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File No: E131875
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Subject: **Procedure And/Or Report Material**

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

Issue

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PO# - T181018 (Project 4788853595)

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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TPI File

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CERTIFICATE OF COMPLIANCE

Certificate Number 20190220-E131875
Report Reference E131875-20190219
Issue Date 2019-FEBRUARY-20

Issued to: ACBEL POLYTECH INC
No159 Sec 3 Danjin Rd
TamSui District
New Taipei 251 TAIWAN

**This certificate confirms that
representative samples of**

COMPONENT - POWER SUPPLIES FOR USE WITH
AUDIO/VIDEO, INFORMATION AND COMMUNICATION
TECHNOLOGY EQUIPMENT

SWITCHING POWER SUPPLY Model

- (1) FSE052, R1CA2801A, FSF037, R1CA2801B
- (2) FSF059, R1CA2551B, FSF065, R1CA2551C

Have been investigated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.

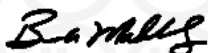
Standard(s) for Safety: UL 62368-1 and CAN/CSA C22.2 No.62368-1-14
Audio/video, information and communication technology equipment – Part 1: Safety requirements

Additional Information: See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.



Bruce Mahrenholz, Director North American Certification Program

UL LLC

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File E131875
Project 4788853595

February 19, 2019

REPORT

on

COMPONENT - Power Supplies for use in Audio/Video, Information and Communication
Technology Equipment

Acbel Polytech Inc.
New Taipei 251, Taiwan

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UL TEST REPORT AND PROCEDURE	
Standard:	UL 62368-1, 2nd Edition, 2014-12-01 (Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements) CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12 (Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements)
Certification Type:	Recognized Component
CCN:	QQJQ2, QQJQ8 (Component Power Supplies for use in Audio/Video, Information and Communication Technology Equipment)
Complementary Certification CCN	N/A
Product:	SWITCHING POWER SUPPLY
Model:	(1) FSE052, R1CA2801A, FSF037, R1CA2801B (2) FSF059, R1CA2551B, FSF065, R1CA2551C
Rating:	I/P: (1) 100-127V~, 50/60Hz, 10.0A; 200-240V~, 50/60Hz, 5.0A or 240VDC, 5A MAX. or 100-240V~, 50/60Hz, 10.0-5.0A (2) 100-127V~, 50/60Hz, 7.0A; 200-240V~, 50/60Hz, 3.5A or 240VDC, 3.5A MAX. O/P: (1) DC +12.0V/66.7A, +12Vsb/3.0A, TOTAL POWER 800W MAX. (2) DC +12.0V/45.8A, +12Vsb/3.0A TOTAL POWER 550W MAX.
Applicant Name and Address:	ACBEL POLYTECH INC NO159 SEC 3 DANJIN RD TAMSUI DISTRICT NEW TAIPEI 251 TAIWAN

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.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of this page through to the end of the Engineering Conditions of Acceptability.

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Prepared by: Tina Lien/ Kyle Lin

Reviewed by: Patrick Tsai

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
- C. Listing Mark/Recognized Component Mark Data Page - 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 was configured as follows: One DC fan and PWB with electronic components, and housed within metal enclosure.

Model Differences

- Model R1CA2801A is identical to model FSE052, except for model designation.
- Model FSF037 and R1CA2801B are similar to model FSE052 except for direction of DC fan.
- Model R1CA2801B is identical to model FSF037 except for model designation.
- The models FSF059, R1CA2551B, FSF065 and R1CA2551C are similar to model FSE052 except for model designation and below items:
 - Input / Output rating
 - Bridge diode (BD1) rating
 - Transistor (Q1, Q11, Q2, Q21) rating
 - Transformer (T401) source
 - Choke (L5) source
 - Capacitor (C36) rating
 - The direction of DC Fan
 - DC Fan sources (with lower air-flow)
 - PCB1 layout slight change
- Models FSF059, R1CA2551B, FSF065 and R1CA2551C are similar to each other except for model designation and the direction of air-flow.
 - For models FSE052 and R1CA2801A, an internal forced air cooling min. air flow 27.6CFM (out-blowing).
 - For models FSF059 and R1CA2551B, an internal forced air cooling min. air flow 20.1CFM (out-blowing).
 - For models FSF065 and R1CA2551C, an internal forced air cooling min. air flow 20.1CFM (in-blowing).

Additional Information

N/A

Test Item Particulars (NOT FOR FIELD REPRESENTATIVE'S USE)

Classification of installation and use by.....:

- ☒ Ordinary person ☐ Instructed person
☐ Skilled person ☐ Children likely to be present

Supply Connection.....:

- ☒ pluggable equipment ☒ type A ☐ type B
☐ permanent connection
☒ appliance coupler
☐ non-detachable power supply cord
☐ not directly connected to the mains

Equipment mobility..... :

- ☐ movable ☐ hand-held ☐ transportable
☐ stationary ☒ for building-in

	☐ direct plug-in	☐ rack-mounting		
	☐ wall-mounted			
Over voltage category (OVC)	☐ OVC I	☒ OVC II	☐ OVC III	☐ OVC IV
	☐ other: _____			
Fundamental Frequency	☒ 50/60 Hz	☐ 50 Hz	☐ 60 Hz	
	☐ other: _____			
Class of equipment	☒ Class I	☐ Class II	☐ Class III	
	☐ Not classified			
	☐ Class II with functional earthing			
Access location	☐ restricted access location		☒ N/A	

Test Item Particulars (NOT FOR FIELD REPRESENTATIVE'S USE) (continued)

Pollution degree (PD) : ☐ PD 1 ☒ PD 2 ☐ PD 3
IP protection class : ☒ IP X0 ☐ IP ____
Tested for IT power systems : ☐ Yes ☒ No
IT testing, phase-phase voltage (V) : ☐ ____ ☒ N/A
Altitude during operation (m) : ☐ Up to 2000 ☒ Up to 5000 meters
Altitude of test laboratory (m) : ☒ Less than 2000 ☐ Approximately ____
Mass of equipment (kg) : Approx. 0.83

Technical Consideration (NOT FOR FIELD REPRESENTATIVE'S USE)

- The equipment disconnect device is considered to be: Appliance inlet
- The product was investigated to the following additional standards: EN 62368-1:2014 + A11:2017. The equipment is operated up to 5000 m (16404 feet) above sea level as declared by manufacturer. Clearances have been evaluated according to IEC 60664-1: table A.2 with a multiplication factor of 1.48 throughout this report.
- Mains supply tolerance (%) or absolute mains supply values: AC mains: +10%, -10% for AC Mains; 180Vdc to 300Vdc for DC source (per manufacturer's request)
- The product is intended for use on the following power systems: TN
- The equipment disconnect device is considered to be: Appliance inlet
- Considered current rating of protective device as part of the building installation (A): 20 A
- Mains supply tolerance (%) or absolute mains supply values: AC mains: +10%, -10%, 180Vdc to 300Vdc for DC input by client declared
- LEDs provided in the product are considered low power devices: Yes
- The equipment shall be supplied from a DC source that provides reinforced insulation to AC mains

Engineering Conditions of Acceptability (NOT FOR FIELD REPRESENTATIVE'S USE)

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 end-product Electric Strength Test is to be based upon a maximum working voltage of: Primary-Earthed Dead Metal: 443Vrms, 694Vpk; Primary-SELV: 443Vrms, 694Vpk
- The following secondary output circuits are ES1: All output
- The following secondary output circuits are at PS3 energy levels: All output
- The following output terminals were referenced to earth during performance testing: Secondary GND
- The power supply terminals and/or connectors are: Suitable for factory wiring only
- 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: Not required
- An investigation of the protective bonding terminals has: Been conducted
- The following magnetic devices (e.g. transformers or inductor) are provided with an OBJY2 insulation system with the indicated rating greater than Class A (105degree C): T5, T401, T201 (Class B)
- The Appliance Inlet Side was considered to be as mechanical, fire, and electrical enclosure.
- The equipment is suitable for direct connection to: AC mains supply

Additional Information

N/A

Additional Standard

The product fulfils the requirements of: N/A

Markings, instructions and instructional safeguards		
Clause Title	Marking or Instruction Details	
	English	French
Equipment identification markings - Manufacturer identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number	
Equipment identification markings - Model identification	Model Number	
Equipment rating markings - Power rating	Input Ratings (voltage, frequency/dc, current/power) Output Ratings (voltage, frequency/dc, current/power)	
Equipment rating markings - Nature of supply voltage	The symbol of IEC 60417-5032 shall be used for a.c. input.	
Fuse identification and rating markings	Rated current and voltage and type located on or adjacent to fuse or fuseholder or in service manual.	
Equipment with output terminals other than mains supply	Ratings (voltage, frequency/dc, maximum current/power)	
Class I equipment - Terminal for main protective earthing	Provided adjacent to the main protective earthing terminal  (IEC 60417-5019)	

Special Instructions to UL Representative

Production-Line Electric Strength (Dielectric Voltage-Withstand) Test:

- Inspect all transformers listed in Electric Strength Test Special Constructions.
- 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 "Electric Strength Test Special Constructions" be conducted at the component manufacturer.

- Production-Line Earthing (Grounding) Continuity Test:

All Models have to be 100% passing the Earthing Continuity Test when in the routine production line. Details procedure for this test please refer to Generic Inspection Instructions AC2.2.

Production-Line Testing Requirements

Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
All Models	--	--	Appliance Inlet L/N Pins to farthest metal chassis	1500	2100	1
All Models	Transformers (T5, T401, T201)	--	Primary to Secondary	3000	4242	1

Earthing Continuity Test Exemptions - This test is not required for the following models:

None

Electric Strength Test Exemptions - This test is not required for the following models:

None

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:

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 or Description	Manufacturer/ trademark	type/model	technical data	Product Category CCN(s)	Required Marks of Conformity	Supplement ID
1. Inlet	Tecx-Unions Technology Corp.	TU-301 series (-A/AP/S/SP)	15A, 250V (10A, 250Vdc, Comply with IEC 61984:2008 / EN 61984:2009)	AXUT2	UL, TUV	
1a. Inlet (Alternate)	Rong Feng Industrial Co Ltd	SS-120	15A, 250V (10A, 250Vdc, Comply with IEC 61984:2008 / EN 61984:2009)	AXUT2	UL, TUV	
1b. Inlet (Alternate)	Sheng Ming Enterprise Co., Ltd.	S14-102	15A, 250V (10A, 250Vdc, Comply with IEC 61984:2008 / EN 61984:2009)	AXUT2	UL, TUV	
1c. Inlet (Alternate)	Inalways Corp (International All Ways Ind Co Ltd)	0711 series	15A, 250V (10A, 250Vdc, Comply with IEC 61984:2008 / EN 61984:2009)	AXUT2/8	UL, CSA, VDE,CCC, ENEC	
2. Fuse (F1)	Hollyland Co Ltd	50CF	F15A, 250Vac/dc	JDYX2	UL	
2a. Fuse (F1) (Alternate)	Littelfuse Inc	487 Series	F15A, 420Vac/dc	JDYX2	UL	
3. Fuse (F201)	Conquer Electronics Co Ltd	PBU	F1A, 250Vac	JDYX2	UL	
3a. Fuse (F201)	Walter Electronic Co., Ltd.	FDP	F1A, 250Vac	JDYX2	UL	
4. Fuse (F3)	Conquer Electronics Co Ltd	PGU	F6.3A, 250Vac	JDYX2	UL	
4a. Fuse (F3) (Alternate)	Conquer Electronics Co Ltd	PBU	F6.3A, 250Vac	JDYX2	UL	
4b. Fuse (F3) (Alternate)	WALTER ELECTRONIC CO LTD	FDP	F6.3A, 250Vac	JDYX2	UL	
5. X-Cap. (C4, C7) (Optional)	Kemet Electronics Italia SRL	R.46	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 110degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, IMQ-ENEC(V-4413)	
5a. X-Cap. (C4, C7) (Optional) (Alternate)	Hua Jung Components Co Ltd	MKP	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 110degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, CUL, CSA, ENEC(14), CQC	
5b. X-Cap. (C4, C7)	SHENZHEN	CBB62B	C4 maximum 1uF, C7	FOWX2	UL, CUL,	

(Optional) (Alternate)	JINGHAO CAPACITOR CO LTD		maximum 0.47uF Minimum 250Vac, 110degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.		VDE, CQC	
5c. X-Cap. (C4, C7) (Optional) (Alternate)	YIMANFENG SCIENCE AND TECHNOLOGY LTD CO	MPX/MKP	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 110degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, CUL, VDE, CQC	
5d. X-Cap. (C4, C7) (Optional) (Alternate)	Okaya Electric Industries Co., Ltd	XF	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 110degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, CUL, SEMKO-ENEC(SE/01 42-20A)	
5e. X-Cap. (C4, C7) (Optional) (Alternate)	Strong Capacitor Co. Ltd.	Type MPX	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 110degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, CUL, VDE, VDE-ENEC, CQC	
5f. X-Cap. (C4, C7) (Optional) (Alternate)	Vishay Capacitors Belgium NV	F1778	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 110degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, CUL, CB-FI, ENEC(16), CQC	
5g. X-Cap. (C4, C7) (Optional) (Alternate)	ZHUHAI SUNG HO ELECTRONICS CO LTD	CMPP	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 105degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, CSA, VDE, CB, CQC	
5h. X-Cap. (C4, C7) (Optional) (Alternate)	Okaya Electric Industries Co., Ltd	RE series	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 100degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, CUL, VDE	
5i. X-Cap. (C4, C7) (Optional) (Alternate)	Okaya Electric Industries Co Ltd	LE series	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 100degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, CUL, ENEC(14)	
5j. X-Cap. (C4, C7)	Cheng Tung	CTX	C4 maximum 1uF, C7	FOWX2	UL, CUL,	

(Optional) (Alternate)	Industrial Co Ltd		maximum 0.47uF Minimum 250Vac, 100degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.		VDE(400263 82), VDE-ENEC, CQC	
5k. X-Cap. (C4, C7) (Optional) (Alternate)	Epcos Electronic Components S.A.	B3292 series	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 100degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, CUL, VDE	
5l. X-Cap. (C4, C7) (Optional) (Alternate)	Vishay Capacitors Belgium NV	F1772	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 100degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, VDE, ENEC(10)	
5m. X-Cap. (C4, C7) (Optional) (Alternate)	KEMET ELECTRONICS OY(Evox Rifa Group Oy))	PHE840M	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 100degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, CUL, ENEC(14)	
5n. X-Cap. (C4, C7) (Optional) (Alternate)	Carli Electronics Co Ltd	MPX	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 100degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, CUL, CSA, VDE, CQC	
5o. X-Cap. (C4, C7) (Optional) (Alternate)	Panasonic Corporation, Panasonic Corporation of North America	ECQUL	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 100degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, CSA, VDE	
5p. X-Cap. (C4, C7) (Optional) (Alternate)	SHENZHEN SURONG CAPACITORS CO LTD	MPX/MKP	C4 maximum 1uF, C7 maximum 0.47uF Minimum 250Vac, 85degree C, Class X1 or X2; the damp heat test duration in 21 days Minimum.	FOWX2	UL, CSA, VDE	
6. Y-Cap. (C198, C199, C5, C6) (Optional)	Murata Mfg Co Ltd	KX	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	

6a.Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	TDK-EPC Corp.	CD	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
6b.Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	Walsin Technology Corp (Pan Overseas Electronic Co Ltd)	AH	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
6c. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	Success Electronics Co Ltd	SE	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
6d. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	Vishay Electronic GMBH (Roederstein Electronics Inc)	VY1	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE, ENEC(10)	
6e. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	JERRO ELECTRONICS CORP	JX	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
6f. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	Holy Stone Enterprise Co., Ltd.	SDC series	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, TUV	
6g. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	Success Electronics Co Ltd	SB	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days	FOWX2	UL, VDE	

			minimum.			
6h. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	YINAN DON'S ELECTRONIC COMPONENT CO LTD	CT81	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
6i. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	NAN JING YUYUE ELECTRONICS CO LTD	CT7, 2B/ CT7, 2E/ CT7, 2F	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
6j. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	Murata Mfg Co Ltd	KH	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
6k. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	TDK-EPC Corp.	CS	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
6l. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	Walsin Technology Corp (Pan Overseas Electronic Co Ltd)	AC	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2/8	UL, VDE	
6m. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	Success Electronics Co Ltd	SF	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
6n. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	Vishay Electronic GMBH (Roederstein Electronics Inc)	VY2	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp	FOWX2/8	UL, VDE, ENEC(10)	

			heat test duration in 21 days minimum.			
6o. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	JERRO ELECTRONICS CORP	JL	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
6p. Y-Cap. (C198, C199, C5, C6) (Optional) (Alternate)	Murata Mfg Co Ltd	KY	C198, C199 maximum 2200pF; C5, C6 maximum 3300pF; Minimum 250Vac, 125 degree C; Class Y1 or Y2; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
7. Bridge-Cap. (C17) (Optional)	Murata Mfg Co Ltd	KX	Maximum 2200pF, Minimum 250Vac, 125 degree C; Class Y1; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
7a. Bridge-Cap. (C17) (Optional) (Alternate)	TDK-EPC Corp.	CD	Maximum 2200pF, Minimum 250Vac, 125 degree C; Class Y1; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
7b. Bridge-Cap. (C17) (Optional) (Alternate)	Walsin Technology Corp (Pan Overseas Electronic Co Ltd)	AH	Maximum 2200pF, Minimum 250Vac, 125 degree C; Class Y1; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
7c. Bridge-Cap. (C17) (Optional) (Alternate)	Success Electronics Co Ltd	SE	Maximum 2200pF, Minimum 250Vac, 125 degree C; Class Y1; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
7d. Bridge-Cap. (C17) (Optional) (Alternate)	Vishay Electronic GMBH (Roederstein Electronics Inc)	VY1	Maximum 2200pF, Minimum 250Vac, 125 degree C; Class Y1; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE, ENEC(10)	
7e. Bridge-Cap. (C17) (Optional) (Alternate)	Holy Stone Enterprise Co., Ltd.	SDC series	Maximum 2200pF, Minimum 250Vac, 125 degree C; Class Y1; the damp heat test duration in 21 days minimum.	FOWX2	UL, TUV	
7f. Bridge-Cap. (C17) (Optional) (Alternate)	Success Electronics Co Ltd	SB	Maximum 2200pF, Minimum 250Vac, 125 degree C; Class	FOWX2	UL, VDE	

			Y1; the damp heat test duration in 21 days minimum.			
7g. Bridge-Cap. (C17) (Optional) (Alternate)	YINAN DON'S ELECTRONIC COMPONENT CO LTD	CT81	Maximum 2200pF, Minimum 250Vac, 125 degree C; Class Y1; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
7h. Bridge-Cap. (C17) (Optional) (Alternate)	JERRO ELECTRONICS CORP	JX	Maximum 2200pF, Minimum 250Vac, 125 degree C; Class Y1; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
7i. Bridge-Cap. (C17) (Optional) (Alternate)	NAN JING YUYUE ELECTRONICS CO LTD	CT7, 2B/ CT7, 2E/ CT7, 2F	Maximum 2200pF, Minimum 250Vac, 125 degree C; Class Y1; the damp heat test duration in 21 days minimum.	FOWX2	UL, VDE	
8. Varistor (MOV1) (Optional)	Brightking (ShenZhen) Co Ltd	xxDyyyK (xx: 14, 20, 25; yyy: 471, 511, 561, 621, 681, 751, 821, 911, 102, 112, 122)	300, 320, 350, 385, 420, 460, 485, 510, 550, 625, 680, 750Vac; 40/85/56 6KV/3KA pulse test passed (coating V-0)	VZCA2	UL, VDE	
8a.Varistor (MOV1) (Optional) (Alternate)	Thinking Electronic Industrial Co Ltd (Wujin Thinking Electronic Co Ltd)	TVR10yyy-D series (yyy: 471, 511, 561, 621, 681, 751, 821, 911, 102, 112)	300, 320, 350, 395, 420, 465, 510, 550, 625, 680Vac, 40/85/56 6KV/3KA pulse test passed(coating V-0)	VZCA2	UL, VDE	
8b.Varistor (MOV1) (Optional) (Alternate)	Thinking Electronic Industrial Co Ltd (Wujin Thinking Electronic Co Ltd)	TVR10yyy-V series (yyy: 471, 511, 561, 621, 681, 751, 821, 911, 102, 112)	300, 320, 350, 395, 420, 465, 510, 550, 625, 680Vac, 40/85/56 6KV/3KA pulse test passed(coating V-0)	VZCA2	UL, VDE	
8c.Varistor (MOV1) (Optional) (Alternate)	Thinking Electronic Industrial Co Ltd (Wujin Thinking Electronic Co Ltd)	TVRxyyyy series (xx: 14, 20; yyy: 471, 511, 561, 621, 681, 751, 821, 911, 102, 112)	300, 320, 350, 395, 420, 465, 510, 550, 625, 680Vac, 40/85/56 6KV/3KA pulse test passed(coating V-0)	VZCA2	UL, VDE	
8d.Varistor (MOV1) (Optional) (Alternate)	Thinking Electronic Industrial Co Ltd (Wujin Thinking Electronic Co Ltd)	TVRxyyyy-M series (xx: 14, 20; yyy: 471, 511, 561, 621, 681,	300, 320, 350, 395, 420, 465, 510, 550, 625, 680Vac, 40/125/56 6KV/3KA pulse test passed(coating V-0)	VZCA2	UL, VDE	

