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 NEW TAIPEI  
 248 TAIWAN

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 Project No: 4786193824  
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 PO Number: B LU 12/18/13

Subject: **Procedure And/Or Report Material**

The following material resulting from the investigation under the above numbers is enclosed.

**Issue**

<u>Date</u>	<u>Vol</u>	<u>Sec</u>	<u>Pages</u>	<u>Revised Date</u>
	1		Revised Index Page(s) 5	2014/08/08
2014/08/08	1	40	Cert of Compliance	
2014/08/08	1	40	Add New Proc/Report Sect	
2014/08/09	1	41	Cert of Compliance	
2014/08/09	1	41	Add New Proc/Report Sect	

Please file revised pages and illustrations in place of material of like identity. New material should be filed in its proper numerical order.

NOTE: Follow-Up Service Procedure revisions DO NOT include Cover Pages, Test Records and Conclusion Pages. Report revisions DO NOT include Authorization Pages, Indices, Section General Pages and Appendixes.

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SCL File

Cat. Nos.	USR	CNR	Section
LED Drivers, Other than Class 2 with isolated output, Models: PWM-90-12, NPF-90X-Y; where X may be blank or D, Y may be 12 or 15.	X	X	38
LED Drivers, Isolated Class 2 LED Power Supplies, Models: NPF-90X-Y, where X may be blank or D, Y may be 20, 24, 30, 36, 42, 48 or 54 ; PWM-90-Z, where Z may be 24, 36 or 48.	X	X	39
<b>LED Drivers, Isolated output: Models LPV-100-X, where X can be 5, 12, 15, 24, 36 or 48 for output voltage.</b>	<b>X</b>	<b>X</b>	<b>40</b>
<b>LED Drivers, Isolated output: Models LPV-150-Y Series, where Y can be 12, 15, 24, 36 or 48 for output voltage.</b>	<b>X</b>	<b>X</b>	<b>41</b>

# CERTIFICATE OF COMPLIANCE

**Certificate Number** 20140811-E334687  
**Report Reference** E334687-20140808  
**Issue Date** 2014-AUGUST-11

**Issued to:** MEAN WELL ENTERPRISES CO LTD  
28 WUQUAN 3RD RD WUGU DIST  
NEW TAIPEI  
248 TAIWAN

**This is to certify that  
representative samples of**

COMPONENT - DRIVERS FOR LIGHT-EMITTING-DIODE  
ARRAYS, MODULES AND CONTROLLERS



LED Drivers, Isolated output: Models LPV-100-X, where X  
can be 5, 12, 15, 24, 36 or 48 for output voltage

Have been investigated by UL in accordance with the  
Standard(s) indicated on this Certificate.

**Standard(s) for Safety:** See Addendum Page

**Additional Information:** See the UL Online Certifications Directory at  
[www.ul.com/database](http://www.ul.com/database) for additional information

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The UL Recognized Component Mark for the U.S. generally consists of the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark: , may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is required when specified in the UL Directory preceding the recognitions or under "Markings" for the individual recognitions. The UL Recognized Component Mark for Canada consists of the UL Recognized Mark for Canada:  and the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory.

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Look for the UL Recognized Component Mark on the product.



William R. Carney, Director, North American Certification Programs  
UL LLC

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# CERTIFICATE OF COMPLIANCE

**Certificate Number** 20140811-E334687  
**Report Reference** E334687-20140808  
**Issue Date** 2014-AUGUST-11

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

**Standard(s) for Safety:**

UL 1012 - Power Units Other Than Class 2  
UL 8750 - Light Emitting Diode (LED) Equipment For Use In Lighting Products  
CSA C22.2 No. 107.1 - General Use Power Supplies  
CSA C22.2 No. 250.0-13 - Luminaires



William R. Carney, Director, North American Certification Programs  
UL LLC

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File E334687  
Project#:4786193824

August 08, 2014

COMPONENT - DRIVERS FOR LIGHT-EMITTING-DIODE ARRAYS, MODULES AND CONTROLLERS

Mean Well Enterprises Co LTD  
New Taipei, Taiwan

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## DESCRIPTION

## PRODUCT COVERED:

USR/CNR - LED Drivers, Isolated output: Models LPV-100-X, where X can be 5, 12, 15, 24, 36 or 48 for output voltage.

## ELECTRICAL RATINGS:

Model	Input (ac)			Output (dc)	
	V	A	Hz	V	A
LPV-100-5	100-240	2.2	50/60	5	12
LPV-100-12	100-240	2.2	50/60	12	8.5
LPV-100-15	100-240	2.2	50/60	15	6.7
LPV-100-24	100-240	2.2	50/60	24	4.2
LPV-100-36	100-240	2.2	50/60	36	2.8
LPV-100-48	100-240	2.2	50/60	48	2.1

## TECHNICAL CONSIDERATIONS (NOT FOR UL FIELD REPRESENTATIVE USE):

This component has been judged on the basis of the spacings required in the standard for Light Emitting Diode (LED) Light Sources for Use in Lighting Products, UL 8750, First Edition.

USR - Indicates investigation to the standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products, UL 8750, First Edition and the Standard Power Units other than Class 2, UL 1012, Eighth Edition.

CNR - Indicates investigation to the Canadian Standard for Luminaires, CSA C22.2 No. 250.13-12; and the Canadian Standard for General Use Power Supplies, CAN/CSA-C22.2 No. 107.1-01.

## SPACING OF ELECTRICAL PARTS:

The spacing between uninsulated live parts of opposite polarity, including magnet wire, and between those parts and exposed metal parts that can be contacted shall not be less than the clearance (through-air) and the creepage distance (over an insulating surface) as described:

Locations of live electrical parts and conditions	Min spacing, mm		
	Clearance	Creepage Distance for printed wiring boards (CTI < 175)	Creepage Distance for ceramic and other materials (CTI => 600)
Between parts within drivers for indoor (dry), and outdoor (damp or wet) locations (125v)	0.5	1.5	0.75
Between parts within drivers for indoor (dry), and outdoor (damp or wet) locations (300v)	1.5	3.0	1.5
Between parts on a printed wiring board that are soldered in place but can move in production prior to soldering to fixed parts; or between parts on a printed wiring board to the enclosure.	3.0 (for 125v) 3.9 (for 300v)	-	-
Components on a printed wiring board buried in potting compound	-	0.8	0.8



Conditions of Acceptability - When installed in the end-use equipment, consideration shall be given to the following:

1. These LED power supplies comply with other than class 2 requirements
2. These products are provided with the following electrical ratings:

Model	Input (ac)			Output (dc)	
	V	A	Hz	V	A
LPV-100-5	100-240	2.2	50/60	5	12
LPV-100-12	100-240	2.2	50/60	12	8.5
LPV-100-15	100-240	2.2	50/60	15	6.7
LPV-100-24	100-240	2.2	50/60	24	4.2
LPV-100-36	100-240	2.2	50/60	36	2.8
LPV-100-48	100-240	2.2	50/60	48	2.1

3. These products shall be enclosed in the end product.
4. These products are suitable for use in dry and damp locations.
5. These products are suitable for factory wiring only.
6. The suitability of input and output shall be determined in end use application.

## CONSTRUCTION DETAILS:

General - See the Sec. General.

Printed Wiring Boards (PWB) - All PWBs, unless otherwise specified in the description are R/C (ZPMV2), rated min V-1, min. 130°C. See Ill 1.

Soldered Connections - All connections are mechanically secured before soldering.

