.9X3.8

公差表				
>0.5-<3.0	3.0-<6.0	6.0-<30	30-<120	120-<400
±0.1	±0.15	±0.2	±0.3	±0.4

設計	審核	批准		類別	SR		初版日期		
					單位	mm		圖號	R35B
			比例	2:1	圖名	35B			





File #341001	GT model name	Output voltage MIS-01	Output current	Max.W	Transformer
Direct Plug in power supply with non-detachable plug					
	GT-46120-1205-W2	5V	2.4A	12W	XF00950
	GT-46120-1206-0.05-W2	5.95V	2A	11.9W	
	GT-46120-1212-W2	12V	1A	12W	XF00924
	GT-46120-1224-W2	24V	0.5A	12W	XF00939
	GT-46120-1248-W2	48V	0.25A	12W	XF00940
Direct Plug in power supply with detachable plug					
	GT-46120-1005	5V	2A	10W	XF00950
	GT-46120-1206-0.05	5.95V	2A	12W	
	GT-46120-1212	12V	1A	12W	XF00924
	GT-46120-1224	24V	0.5A	12W	XF00939
	GT-46120-1248	48V	0.25A	12W	XF00940

Test Record

Test Record No. 1

Tests on Models GT-46120-WWVV-X.XX-W2***** and GT-46120-WWVV-X.XX***** are not required due to copy file