		751, 821, 911, 102, 112)				
8e.Varistor (MOV1) (Optional) (Alternate)	Joyin Co. Ltd	xxSyyyK (xx: 10, 14, 20; yyy: 471, 511, 561, 621, 681, 751, 781, 821, 911, 102, 112)	300, 320, 350, 385, 420, 460, 485, 510, 550, 625, 680Vac;40/85/56 6KV/3KA pulse test passed(coating V-0)	VZCA2	UL, VDE	
8f.Varistor (MOV1) (Optional) (Alternate)	Joyin Co. Ltd	xxNyyyK (xx: 10, 14, 20; yyy: 471, 511, 561, 621, 681, 751, 781, 821, 911, 102, 112, 182)	300, 320, 350, 385, 420, 460, 485, 510, 550, 625, 680, 1000Vac;40/85/56 6KV/3KA pulse test passed(coating V-0)	VZCA2	UL, VDE	
8g.Varistor (MOV1) (Optional) (Alternate)	Littelfuse Inc.	CIII series / LA series, VxxxLAYy series, (xxx:300, 320, 385, 420, 460, 480, 510, 550, 575, 625, 660, 680; yy:10, 20, 40, 50, 80, 100)	300, 320, 385, 420, 460, 480, 510, 550, 575, 625, 660, 680Vac;40/85/56 6KV/3KA pulse test passed(coating V-0)	VZCA2	UL, VDE	
8h.Varistor (MOV1) (Optional) (Alternate)	EPCOS (ZHUHAI FTZ) CO LTD (Epcos OHG(Siemens AG))	S(NF)xxKyyy (xx: 14, 20; yyy: 300, 320, 350, 385, 420, 440, 460, 510, 550, 625, 680, 1000)	300, 320, 350, 385, 420, 440, 460, 510, 550, 625, 680, 1100Vac, 40/85/56 6KV/3KA pulse test passed(coating V-0)	VZCA2	UL, VDE	
8i.Varistor (MOV1) (Optional) (Alternate)	EPCOS (ZHUHAI FTZ) CO LTD (Epcos OHG(Siemens AG))	Q20Kyyy (yyy: 300, 320)	300, 320Vac, 40/85/56 6KV/3KA pulse test passed(coating V-0)	VZCA2	UL, VDE	
8j.Varistor (MOV1) (Optional) (Alternate)	EPCOS (ZHUHAI FTZ) CO LTD (Epcos OHG(Siemens AG))	S(NF)10KyyyE2K 1 (yyy: 300, 320, 350, 385, 420, 460, 510, 550, 625, 680)	300, 320, 350, 385, 420, 440, 460, 510, 550, 625, 680Vac, 40/85/56 6KV/3KA pulse test passed(coating V-0)	VZCA2	UL, VDE	

9. Optical Isolator (M12, M13, M14, M16, M202, M203)	Everlight Elertronic (China) Co., Ltd.	CNY series. CNY-171 series., CNY17F1 series., EL610. ("." Can be blank, A-Z or numbers and denote different pin shape.)	Minimum 3000Vac, thermal cycling test passed by FIMKO, Insulation thickness =0.5mm, internal creepage=6mm, external creepage=7.7mm ; 110degreeC	FPQU2	UL, FI (27144)	
9a. Optical Isolator (M12, M13, M14, M16, M202, M203) (Alternate)	Vishay semiconductor GMBH (Vishay Infrared Components Inc)	TCLT10xx series (xx can be "00-03, 06-09"), TCLT11xx series (xx can be "01-03, 06-09"), TCLT1600 series.	Minimum 4800Vac, Thermal cycling test passed by FIMKO, external creepage=8.2mm100degreeC	FPQU2	UL, VDE, FI(17107)	
9b. Optical Isolator (M12, M13, M14, M16, M202, M203) (Alternate)	RENESAS ELECTRONICS CORPORATION (NEC Electronics Corp Compound Semiconductor Device Div)	PS2381-1	Minimum 5000VacInsulation thickness = 0.4mm, thermal cycling test passed by FIMKO, external creepage 8mm min.115degreeC	FPQU2	UL, VDE, Semko(911049)	
9c. Optical Isolator (M12, M13, M14, M16, M202, M203) (Alternate)	Cosmo Electronics Corporation	KT1yxx series (y can be "0-4 and 6", xx can be "CTR Rank, 00-zz")	Minimum 4800Vac,OVC II, Pollution Degree 2 and 2000m.Insulation thickness = 0.7mm, thermal cycling test passed by FIMKO, external creepage=8.6mm115degreeC	FPQU2	UL, VDE, FI(23460)	
9d. Optical Isolator (M12, M13, M14, M16, M202, M203) (Alternate)	Everlight Elertronic (China) Co., Ltd.	EL817 series	Minimum 3000Vac, thermal cycling test passed by NEMKO, Insulation thickness =0.5mm, internal creepage=6mm, external creepage=7.7mm ; 110degreeC	FPQU2	UL, VDE, NEMKO(P11214765)	
9e. Optical Isolator (M12, M13, M14, M16, M202, M203) (Alternate)	RENESAS ELECTRONICS CORPORATION (NEC Electronics Corp Compound	PS2561 series	Minimum 5000Vac,Insulation thickness =0.4mm, thermal cycling test passed by FIMKO, external creepage=7mm 100degreeC	FPQU2	UL, FI(11898)	

	Semiconductor Device Div)					
9f. Optical Isolator (M12, M13, M14, M16, M202, M203) (Alternate)	Cosmo Electronics Corporation	K1010 series	Minimum 5000VacInsulation thickness =0.5mm, thermal cycling tested by FIMKO, external creepage=6.5mm115degreeC	FPQU2	UL, FI(22653)	
9g. Optical Isolator (M12, M13, M14, M16, M202, M203) (Alternate)	Vishay Semiconductor GMBH (Vishay Infrared Components Inc)	VOL617 series/ VOL618A series	Minimum 5000VacInsulation thickness >0.4mm, thermal cycling tested by FIMKO, external creepage>8.0mm110degreeC	FPQU2	UL, FI(17107)	
9h. Optical Isolator (M12, M13, M14, M16, M202, M203) (Alternate)	Lite-on Technology Co. (Lite-on Electronic, Inc.)	LTV-817	Minimum 5000VacInsulation thickness =0.8mm, internal creepage=5.2mm, external creepage=7.8mm100degreeC	FPQU2	UL, FI(21712)	
9i. Optical Isolator (M12, M13, M14, M16, M202, M203) (Alternate)	EVERLIGHT ELECTRONICS CO LTD	EL101 series	Minimum 3000Vac, thermal cycling test passed by NEMKO, Insulation thickness =0.4mm, external creepage=8.1mm ; 110degreeC	FPQU2	UL, DEMKO(D-0070)	
9j. Optical Isolator (M12, M13, M14, M16, M202, M203) (Alternate)	LITE-ON TECHNOLOGY CORP	LTV-100x (x can be 0~9)	Minimum 5000VacInsulation thickness >0.4mm, thermal cycling tested by FIMKO, external creepage=8.3mm100degreeC	FPQU2	UL, FI	
9k. Optical Isolator (M6, M8)	SILICON LABORATORIES	Si8233BD-D	Minimum 5000Vac Insulation thickness=0.4mm, thermal cycling tested by VDE, external creepage=8.6 mm, 125degreeC	FPQU2	CUL, VDE	
10. Thermistor (RT1) (Optional)	Interchangeable	Interchangeable	25 ohm at 25 degree C, 4A; 80 ohm at 25 degree C, 2A; 80 ohm at 25 degree C, 6A	--	--	
11. Thermistor (RT301)	Interchangeable	Interchangeable	10Kohm at 25 degree C ,NTC	XGPU2	UL	
12. Discharge Resistor (RHV1, RHV2, RHV3)	RALEC TECHNOLOGY (KUNSHAN) CO., LTD.	RTV05 series, RTV06 series, RTV12 series, RTV20 series, RTV25 series	1/4W, 220k ohm	UL Demko (DK-66106-M1-UL)	UL	

12a. Discharge Resistor (RHV1, RHV2, RHV3) (Alternate)	TA-I Technology Co Ltd	RH series, RH10 series, RH12 series	1/4W, 220k ohm	UL Demko (DK-68398-M1-UL)	UL	
12b. Discharge Resistor (RHV1, RHV2, RHV3) (Alternate)	Kamaya Electric Co Ltd	RVC32 series	1/4W, 220k ohm	UL JP (JP-14825-UL)	UL	
12c. Discharge Resistor (RHV1, RHV2, RHV3) (Alternate)	Viking Tech Corporation Kaoshiung Branch	HVR02 series, HVR03 series, HVR05 series, HVR06 series, HVR0A series, HVR12 series	1/4W, 220k ohm	UL Demko (DK-68124-M1-UL)	UL	
12d. Discharge Resistor (RHV1, RHV2, RHV3) ()	Yageo Corporation	RV0603 series, RV0805 series, RV1206 series	1/4W, 220k ohm	UL Demko (DK-64853-UL)	UL	

13. Relay (REL1) (optional)	Song Chuan Precision Co Ltd	307HN-1AH-F-C	277Vac, 10A	NLDX2	UL	
13a. Relay (REL1) (optional) (Alternate)	XIAMEN HONGFA ELECTROACOUSTI C CO LTD	HF32F series	250Vac, 10A	NLDX2	UL	
13b. Relay (REL1) (optional) (Alternate)	DONGGUAN GOLDEN ELECTRICAL APPLIANCE CO LTD	GI-1A-12LHF (GI series)	250Vac, 10A	NLDX2	UL	
13c. Relay (REL1) (optional) (Alternate)	XIAMEN HONGFA ELECTROACOUSTI C CO LTD	HF32FV series	250Vac, 10A	NLDX2	UL	
13d. Relay (REL1) (optional) (Alternate)	XIAMEN HONGFA ELECTROACOUSTI C CO LTD	HF32F-G series, HF32FV-G series	250Vac, 10A	NLDX2	UL	
13e. Relay (REL1) (optional) (Alternate)	XIAMEN HONGFA ELECTROACOUSTI C CO LTD	HF32FA-G series	250Vac, 10A	NLDX2	UL	
13f. Relay (REL1) (optional) (Alternate)	XIAMEN HONGFA ELECTROACOUSTI C CO LTD	HF158F-V series	277Vac, 12A	NLDX2	UL	
14. Bridge Diode (BD1)	Interchangeable	Interchangeable	600V min., 25A min.	--	--	
14a. Bridge Diode (BD1) for Models FSF059, R1CA2551B, FSF065 and R1CA2551C only.	Interchangeable	Interchangeable	600V min., 15A min.	--	--	
15. Electrolytic Capacitor (C36)	Interchangeable	Interchangeable	560uF; 105 degree C min., 450V min.	--	--	
15a. Electrolytic Capacitor (C36) for Models FSF059, R1CA2551B, FSF065 and R1CA2551C only.	Interchangeable	Interchangeable	470 to 560uF; 105 degree C min., 450V min.	--	--	
16. Transistor (Q1, Q11, Q2, Q21)	Interchangeable	Interchangeable	600V min., 13~15A	--	--	
16a. Transistor (Q1, Q11, Q2, Q21) for Models FSF059, R1CA2551B, FSF065	Interchangeable	Interchangeable	600V min., 7-15 A min.	--	--	

and R1CA2551C						
17. Choke (L1)	--	--	130 degree min.	--	--	ILL. 2
17-1. Core of Choke (L1)	--	--	Ferrite, Toroidal overall 22.3 by 10.0 by 8.0 mm	--	--	ILL. 2
17-2. Coil of Choke (L1)	Various	Various	130 degree min.	--	--	ILL. 2
18. Choke (L4)	--	--	130 degree min.	--	--	ILL. 3
18-1. Core of Choke (L4)	--	--	Ferrite, Toroidal overall 22.3 by 10.0 by 8.0 mm	--	--	ILL. 3
18-2. Coil of Choke (L4)	Various	Various	130 degree min.	--	--	ILL. 3
19. Choke (L5)	--	--	130 degree min.	--	--	ILL. 4
19-1. Core of Choke (L5)	--	--	Ferrite, Toroidal overall 27.69 by 14.1 by 11.99 mm	--	--	ILL. 4
19-2. Coil of Choke (L5)	Various	Various	130 degree min.	--	--	ILL. 4
19a. Choke (L5) for Models FSF059, R1CA2551B, FSF065 and R1CA2551C only.	--	--	130 degree min.	--	--	ILL. 15
20. Choke (L403)	--	--	130 degree min.	--	--	ILL. 5
20-1. Core of Choke (L403)	--	--	Iron overall 29.7 by 24 by 7.8 mm	--	--	ILL. 5
20-2. Coil of Choke (L403)	Various	Various	130 degree min.	--	--	ILL. 5
21. Transformer(T5)	--	--	See enclosure for winding and construction details.	--	--	ILL. 6
21-1. Insulation System of Transformer T5	AcBel Polytech Inc.(API)	B-8	Class B	OBJY2	UL	ILL. 6
21-2. Coil of Transformer T5	--	MW28	130 degree C min.	OBMW2	UL	ILL. 6
21-3. Triple Insulation wire of Transformer T5	Totoku Electric Co Ltd	TIW-2	Electric strength: 4000Vrms, 130 degree C	OBJT2	UL	ILL. 6
21-3a. Triple Insulation wire of Transformer T5 (Alternate)	Totoku Electric Co Ltd	TIW-3	Electric strength: 4000Vrms, 155 degree C	OBJT2	UL	ILL. 6
21-3b. Triple Insulation wire of Transformer T5 (Alternate)	Furukawa Electric Co Ltd	TEX-E	Electric strength: 3000Vrms, 130 degree C	OBJT2	UL	ILL. 6
21-4. Insulation Tape of Transformer T5	3M Co	1350F-1	130 degree C	OANZ2	UL	ILL. 6
21-4a. Insulation Tape of Transformer T5	Jingjiang Yahua Co	CT series	130 degree C	OANZ2	UL	ILL. 6

and Report

(Alternate)						
21-5. Tube of Transformer T5	Great Holding Industrial co., Ltd.	TFL, TFT, TFS	200 degree C	YDPU2	UL	ILL. 6
21-5a. Tube of Transformer T2 (Alternate)	Changyuan Electronics	CB-TT series	200 degree C	YDPU2/8	UL	ILL. 6
21-5b. Tube of Transformer T5 (Alternate)	Zeus Industrial Products Inc.	TFE-LW, TFE-SW, TFE-TW	200 degree C	YDPU2	UL	ILL. 6
21-6. Varnish of Transformer T5	KYOCERA CHEMICAL CO.	TVB-2180T	130 degree C	OBOR2	UL	ILL. 6
21-6a. Varnish of Transformer T5 (Alternate)	Elantas Electrical Insulation Elantas PDG Inc.	V1630FS	130 degree C	OBOR2	UL	ILL. 6
21-6a. Varnish of Transformer T5 (Alternate)	Elantas Electrical Insulation Elantas PDG Inc.	468-2(x)	130 degree C	OBOR2	UL	ILL. 6
22. Transformer(T201)	--	--	See enclosure for winding and construction details.	--	--	ILL. 7
22-1. Insulation System of Transformer T201	AcBel Polytech Inc.(API)	CIS.04	Class B	OBJY2	UL	ILL. 7
22-2. Core of Transformer T201	--	--	Ferrite, overall 20.5 mm by 16.0 mm by 14.0 mm	--	--	ILL. 7
22-3. Bobbin of Transformer T201	Sumitomo Bakelite Co Ltd	PM-9820	Phenolic, V-0, 150 degree C, minimum 0.71 mm thickness.	QMFZ2	UL	ILL. 7
22-3a. Bobbin of Transformer T201 (Alternate)	Sumitomo Bakelite Co Ltd	PM-9630	Phenolic, V-0, 150 degree C, minimum 0.71 mm thickness.	QMFZ2	UL	ILL. 7
22-3b. Bobbin of Transformer T201 (Alternate)	Chang Chun Co.	T375J	Phenolic, V-0, 150 degree C, minimum 0.71 mm thickness.	QMFZ2	UL	ILL. 7
22-4. Coil of Transformer T201	--	MW28	130 degree C min.	OBMW2	UL	ILL. 7
22-5. Triple Insulation wire of Transformer T201	Cosmolink Co., Ltd.	TIW-M	Electric strength: 3000Vrms, 130 degree	OBJT2	UL	ILL. 7
22-6. Insulation Tape of Transformer T201	3M Co	1350F-1	130 degree C	OANZ2	UL	ILL. 7
22-6a. Insulation Tape of Transformer T201	Jingjiang Yahua Co	CT series	130 degree C	OANZ2	UL	ILL. 7

(Alternate)						
22-7. Tube of Transformer T201	Great Holding Industrial co., Ltd.	TFL, TFT, TFS	200 degree C	YDPU2	UL	ILL. 7
22-7a. Tube of Transformer T201 (Alternate)	Changyuan Electronics	CB-TT series	200 degree C	YDPU2/8	UL	ILL. 7
22-7b. Tube of Transformer T201 (Alternate)	Zeus Industrial Products Inc.	TFE-SW, TFE-TW	200 degree C	YDPU2	UL	ILL. 7
22-8. Varnish of Transformer T201	Elantas Electrical Insulation Elantas PDG Inc.	V1630FS	130 degree C	OBOR2	UL	ILL. 7
22-8a. Varnish of Transformer T201 (Alternate)	Elantas Electrical Insulation Elantas PDG Inc.	468-2(x)	130 degree C	OBOR2	UL	ILL. 7
23. Transformer (T401)	--	--	See enclosure for winding and construction details.	--	--	ILL. 8
23-1. Insulation System of Transformer T401	AcBel Polytech Inc.(API)	B-8	Class B	OBJY2	UL	ILL. 8
23-2. Core of Transformer T401	--	--	Ferrite, overall 32.0 mm by 22.0 mm by 30.3 mm	--	--	ILL. 8
23-3. Bobbin of Transformer T401	Sumitomo Bakelite Co Ltd	E4008	Phenolic, V-0, 130 degree C, minimum 0.71 mm thickness.	QMFZ2	UL	ILL. 8
23-4. Base of Transformer T401	BOSCOM CO.	PM9820, PM9630	Phenolic, V-0, 150 degree C, minimum 0.71 mm thickness.	QMFZ2	UL	ILL. 8
23-5. Triple Insulation wire of Transformer T401	Totoku Electric Co Ltd	TIW-2LZ	Electric strength: 3000Vrms, 130 degree	OBJT2	UL	ILL. 8
23-6. Insulation Tape of Transformer T401	3M Co	1350F-1	130 degree C	OANZ2	UL	ILL. 8
23-6a. Insulation Tape of Transformer T401 (Alternate)	Jingjiang Yahua Co	CT series	130 degree C	OANZ2	UL	ILL. 8
23-7. Tube of Transformer T401	Great Holding Industrial co., Ltd.	TFL, TFT, TFS	200 degree C	YDPU2	UL	ILL. 8
23-7a. Tube of Transformer T401 (Alternate)	Changyuan Electronics	CB-TT series	200 degree C	YDPU2/8	UL	ILL. 8
23-8. Varnish of	Hitachi Chemical Co	WP-2952F-2G	130 degree C	OBOR2	UL	ILL. 8