Markings - In addition to the Section General, the following markings shall be also marked on the unit.

1. Company Name, File No., or Trade Mark (if authorized).
2. Model Designation.
3. Optional - Date Code.
4. Optional - Electrical Ratings.
5. Optional - "Suitable For dry and damp locations".
6. Optional - The Polarity of the Input and Output Connections.
7. Optional - Maximum Ambient Temperature: 45 °C for LPV-100-X.

## LED Power Supplies, Models LPV-100-X - FIG 1-2

General - Description below represents all models unless specifically noted otherwise. FIG. 1 and 2 the overall view of the units.

1. Enclosure -R/C (QMFZ2), manufacturers as below table, Type 940(f1), rated min.V-0, 120°C, min.1.5mm thick.

Company	File No.	Type
Sabic Innovative Plastics B V	UL (E45329)	940 (f1)
Sabic Innovative Plastics JAPANL L C	UL (E207780, E45587)	940 (f1)
Sabic Innovative Plastics US L LC	UL (E121562)	940 (f1)
Sabic Innovative Plastics B V	UL (E45329)	945 (GG)
Sabic Innovative Plastics JAPANL L C	UL (E207780)	945 (GG)
Sabic Innovative Plastics US L LC	UL (E121562)	945 (GG)

2. Input Leads - (AVLV2, AVLV8), rated min.80°C, min.300V, and min.18AWG. Mechanically secured and soldered on PWB.

Alternate - (ZJCZ, ZJCZ7), rated min.80°C, min.300V, and min.18AWG. Mechanically secured and soldered on PWB.

2. Output Leads - (AVLV2, AVLV8), rated min.80°C, min.300V, and min.18AWG. Mechanically secured and soldered on PWB.

Alternate - (ZJCZ, ZJCZ7), rated min.80°C, min.300V, and min.18AWG. Mechanically secured and soldered on PWB.

4. Printed Wiring Board - R/C (ZPMV2), rated min. V-1, min. 130°C. See ILL. 2 for component and trace layout.

5. Fuse (FS1) - R/C (JDYX2/JDYX8), Conquer Electronics Co. Ltd., Type PTU or PDU rated min. 4 A, min. 250V.

Alternate - Same as above except, Listed (JDYX/ JDYX7), rated min. 4 A, min. 250 V.

6. X-Capacitors (C1, C2) - Optional, R/C (FOWX2, FOWX8) or (FOWX2, CSA certified), rated min. 250 V ac, max. 0.82uF.

Alternate -R/C (FOKY2, FOKY8), rated min. 250 V ac, max. 0.82uF.

## and Report

7. Bleeder Resistors (R1, R2) - Rated Max. 470k ohms, min. 1/4 W.
8. Choke (LF1) - Optional, Core: Ferrite, measured overall 22 mm OD by 14mm ID by 8 mm wide. Coil: R/C (OBMW2), rated min. 130°C.
9. Y-Capacitors (C3, C4, C31) - Optional, R/C (FOWX2, FOWX8) or (FOKY2, FOKY8) or (FOWX2, CSA certified), type Y1 or Y2, rated min. 250 V ac, max.2200pF. The following type may be used:

Manufacturers	Type
Murata MFG Co., LTD	KX, KH
Walsin Technology Corp.	AH, AC
TDK Corp.	CD, CS
Welson	WD

10. Bridge Rectifier (BD1) - Optional, rated min. 600 V, min. 4 A.
11. Capacitor (C5, C6) - Optional, rated min. 400V, 100  $\mu$ F, min 105°C.
12. Transistor (Q1) -Optional, Rated min. 650 V, min 12 A.
13. Thermistor (RTH1) - Optional, Rated min. 4A, max. 15 Ohm.
14. Optical Isolators (U2, U3) - R/C (FPQU2), Sharp Corp Electronic Components Group, Type PC123, rated min. 5000 V ac isolation voltage.
- Alternate - Same as above except R/C (FPQU2, FPQU8), Cosmo Electronics Corp., Type K1010, rated min. 5000 V isolation voltage.
- Alternate - Same as above except R/C (FPQU2, FPQU8), Lite-on Technology Corp., Type LTV817, LTV-817M, rated min. 5000 V ac isolation voltage.
15. Potting Compound - R/C (QMFZ2), SHIN-ETSU SILICONE TAIWAN CO LTD. (E174951), Type KET-132 A/B, NC color, V-0, rated 150°C, min. 1.0 mm thick.
- Alternative: R/C (QMFZ2), Dow Corning Corp. (E40195), Type SYLGARD 160, GY color, V-0, rated 150°C, min. 1.5 mm thick.
- Alternate: R/C (QMFZ2), GUANGZHOU HUITIAN FINE CHEMICAL LTD. (E306078), Type 5299, GY color, V-0, rated 150°C, min. 1.0 mm thick.
- Alternative: R/C (QMFZ2), U-BOND MATERIAL TECHNOLOGY CO LTD. (E250719), Type UB-5203A/B, NC color, V-0, rated 105°C, min. 1.5 mm thick.
- Alternative: R/C (QMFZ2), GUANGZHOU HUITIAN FINE CHEMICAL LTD. (E306078), Type 5295, NC, GY or BK color, V-0, rated 150°C, min. 3.0 mm thick.

## and Report

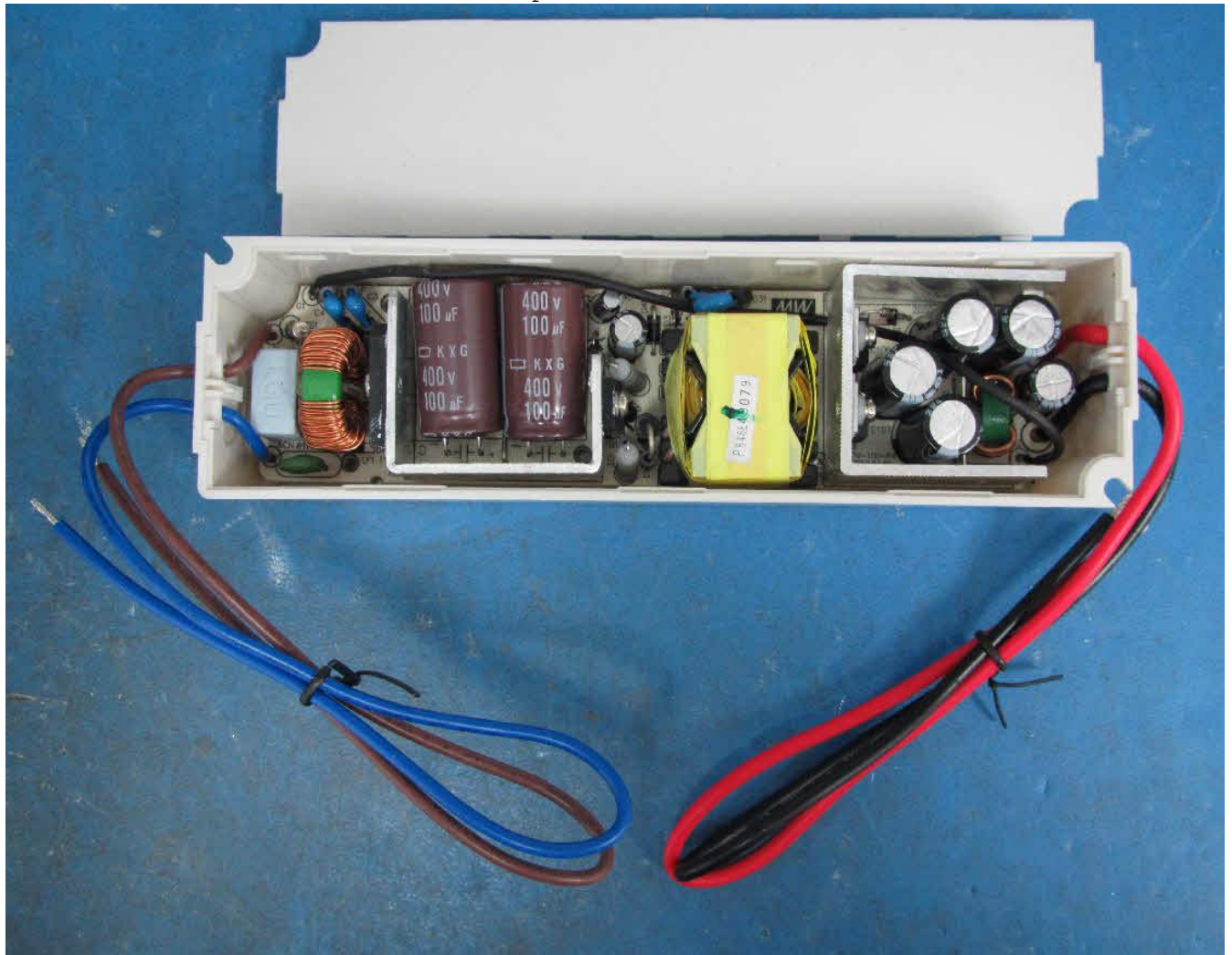
16. Mylar Sheet - Optional, R/C (QMFZ2), min.V-2, min.85°C, min.0.2mm thick.
17. Transformer (T1) - Class B. See below for details  
Constructed as follow:
- A. Core: TDK PC44 or FERROXCUBE 3C96 or PQ3220+PQ3230.
- B. Bobbin - R/C (QMFZ2), Sumitomo Bakelite Co. Ltd. (E41429), Type PM-9820 or PM-9630, rated V-0, 130°C or 150°C, min. 0.51 mm thick.  
Alternate - R/C (QMFZ2), E I DUPONT DE NEMOURS & CO INC. (E41938), Type FR530, rated V-0, 155°C, min. 0.75 mm thick.
- C. Windings - Enameled copper magnet wire, R/C (OBMW2), rated min. 130°C random wound.
- D. Triple Insulated Winding - R/C (OBJT2), FURUKAWA ELECTRIC CO LTD (E206440), Type TEX-E, Rated 130°C.  
Alternate - (OBJT2), TOTOKU ELECTRIC CO LTD (E166483), Type TIW-2, Rated 130°C.  
Alternate - (OBJT2), TOTOKU ELECTRIC CO LTD (E166483), Type TIW-3, Rated 155°C.
- E. Insulation Tape - R/C (OANZ2), 3M Company Electrical Markets Div, (E17385), Type. 1351T-1(a)\*, 1351T-2(a)\*, 1351T-3(a), 1350T-1(b)\*, 1350T-2(b)\*, 1350T-3(b)\*, 1351-1(C)\*, 1351-2(C)\*, 1350F-1(b)\* or 1318-1(a), rated 130°C.  
Alternate - Same as above except R/C (OANZ2), Symbio Inc. (E50292), Cat. Nos. 35660\*®, MY9YAF\*(h) or 35660Y\*(%), rated 130°C.  
Alternate - Same as above except R/C (OANZ2), BONDTEC PACIFIC CO LTD (E175868), Cat. No. 370S+\$ or 371F+®, rated 130°C.  
Alternate - R/C (OANZ2), Jingjiang Yahua Pressure Sensitive Glue Co Ltd (E165111), Type WF, CT, PZ rated 130°C.
- F. Insulation Tubing - R/C (YDPU2), Great Holding Industrial Co. Ltd. (E156256), Type TFL, TFS or TFT, rated 200°C. Provided on all exit leads.  
Alternate - Same as above, except ZEUS INDUSTRIAL PRODUCTS INC. (E64007), Type TFE-TW-300, TFE-LW-150 or TFE-SW-600.

G. See table below for winding and Insulation details.

Model	Windings and insulation
LPV-100-5	See ILL. 2 (part # TF-2119)
LPV-100-12	See ILL. 2 (part # TF-2120)
LPV-100-15	See ILL. 2 (part # TF-2121)
LPV-100-24	See ILL. 2 (part # TF-2122)
LPV-100-36	See ILL. 2 (part # TF-2123)
LPV-100-48	See ILL. 2 (part # TF-2124)

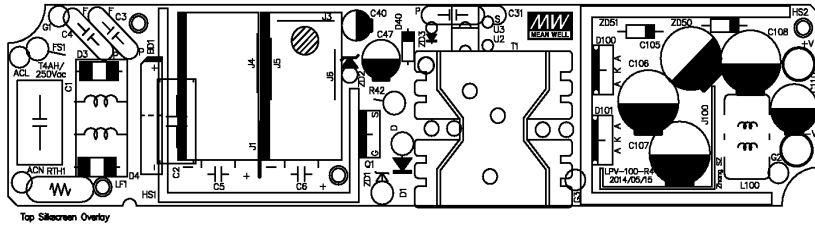


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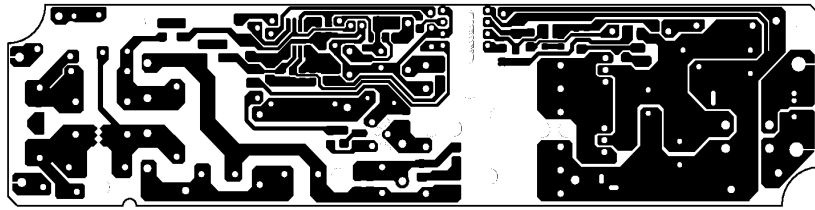


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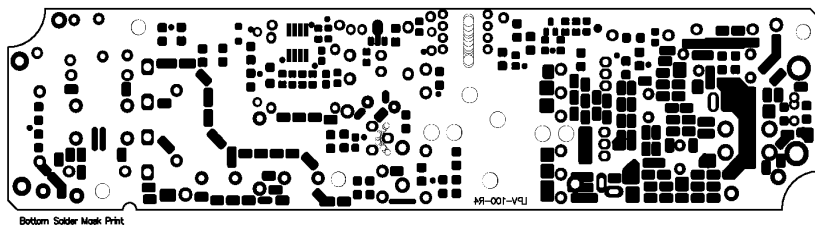
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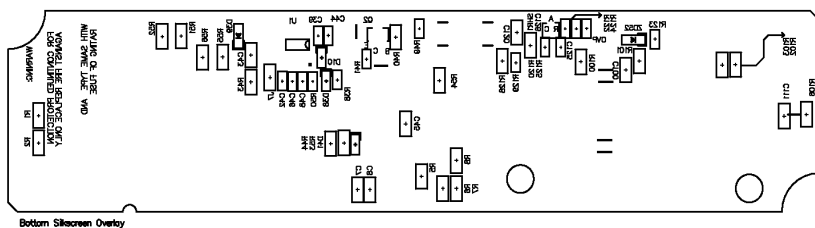
Bottom Layer