Transformer T401 (Alternate)	Ltd					
23-8a. Varnish of Transformer T401 (Alternate)	KYOCERA CHEMICAL CO.	TVB-2180T	130 degree C	OBOR2	UL	ILL. 8
23a. Transformer(T401) for Models FSF059, R1CA2551B, FSF065 and R1CA2551 use only	--	--	See enclosure for winding and construction details.	--	--	ILL. 16
23a-1. Insulation System of Transformer T401	AcBel Polytech Inc.(API)	B-8	Class B	OBJY2	UL	ILL. 16
23a-2. Core of Transformer T401	--	--	Ferrite, overall 32.0 mm by 22.0 mm by 30.3 mm	--	--	ILL. 16
23a-3. Bobbin of Transformer T401	Sumitomo Bakelite Co Ltd	E4008	Phenolic, V-0, 130 degree C, minimum 0.71 mm thickness.	QMFZ2	UL	ILL. 16
23a-4. Base of Transformer T401	BOSCOM CO.	PM9820, PM9630	Phenolic, V-0, 150 degree C, minimum 0.71 mm thickness.	QMFZ2	UL	ILL. 16
23a-5. Triple Insulation wire of Transformer T401	Cosmolink Co Ltd	TIW-2	Electric strength: 4000Vrms, 130 degree C	OBJT2	UL	ILL. 16
23a-6. Insulation Tape of Transformer T401	3M Co	1350F-1	130 degree C	OANZ2	UL	ILL. 16
23a-6a. Insulation Tape of Transformer T401 (Alternate)	Jingjiang Yahua Co	CT series	130 degree C	OANZ2	UL	ILL. 16
23a-7. Tube of Transformer T401	Great Holding Industrial co., Ltd.	TFL, TFT, TFS	200 degree C	YDPU2	UL	ILL. 16
23a-7a Tube of Transformer T401 (Alternate)	Changyuan Electronics	CB-TT series	200 degree C	YDPU2/8	UL	ILL. 16
23a-8. Varnish of Transformer T401 (Alternate)	Hitachi Chemical Co Ltd	WP-2952F-2G	130 degree C	OBOR2	UL	ILL. 16
23a-8a. Varnish of Transformer T401 (Alternate)	KYOCERA CHEMICAL CO.	TVB-2180T	130 degree C	OBOR2	UL	ILL. 16
23b. Transformer (T401) (for models FES052, R1CA2801A, FSF037,	--	--	See enclosure for winding and construction details.	--	--	ILL.17

and Report

R1CA2801B. (Alternate)						
23b-1. Insulation System of Transformer T401	AcBel Polytech Inc.(API)	Ta Ya 130-1	Class B	OBJY2	UL	ILL.17
23b-2. Core of Transformer T401	--	--	Ferrite, overall 32.0 mm by 22.0 mm by 30.3 mm	--	--	ILL.17
23b-3. Bobbin of Transformer T401	Sumitomo Bakelite Co Ltd	E4008	Phenolic, V-0, 130 degree C, minimum 0.71 mm thickness.	QMFZ2	UL	ILL.17
23b-4. Base of Transformer T401	BOSCOM CO.	PM9820, PM9630	Phenolic, V-0, 150 degree C, minimum 0.71 mm thickness.	QMFZ2	UL	ILL.17
23b-5. Triple Insulation wire of Transformer T401	TA YA CO.	TILW-B	Electric strength: 3000Vrms, 130 degree	OBJT2	UL	ILL.17
23b-6. Insulation Tape of Transformer T401	3M Co	1350F-1	130 degree C	OANZ2	UL	ILL.17
23b-6a. Insulation Tape of Transformer T401 (Alternate)	Jingjiang Yahua Co	CT series	130 degree C	OANZ2	UL	ILL.17
23b-7. Tube of Transformer T401	Great Holding Industrial co., Ltd.	TFL, TFT, TFS	200 degree C	YDPU2	UL	ILL.17
23b-7a Tube of Transformer T401 (Alternate)	Changyuan Electronics	CB-TT series	200 degree C	YDPU2/8	UL	ILL.17
23b-8. Varnish of Transformer T401 (Alternate)	Hitachi Chemical Co Ltd	WP-2952F-2G	130 degree C	OBOR2	UL	ILL.17
23b-8a. Varnish of Transformer T401 (Alternate)	Elantas Electrical Insulation Elantas PDG Inc.	V1630FS	130 degree C	OBOR2	UL	ILL.17
23b-8b. Varnish of Transformer T401 (Alternate)	Elantas Electrical Insulation Elantas PDG Inc.	468-2(x)	130 degree C	OBOR2	UL	ILL.17
23c. Transformer(T401) for Models FSF059, R1CA2551B, FSF065 and R1CA2551 use only	--	--	See enclosure for winding and construction details.	--	--	ILL. 18
23c-1. Insulation System of Transformer T401	AcBel Polytech Inc.(API)	Ta Ya 130-1	Class B	OBJY2	UL	ILL. 18
23c-2. Core of Transformer T401	--	--	Ferrite, overall 32.0 mm by 22.0 mm by 30.3 mm	--	--	ILL. 18
23c-3. Bobbin of	Sumitomo Bakelite	E4008	Phenolic, V-0, 130 degree C,	QMFZ2	UL	ILL. 18

Transformer T401	Co Ltd		minimum 0.71 mm thickness.			
23c-4. Base of Transformer T401	BOSCOM CO.	PM9820, PM9630	Phenolic, V-0, 150 degree C, minimum 0.71 mm thickness.	QMFZ2	UL	ILL. 18
23c-5. Triple Insulation wire of Transformer T401	TA YA CO.	TILW-B	Electric strength: 3000Vrms, 130 degree	OBJT2	UL	ILL. 18
23c-6. Insulation Tape of Transformer T401	3M Co	1350F-1	130 degree C	OANZ2	UL	ILL. 18
23c-6a. Insulation Tape of Transformer T401 (Alternate)	Jingjiang Yahua Co	CT series	130 degree C	OANZ2	UL	ILL. 18
23c-7. Tube of Transformer T401	Great Holding Industrial co., Ltd.	TFL, TFT, TFS	200 degree C	YDPU2	UL	ILL. 18
23c-7a. Tube of Transformer T401 (Alternate)	Changyuan Electronics	CB-TT series	200 degree C	YDPU2/8	UL	ILL. 18
23c-8. Varnish of Transformer T401 (Alternate)	Hitachi Chemical Co Ltd	WP-2952F-2G	130 degree C	OBOR2	UL	ILL. 18
23c-8a. Varnish of Transformer T401 (Alternate)	Elantas Electrical Insulation Elantas PDG Inc.	V1630FS	130 degree C	OBOR2	UL	ILL. 18
23c-8b. Varnish of Transformer T401 (Alternate)	Elantas Electrical Insulation Elantas PDG Inc.	468-2(x)	130 degree C	OBOR2	UL	ILL. 18
24. Insulation tape	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD	CT, WF	Electric strength: 5000V,thickness: 0.025mm	OANZ2	UL	
24a. Insulation tape (Alternate)	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	1350F-1, 1350-1	Electric strength: 5000V,thickness: 0.025mm	OANZ2	UL	
24b. Insulation tape (Alternate)	Chyun Yih Tape Co. Ltd	PB 416F	Electric strength: 5000V,thickness: 0.025mm	OANZ2	UL	
25. Metal Enclosure	Interchangeable	Interchangeable	0.8mm min.	--	--	ILL.1, ILL. 14
26. DC Fan	ASIA VITAL COMPONENTS CO LTD	DBTD0428B2G(V) where (V) may be xxxx, where x	12V, 1.5A, 31.16CFM	GPWV2	UL	

		may be A through Z, 0 through 9, "-", or blank.				
26a. Fan (Alternate)	Foxconn Technology Co., Ltd.	PIA040H12Q	12V, 1.7A, 30.64CFM	GPWV2	UL	
26b. Fan (Alternate)	NIDEC AMERICA CORP	(a)40S12BGD5-07T08B, where (a) may be b, c, h, i, l, r~w.	12V, 1A, 27.8CFM	GPWV2	UL	
26c. Fan (Alternate)	NMB Technologies Corporation/MINEBEA CO LTD	04028DA-12S-(d)(e)G, where(d) may be "A", "B", "C", "E", "F", "G", "S", "T", "U", "W", "Y", or "Z"; (e) may be "A", "B", "L", "M", "T", "U", "E", "F", "G", "H", "J", "K", "C", "D", "N", "P", "V", "W" or 1-6	12V, 1.4A, 27.6CFM	GPWV2	UL	
26d. Fan for Model FSF059, R1CA2551B, FSF065 and R1CA2551C only. (Alternate)	ASIA VITAL COMPONENTS CO LTD	DB04028B12U(V) where (V) may be xxxx, where x may be A through Z, 0 through 9, "-", or blank.	12V, 0.66A, 22.92CFM. For models FSF059 and R1CA2551B, (out-blowing) For models FSF065, R1CA2551C (in-blowing).	GPWV2	UL	
26e. Fan for Model FSF059, R1CA2551B, FSF065 and R1CA2551C only. (Alternate)	NIDEC AMERICA CORP	(a)40S12BS4A5, where (a) maybe b, c, h, i, l, r~w.	12V, 0.73A, 26.5 CFM. For models FSF059 and R1CA2551B, (out-blowing) For models FSF065, R1CA2551C (in-blowing).	GPWV2	UL	
26f. Fan for Model FSF059, R1CA2551B, FSF065 and R1CA2551C only. (Alternate)	NMB Technologies Corporation/MINEBEA CO LTD	04028DA-12R-(d)(e)F, where(d) may be "A", "B", "C", "E", "F", "G", "S", "T", "U", "W", "Y", or "Z"; (e) may be "A", "B", "L", "M", "T", "U", "E", "F", "G", "H", "J",	12V, 0.52A, 20.1 CFM. For models FSF059 and R1CA2551B, (out-blowing) For models FSF065, R1CA2551C (in-blowing).	GPWV2	UL	

		"K", "C", "D", "N", "P", "V", "W" or 1- 6				
26g. Fan for Model FSF059, R1CA2551B, FSF065 and R1CA2551C only. (Alternate)	Foxconn Technology Co., Ltd.	PIA040H12P	12V, 0.81A, 26.33CFM	GPWV2	UL	
26h. Fan for Model FSF059, R1CA2551B, FSF065 and R1CA2551C only. (Alternate)	Potechnic Co., Ltd.	MG(a)4012U(e)- (f)28, where (a) maybe A or T; (e) maybe B,C,R,F OR S; (f) maybe A-Z or a-z or 0- 100, PWM or blank)	12V, 0.55A, 23.28CFM	GPWV2	UL	
26i. Fan for Model FSF059; R1CA2551B; FSF065; R1CA2551C only) (Alternate)	ASIA VITAL COMPONENTS CO LTD	DBTD0428B2G(V) where (V) may be xxxx, where x may be A through Z, 0 through 9, "-", or blank.	12V, 1.5A, 31.27CFM. For models FSF059 and R1CA2551B, (out-blowing) For models FSF065, R1CA2551C (in-blowing).	GPWV2	UL	
26j. Fan for Model FSF059; R1CA2551B; FSF065; R1CA2551C only (Alternate)	Foxconn Technology Co., Ltd.	PIA040H12Q	12V, 1.7A, 30.64CFM	GPWV2	UL	
26k. Fan for Model FSF059; R1CA2551B; FSF065; R1CA2551C only (Alternate)	NIDEC AMERICA CORP	(a)40S12BGD5- 07T08B, where (a) may be b, c, h, i, l, r-w.	12V, 1A, 27.8CFM. For models FSF059 and R1CA2551B, (out- blowing) For models FSF065, R1CA2551C (in-blowing).	GPWV2	UL	
26l. Fan for Model FSF059; R1CA2551B; FSF065; R1CA2551C only (Alternate)	NMB Technologies Corporation/MINEBE A CO LTD	04028DA-12S- (d)(e)G , where(d) may be "A", "B", "C", "E", "F", "G", "S", "T", "U", "W", "Y", or "Z"; (e) may be "A", "B", "L", "M", "T", "U", "E", "F", "G", "H", "J", "K", "C", "D", "N", "P", "V", "W"	12V, 1.4A, 27.6CFM. For models FSF059 and R1CA2551B, (out-blowing) For models FSF065, R1CA2551C (in-blowing).	GPWV2	UL	

		or 1-6				
26m. Fan for Model FSF059; R1CA2551B; FSF065; R1CA2551C only (Alternate)	Potechnic Co., Ltd.	MG(a)4012W(e)-(f)28,where (a) maybe A or T; (e) maybe B,C,R,F OR S; (f) maybe A-Z or a-z or 0-100, PWM or blank)	12V, 1.2A, 28.64 CFM	GPWV2	UL	
27. Insulation Sheet (Between PCB and CASE) (On L1)	Formex, Div of Illinois Tool Works Inc, Formerly	FORMEX-18	Minimum 0.4 mm thickness, min V-2, 90 degree C.	QMFZ2	UL	ILL. 9, ILL.10
27a. Insulation Sheet (Between PCB and CASE), (On L1) (Alternate)	Formex, Div of Illinois Tool Works Inc, Formerly	FORMEX GK-(a)(b), (a) - One to three digit suffix indicating nominal thickness in mils. (b) - May have additional suffix letter(s) indicating color.	Minimum 0.4 mm thickness, min V-2, 115 degree C.	QMFZ2	UL	ILL. 9, ILL.10
27b. Insulation Sheet (Between PCB and CASE), (On L1) (Alternate)	SABIC INNOVATIVE PLASTICS B V/ SABIC INNOVATIVE PLASTICS US L L C/ SABIC JAPAN L L C	FR700/ FR60	Minimum 0.4 mm thickness, min V-2, 80 degree C.	QMFZ2	UL	ILL. 9, ILL.10
27c. Insulation Sheet (Between PCB and CASE), (On L1) (Alternate)	SABIC INNOVATIVE PLASTICS US L L C/ SABIC JAPAN L L C	FR1	Minimum 0.4 mm thickness, min V-2, 125 degree C.	QMFZ2	UL	ILL. 9, ILL.10
27d. Insulation Sheet (Between PCB and CASE), (On L1) (Alternate)	SABIC INNOVATIVE PLASTICS US L L C/ SABIC JAPAN L L C	EFR95	Minimum 0.4 mm thickness, min V-2, 80 degree C.	QMFZ2	UL	ILL. 9, ILL.10
27e. Insulation Sheet (Between PCB and CASE), (On L1) (Alternate)	SUN DELTA CORP	VS(f); (f) - May be replaced by any digit 000-999, except 560 and 160	Minimum 0.4 mm thickness, min V-2, 120 degree C.	QMFZ2	UL	ILL. 9, ILL.10
27f. Insulation Sheet	Toray Industries Inc	Lumirror (#), (#) -	Minimum 0.4 mm thickness,	QMFZ2	UL	ILL. 9, ILL.10

(Between PCB and CASE), (On L1) (Alternate)		Followed by F60, F60C, L11, Q55 or (a)(b)(c)(d) , where; (a) can be one letter H,K,S,T or W. (b) denotes a one digit number 0 - 7. (c) may be one digit number 0 - 9 or one letter A - M. (d) may be one digit number 0-9 or one letter A,C,E,K,M,V,W or Z. <>	min V-2, 130 degree C.			
27g. Insulation Sheet (Between PCB and CASE), (On L1) (Alternate)	Yi-Hsin Plastech Co. Ltd	YIMEX PP-17	Minimum 0.4 mm thickness, min V-2, 90 degree C.	QMFZ2	UL	ILL. 9, ILL.10
27h. Insulation Sheet (Between PCB and CASE), (On L1) (Alternate)	Yi-Hsin Plastech Co. Ltd	HSINMEX PC - 175	Minimum 0.4 mm thickness, min V-2, 80 degree C.	QMFZ2	UL	ILL. 9, ILL.10
27i. Insulation Sheet (Between PCB and CASE), (On L1) (Alternate)	Shenzhen Borsun Industrial Co Ltd	BN-ZD16	Minimum 0.4 mm thickness, min V-2, 115 degree C.	QMFZ2	UL	ILL. 9, ILL.10
27j. Insulation Sheet (Between PCB and CASE), (On L1) (Alternate)	SHENZHEN BORSUN INDUSTRIAL CO LTD	BN-FP	Minimum 0.4 mm thickness, min V-2, 120 degree C.	QMFZ2	UL	ILL. 9, ILL.10
28. PCB	PLOTECH CO LTD	4	V-0, 140 degree C	ZPMV2	UL	
28a. PCB (Alternate)	EISO ENTERPRISE CO LTD	3/6	V-0, 130 degree C	ZPMV2	UL	
28b. PCB (Alternate)	ELEC&ELTEK CO LTD	E3330FL	V-0, 130 degree C	ZPMV2	UL	
28c. PCB (Alternate)	GOLD CIRCUIT ELECTRONICS LTD	D-V0A/T-V0A	V-0, 130 degree C	ZPMV2	UL	
28d. PCB (Alternate)	GOLD CIRCUIT	H	V-0, 130 degree C	ZPMV2	UL	

	ELECTRONICS LTD					
28e. PCB (Alternate)	GUANG DONG ELLINGTON ELECTRONICS TECHNOLOGY CO LTD	ET856/ET866/ET 566	V-0, 130 degree C	ZPMV2	UL	
28f. PCB (Alternate)	NEW ERA ELECTRONICS CO LTD	TC/2M	V-0, 130 degree C	ZPMV2	UL	
28g. PCB (Alternate)	PALWONN ELECTRONICS (SHENZHEN) CO LTD	M2/M3/M5/M8	V-0, 130 degree C	ZPMV2	UL	
28h. PCB (Alternate)	REMAPP INDUSTRIAL CO LTD	RM04TG	V-0, 130 degree C	ZPMV2	UL	
28i. PCB (Alternate)	SHENZHEN KINWONG ELECTRONIC CO LTD	8B/8F	V-0, 130 degree C	ZPMV2	UL	
28j. PCB (Alternate)	TREASURE ELECTRONIC TECHNOLOGY (SHENZHEN) LTD	T-M1	V-0, 130 degree C	ZPMV2	UL	
28k. PCB (Alternate)	PALWONN ELECTRONICS (SHENZHEN) CO LTD	M6	V-0, 105 degree C	ZPMV2	UL	
28l. PCB (Alternate)	APCB Inc (Competitor Printed Circuit Board)	77	V-0, 130 degree C	ANSI/UL 796	UL	
28m. PCB (Alternate)	SUNTAK MULTILAYER PCB CO LTD	STM-4, STM-6	V-0, 130 degree C	ANSI/UL 796	UL	
28n. PCB (Alternate)	ELEC&ELTEK CO LTD	E3330RN	V-0, 130 degree C	ANSI/UL 796	UL	
28o. PCB (Alternate)	PALWONN ELECTRONICS (SHENZHEN) CO LTD	M7	V-0, 130 degree C	ANSI/UL 796	UL	

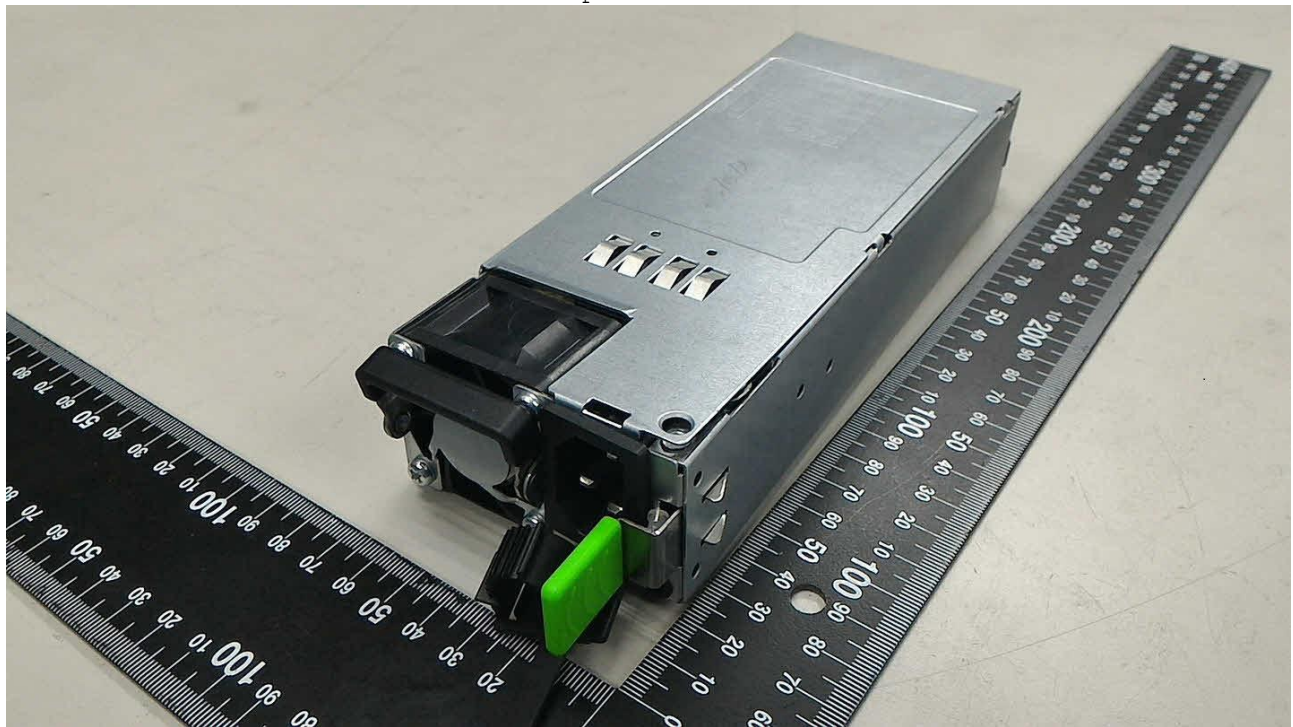
28p. PCB (Alternate)	PLOTECH CO LTD	5/6	V-0, 130 degree C	ANSI/UL 796	UL	
29. Insulation Tubing	3M COMPANY ELECTRICAL MARKETS DIV (EMD)	FP-301VW	0.4mm min., VW-1, 125 degree C (All colors except clear)	YDPU2	UL	
29a. Insulation Tubing (Alternate)	Changyuan Electronics (Shenzeng) Co Ltd	CB-HFT	0.4mm min., VW-1, 125 degree C (All colors except clear)	YDPU2	UL	
29b. Insulation Tubing (Alternate)	Hamburg Industries Co Ltd	H-2	0.4mm min., VW-1, 125 degree C (All colors except clear)	YDPU2	UL	
29c. Insulation Tubing (Alternate)	SUMITOMO ELECTRIC FINE POLYMER INC (Sumitomo Electric Industries Ltd)	SUMITUBE F2 or SUMITUBE F32	VW-1, 125 degree C (All colors except clear)	YDPU2	UL	
29d. Insulation Tubing (Alternate)	TYCO ELECTRONICS CORP (Raychem Corp)	VERSAFIT	0.4mm min., VW-1, 125 degree C (All colors except clear)	YDPU2	UL	
29e. Insulation Tubing (Alternate)	Kai Suh Suh Enterprise Co Ltd	K32	0.4mm min., VW-1, 125 degree C (All colors except clear)	YDPU2	UL	
29f. Insulation Tubing (Alternate)	SUMITOMO ELECTRIC FINE POLYMER INC	717 or Sumitube NHR2	0.4mm min., VW-1, 125 degree C (Pink, yellow, blue, green, red, gray, and black)	YDPU2	UL	
29g. Insulation Tubing (Alternate)	TYCO ELECTRONICS CORP	ZH2	0.4mm min., VW-1, 125 degree C (Black)	YDPU2	UL	
29h. Insulation Tubing (Alternate)	Shenzhen Woer Heat-shrinkable Material Co Ltd	RSFR-HPF	0.4mm min., VW-1, 125 degree C (All colors except clear)	YDPU2	UL	
29i. Insulation Tubing (Alternate)	CHANGYUAN ELECTRONICS (SHENZHEN) CO LTD	CYG-ZHP	0.4mm min., VW-1, 600V, 125 degree C (All except clear)	YDPU2	UL	
29j. Insulation Tubing (Alternate)	Changyuan Electronics	CB-300	0.4mm min., VW-1, 300V,	YDPU2	UL	