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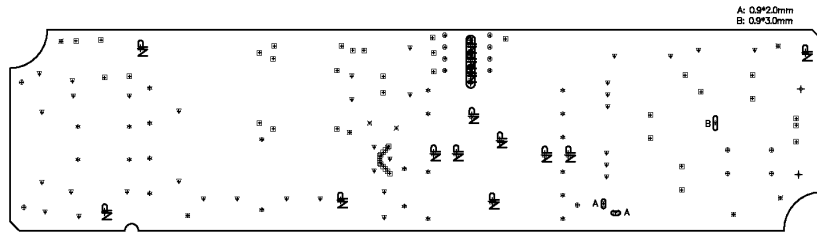
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Symbol	Hit Count	Tool Size	Physical Length	Rout Path Length	Picked	Hole Type
□	2	0.8mm (31.496m)				NPTH Round
○	8	0.9mm (35.433m)				NPTH Round
□	45	1mm (39.37m)				NPTH Round
▽	35	1.2mm (47.244m)				NPTH Round
◇	18	1.3mm (51.181m)				NPTH Round
≡	6	1.5mm (59.055m)				NPTH Round
○	6	1.6mm (62.992m)				NPTH Round
○	7	1.8mm (70.866m)				NPTH Round
▽	15	2mm (78.74m)				NPTH Round
◇	6	3mm (118.11m)				NPTH Round
≡	7	3.2mm (125.984m)				NPTH Round
□	2	0.9mm (35.433m)	2mm (78.74m)	1.1mm (43.307m)		NPTH Slot
○	1	0.9mm (35.433m)	3mm (118.11m)	2.1mm (82.877m)		NPTH Slot
	156	Total				

Slot definitions : Rout Path Length = Calculated from tool start centre position to tool end centre position.  
Physical Length = Rout Path Length + Tool Size = Slot length as defined in the PCB layout

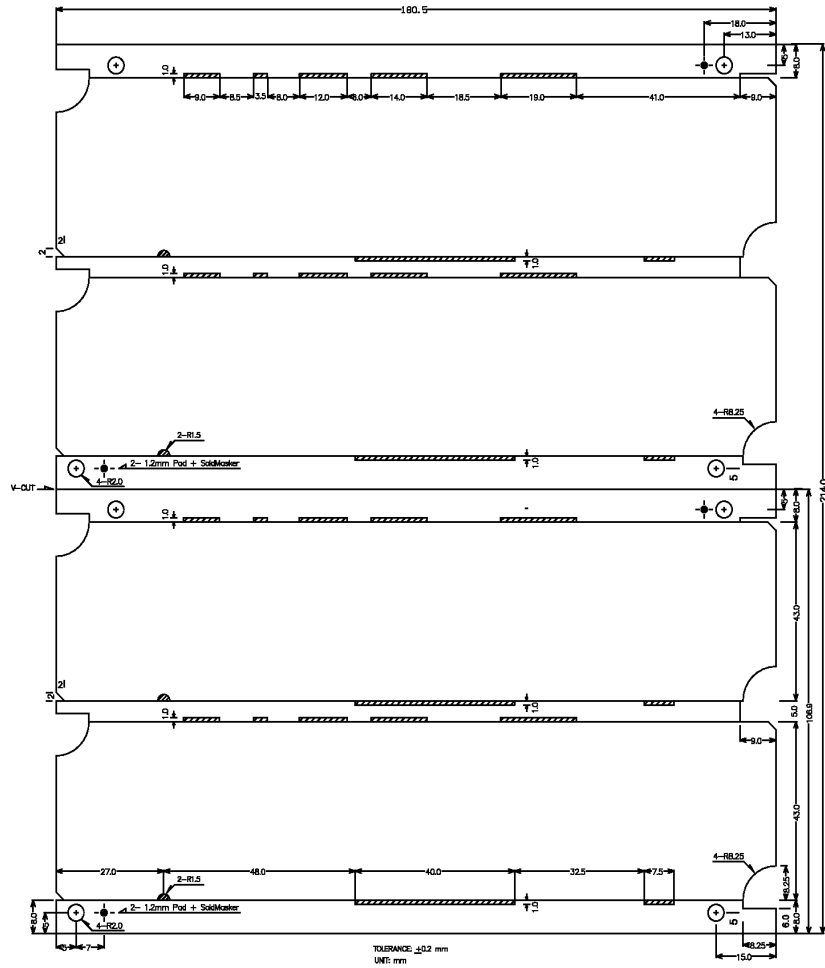


A: 0.9\*2.0mm  
B: 0.9\*3.0mm

Drill Drawing For (Top Layer/Bottom Layer)



C141584786



C141584786

**規格書**  
**SPECIFICATIONS**

編號： TF-2119 ~ 2124

經辦人：

**明緯企業股份有限公司**

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**傑信工業股份有限公司**

**JET SIGNAL INDUSTRIES CO.,LTD.**

Tel: 02-27924181

Address: NO. 27, ALLEY3, LANE246, HSIN MING RD. NEI HU DISTRICT 11413, TAIPEI.

明緯企業股份有限公司

圖號: LPV-100-5

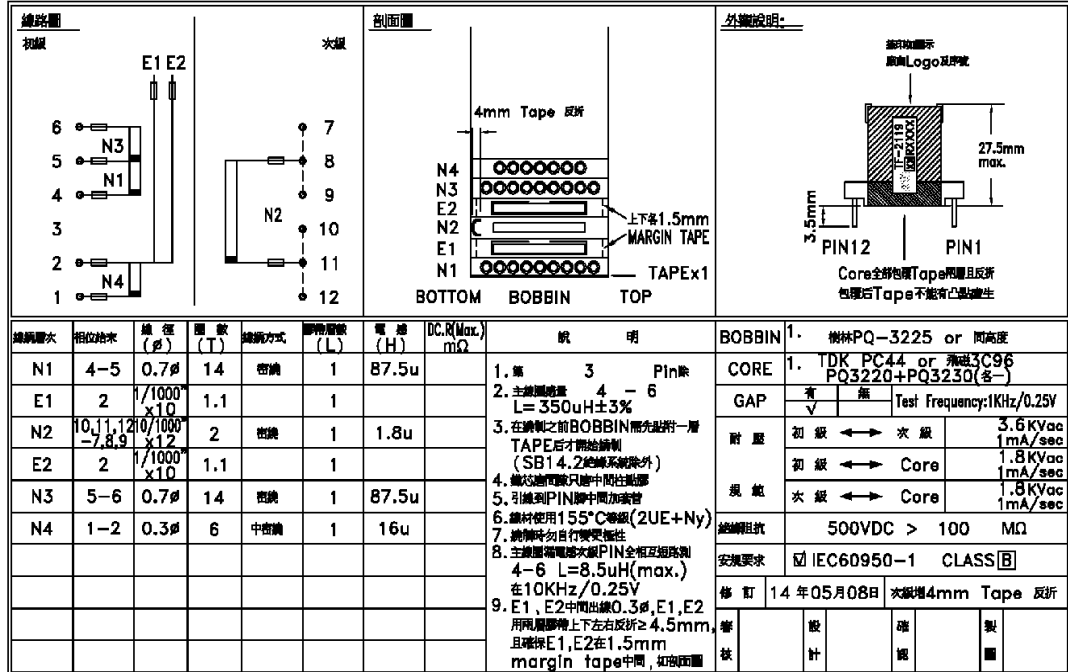
變壓器圖面

試裝圖面

圖號: TF-2119-R4

正式圖面

日期: 2014-05-08



- 10. PIN腳吃線磁膠并注重PIN腳磁膠和吃線后勿超出BOBBIN磁膠範圍及PIN腳磁膠勿超出BOBBIN面寬範圍<2mm內
- 11. Pin膠長如外圖說明
- 12. 所有出線加磁膠
- 13. Core先以10mm Tape粘附半柱, 再全柱包膠Tape膠層
- 14. Pin5繞線后剪除

- 15. N1, N3, N4使用三層絕緣線, N2線上下用ape反折≥3mm, N2 Bottom線引pin1~pin6處使用寬為10mm\*20mm tape一層反折大於等于4mm
- 16. 組裝好后磁芯上下用16mm寬Tape繞兩層固定, 再用16mm寬Tape沿Bobbin繞一層; 然後再用2/1000\*12mm且用膠帶或折5mm的絕緣沿Bobbin繞一層, 2/1000\*8mm白絕緣膠帶繞磁芯上下繞一層, 用膠帶均于pin1, pin2處膠帶并在此處會處膠帶兩層, 于pin2正上端引線0.3φ至pin2膠, 再另外加兩層寬16mm Tape交叉繞在core及Bobbin上, pin6, pin7處的Tape不能有突起點發生

2004-09-14

C141584787



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圖號: LPV-100-12

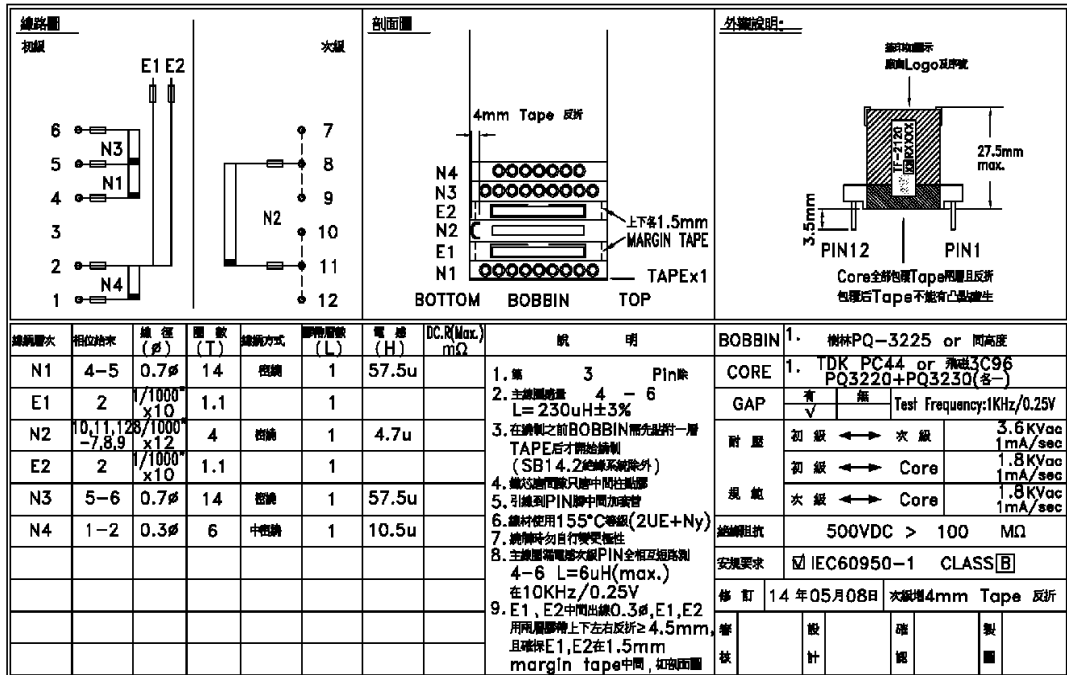
變壓器圖面

試裝圖面

圖號: TF-2120-R3

正式圖面

日期: 2014-05-08



- 10. PIN腳吃線處需并注重PIN腳膠漆和吃線后勿超出BOBBIN底面範圍及PIN腳端線勿超出BOBBIN面寬範圍<2mm內
- 11. Pin膠漆如功備說明
- 12. 所有出線加漆管
- 13. Core先以10mm Tape粘附半柱, 再全柱包膠Tape兩層
- 14. Pin5繞線后剪除

- 15. N1, N3, N4使用三層絕緣線, N2線上下用ape反折≥3mm, N2 Bottom線紅pin1~pin6處使用寬為10mm\*20mm tape一層反折大於等于4mm
- 16. 組裝好后線芯上下用16mm寬Tape繞兩層固定, 再用16mm寬Tape沿Bobbin繞一層; 然後再用2/1000" \* 12mm且用膠帶或折5mm的線膠沿Bobbin繞一層, 2/1000" \* 8mm白絕緣膠帶繞上下第一層, 用鋼絲卡于pin1, pin2線路并在此次會高膠帶兩層, 于pin2正上端引線0.3φ至pin2腳, 再另外加兩層寬16mm Tape交叉繞在core及Bobbin上, pin6, pin7腳的Tape不能有突點產生

2004-09-14

C141584787

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圖號: LPV-100-15

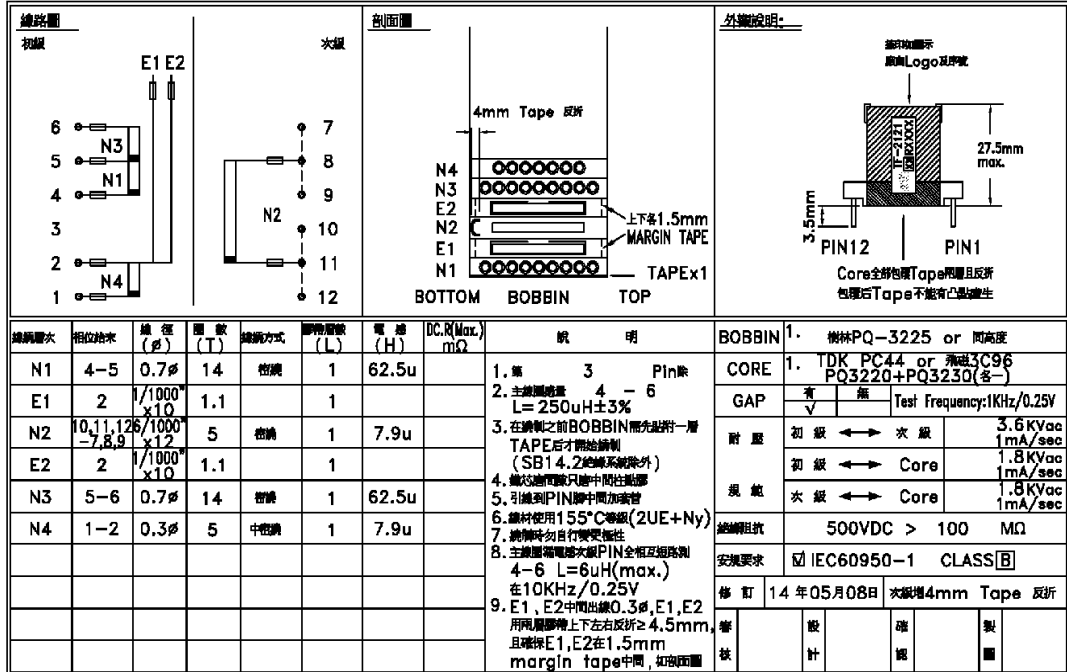
變壓器圖面

試裝圖面

圖號: TF-2121-R3

正式圖面

日期: 2014-05-08



10. PIN腳吃磁膠並將注重PIN腳磁膠和吃磁膠勿超出BOBBIN磁膠範圍及PIN腳磁膠勿超出BOBBIN面寬範圍<2mm內
11. Pin膠長如外圖說明
12. 所有出線加磁膠
13. Core先以10mm Tape貼附半柱, 再全柱包膠Tape兩層
14. Pin5繞線後剪除