	(Shenzeng) Co Ltd		105 degree C (Black)			
29k. Insulation Tubing (Alternate)	Develop Electric Co Ltd	DEV-300	0.4mm min., VW-1, 300V, 105 degree C (All colors)	YDPU2	UL	
29l. Insulation Tubing (Alternate)	Qifurui Electronics Co	QFR-PVC-300	0.4mm min., VW-1, 300V, 105 degree C (Black)	YDPU2	UL	
29m. Insulation Tubing (Alternate)	Qifurui Electronics Co	QFR-PVC-600	0.4mm min., VW-1, 600V, 105 degree C (Black)	YDPU2	UL	
29n. Insulation Tubing (Alternate)	Kai Suh Suh Enterprise Co Ltd	NHS	0.4mm min., VW-1, 300V&600V, 105 degree C (All colors)	YDPU2	UL	
29o. Insulation Tubing (Alternate)	Shenzhen Gaoertai Electyonics Co., Ltd.	GET300	0.4mm min., VW-1, 300V, 105 degree C, (All colors)	YDPU2	UL	
29p. Insulation Tubing (Alternate)	Shenzhen Gaoertai Electyonics Co., Ltd.	GET600	0.4mm min., VW-1, 600V, 105 degree C, (All colors)	YDPU2	UL	
30. Label	Various	Various	Cover with plastic film on print out information side.	PGDQ2 or PGJI2	UL	
31. Earthing / Bonding	Various	Various	Min. No. 18 AWG, insulated with green/yellow color, one end connected to the inlet earthing terminal and mechanically secured by soldering and hooked in before soldering, the other end terminated with double crimp-on copper ring terminal and secured to metal chassis by a dedicated screw and star washer.	AVLV2	UL	
32. Internal plastic part	Various	Various	V-2 minimum	QMFZ2	UL	
33. Heatsink (HS1)	--	--	Aluminum Alloy, Secured to PCB soldered	--	--	ILL. 12
34. Heatsink (HS2)	--	--	Aluminum Alloy, Secured to PCB soldered	--	--	ILL. 13
35. Connectors and Receptacles (secondary SELV circuits)	Various	Various	--	ECBT2, RTRT2	UL	
35a. Connectors and Receptacles (secondary	Various	Various	Metal / Plastic, Copper alloy pins housed in bodies of plastic	QMFZ2	UL	

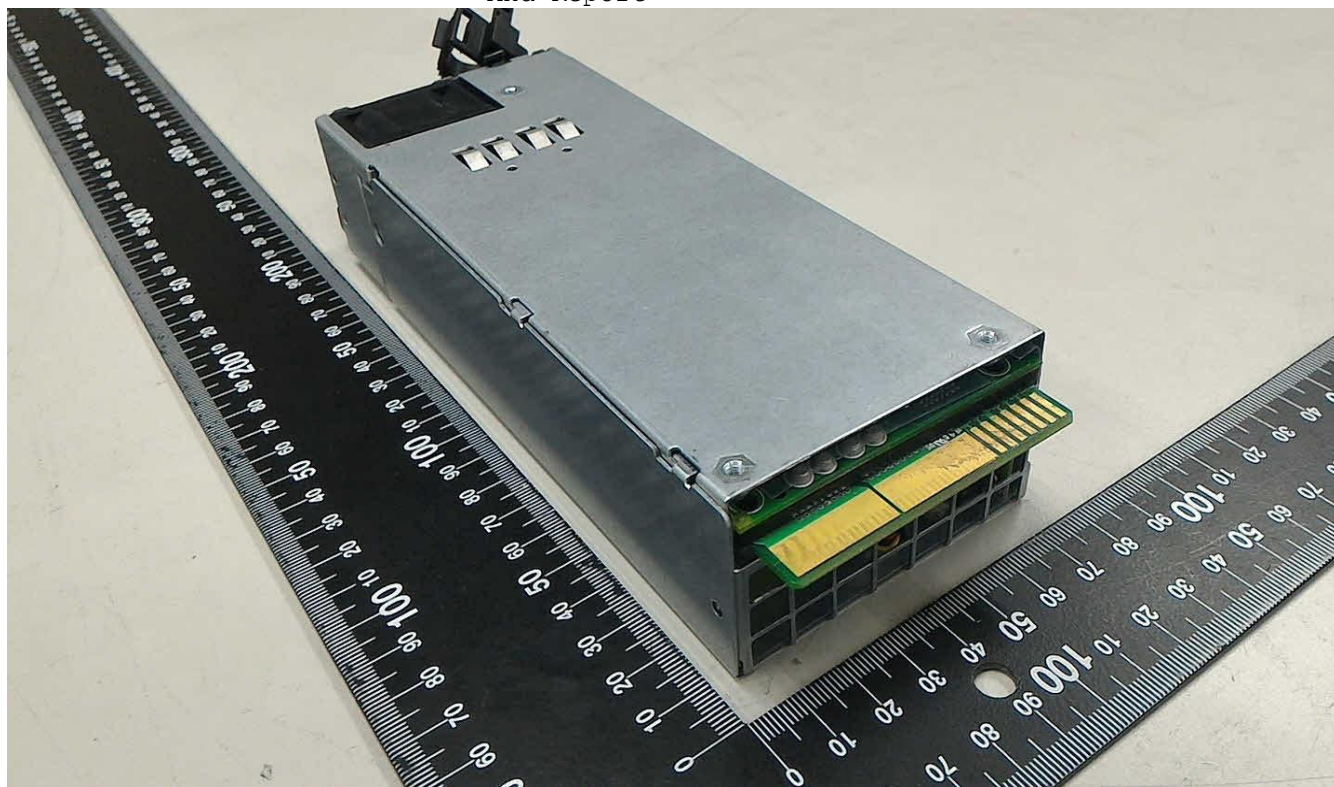
SELV circuits) (Alternate)			rated V-2 minimum			
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Enclosure

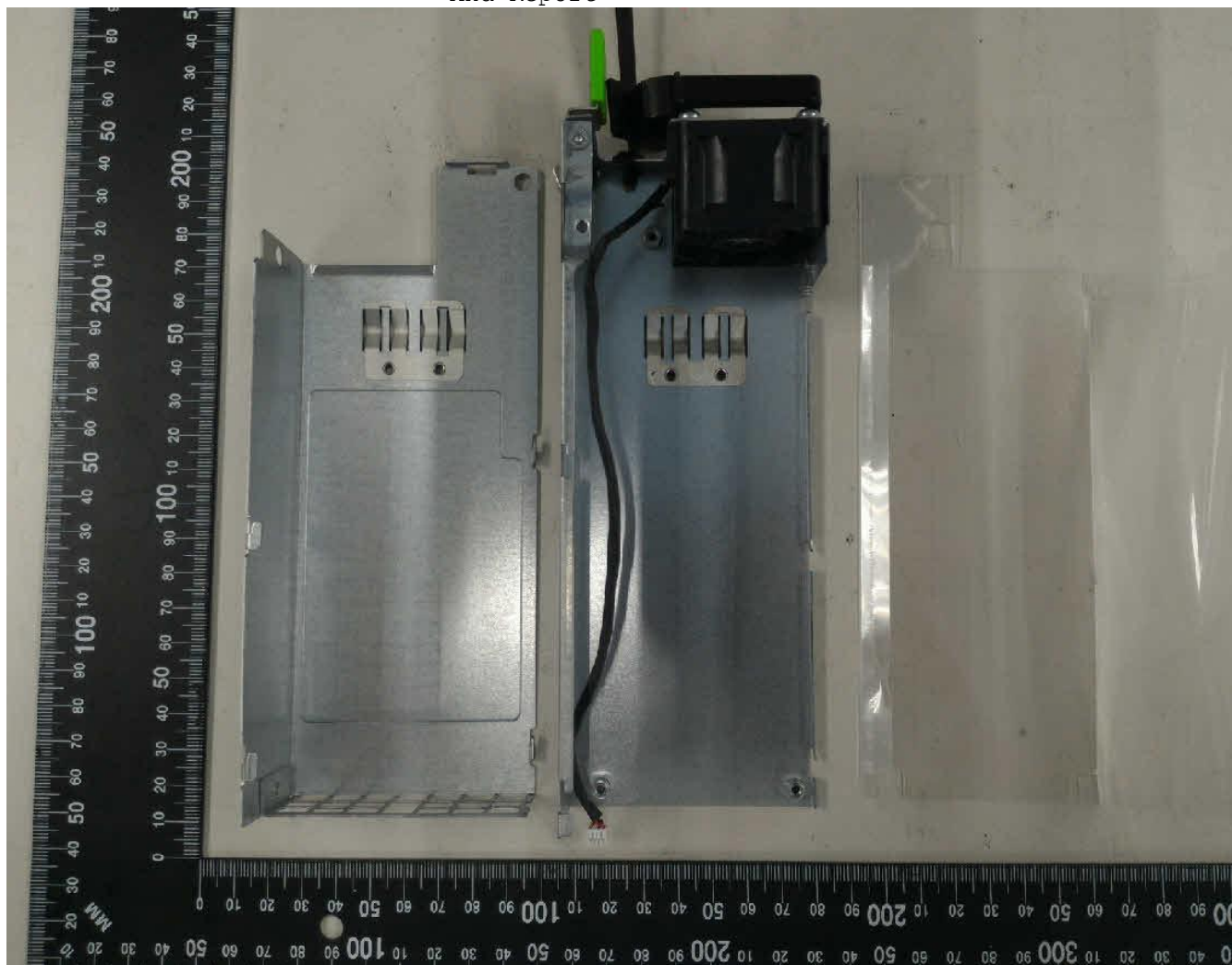
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Figure	FIG. 1	External View-1
Figure	FIG. 2	External View-2
Figure	FIG. 3	Internal View-1
Figure	FIG. 4	Internal View-2
Figure	FIG. 5	Internal View-3
Figure	FIG. 6	PCB Bottom View
Figure	FIG. 7	PCB2, PCB3, PCB4
Figure	FIG. 8	Alternate fan guard shape
Illustration	ILL. 1	Case Dimension
Illustration	ILL. 2	Choke (L1) for PCB1
Illustration	ILL. 3	Choke (L4) for PCB1
Illustration	ILL. 4	Choke (L5) for PCB1
Illustration	ILL. 5	Choke (I403) for PCB4
Illustration	ILL. 6	Transformer (T5) for PCB1
Illustration	ILL. 7	Transformer (T201) for PCB2
Illustration	ILL. 8	Transformer (T401) for PCB4
Illustration	ILL. 9	Insulation Sheet (Between PCB and Case)
Illustration	ILL. 10	Insulation Sheet (On L1)
Illustration	ILL. 11	Insulation Sheet (Between PCB3 and T5)
Illustration	ILL. 12	Heatsink (HS1) for PCB1
Illustration	ILL. 13	Heatsink (HS2) for PCB1 on FSE052, R1CA2801A, FSF037, R1CA2801B
Illustration	ILL. 14	Case (Alternate)
Illustration	ILL. 15	Choke (L5) for Model FSF059, R1CA2551B, FSF065 and R1CA2551C(Alternate)
Illustration	ILL. 16	T401 for Models FSF059, R1CA2551B, FSF065 and R1CA2551C.(Alternate)
Illustration	ILL. 17	T401 for Models FSE052, R1CA2801A, FSF037, R1CA2801B.(Alternate)
Illustration	ILL. 18	T401 for Models FSF059, R1CA2551B, FSF065 and R1CA2551C.(Alternate)
Illustration	ILL. 19	PCB1 Layout (MAIN BOARD)
Illustration	ILL. 20	PCB2 Layout (mounted on PCB1)
Illustration	ILL. 21	PCB4 Layout (mounted on PCB1)
Illustration	ILL. 22	PCB3 Layout (mounted on PCB1)
Illustration	ILL. 23	PCB5 Layout (mounted on PCB1)
Illustration	ILL. 24	PCB1 Layout for Model FSF059, R1CA2551B, FSF065 and R1CA2551C(mainboard)
Illustration	ILL. 25	Model difference



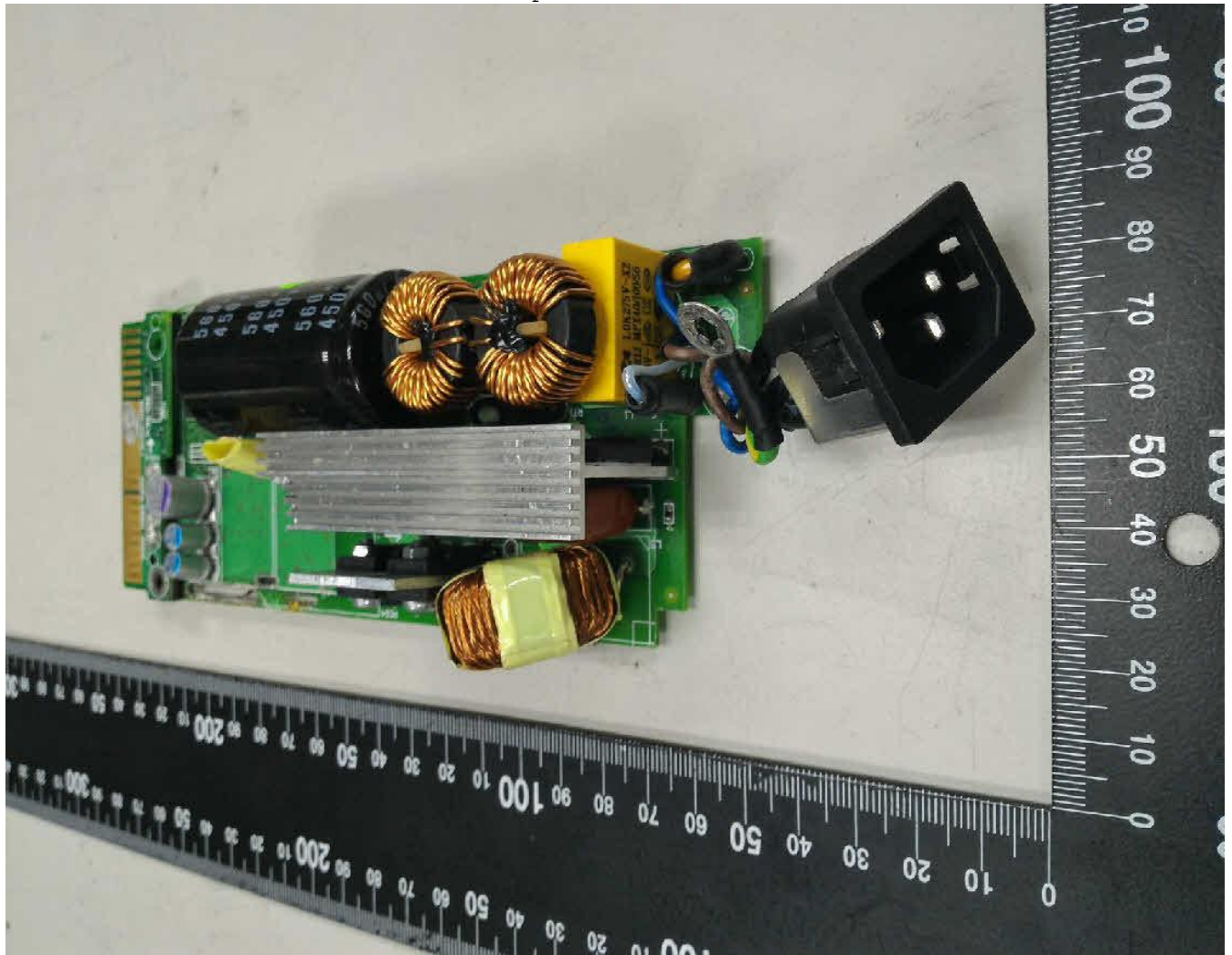
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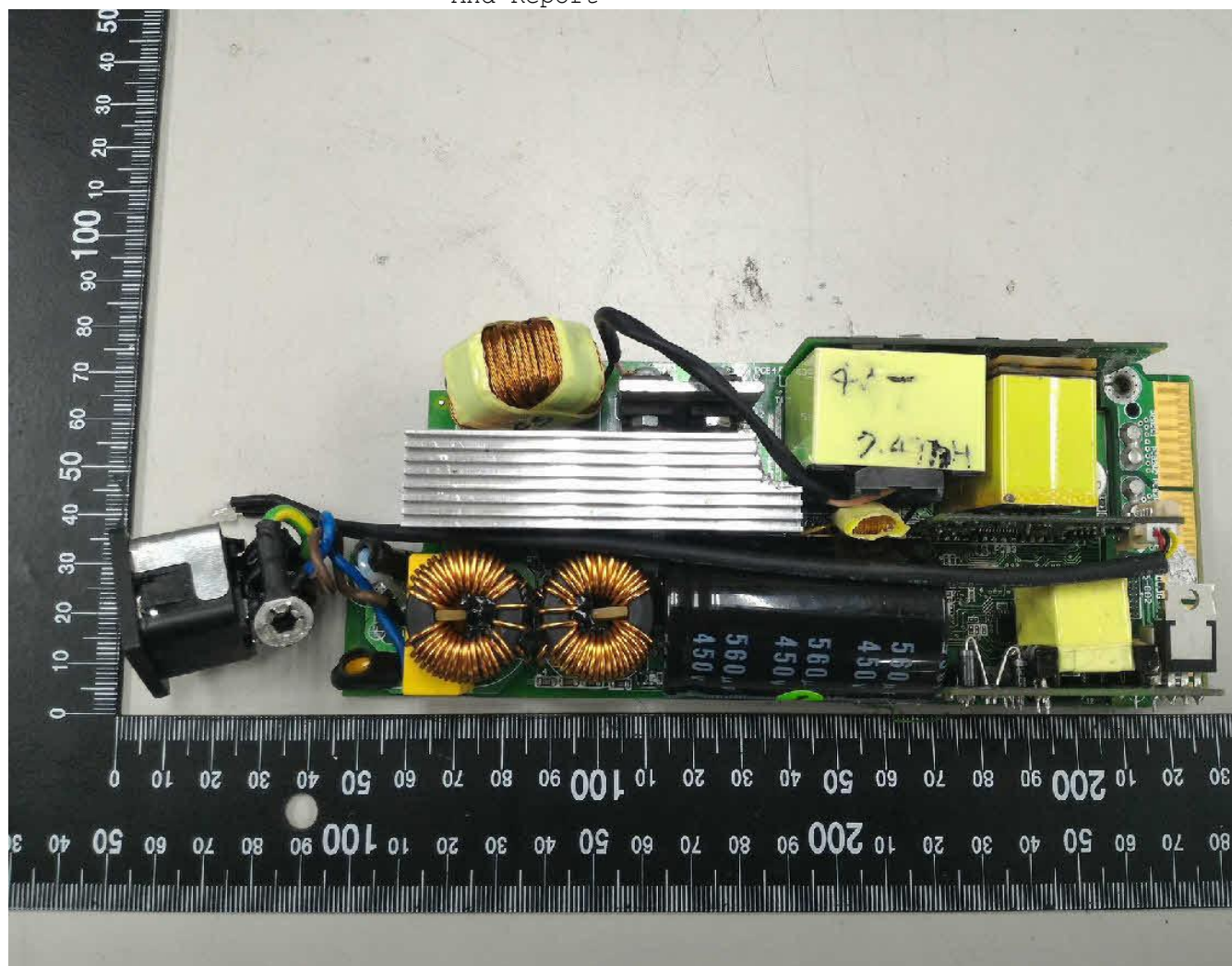
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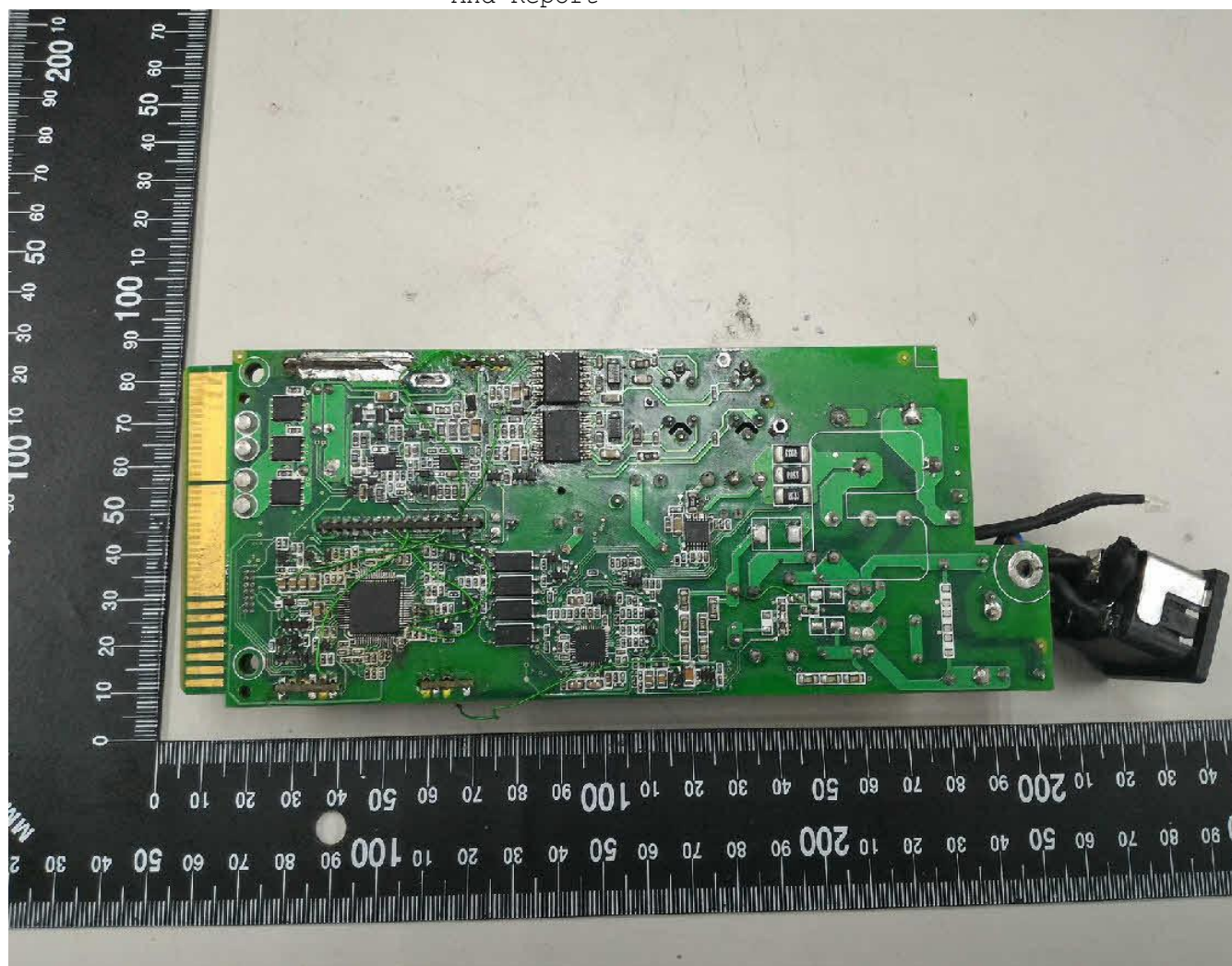
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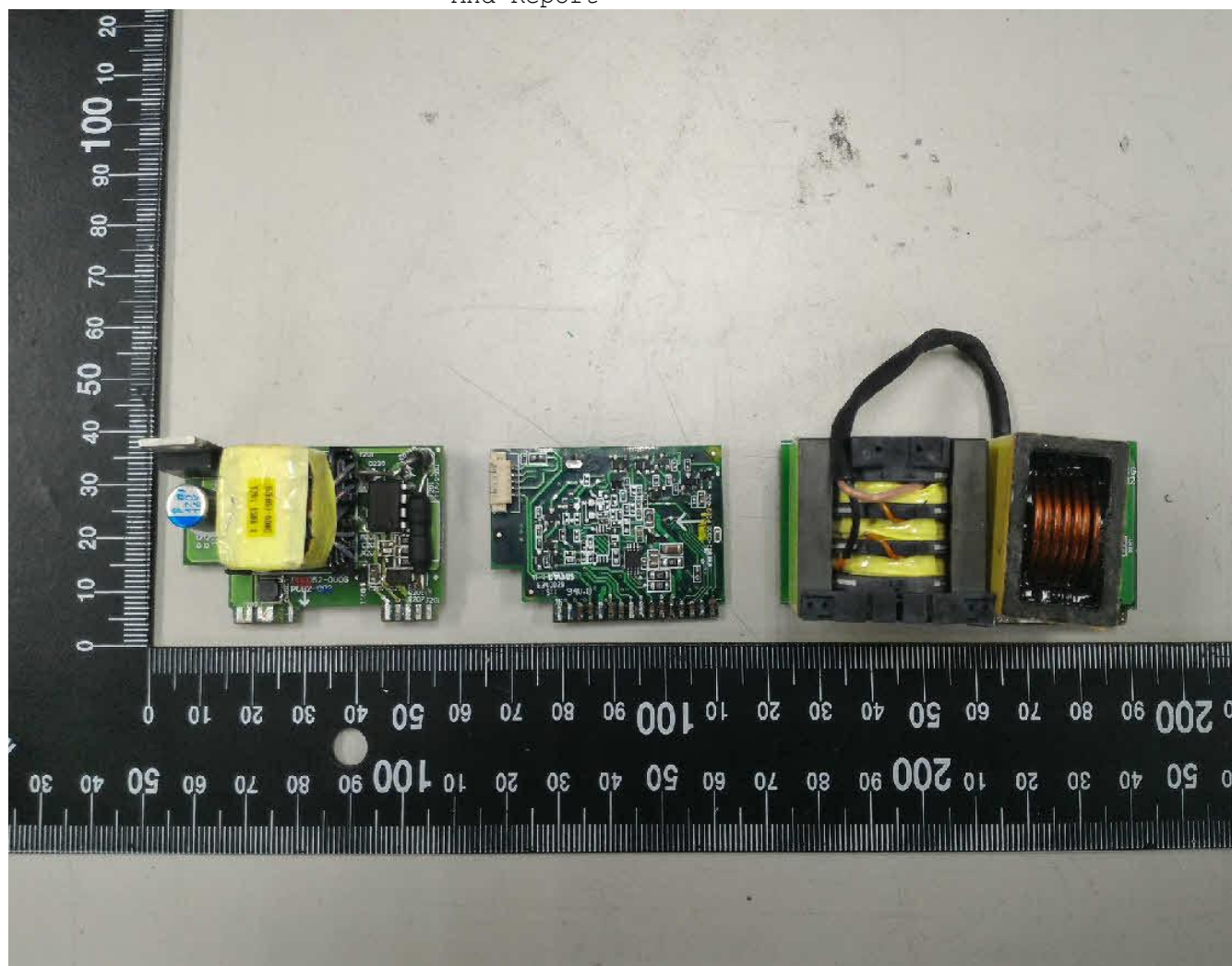
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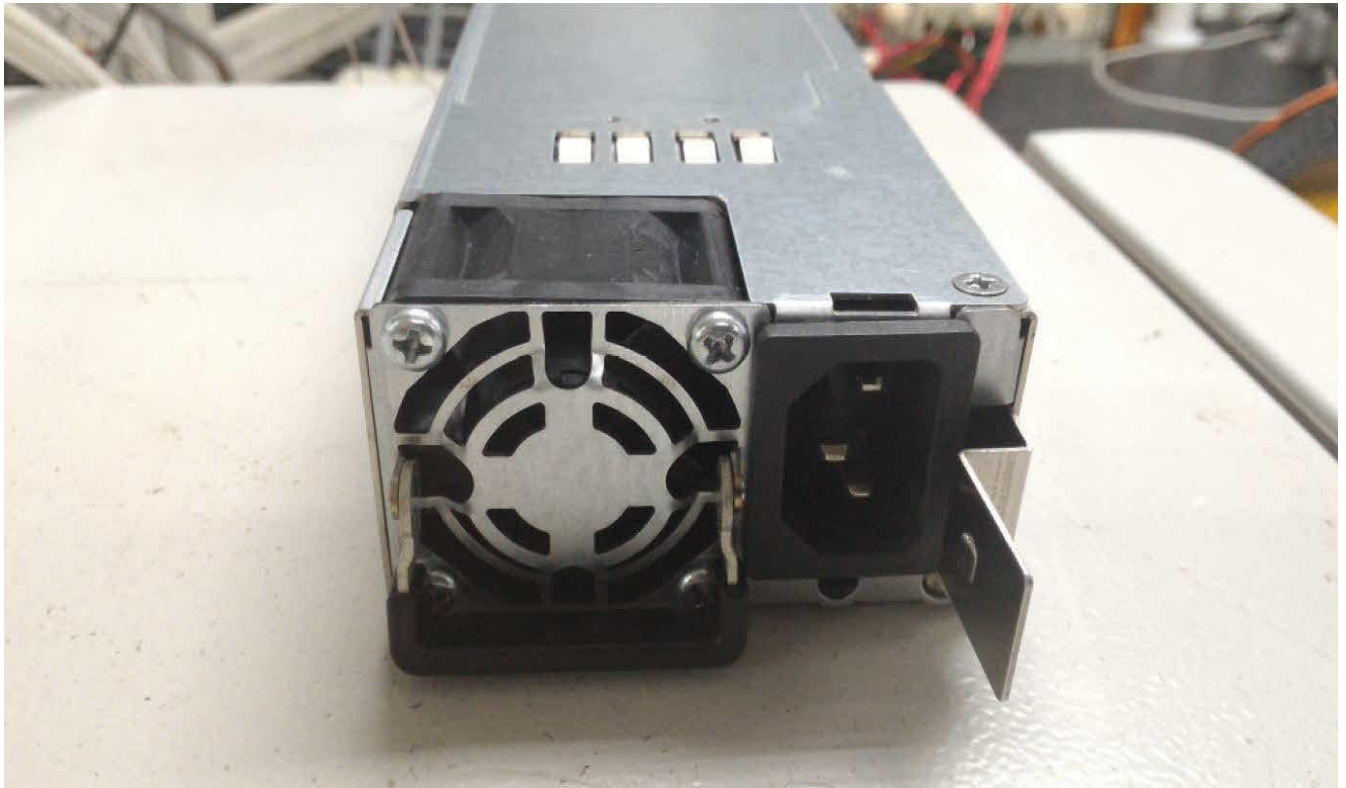
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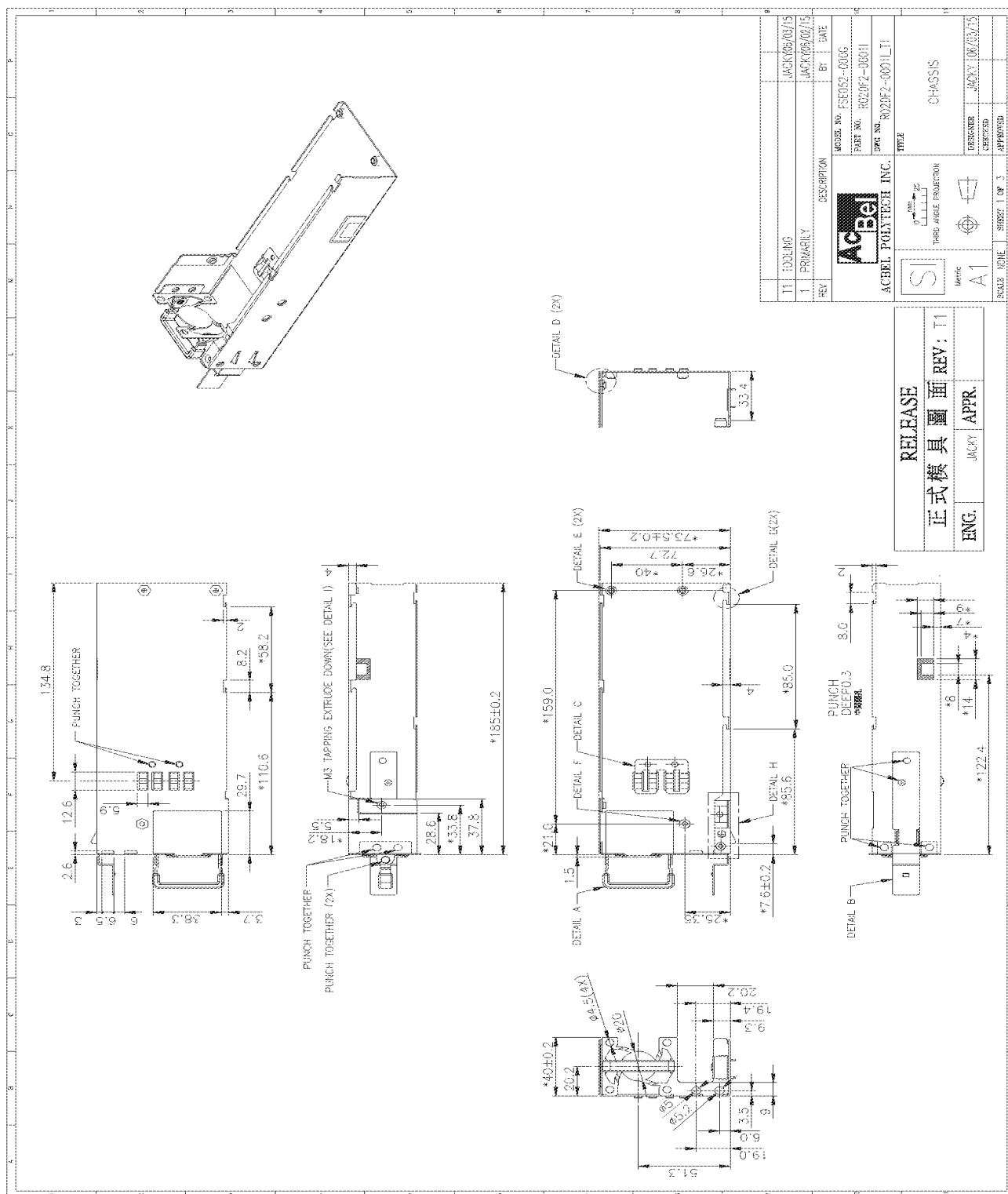
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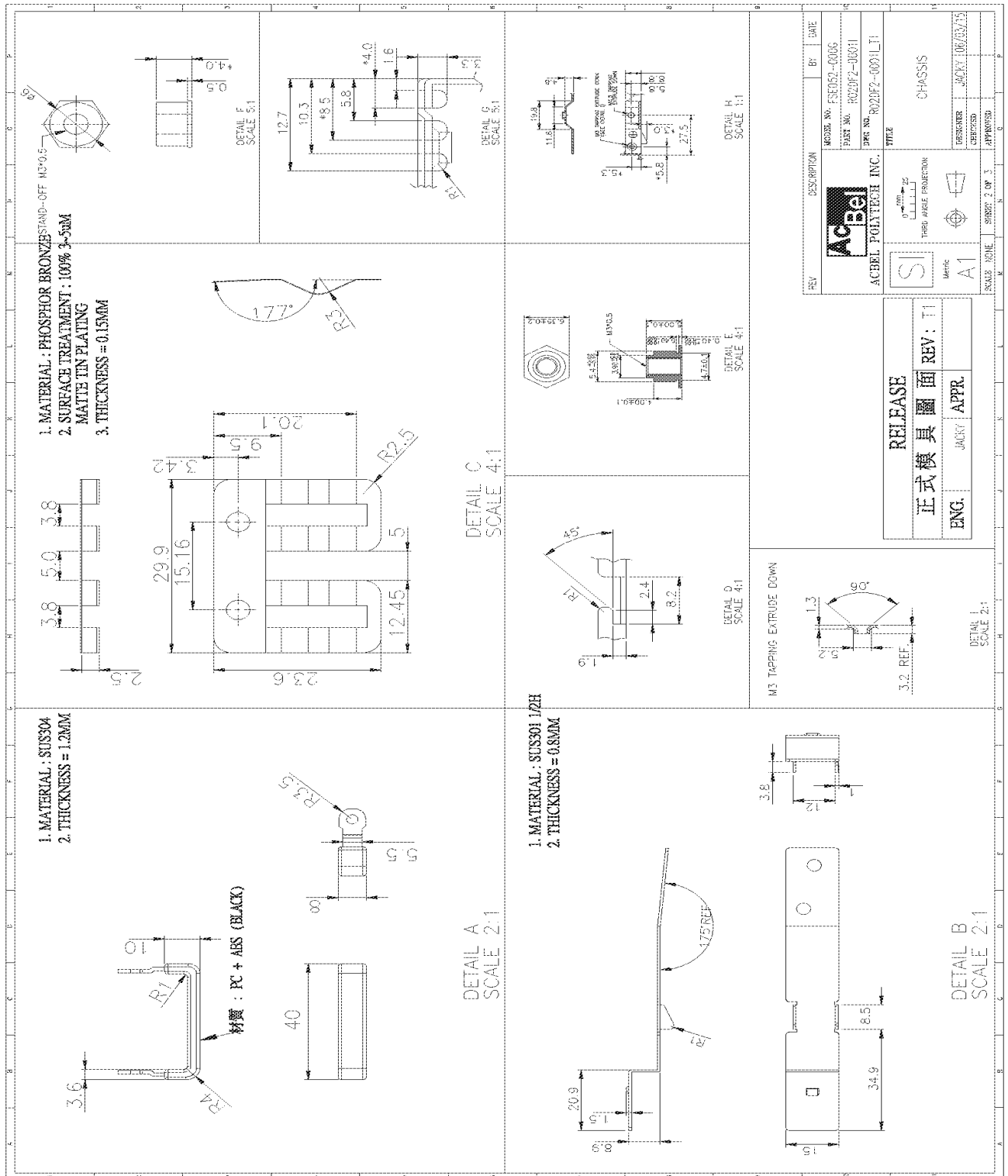
N191893371



N191893372



N191893323



N191893323

ACBEL POLYTECH INC.

Source Control Drawing

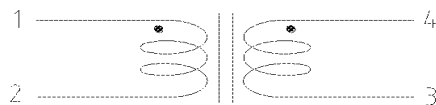
REV: S2

SAFETY P/N: 21Q84 PART NO.: P 21Q84-00011 L1 COMMON MODE CHOKE FSE052-000G

1. MATERIALS' LIST :

Item	Material Name 材料名稱	Manufactory Part No. 製造商品名規格	Manufactory name 製造廠商名稱	Acbel P/N 康舒料號
[1]	CORE OD*ID*HT: 22.3mm*10.0mm *8.0mm	DY191305H AL3500 MIN CASE PBT-RG301(r1) 130℃ FS1905H-1LB AL4200 MIN CASE 6410G5 130℃	DA YOU CO. KINGFA SCI & THCE CO. E171666 FRIENDSHIP CO.NAN YA PLASTICS CO.E130155	P90485-8684IZ1 P90485-8684I
[2]	MAGNET WIRE	POLYURETHANE COATED POLYAMIDE 1UEWN/U & 2UEWN/U MW28-C 130℃ POLYURETHANE COATED POLYAMIDE 1UEWE & 2UEWE MW-28C 130℃	PACIFIC E W & C CO.SHENZHEN. E201757 TAI-I CO. E85640	
[3]	SPACER	KINGBOARD CO. E123995 FR-1 94V-0/KB-3152 130℃ 10.9*8.0*T1.0mm	JIANYOUG CO.	
[4]	SOLDER	SACX0300 SOLDER BAR	ALPHA CO. OR EQUIVALENT.	XT5002-99361A
[5]	SOLDERING FLUX	EF-9301 FLUX	ALPHA CO. OR EQUIVALENT	XT9031-98981A
[6]	EPOXY	3300HF(灰色)	EATTO CO.	XT9041-9943I
[7]	VARNISH	V1630FS 130℃	ELANTASELECTRICALIN SULATION ELANTASPDGINC. E87039	XT9051-9997I

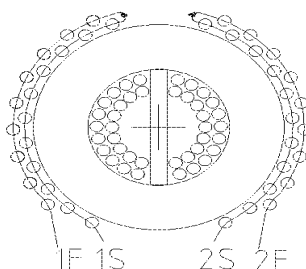
2. SCHEMATIC CIRCUIT :



3. WINDING CONSTRUCTION:

ORDER 順序	S - F 開始 - 結束	WIRE SIZE 線徑	TURN 圈數	NOTES 說明
#1	1 - 2	Φ 0.9	25	整齊循環繞線。
#2	4 - 3	Φ 0.9	25	To wind in good order.

4. WINDING CROSS-SECTIONAL VIEW:

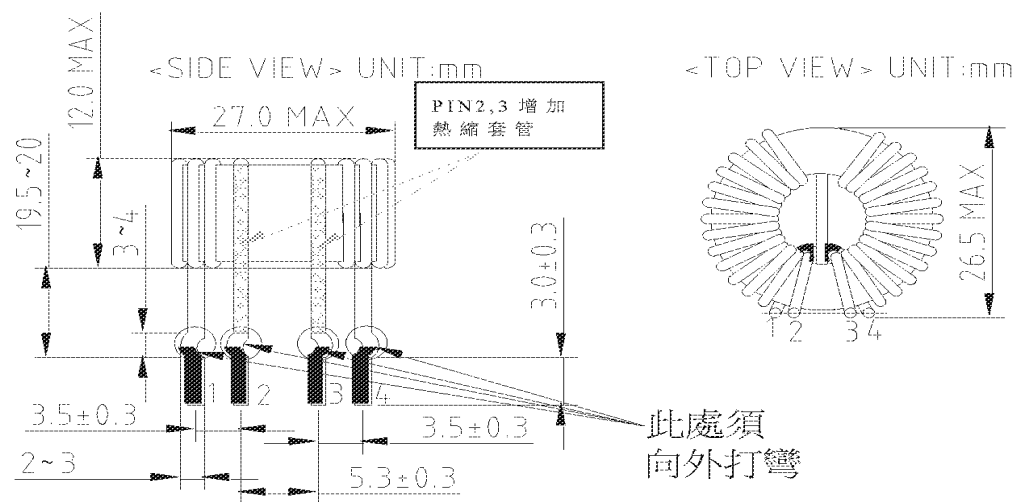


ACBEL POLYTECH INC.