15. N1, N3, N4使用三層絕緣線, N2線絲上下用ape反折≥3mm, N2 Bottom線紅pin1~pin6處使用寬為10mm\*20mm tape一層反折大於等於4mm
16. 組裝好後磁芯上下用16mm寬Tape繞兩層固定, 再用16mm寬Tape沿Bobbin繞一層; 然後再用2/1000" \* 12mm且用膠帶或折5mm的絕緣沿Bobbin繞一層, 2/1000" \* 8mm白絕緣膠帶繞磁芯上下繞一層, 用鋼絲卡于pin1, pin2處磁膠并在此次會高膠帶兩層, 于pin2正上端引線0.3φ至pin2腳, 再另外加兩層寬16mm Tape交叉繞在core及Bobbin上, pin6, pin7處的Tape不能有突起點發生

2004-09-14

C141584787

明緯企業股份有限公司

原稿編號:

機種: LPV-100-24

變壓器圖面

試機圖面

圖號: TF-2122-R3

正式圖面

日期: 2014-05-08

**線路圖**

**剖面圖**

**外觀說明:**

線路層次	相位結木	線徑 (φ)	線數 (T)	線繞方式	腳位層數 (L)	電感 (H)	DC.R(Max.) mΩ	說明	BOBBIN
N1	4-5	0.7φ	14	密繞	1	62.5u		1. 層 3 Pin脚 2. 主線圈線量 4 - 6 L=250uH±3% 3. 在繞線之前BOBBIN需先貼附一層Tape後才開始繞線(SBI4.2絕緣系統除外) 4. 繞完線圈後只應中間加膠帶 5. 引線到PIN脚中間加膠帶 6. 線料使用155°C等級(2UE+Ny) 7. 繞線時勿自行變更極性 8. 主線圈兩端電線大線PIN全相互短路割 4-6 L=6uH(max.) 在10KHz/0.25V 9. E1, E2中間出線0.3φ, E1, E2用膠帶膠帶上下左右反折≥4.5mm, 且確保E1, E2在1.5mm margin tape中間, 如剖面圖	1. 樹林PQ-3225 or 同高度
E1	2	1/1000" x10	1.1		1				CORE 1. TDK PC44 or 飛利浦C96 PQ3220+PQ3230(各一)
N2	10,11,12-7,8,9	0.1φ x20 x2	7	密繞	1	15.6u			GAP 有 <input type="checkbox"/> 無 <input checked="" type="checkbox"/> Test Frequency:1KHz/0.25V
N3	10,11,12-7,8,9	0.1φ x20 x2	7	密繞	1	15.6u			耐壓 初級 ↔ 次級 3.6 KV/ac 1mA/sec
N4	10,11,12-7,8,9	0.1φ x20 x2	7	密繞	1	15.6u			絕緣 初級 ↔ Core 1.8 KV/ac 1mA/sec
E2	2	1/1000" x10	1.1		1				絕緣 次級 ↔ Core 1.8 KV/ac 1mA/sec
N5	5-6	0.7φ	14	密繞	1	62.5u			絕緣阻抗 500VDC > 100 MΩ
N6	1-2	0.3φ	5	中密繞	1	7.9u			安裝要求 <input checked="" type="checkbox"/> IEC60950-1 CLASS II
									修訂 14年05月08日 次級增加4mm Tape 反折

10. PIN脚吃膠粘帶并注重PIN脚端線和吃端后勿超出BOBBIN底脚端點及PIN脚端線勿超出BOBBIN面積範圍<2mm內
11. Pin脚長如外觀說明
12. 所有出線加膠帶
13. Core先以10mm Tape貼附中柱, 再全部包覆Tape兩層
14. Pin5繞線後剪除

15. N1, N5, N6使用三層絕緣線, N2, N3, N4 Bottom靠近pin1~pin6 處使用寬為10mm\*20mm tape一層反折大於等於4mm
16. 組裝好後線端上下用16mm寬Tape膠帶固定, 再用16mm寬Tape沿Bobbin繞一層; 然後再用2/1000" \*12mm 且用膠帶反折5mm的網格沿Bobbin繞一層, 2/1000" \*8mm 自粘網格沿線端上下繞一層, 兩端均於pin1, pin2繞膠帶 并在此次會高壓線兩端, 于pin2正上端引線0.3φ至pin2脚, 再另外加兩層寬16mm Tape交叉繞在core及Bobbin上, pin6, pin7處的Tape不能有交疊產生

2004-09-14

C141584787

明緯企業股份有限公司

原物料號:

機種: LPV-100-36

變壓器圖面

試機圖面

圖號: TF-2123-R3

正式圖面

日期: 2014-05-08

**線路圖**

**剖面圖**

**外觀說明:**

線路層次	相位結木	線徑 (φ)	線數 (T)	線繞方式	腳位層數 (L)	電感 (H)	DC.R(Max.) mΩ	說明	BOBBIN	1. 樹林PQ-3225 or 同高度	
N1	4-5	0.7φ	14	密繞	1	62.5u		1. 層 3 Pin脚 2. 主線圈線量 4 - 6 L= 250uH±3% 3. 在繞線之前BOBBIN需先貼附一層Tape後才開始繞線(SBI4.2絕緣系統除外) 4. 繞完線圈後只應中間加漆膠 5. 引線到PIN脚中間加漆膠 6. 線料使用155°C等級(2UE+Ny) 7. 繞線時勿自行變更極性 8. 主線圈線電感次級PIN全相互短路制 4-6 L=6uH(max.) 在10KHz/0.25V 9. E1, E2中間出線0.3φ, E1, E2用膠膠帶上下左右反折≥4.5mm, 且確保E1, E2在1.5mm margin tape中間, 如剖面圖	CORE	1. TDK PC44 or 飛利浦C96 PQ3220+PQ3230(各一)	
E1	2	1/1000" x 1.0	1.1		1				GAP	有 <input type="checkbox"/> 無 <input checked="" type="checkbox"/> Test Frequency: 1KHz/0.25V	
N2	10,11,12-7,8,9	0.1φx30	11	密繞	1	38.5u			耐壓	初級 ↔ 次級 3.6 KVac 1mA/sec	
N3	10,11,12-7,8,9	0.1φx30	11	密繞	1	38.5u				初級 ↔ Core 1.8 KVac 1mA/sec	
N4	10,11,12-7,8,9	0.1φx30	11	密繞	1	38.5u			次級 ↔ Core 1.8 KVac 1mA/sec	絕緣阻抗	500VDC > 100 MΩ
E2	2	1/1000" x 1.0	1.1		1				安裝要求	<input checked="" type="checkbox"/> IEC60950-1 CLASS II	
N5	5-6	0.7φ	14	密繞	1	62.5u			修訂	14年05月08日	次級增4mm Tape 反折
N6	1-2	0.3φ	5	中密繞	1	7.9u			審核		