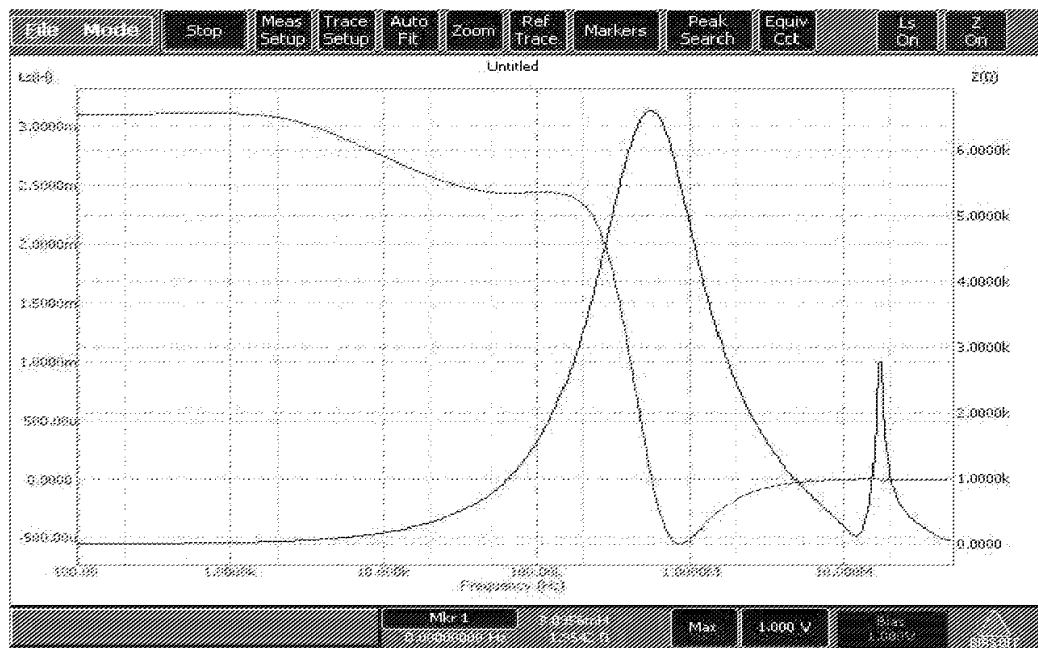
Source Control Drawing

REV: S2

SAFETY P/N: 21Q84 PART NO.: P 21Q84 -0001I L1 COMMON MODE CHOKE FSE052-000G



7. IMPEDANCE CURVE (Reference @ WK6500B)



ACBEL POLYTECH INC.

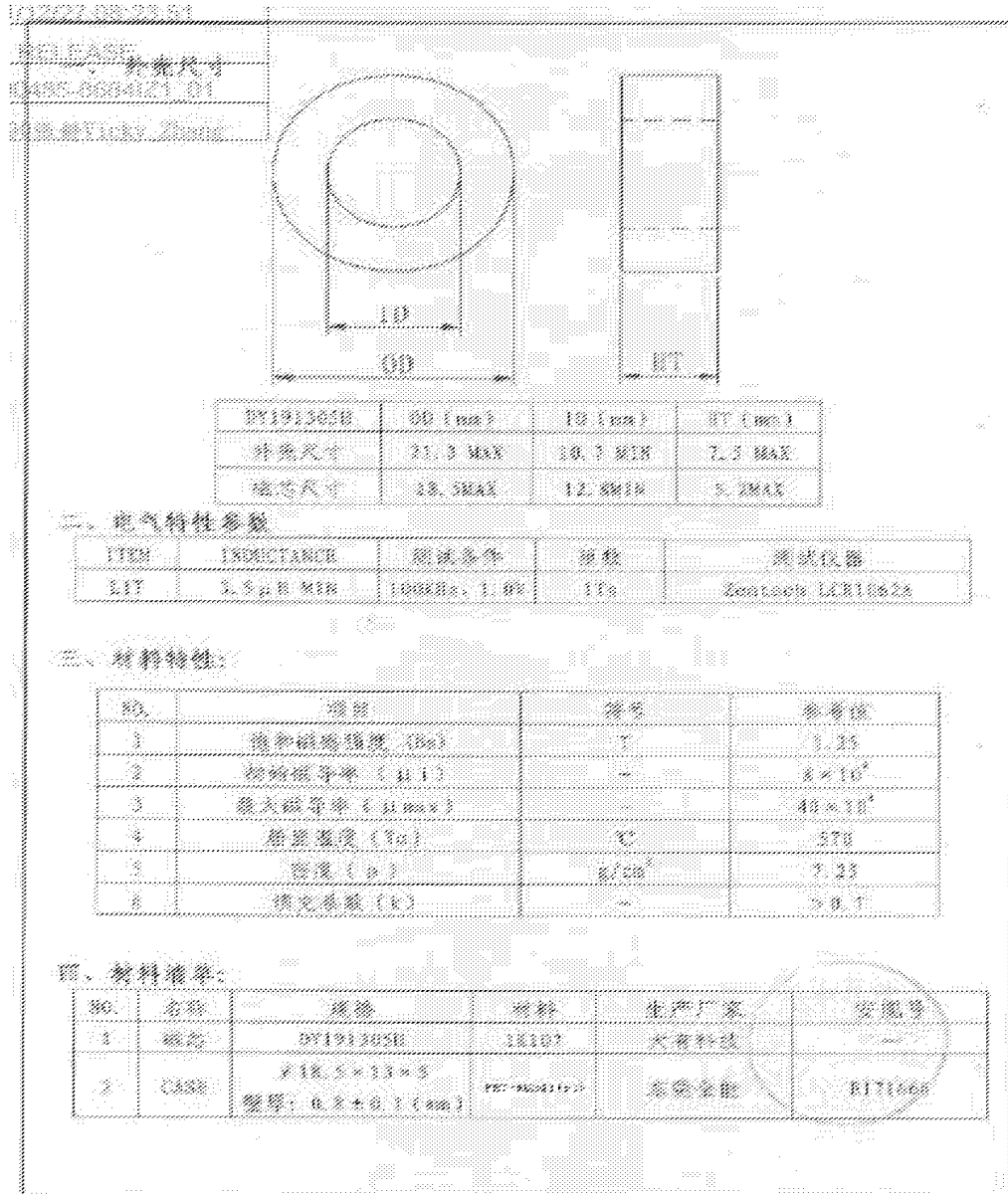
Source Control Drawing

REV: S2

SAFETY P/N: 21Q84 PART NO.: P 21Q84 -0001I L1 COMMON MODE CHOKE FSE052-000G

附件一: CORE SPEC:

1. DY191305H (R90485-8684IZ1)



ACBEL POLYTECH INC.

Source Control Drawing

REV: S2

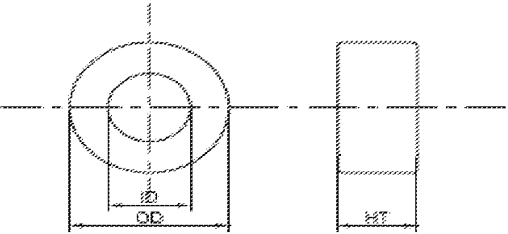
SAFETY P/N: 21Q84 PART NO.: P 21Q84 -00011 L1 COMMON MODE CHOKE FSE052-000G

2. FS1905H-1LB (R90485-86841)

SPECIFICATION FOR PRODUCTS

CUST. NO.	FS1905H-1LB	OUT DWG NO.	FS-KANGSHU018C
ITEM NO.	FS1905H-1LB	DATE	12/15/2011
PART NO.	FS1905H-1LB	REV. A/1(C)	PAGE: 1/2

1. OUT LINE DIMENSION.



Bored Dimension (mm)	
OD	22.5MAX
ID	18.0MIN
HT	8.0MAX
Bore Core (mm)	
OD	19.0±0.2
ID	13.0±0.2
HT	4.5±0.2

2. WINDING & ELECTRONICS: (100kHz, IV)

ITEM	START	FINISH	MATERIAL	TURNS	COLOR	AL
1	1	1	1	1TS	Black	4.2uH MIN

3. TEST INSTRUMENTS CHROMA METER: L.C.R1063A

4. MATERIAL LIST:

NO	ITEM	MATERIAL	SUPPLIER	UL NO.	CLASS
1	RIBBON	PT-3	HITACHI CO. LTD		
2	CASE	6410G5 (Min 0.7mm thick)	NAN YA PLASTICS CORP PLASTICS 4TH DIV	E130155	V-0
3	SPONGE	SM-55	INDAC CORPORATION		

APPROVED	RECHECKED	CHECKED	DRAWN
 2011-12-15 朱文輝	 2011-12-15 許文輝	 2011-12-15 陳文輝	 2011-12-15 許文輝

---END---

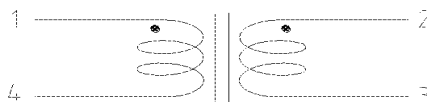
ACBEL POLYTECH INC.

Source Control Drawing

REV: S3

SAFETY P/N: 21011 PART NO.: R 21011 -00021 L1,L4 COMMON MODE CHOKE FSD043-030G

1. SCHEMATIC CIRCUIT :



2. MATERIALS' LIST :

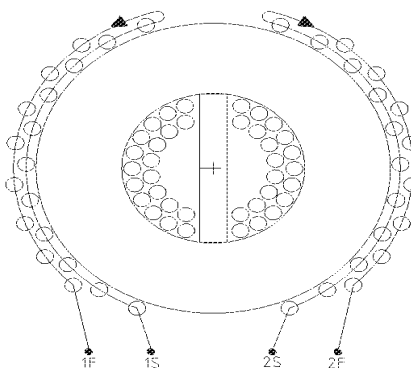
[1] CORE	FS1905H-1LB AL4200 MIN	FRIENDSHIP CO.
	CASE 6410G5 130°C	NAN YA PLASTICS CO.E130155
	11301850130050731W12	BN HONG CO.
	CASE PBT3080G20 130°C	
	OD*ID*HT: 21.1mm*10.9mm*7.3mm	
[2] MAGNET WIRE	POLYURETHANE COATED POLYAMIDE	PACIFIC E W & C CO.SHENZHEN.
	1UEWN/U & 2UEWN/U MW28-C 130°C	E201757
	POLYURETHANE COATED POLYAMIDE	TAI-I CO. E85640
	1UEWE & 2UEWE MW28-C 130°C	
[3] SPACER	FR-1 94V-0/KB-3152 130°C	KINGBOARD CO. E123995
	X90880-86121J	JIANYOU CO.
	10.6*7.0*T1.6mm	
[4] SHRINK TUBE	102 125°C	CHANGYUAN CO. E180908
	NHR2 125°C	SUMIPAC CO.E48762
[5] EPOXY	3300HF AD-3B	EATTO CO. JASDI CO.

Thermal Class: B

3. WINDING CONSTRUCTION:

ORDER 順 序	S - F 開始 - 結束	WIRE SIZE 線 徑	TURN 圈 數	NOTES 說 明
#1	1 - 4	Φ 1.0	19	整齊循環繞線。
#2	2 - 3	Φ 1.0	19	To wind in good order.

4. WINDING CROSS-SECTIONAL VIEW:



ACBEL POLYTECH INC.

Source Control Drawing

REV: S3

SAFETY P/N: 21011 PART NO.: R 21011 -00021 L1,L4 COMMON MODE CHOKE FSD043-030G

5. ELECTRICAL REQUIREMENTS:

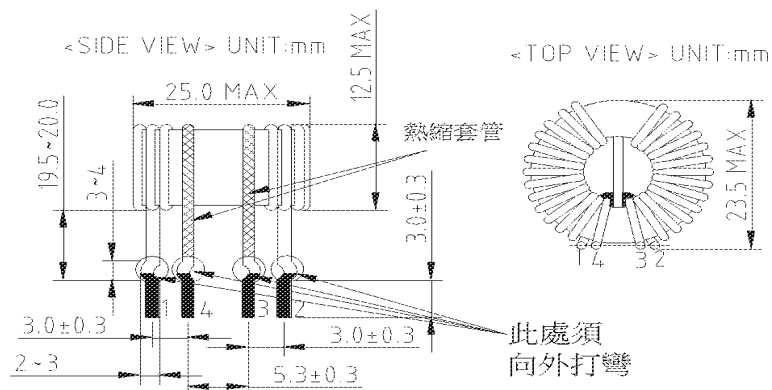
- [1] INDUCTANCE @100 KHZ, 0.5VRMS, L(1-4)=L(2-3)=1.26mH MIN.
(兩組之感量誤差須在±2% 以內.)
- [2] DCR @20℃ R(1-4)=(2-3)=0.02Ω MAX.
- [3] POLARITY @100 KHZ, 0.5VRMS, L(1-3)=5.0mH MIN.SHORTED LEADS 4 & 2.
- [4] HI-POT 適用於生產線 (1-4) TO (2-3).....1800Vac, 3 SEC, 1 mA
WINDING TO CORE.....1800Vac, 3 SEC, 1mA
HI-POT 適用於實驗室 (1-4) TO (2-3).....1800Vac, 60 SEC, 1 mA
WINDING TO CORE.....1800Vac, 60 SEC, 1mA

6. NOTES:

- [1] CORE 先用 1.6±0.1mm 寬隔板等分成兩半,隔板須放置於 CORE 正中央.
To compartmentalize the core into two part with 1.6±0.1mm spacer.
- [2] 兩組對稱繞線 19 圈,分兩層繞制.第一層 11 圈,第二層 8 圈.
Number of turn's equals of times through core, Turns of both winding must be equal. The first layer should be 11turns; the second layer should be 8 turns.
- [3] PIN3 及 PIN4 出線須加裝熱縮套管,如圖所示.<此套管須串入線包內側>
The pin3 and pin4 must be sleeved with shrink tube.
- [4] 入出線須打彎,打彎方式如圖所示.
The part must kink, refer to Figure attached below.
- [5] 出入線須點 EPOXY 固定.
To fix the start and finish wire with epoxy.
- [6] 臥式,PIN 長 3.0±0.3mm(自成品最低點算起).
The length of pins are 3.0±0.3mm(Measure from the bottom of the part).
- [7] PITCHES 如圖示,整腳以 PCB 為準.
Pitches and marking are shown as figure.
- [8] 成品外圍尺寸限制如圖示.
The dimension of the part is shown as figure

以上 SCD 未明確定義之其餘共同性標準請依康舒<<磁性元件技術規範>>為準作業.

SCD is not well defined above the rest by AcBel common standards, please <<Magnetic Components Technical Specifications>> subject to operating.



ACBEL POLYTECH INC.

Source Control Drawing

REV: S2

SAFETY P/N: 21011 PART NO.: R 21011 -00021 L1,L4 COMMON MODE CHOKE FSD043-030G

附件一: FS1905H-1LB CORE SPEC:

1. FS1905H-1LB(P90485-8684IR)

SPECIFICATION FOR PRODUCTS

CUST	客户		OUT DWG NO.	FS-KLANGSHU018C																			
ITEM	FS1905H-1LB		DATE	08/11/2011																			
PART NO.			REV:A/0	PAGE:1/2																			
1. OUT LINE DIMENSION:																							
				<table border="1"> <tr> <th colspan="2">Bored Dimension (mm)</th> </tr> <tr> <td>CD</td> <td>22.3MAX</td> </tr> <tr> <td>ID</td> <td>10.0MIN</td> </tr> <tr> <td>HT</td> <td>8.0MAX</td> </tr> <tr> <th colspan="2">Bore Core (mm)</th> </tr> <tr> <td>CD</td> <td>19.0±0.2</td> </tr> <tr> <td>ID</td> <td>13.0±0.2</td> </tr> <tr> <td>HT</td> <td>4.3±0.2</td> </tr> </table>				Bored Dimension (mm)		CD	22.3MAX	ID	10.0MIN	HT	8.0MAX	Bore Core (mm)		CD	19.0±0.2	ID	13.0±0.2	HT	4.3±0.2
Bored Dimension (mm)																							
CD	22.3MAX																						
ID	10.0MIN																						
HT	8.0MAX																						
Bore Core (mm)																							
CD	19.0±0.2																						
ID	13.0±0.2																						
HT	4.3±0.2																						
2.WINDING & ELECTRONICS: (100kHz, IV)																							
ITEM	START	FINISH	MATERIAL	TURNS	COLOR	AL																	
/	/	/	/	1TS	Black	4.2xH MIN																	
3.TEST INSTRUMENTS CHROMAMETER : L.C.R.1062A																							
4.MATERIAL LIST:																							
NO	ITEM	MATERIAL	SUPPLIER			UL NO.	CLASS																
1	RIBBON	FT-3	HITACHI CO.,LTD																				
2	CASE	PA66	HONG RONG PLASTIC STEEL MOLD CO.,LTD																				
3	SPONGE	SM-35	INOAC CORPORATION																				
APPROVED		RECHECKED		CHECKED		DRAWN																	

ACBEL POLYTECH INC.

Source Control Drawing

REV: S3

SAFETY P/N: 21Q79	PART NO.: X 21Q79 -0001I	L5	PFC CHOKE	FSE052-000G
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1. MATERIALS' LIST :

Item	Material Name 材料名稱	Manufactory Part No. 製造商品名規格	Manufactory name 製造廠商名稱	Acbel P/N 康舒料號
[1]	CORE TYPE: OD*ID*HT: 27.69mm*14.1mm*11.99mm	SUPER-MSS MS106060-2 AL 75±8%	ARNOLD CO.	X90485-9503IA
		SENDUST CS270060 AL 75±8%	CSC CO.	X90485-9503IL1
[2]	MAGNET WIRE	POLYURETHANE COATED POLYAMIDE 1UEWN/U MW28-C 130℃ 2UEWN/U MW28-C 130℃	PACIFIC E W & C CO.SHENZHEN. E201757	
		POLYURETHANE COATED POLYAMIDE 1UEWE MW-28C 130℃ 2UEWE MW-28C 130℃	TAI-I CO. E85640	
		POLYURETHANE COATED POLYAMIDE 1UEW-NY MW28C 130℃ 2UEW-NY MW28C 130℃	PROSPERITY CO. E196072	
[3]	PCB BASE	KINGBOARD CO. E123995 FR-1 94V-0/KB-6150 130℃ 22*11*11.0-2HOLE	JIANYOUG CO.	料號待申請
[4]	TUBE	TEFLON TUBE CB-TT-L 200℃	CHANGYUAN CO. E180908	
		TEFLON TUBE TFL 200℃	GREAT HOLDING CO. E156256	
[5]	INSULATION TAPE	POLYESTER TAPE 3M#1350F-1 130℃ GROUPII	3M CO. E305006 OR EQUIVALENT	
		CT-280 130℃ GROUPI	JINGJIANG YAHUA CO. E165111 OR EQUIVALENT	
[6]	EPOXY	3300HF(灰色)	EATTO CO.	XT9041-9943I
[7]	SOLDER	SACX0300 SOLDER BAR	ALPHA CO. OR EQUIVALENT.	XT5002-9936IA
[8]	SOLDERING FLUX	EF-9301 FLUX	ALPHA CO. OR EQUIVALENT	XT9031-9898IA
[9]	VARNISH	V1630FS 130℃	ELANTASELECTRIC ALINSULATION ELANTAS PDG INC. E75225	XT9051-9997I

ACBEL POLYTECH INC.

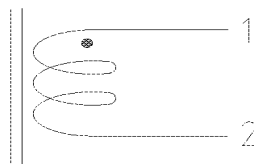
Source Control Drawing

REV: S3

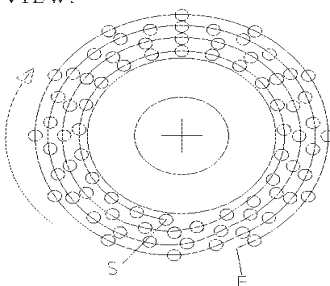
SAFETY P/N: 21Q79 PART NO.: X 21Q79 -0001I L5 PFC CHOKE

FSE052-000G

2. SCHEMATIC CIRCUIT :



3. WINDING CROSS-SECTIONAL VIEW:



4. WINDING CONSTRUCTION :

ORDER 順 序	S - F 開 始 - 結 束	WIRE SIZE 線 徑	TURN 圈 數	NOTES 說 明
#1	1 - 2	(Φ 0.3*10)*1	80	[1][2]

說明 :

- [1] 整齊循環繞線,分四層繞制,第一層繞 27 圈,第二層繞 23 圈,第三層繞 19 圈,第四層繞 10TS.(每層允許圈數誤差 ± 1 TS).繞線工法如圖示.

Neat circulation winds the wind, divide into four layers to wind, the first layer should be 27turns, the second layer should be 23turns, the three layer should be 19turns, the four layer should be 10turns.(Each coat to allow ring number offset ± 1 TS)

- [2] 入出線須加 TUBE,TUBE 靠 PIN 端須與本體最低點齊平,另一端伸入線包內環至少 2mm.如圖所示

To fix the start and finish wire must be sleeved with tube. The tube that is flush with the finished product. Shown as figure, and the tube must be extended into winding 2.0mm min.

5. ELECTRICAL REQUIREMENT :

- [1] DCR @20°C $R(1-2) = 0.09 \Omega$ MAX.
 [2] INDUCTANCE @100KHZ, 0.5VRMS, $L(1-2) = 432.0 \mu H$ MIN
 [3] Q @100KHZ, 0.5VRMS, $Q(1-2) = 75$ MIN
 [4] LAYER SHORT TEST: 1200V(REF)

ACBEL POLYTECH INC.

Source Control Drawing

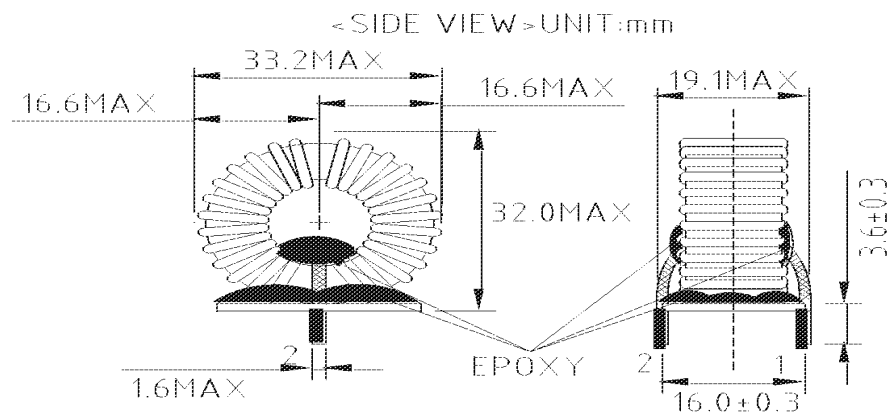
REV: S3

SAFETY P/N: 21Q79 PART NO.: X 21Q79 -0001I L5 PFC CHOKE

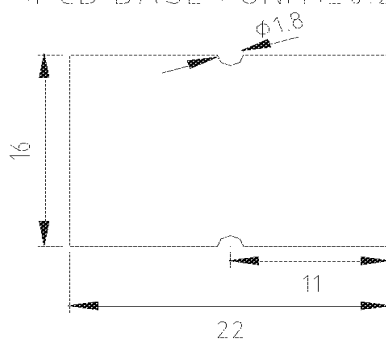
FSE052-000G

6. ASSEMBLY NOTES :

- [1] 成品入出線及 PCB BASE 與線包間須點 EPOXY ,並把 TUBE 固定.如圖所示
To fix the start and finish wire which sleeved with tube and PCB BASE fix it with epoxy..
Shown as figure.
- [2] 出入線沾錫后,最大完成外徑為 1.6mmMAX.
After tinned, the OD is 1.6mm max
- [3] 成品須真空含浸.(凡立水不可稀釋)
The part must be varnished in the vacuum.
- [4] PIN 長自成品之最低點量起 3.6±0.3mm.
The length of pins are 3.6±0.3mm. (Measured from the bottom of the part)
- [5] PITCHES 如圖示.整腳以 PCB 為準.
Pitches are shown as figure.
- [6] 成品外圍尺寸限制如圖示.
The dimension of the part is shown as figure.
- [7] 以上 SCD 未明確定義之其餘共同性標準請依康舒 <<磁性元件技術規範>>為準作業.
SCD is not well defined above the rest by AcBel common standards, please <<Magnetic Components Technical Specifications>> subject to operating.



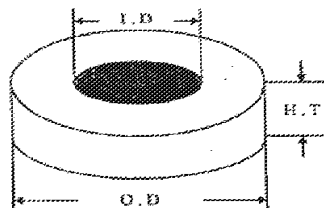
<PCB BASE >UNIT:±0.2mm



ACBEL POLYTECH INC.	Source Control Drawing	REV: S3
SAFETY P/N: 21Q79 PART NO.: X 21Q79 -0001I L5 PFC CHOKE		FSE052-000G

7. CORE SPEC: (ARNOLD, CSC)

[1] 尺寸 Dimension (mm)(参考 ARNOLD. After coating)



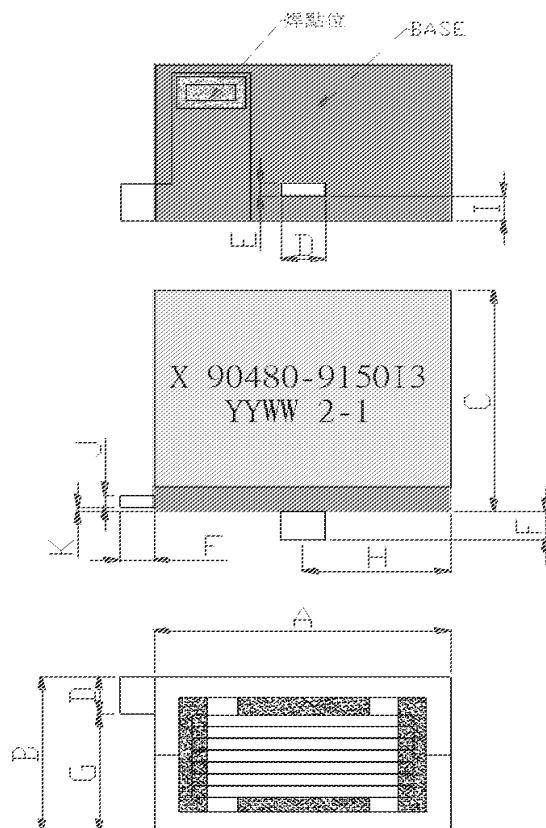
OD	26.92±0.78
ID	14.73±0.64
HiGH	11.18±0.81

[2] 磁芯參數 Core set parameters

Manufactory name	ARNOLD	CSC	Unit
Effective magnetic path length (Le)	63.52	63.5	mm
Effective cross-sectional area(Ae)	65.4	65.4	mm ²
Effective volume (Ve)	4154	4154	mm ³
Weight(approx) (Wt)	25.5	25.5	g/pcs

[3] 電氣特性 Electrical characteristics

Manufactory name	ARNOLD	CSC	Test conditions	Test meter
Inductance (AL)	75nH/N ² ±8%	75nH/N ² ±8%	100kHz, 0.5V, 10Ts, 25±3℃	HP-4284A

SPECIFICATION FOR APPROVAL**HF
COMPLIANT****Mechanical Specification:****Dimensions (Unit: mm)**

A	30.0 ± 1.0
B	15.9 ± 0.6
C	28.0 max
D	4.5 ± 0.3
E	1.6 ± 0.3
F	3.5 ± 0.5
G	11.4 ± 0.5
H	15.0 ± 0.5
I	3.0 ± 0.5
J	1.5 ± 0.2
K	0.5 ± 0.2

REMARK**(1) MARKING BLACK**

"YYWW"中YY表示生产年份，
WW表示生产周期，2-1表示版本
(内部)

NOTE:

1. 使用扁平铜线繞制
2. 組裝CORE須包2圈#1388Y-1 or CT-280膠帶

MAGIC TECHNOLOGY / TAIPEI / TEL: 886-2-82273366 / FAX: 886-2-82273377
CHINA FACTORY / TEL: 86-755-27222227 / FAX: 86-755-27222476

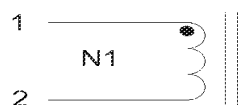
SPECIFICATION FOR APPROVAL

HF
COMPLIANT

Winding Construction Insulation:

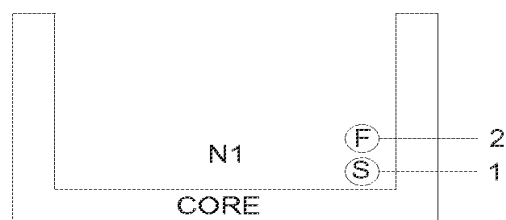
NO.	Terminal start/end	Wire Turns	Turns	Insulation Tape	Notes
N1	1-2	SFT-EI/ANW1.6*4.5	3.5		密繞

Schematic:



● INDICATE WINDING START

Winding Stack UP:



TOP

PIN SIDE

SPECIFICATION FOR APPROVAL					
HF COMPLIANT					
Materials (All RoHS Compliant):					
MATERIAL IDENTIFICATION					
NO.	NAME	MATERIAL	RATING	UL NO.	MANUFACTURER
1	FERRITE C CORE	TP40 U29.7*24*7.8T	N/A	N/A	TAK
2	BASE	PM-9630	155℃	E41429	SUMITOMO BAKELITE CO., LTD.
3	ALLOY R CORE	R14*9.6-75	N/A	N/A	ACE
		S14096P-060	N/A	N/A	KDM
		S75 R14*9.6	N/A	N/A	MAGIC
4	WIRE	polyester-imide overcoated with polyamide-imide enamelled rectangular copper wire, class 220	220℃	E318511	WELL ASCENT ELECTRONIC(GANZHOU) CO., LTD
5	TAPE	POLYESTER TAPE 25µm (YELLOW)3M #1388Y-1	130℃	E17385	3M COMPANY
		CT-280		E165111	JINGJIANG YAHUA PRESSURE SENSITIVE GLUE CO LTD
6	EPOXY	3300	N/A	E218090	DONGGUAN EATTO ELECTRONIC MATERIAL CO LTD
7	VARNISH	V1630FS	155℃	E87039	ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC
Safety and Compliance Requirements: 1) The transformer must meet RoHS Directive 2002/95/EC 2) FBP-RHS-500 MAGIC TECHNOLOGY Banned Substances 3) All materials must meet compliant with UL class B (130°) temperature rating. 4) Materials on this product comply with Sumitomo CIS.04 insulation system supplier must manufacture per UL recognized insulation system that list these materials					

MAGIC TECHNOLOGY / TAIPEI / TEL: 886-2-82273366 / FAX: 886-2-82273377
 CHINA FACTORY / TEL: 86-755-27222227 / FAX: 86-755-27222476

ACBEL POLYTECH INC.

Source Control Drawing

REV:S2

SAFETY P/N: 25P07 PART NO.: P 25P07 -00011 T5 CURRENT TRANSFORMER FSE052-000G

1. MATERIALS' LIST :

Item	Material Name 材料名稱	Manufactory Part No. 製造商品名規格	Manufactory name 製造廠商名稱	Acbel P/N 康舒料號
[1]	CORE: OD*ID*HT: 10.0*4.25* 3.8mm	JPH-7 T9*3-5-C AL2470±25%	A-CORE CO.	X90485-9609ID1
		A07 T9*5*3-C AL2470±25%	ACME CO.	X90485-9609IE
		KA70 T9*5*3-C AL	JIUXIN CO.	料號待申請
[2]	MAGNET WIRE	POLYURETHANE COATED POLYAMIDE 1UEWN/U & 2UEWN/U MW28-C 130℃	PACIFIC E W & C CO.SHENZHEN. E201757	
		POLYURETHANE COATED POLYAMIDE 1UEWE & 2UEWE MW-28C 130℃	TAI-I CO. E85640	
		POLYURETHANE COATED POLYAMIDE 1UEW-NY & 2UEW-NY MW28C 130℃	PROSPERITY CO. E196072	
[3]	PCB BASE	KINGBOARD CO. E123995 FR-1 94V-0/KB-6150 130℃ T1.2*19.65*7.43-4HOLE	JIANYOUG CO.	料號待申請
[4]	TRIPLE WIRE	TRIPLE INSULATED WINDING WIRE TEX-E 130℃	FURUKAWA CO. E206440	
		TIW-2 130℃ ,TIW-3 155℃	TOTOKU CO. E166483	
[5]	TUBE	TEFLON TUBE TFL TFT TFS 200℃	GREAT HOLDING CO. E156256	
		TEFLON TUBE TFE-LW TFE-TW TFE-SW 200℃	ZEUS CO. E64007	
		TEFLON TUBE CB-TT-L CB-TT-T CB-TT-S 200℃	CHANGYUAN CO. E180908	
[6]	INSULATION TAPE	3M#1350F-I 130℃ GROUP II	3M CO. E17385	
		CT-280 130℃ GROUP I	JINGJIANG YAHUA CO. E165111	
[7]	EPOXY	3300A/B-1(透明)	EATTO CO.	
[8]	VARNISH	V1630FS 130℃	ELANTASELECTRIC AL INSULATION ELANTAS PDG INC. E87039	XT9051-9997I
		468-2FC 130℃	ELANTASELECTRIC AL INSULATION ELANTAS PDG INC. E87039	XT9051-9996I
		TVB-2180T 130℃ ADD 2% TEC9652(Catalyst)	KYOCERA CHEMICAL CO. E83702	XT9051-9991I XT9051-9894I
Insulation System: B-8 Table II (E97394) Thermal Class: B				

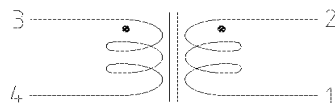
ACBEL POLYTECH INC.

Source Control Drawing

REV: S2

SAFETY P/N: 25P07 PART NO.: P 25P07 -00011 T5 CURRENT TRANSFORMER FSE052-000G

2 SCHEMATIC CIRCUIT :



3. WINDING CONSTRUCTION :

ORDER 順 序	S - F 開始 - 結束	WIRE SIZE 線 徑	TURN 圈 數	NOTES 說 明
#1	3 - 4	$\Phi 0.25$	100	[1][2]
#2	2 - 1	TRIPLE WIRE $\Phi 0.7$	1	[3]

說明：

[1] 整齊循環繞線。

To be wound in good order.

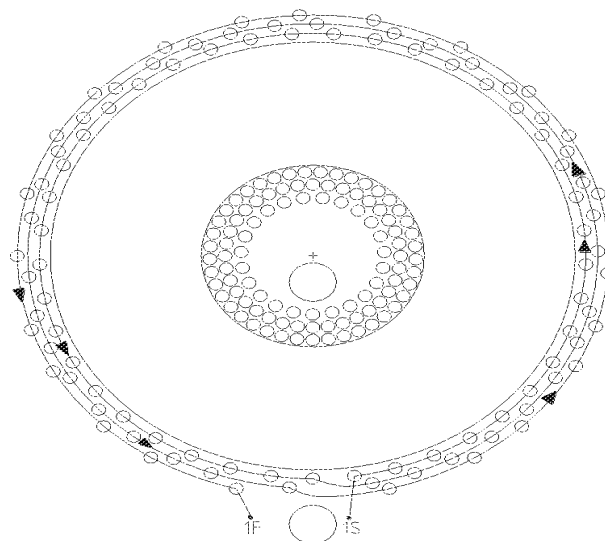
[2] PIN3 及 PIN4 入出線須裝“S”型 TEFLON 套管, 套管須與 BASE 齊平。

Pin3 and pin4 are entered must put “S” type Teflon Tube to qualify for the next round of competitions. The Tube must be with Base Parallel.

[3] 整條線加裝“L”型 TEFLON 套管。

The whole wire must be sleeved with “L” Type Teflon tube.

4. WINDING CROSS-SECTIONAL VIEW:

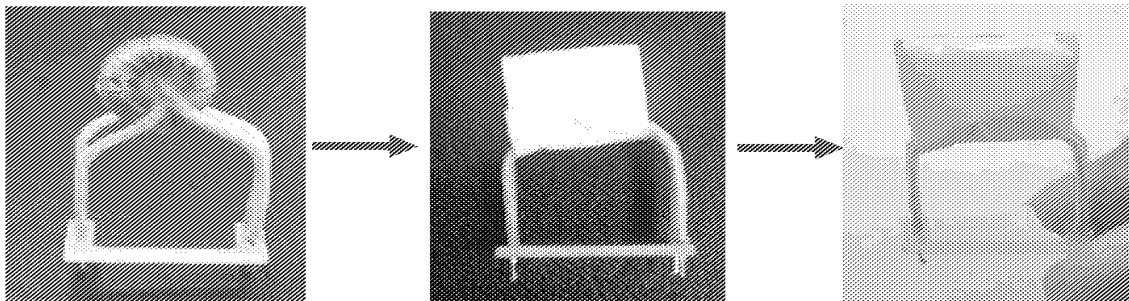


ACBEL POLYTECH INC.

Source Control Drawing

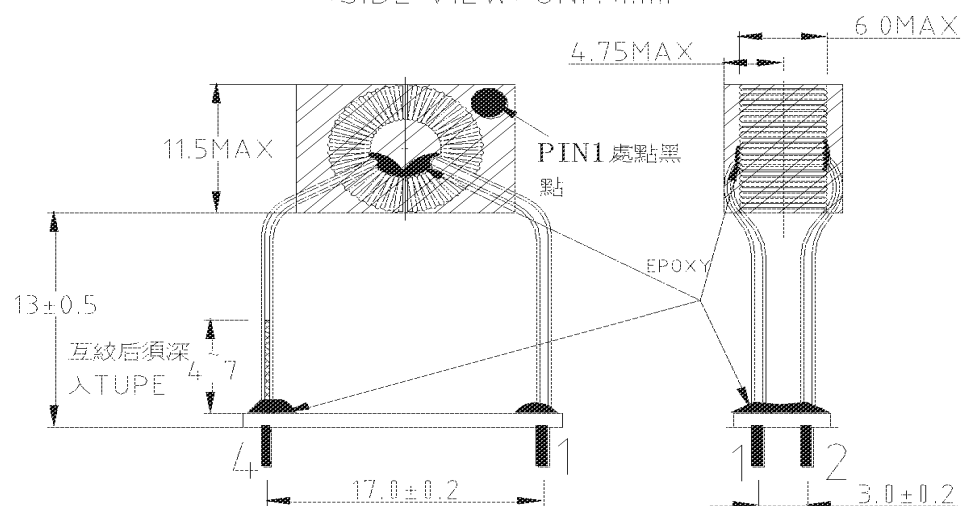
REV: S2

SAFETY P/N: 25P07 PART NO.: P 25P07 -00011 T5 CURRENT TRANSFORMER FSE052-000G

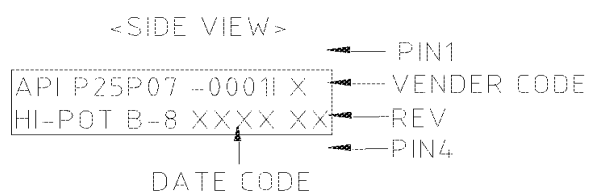


成品外圍直向包寬 15mm 3M#1350F-1 or CT-280 TAPE 一圈,再橫向包寬 12mm TAPE 一圈.

<SIDE VIEW> UNIT: mm



<PCB BASE VIEW> UNIT: ±0.2mm



ACBEL POLYTECH INC. Source Control Drawing REV: S2
SAFETY P/N: 25P07 PART NO.: P 25P07 -00011 T5 CURRENT TRANSFORMER FSE052-000G

附件一: T9*5*3-C JPH-7 & A07 & KA70 CORE SPEC:
1. JPH-7(X90485-96091D1)

A-CORE
ELECTRICAL CO.



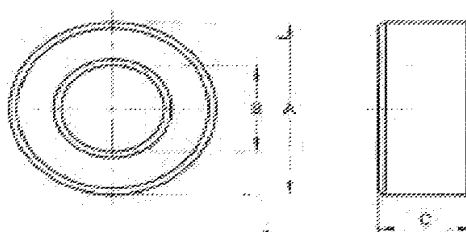
3/6

Material: JPH-7

Type: OR9x 3-5C

1. Dimensions(mm)

A	9.40 ± 0.50
B	4.60 ± 0.50
C	3.40 ± 0.50



2. Core set parameters

Core constant	C_1	3.59	mm^{-1}
Effective magnetic path length	L_e	20.80	mm
Effective cross-sectional area	A_e	5.80	mm^2
Effective volume	V_e	120.64	mm^3

3. Electrical characteristics

3.1. Inductance : $61.8 \pm 30\% \mu\text{H}$ ($AL=2470\text{nH}/N^2 \pm 30\%$)

Test Conditions : 10KHz 0.25V 5Turns $25 \pm 3^\circ\text{C}$

Test Meter : HP-4284A LCR-Meter or Equivalent

ACBEL POLYTECH INC.

Source Control Drawing

REV: S2

SAFETY P/N: 25P07 PART NO.: P 25P07 -00011 T5 CURRENT TRANSFORMER FSE052-000G

2. A07(X90485-96091E)



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Product Specifications

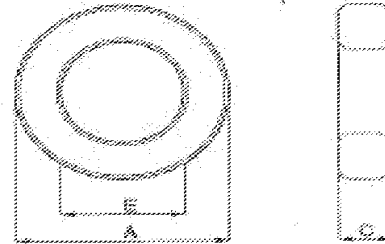
Type : T Cores

Ordering Code:

Shape:

A05	T8*4*2	P	G□
Material 材質	Core Size 品名	Coating 塗装	Gapped AL Value

C : Epoxy Coating
P : Polyurethane Coating
W : Powder Coating



■ DIMENSIONS AND EFFECTIVE PARAMETERS

CORES	DIMENSIONS (mm)			EFFECTIVE PARAMETERS				
	COATING DIMENSIONS (mm)			Core ²	Length	Area ²	Volume ³	Weight
	A	B	C					
T6.35x3.51x3.18	6.35 ± 0.20	3.51 ± 0.20	3.18 ± 0.20	3.29	15.26	4.26	64.45	0.35
	6.35 ± 0.20	3.51 ± 0.20	3.18 ± 0.20					
T7.62x3.18x4.8	7.62 ± 0.15	3.18 ± 0.15	4.80 ± 0.15	4.20	16.50	10.45	181.7	0.88
	7.62 ± 0.15	3.18 ± 0.15	4.80 ± 0.15					
T8x4x2	8.00 ± 0.20	4.00 ± 0.20	2.00 ± 0.20	4.71	18.84	4.20	75.39	0.57
	8.00 ± 0.20	4.00 ± 0.20	2.00 ± 0.20					
T8x4x3	8.00 ± 0.20	4.00 ± 0.20	3.00 ± 0.20	5.14	19.94	6.20	115.06	0.75
	8.00 ± 0.20	4.00 ± 0.20	3.00 ± 0.20					
T8x4x4	8.00 ± 0.20	4.00 ± 0.20	4.00 ± 0.20	5.38	19.94	8.20	130.79	0.76
	8.00 ± 0.20	4.00 ± 0.20	4.00 ± 0.20					
T8x4.5x4	8.90 ± 0.20	4.50 ± 0.20	4.00 ± 0.20	5.85	19.93	7.60	137.81	0.85
	8.90 ± 0.20	4.50 ± 0.20	4.00 ± 0.20					
T9x5x3	9.14 ± 0.25	5.10 ± 0.25	3.00 ± 0.25	5.67	22.3	6.80	173	0.88
	9.14 ± 0.25	5.10 ± 0.25	3.00 ± 0.25					
T9x5x4	9.14 ± 0.25	5.10 ± 0.25	4.00 ± 0.25	5.75	22.3	9.40	198	0.87
	9.14 ± 0.25	5.10 ± 0.25	4.00 ± 0.25					
T9x5x5	9.14 ± 0.25	5.10 ± 0.25	5.00 ± 0.25	5.75	22.3	11.60	225	1.00
	9.14 ± 0.25	5.10 ± 0.25	5.00 ± 0.25					
T9x5x5.5	9.14 ± 0.25	5.10 ± 0.25	5.50 ± 0.25	5.83	22.3	11.80	248	1.06
	9.14 ± 0.25	5.10 ± 0.25	5.50 ± 0.25					
T9x5x7	9.14 ± 0.25	5.10 ± 0.25	7.00 ± 0.25	5.75	22.3	14.00	312	1.41
	9.14 ± 0.25	5.10 ± 0.25	7.00 ± 0.25					

ACBEL POLYTECH INC.