- 10. PIN脚吃藥粘帶并注重PIN脚端線和吃藥後勿超出BOBBIN底脚端點及PIN脚端線勿超出BOBBIN面積範圍<2mm內
- 11. Pin脚長短外腳說明
- 12. 所有出線加漆膠
- 13. Core先以10mm Tape貼附中柱, 再全部包覆Tape兩層
- 14. Pin5繞線後剪除

- 15. N1, N5, N6使用三層絕緣線, N2, N3, N4 Bottom靠近pin1~pin6 處使用寬為10mm\*20mm tape一層反折大於等於4mm
- 16. 組裝好後線柱上下用16mm寬Tape繞膠帶固定, 再用16mm寬Tape沿Bobbin繞一層; 然後再用2/1000" \* 12mm 且用膠帶反折5mm的網格沿Bobbin繞一層, 2/1000" \* 8mm 自粘網格沿線柱上下繞一層, 兩端均於pin1, pin2繞膠帶 并在此次會高壓線兩端, 于pin2正上端引線0.3φ至pin2脚, 再另外加兩層寬16mm Tape交叉繞在core及Bobbin上, pin6, pin7處的Tape不能有突出生

2004-09-14

C141584787

明緯企業股份有限公司

原稿編號:

機種: LPV-100-48

變壓器圖面

試機圖面

圖號: TF-2124-R3

正式圖面

日期: 2014-05-08

<p><b>線路圖</b></p>		<p><b>剖面圖</b></p>		<p><b>外觀說明:</b></p>						
線路層次	相位結木	線徑 (φ)	線數 (T)	線繞方式	腳位層數 (L)	電感 (H)	DC.R(Max.) mΩ	說明	BOBBIN	1. 樹林PQ-3225 or 同高度
N1	4-5	0.7φ	14	密繞	1	62.5u		1. 層 3 Pin脚 2. 主線圈電感 L=250uH±3% 3. 在繞線之前BOBBIN需先貼附一層Tape後才開始繞線(SBI4.2絕緣系統除外) 4. 繞線間隙只應中間加漆管 5. 引線到PIN脚中間加漆管 6. 線料使用155°C等級(2UE+Ny) 7. 繞線時勿自行變更極性 8. 主線圈每電感次級PIN全相互短路制 4-6 L=6uH(max.) 在10KHz/0.25V 9. E1, E2中間出線0.3φ, E1, E2用膠膠帶上下左右反折≥4.5mm, 且確保E1, E2在1.5mm margin tape中間, 如剖面圖	CORE	1. TDK PC44 or 飛利浦C96 PQ3220+PQ3230(各一)
E1	2	1/1000" x10	1.1		1				GAP	有 <input type="checkbox"/> 無 <input checked="" type="checkbox"/> Test Frequency:1KHz/0.25V
N2	10,11,12-7,8,9	0.1φx25	15	密繞	1	71.7u			耐壓	初級 ↔ 次級 3.6 KV/ac 1mA/sec
N3	10,11,12-7,8,9	0.1φx25	15	密繞	1	71.7u				初級 ↔ Core 1.8 KV/ac 1mA/sec
N4	10,11,12-7,8,9	0.1φx25	15	密繞	1	71.7u			繞線	次級 ↔ Core 1.8 KV/ac 1mA/sec
E2	2	1/1000" x10	1.1		1				絕緣阻抗	500VDC > 100 MΩ
N5	5-6	0.7φ	14	密繞	1	62.5u			安裝要求	<input checked="" type="checkbox"/> IEC60950-1 CLASS II
N6	1-2	0.3φ	5	中密繞	1	7.9u			修訂	14年05月08日 次級增4mm Tape 反折
									審核	製

- 10. PIN脚吃藥粘帶并注重PIN脚端線和吃藥後勿超出BOBBIN底腳端點及PIN脚端線勿超出BOBBIN面積範圍<2mm內
- 11. Pin脚長短外腳說明
- 12. 所有出線加漆管
- 13. Core先以10mm Tape貼附中柱, 再全部包覆Tape用層
- 14. Pin5繞線後剪除

- 15. N1, N5, N6使用三層絕緣線, N2, N3, N4 Bottom靠近pin1~pin6 處使用寬度為10mm\*20mm tape一層反折大於等於4mm
- 16. 組裝好後線柱上下用16mm寬Tape繞膠帶固定, 再用16mm寬Tape沿Bobbin繞一層; 然後再用2/1000" \*12mm 且用膠帶反折5mm的網箔沿Bobbin繞一層, 2/1000" \*8mm 自粘網箔沿線柱上下繞一層, 兩端箔均于pin1, pin2繞膠帶 并在此次會高壓線兩端箔, 于pin2正上端引線0.3φ至pin2脚, 再另外加兩層寬16mm Tape交叉繞在core及Bobbin上, pin6, pin7處的Tape不能有突出產生

2004-09-14

C141584787

## 變壓器材料表

## A. Magnet Wire(漆包線)

廠牌	品名	耐熱等級	UL FILE NUMBER
PACIFIC ELECTRIC WIRE & CABLE (SHENZHEN) CO LTD.(太平洋)	UEW/U (MW-75C)	130°C	E201757
PACIFIC ELECTRIC WIRE & CABLE CO LTD.(太平洋)	DD(MW-75C) 、 DD-NYU(MW-28C)	130°C	E84081
JUNG SHING WIRE CO LTD. (榮星)	UEY-2#(MW-28C)	130°C	E174837
	UEW-4#(MW-75C)	130°C	E174837
TA YA ELECTRIC WIRE & CABLE CO LTD.(大亞)	TYTUN-B130(UEWNY/Q(A/X)-B, F)(MW-28C)	130°C	E84201
TAI-I ELECTRIC WIRE & CABLE CO LTD.(台一)	UEWE(MW-28C)	130°C	E85640
HUIZHOU GOLDEN OCEAN MAGNET WIRE FACTORY.(鑫洋)	UEWN(MW-28C)	130°C	E225143
FENG CHING METAL CORP.(風青)	UEW-NY(MW-28C)	130°C	E172395
PACIFIC ELECTRIC WIRE & CABLE (SHENZHEN) CO LTD. (太平洋)	UEWN/U(MW-80C) 、 UEFN/U(MW-80C)	155°C	E201757
PACIFIC ELECTRIC WIRE & CABLE CO LTD.(太平洋)	DDF-NY(MW-80C)	155°C	E84081
JUNG SHING WIRE CO LTD. (榮星)	SFBY-2#(MW-80C)	155°C	E174837
	SFFW-2#(MW-79C)	155°C	E174837
	SFBW-2#(MW-79C)	155°C	E174837
TA YA ELECTRIC WIRE & CABLE CO LTD.(大亞)	TYTUN-B130(UEWNY/Q(A/X)-B, F)(MW-80C)	155°C	E84201
	TYFU-H180(UEW/QA-H) (MW-82C)	180°C	E84201
TAI-I ELECTRIC WIRE & CABLE CO LTD.(台一)	UEWF-E@(MW-80C)	155°C	E85640
HUIZHOU GOLDEN OCEAN MAGNET WIRE FACTORY.(鑫洋)	UEWNF@(MW-80C)	155°C	E225143
FENG CHING METAL CORP. (風青)	FSW-NY(MW-80C)	155°C	E172395

## B. Triple wire(三重絕緣線)

廠牌	品名	耐熱等級	UL FILE NUMBER
FURUKAWA ELECTRIC CO LTD.	TEX-E	130°C	E206440
TOTOKU ELECTRIC CO LTD.	TIW-2	130°C	E166483
TOTOKU ELECTRIC CO LTD.	TIW-3	155°C	E166483

## C. Varnish(變壓器凡立水)

廠牌	品名	UL FILE NUMBER
JOHN C DOLPH CO.	BC-359,BC-346A	E317427
ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC	468-2(x), 468-2FC(x), 468-2-7-xxF(x),	E75225
	468-2-7FC-xxF(x)	E87039
KYOCERA CHEMICAL CORP (TOSHIBA)	TVB-2180T++@	E83702
HITACHI CHEMICAL CO LTD	WP-2952F-2G	E72979
ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC	V1630FS	E75225

## D. Bobbin

廠牌	品名	耐熱等級	UL FILE NUMBER
SUMITOMO BAKELITE CO LTD.	PM-9820	130°C	E41429(M)
SUMITOMO BAKELITE CO LTD.	PM-9630	150°C	E41429(M)
E I DUPONT DE NEMOURS & CO INC	FR-530	155°C	E41938

## 變壓器材料表

## E. Margin Tape(槽牆膠布)

廠牌	品名	CTI 等級	耐熱 等級	UL FILE NUMBER
3M COMPANY ELECTRICAL MARKETS DIV (EMD)	Composite Film 44(a)	I	130°C	E17385
	Composite Film 44T-A(a)	I	130°C	E17385
SYMBIO INC (四維)	35661S	I	130°C	E50292
JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD.	WF	II	130°C	E165111

## F. Tape(絕緣膠布)

廠牌	品名	CTI 等級	耐熱 等級	UL FILE NUMBER
3M COMPANY ELECTRICAL MARKETS DIV (EMD)	Polyester Film 1351T-1(a)*	I	130°C	E17385
	Polyester Film 1351T-2(a),1351T-3(a)	I	130°C	E17385
	Polyester Film 1351-1(a)*,1351-2(c)*	I	130°C	E17385
BONDTEC PACIFIC CO LTD. 3M COMPANY ELECTRICAL MARKETS DIV (EMD)	Polyester Film No 370S+\$	I	130°C	E175868
	Polyester Film 1350F-1(b)*	II	130°C	E17385
	Polyester Film 1350T-1(b)*, Polyester Film 1350T-2(b)*, 1350T-3(b)*	II	130°C	E17385
	Polyester Film 1318-1(a)	II	130°C	E17385
JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD.	WF	II	130°C	E165111
SYMBIO INC (四維)	MY9YAF*(h),35660Y*(%),35660*(@)	II	130°C	E50292
BONDTEC PACIFIC CO LTD.	Polyester Film No 371F+@	II	130°C	E175868

## G. Tube(套管)

廠牌	品名	UL FILE NUMBER
Great Holding Industrial Co., Ltd.	Teflon Tube (TFL,TFT,TFS)	E156256
ZEUS INDUSTRIAL PRODUCTS INC.	TFE-LW-150,TFE-TW-300,TFE-SW-600	E64007

TEST RECORD NO. 1

## SAMPLES:

Samples of LED Drivers, Isolated output, Models LPV-100-X series as indicated below and constructed as described herein, were submitted by the manufacturer for examination and test.

## GENERAL:

Test results relate only to the items tested.

Due to similarity of the units, models LPV-100-5 and LPV-100-48 were used for test purposes to represent the entire series.

Input	UL 8750 8.2
WORKING VOLTAGE MEASUREMENT	UL 8750- 7.8.3, 8.4.1
ENCLOSURE LEAKAGE CURRENT TEST	UL 8750- 8.7 CSA 250.13- 9.7
Normal Temperature Test	UL 8750 8.3 CSA 250.13- 9.3
Dielectric Voltage-Withstand Test	UL 8750 8.4 CSA 250.13- 9.4
MOLD STRESS-RELIEF CONDITIONING	UL 8750, 4, Table 6.3 UL 1310 Table 25.1 UL 746C 29,31,61
HUMIDITY CONDITIONING	UL 8750 8.12
Dielectric Voltage-Withstand Test	UL 1310 27
50-WATT POINT POWER MEASUREMENT TEST	UL 8750- 8.6 CSA 250.13- 9.6
ABNORMAL COMPONENT FAILURE	UL 8750- 8.5.2 UL 1012 54
TRANSFORMER OVERLOAD TEST (switch-mode designs) - abnormal:	UL1012, 53.7 (UL only) UL1012, 42.1 / CSA C22.2
DIELECTRIC VOLTAGE WITHSTAND AFTER TRANSFORMER OVERLOAD TEST:	No. 107.1-01, 6.5 CAN/CSA C22.2 No. 107.01-01
Output Overload Test (Maximum Available Power Output)	CSA C22.2 No. 107.1 Clause 6.6.1
DIELECTRIC VOLTAGE WITHSTAND AFTER Output Overload Test(Maximum Available Power Output)	
Output Short Circuit Test - Abnormal	UL 8750 4 UL 1012 54.2
Abnormal Operation	CSA C22.2 No. 107.1 6.6



## TEST RECORD NO. 1 (Con.)

OUTPUT LOADING TEST	UL 8750- 8.5.3 CSA C22.2 No. 250.13- 9.5.3
ISOLATED LIMITED ENERGY CIRCUIT CAPACITY	UL 8750 4 UL 1012 50
Transformer Insulating Materials Test Insulating Material	UL 8750 4 UL 1012 44 CSA C22.2 NO. 107.1 6.19
BARE PW BOARD DIELECTRIC VOLTAGE WITHSTAND TEST	UL 8750, 8.4

## TEST RECORD SUMMARY:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the standards noted below and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Latest Revision Date
UL 1012	Power Units Other Than Class 2	8th Edition	2012-01-19
UL 8750	Light Emitting Diode (LED) Equipment For Use In Lighting Products	1 <sup>st</sup> Edition	2014-05-22
CSA C22.2 No. 107.1	General Use Power Supplies	3 <sup>rd</sup> Edition	2006-01-01
CSA C22.2 No. 250.0- 13	Luminaires	1 <sup>st</sup> Edition	2012-01-01

Any information and documentation provided to you involving UL Mark services are provided on behalf of UL LLC.

## CONCLUSION

Samples of the components covered by this Report have been found to comply with the requirements covering the category and the components are found to comply with UL's applicable requirements. The description and test result in this Report are only applicable to the sample(s) investigated by UL and does not signify the products described as being covered under UL's Follow-Up Service Program. When covered under UL's Follow-Up Service Program, the manufacturer is authorized to use the Recognized Marking on such products which comply with UL's Follow-Up Service Procedure and any other applicable requirements of UL LLC. The Recognized Component Mark of UL LLC on the product, or the Recognized Marking symbol on the product and the Recognized Component Mark on the smallest unit container in which the product is packaged, is the only method to identify products investigated by UL to published requirements and manufactured under UL's Recognition and Follow-Up Service.

This Report is intended solely for the use of UL and the Applicant for establishment of UL certification coverage of the product under UL's Follow-Up Service. Any use of the Report other than to indicate that the sample(s) of the product covered by the Report has been found to comply with UL's applicable requirements is not authorized and renders the Report null and void. UL shall not incur any obligation or liability for any loss, expense, or punitive damages, arising out of or in connection with the use or reliance upon the contents of this Report to anyone other than the Applicant as provided in the agreement between UL and Applicant. Any use or reference to UL's name or certification mark(s) by anyone other than the Applicant in accordance with the agreement is prohibited without the express written approval of UL. Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Report by:

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Conformity Assessment Services