Source Control Drawing

REV:S5

SAFETY P/N: 25P05 PART NO.: P 25P05 -00011 T201 STAND BY TRANSFORMER FSE052-000G

1. MATERIALS' LIST :

Item	Material Name 材料名稱	Manufactory Part No. 製造商品名規格	Manufactory name 製造廠商名稱	Acbel P/N 康舒料號
[1]	CORE: 20.5mm*16.0mm *14.0mm	PQ20/16 DMR95 AL4300±25%	DMEGC CO.	X90485-87681J1
		PQ20/16 TPW33 AL4700±25%	TDG CO.	X90485-87441E1
		PQ20/16 JPP-95 AL4380±25%	A-CORE CO.	X90485-87781D1
		PQ2016 KP95 AL4200±25%	KAIYUAN CO.	X90485-87781U1
		PQ20/16 NH9 AL 4300±25%	LIANFENG CO.	X90485-87781W1
[2]	BOBBIN: PQ20/16 立式 6/8PIN	SUMITOMO BAKELITE CO. E41429 PHENOLIC PM-9820 PM-9630 150℃ CHANG CHUN CO. E59481 PHENOLIC T375J 150℃ (VP-2017)	VALOP CO.	X90486-88251V
[3]	MAGNET WIRE	POLYURETHANE COATED POLYAMIDE 1UEWN/U & 2UEWN/U MW28-C 130℃	PACIFIC E W & C CO.SHENZHEN. E201757	
		POLYURETHANE COATED POLYAMIDE 1UEWE & 2UEWE MW-28C 130℃	TAI-I CO. E85640	
		POLYURETHANE COATED POLYAMIDE 1UEW-NY & 2UEW-NY MW28C 130℃	PROSPERITY CO. E196072	
[4]	TRIPLE WIRE	TRIPLE INSULATED WINDING WIRE TIW-M 130℃	COSMOLINK CO. E213764	
[5]	TUBE	TEFLON TUBE TFL TFT TFS 200℃	GREAT HOLDING CO. E156256	
		TEFLON TUBE TFE-TW TFE-SW 200℃	ZEUS CO. E64007	
		TEFLON TUBE CB-TT-L CB-TT-T CB-TT-S 200℃	CHANGYUAN CO. E180908	
[6]	INSULATION TAPE	3M#1350F-1 130℃ GROUP II	3M CO. E17385	
		CT-280 130℃ GROUP I	JINGJIANG YAHUA CO. E165111	
[7]	EPOXY	3300HF(灰色)	EATTO CO.	XT9041-99431
		AD-3B	JASDI CO.	PT9041-99351J
[8]	VARNISH	V1630FS 130℃	ELANTASELECTRIC AL INSULATION	XT9051-99971
		468-2FC 130℃	ELANTAS PDG INC. E75225	
[9]	SOLDER	SACX0300 SOLDER BAR	ALPHA CO. OR EQUIVALENT.	XT5002-99361A
[10]	SOLDERING FLUX	EF-9301 FLUX	ALPHA CO. OR EQUIVALENT	XT9031-98981A

Insulation System: CIS.04 Table III (E97394) Thermal Class: B

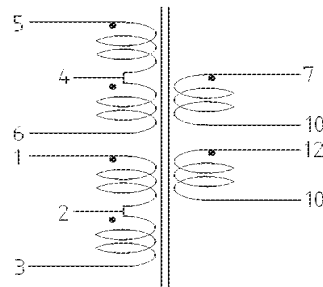
ACBEL POLYTECH INC.

Source Control Drawing

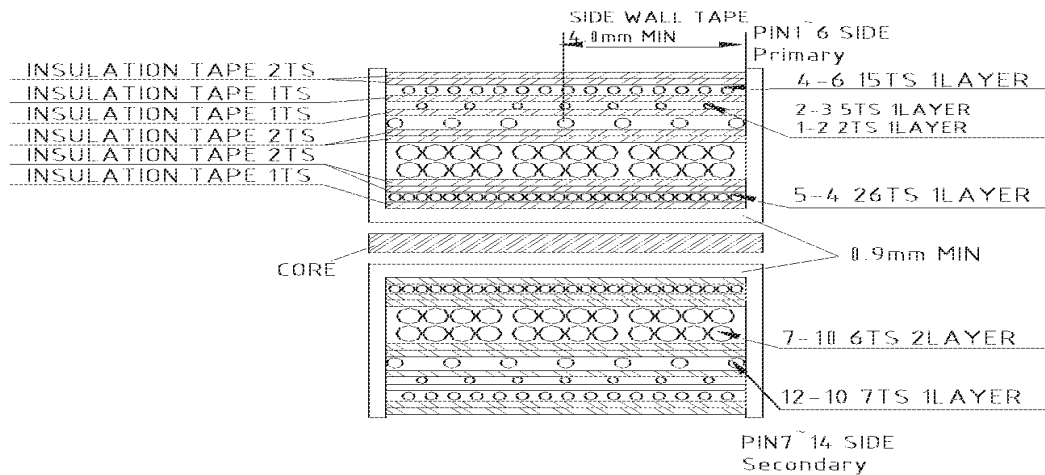
REV:S5

SAFETY P/N: 25P05 PART NO.: P 25P05 -00011 T201 STAND BY TRANSFORMER FSE052-000G

2. SCHEMATIC CIRCUIT :



3. WINDING CROSS-SECTIONAL VIEW:



4. WINDING CONSTRUCTION :

ORDER 順序	S - F 開始 - 結束	WIRE SIZE 線徑	TURN 圈數	INSULATION TAPE	NOTES 說明
#1				1 層	[1]
#2	5 - 4	$\Phi 0.25$	26	2 層	[2][6]
#3	7 - 10	TRIPLE WIRE $\Phi 0.35*4$	6	2 層	[2][3][7]
#4	12 - 10	TRIPLE WIRE $\Phi 0.35*1$	7	1 層	[2]
#5	1 - 2	$\Phi 0.2$	2	1 層	[2][4][5][8]
#6	2 - 3	$\Phi 0.2$	5		
#7	4 - 6	$\Phi 0.25$	15	2 層	[2][8]

***PIN5 ,PIN6 入出線不交叉.

***The breakout of pin5 and pin6 are non-crossed.

***所有出入線須裝“L”TEFLON TUBE. TUBE 至少伸入線包 3mm.

***All of the start and finish wire must be sleeved with “L” Type Teflon tube. Tube must be extended into coil 3mm min.

ACBEL POLYTECH INC.	Source Control Drawing	REV:S5
SAFETY P/N: 25P05 PART NO.: P 25P05 -00041 T201 STAND BY TRANSFORMER FSE052-000G		

說明:

- [1] 未繞線之前先貼一層 INSULATION TAPE.
To tape one layer of insulation tape on the bobbin before winding.
- [2] 不滿一層時須均勻疏繞。
To wind distributed across the full winding width.
- [3] 四線並繞。
Four wires to be wound together
- [4] 雙線並繞。
Bifilar wound.
- [5] 繞組#5 PIN1,#6 PIN3 出入線部分須做三次折回再相絞處理,且互絞部分須深入線包 5-10mm.
Winding #5 pin1 and #6 pin3 finish wires to be there and each twist, Each part and twisted to be in-depth line package 5 ~ 10mm.
- [6] 繞組#2 繞線前須先在 PIN7~14 側貼一塊 SIDE WALL TAPE.繞完繞組#2 後,再折回線包.折回的部分須大於 4mm.
Before wind#2, apply one pieces of sidewall tape on the side of pin7~14. After winding #2 finished, the tape must folded toward the winding 4mm min.
- [7] 繞組#3 繞線前須先在 PIN1~6 側貼一塊 SIDE WALL TAPE.繞完繞組#3 後,再折回線包.折回的部分須大於 4mm.
Before wind#3, apply one pieces of sidewall tape on the side of pin1~6. After winding #3 finished, the tape must folded toward the winding 4mm min.
- [8] 繞組#5 繞線前須先在 PIN7~14 側貼一塊 SIDE WALL TAPE.繞完繞組#7 後,再折回線包.折回的部分須大於 4mm.
Before wind#5, apply one pieces of sidewall tape on the side of pin7~14. After winding #7 finished, the tape must folded toward the winding 4mm min.

5. ELECTRICAL REQUIREMENT :

TERMINAL		DCR Ω 20℃ MAX.	INDUCTANCE (L) LEAKAGE INDUCTANCE (LK) @100KHZ, 1VRMS.	TURN RATIO & PHASE INPUT PIN(5-6) @ 20KHZ(REF) 1VRMS
START	FINISH			
5	6	0.80	L: 250 uH±8%	4:1
7	10	0.025	LK: 9.0 uH MAX PIN 7,10 SHORTED.	+ 5.95 ~ 6.0
12	10	0.085	LK: 15 uH MAX PIN 12,10 SHORTED.	+ 6.95 ~ 7.0
1	2	0.08	LK: 26.0 uH MAX. PIN 1,2,3 SHORTED.	+ 1.95 ~ 2.0
2	3	0.25		+ 4.95 ~ 5.0

LEAKAGE INDUCTANCE IS MEASURED BY L(4-6) WITH SECONDARY WINDINGS SHORTED.

HI-POT: PRIMARY&CORE TO SECONDARY.....3600 Vac, 3 SEC, 1 mA.

適用於生產線 PRIMARY TO PRIMARY&CORE.....600 Vac, 3 SEC, 1 mA.

HI-POT: PRIMARY&CORE TO SECONDARY.....3600 Vac, 60 SEC, 1 mA.

適用於實驗室 PRIMARY TO PRIMARY&CORE.....600 Vac, 60 SEC, 1 mA.

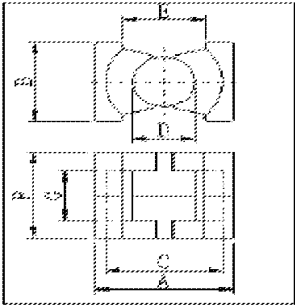
ARCING TEST: 初次級測試須通過華儀 7440 ARCING 6 等級/3600Vac 測試.

ACBEL POLYTECH INC.	Source Control Drawing	REV:S5
SAFETY P/N: 25P05 PART NO.: P 25P05 -00011 T201 STAND BY TRANSFORMER FSE052-000G		

附一. PQ20/16 KP95&TPW33&JPP-95&DMR95&NH9 CORE SPEC:

1. KP95 (X90485-8778IU1)

尺寸及公差 (mm) V1
2014.2.11 jany_lisong



A =20.5±0.4
B= 14.0±0.4
C =18.0±0.4
D=8.8±0.2
E=12.0min
F/2=8.1±0.2
G/2=5.15±0.2
配对段差

[2] 磁芯参数 Core set parameters		单位
Manufacture name		
Core constant (Cl)	0.607	mm ³
Effective magnetic path length (Le)	37.6	mm
Effective cross-sectional area (As)	61.9	mm ²
Effective volume (Ve)	2330	mm ³
Weight(approx) (W)	12.5	g/pzs

[3] 磁芯特性 Electrical characteristics

Manufacture name		Test conditions	Test meter
Inductance (AL1)	4200nH/N ² ± 25%	20KHZ, 1V, ±0.35*10TS, 25±3℃	HP-4284A
Q1	30min		
Inductance (AL2)	4200nH/N ² ± 55%	100KHZ, 1V, ±0.35*10TS, 25±3℃	HP-4284A
Q2	30min		
Power loss (Pc)	≤1.31W/set	100kHz,200mA,100±2℃	5Y-8232 or Equivalent

ACBEL POLYTECH INC.

Source Control Drawing

REV:S5

SAFETY P/N: 25P05 PART NO.: P 25P05 -00011 T201 STAND BY TRANSFORMER FSE052-000G

2. TPW33(X90485-87441E1)

1. 尺寸 DIMENSIONS(mm)

尺寸 DIMENSIONS(mm)	
A	20.5±0.4
B	3.1+0.2/-0
C	14.0±0.4
D	3.5±0.2
E	18.0±0.4
F	5.1+0.3/-0
G	12.0min

磁芯参数 CORE PARAMETERS	
有效磁路长度 Effective Length Le	37.53 mm
有效截面积 Effective Cross Area Ae	51.09 mm ²
最小截面积 Minimum Cross Area Amin	59.01 mm ²
有效体积 Effective Volume Ve	1292.9 mm ³
重量 Approx. Weight W	11 g/pcs

Item:	P/N:	SPEC./N
FERRITE CORE	TPW33-PQ10/16	TPW33-107-12-097-A

TDG天通控股股份有限公司
TDG HOLDING CO., LTD.

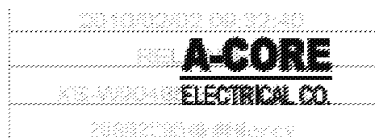
ACBEL POLYTECH INC.

Source Control Drawing

REV:S5

SAFETY P/N: 25P05 PART NO.: P 25P05 -00011 T201 STAND BY TRANSFORMER FSE052-000G

3. JPP-95(X90485-8778ID1)

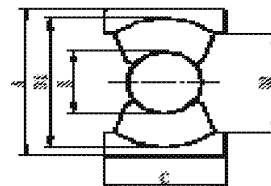
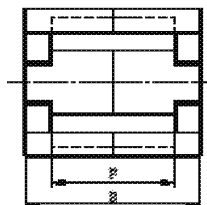


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SPECIFICATION

1. Dimensions (mm)

A	20.50±0.40
B	16.20±0.20
C	14.00±0.40
D1	18.00±0.40
D2	13.30min
E	8.80±0.20
F	10.30±0.20



2. Core set parameters

Core constant	C ₁	0.60	mm ⁻¹
Effective magnetic path length	Le	37.40	mm
Effective cross-sectional area	Ae	62.00	mm ²
Effective volume	Ve	2318.80	mm ³

3. Electrical characteristics

3.1. Inductance : 43.8 ± 25% mH (AL=4380nH/N² ± 25%)

Test Conditions : 1KHz 0.25V 100Turns 25±3°C

Test Meter : HP-4284A LCR-Meter or Equivalent

3.2 Power loss:

100 KHz 200 mT	
25 °C	100 °C
110mW/g max	95mW/g max

Test Meter : CH-258 V-A-W Meter or Equivalent

ACBEL POLYTECH INC.

Source Control Drawing

REV:S5

SAFETY P/N: 25P05 PART NO.: P 25P05 -00011 T201 STAND BY TRANSFORMER FSE052-000G

4. DMR95(X90485-8768IJ1)

20190312 13:18:23
RELEASE
20190312 13:18:23

检测报告

客户名称: 东莞德顺电子

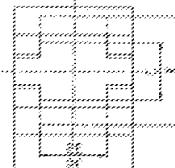
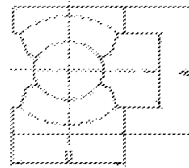
客户产品名称:

我方产品名称: PQ22/16

料 质: DMR95

送样数量: 15 付

抽检数量: 5 付



符号	A	B	C	D	2E	2F	I
标准尺寸	20.5±0.4	18.0±0.4	8.8±0.2	14.0±0.4	10.3±0.3	16.2±0.2	12.0min
实 测 尺 寸	1	20.44	17.85	8.85	14.02	10.28	12.36
	2	20.49	17.87	8.86	14.05	10.27	12.40
	3	20.51	17.88	8.88	14.07	10.33	12.44
	4	20.49	17.77	8.86	14.01	10.24	12.35
	5	20.37	17.71	8.87	14.05	10.26	12.26
检 测 条 件	电感系数 AL	f=1kHz U=0.25V Φ=0.35mm N=10T LCR4215					
	功率损耗 Pw	f=100kHz B=200mT Φ=0.35mm N=10T GHY-3					
	机械强度 F	20mm/min KD-03					
项 目	AL (nH/V)	P (mW/cm²)		F(N)			
	T=25±2℃	T=100±2℃		M 法			
客户标准	4300±15%	≤500		≥50			
实 测 数 据	1	4588	488	62			
	2	4620	479	61			
	3	4490	482	60			
	4	4300	481	63			
	5	4380	482	63			
判定:	测试: 金淑珍 审核:						2010年3月12日

东莞德顺电子事业部品质部

ACBEL POLYTECH INC.	Source Control Drawing	REV:S5
SAFETY P/N: 25P05 PART NO.: P 25P05 -00011 T201 STAND BY TRANSFORMER FSE052-000G		

5. NH9(X90485-8778IW1)

1. 尺寸 DIMENSIONS(mm)

尺寸 DIMENSIONS(mm)	
A	20.5±0.4
D1	18.0±0.4
E	8.8±0.2
C	14.0±0.45
F	5.15±0.2
B	8.1±0.2
D2	12.0min

磁芯参数 CORE PARAMETERS	
有效磁路长度 Effective Length Le	37.6 mm
有效截面积 Effective Cross Area Ae	61.9 mm²
有效体积 Effective Volume Ve	2330mm³
重量 Approx. Weight W	6.48g/pcs

注：PQ2020-2 模具 有倒角

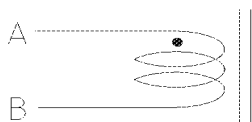
ACBEL POLYTECH INC.	Source Control Drawing	REV:S4
SAFETY P/N: 25P06 PART NO.: P 25P06 -0001I T401 MAIN TRANSFORMER FSE052-000G		

3 MATERIALS' LIST :

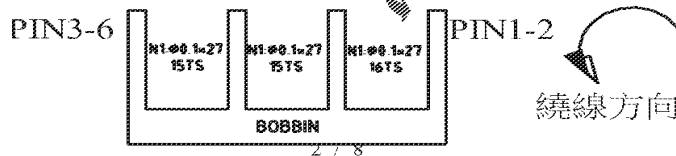
Item	Material Name 材料名稱	Manufacture Part No. 製造商品名規格	Manufacture name 製造廠商名稱	Acbel P/N 康舒料號
[1]	CORE TYPE: PQ3230	PQ3230 KP95 AL6500±25%	KAI YUAN CO.	Y90485-8831IU1
		PQ32/30 JPP-95 AL6800±25%	A-CORE CO.	Y90485-8831ID1
		PQ32/30 TPW33 AL6300±25%	TDG CO.	X90485-8831IE1
		PQ32/30 NH9 AL6000±25%	LIANFENG CO.	X90485-8831IW1
		PQ32/30 LP9 AL6000±25%	NEW CONDA CO.	X90485-8737IX1
[2]	BOBBIN PQ3230 臥式 3 SECTION	SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (PQ-32-30)	SHULIN CO.	X90486-8578IC
[3]	BASE	SUMITOMO BAKELITE CO. PHENOLIC PM-9820 PM-9630 150℃ (B-R112)	BOSCOM CO.	X90484-9176IS
[4]	TRIPLE WIRE	TRIPLE INSULATED WINDING WIRE TIW-2L2 130℃	TOTOKU CO. E166483	
[5]	INSULATION TAPE	3M#1350F-1 130℃ GROUP II	3M CO. E17385	
		CT-280 130℃ GROUP II	JINGJIANG YAHUA CO. E165111	
[6]	TEFLON TUBE	TEFLON TUBE CB-TT-L 200℃	CHANGYUAN CO. E180908	
		TEFLON TUBE TFL 200℃	GREAT HOLDING CO. E156256	
[7]	SHRINK TUBE	TUBE HEAT SHRINK ϕ 3.0 BLACK CB-HFT TYPE	CHANG YUAN CO.	X90680-9244I
[8]	銅片	C-1.0*15.8*87.23 C1100	LIANCHENH. CO	X40D00-9999I
		1*15.8*AT7.23 C1100	MEILI CO	X40D00-9999IN
[9]	EPOXY	3300HF(灰色)	EATTO CO.	XT9041-9943I
		3300ZH-F(灰白色)	EATTO CO.	XT9041-9948I
[10]	SOLDER	SACX0300 SOLDER BAR	ALPHA CO.	XT5002-9936IA
		SACX0307 SOLDER WIRE	OR EQUIVALENT.	XT5001-9898IA
[11]	SOLDERING FLUX	EF-9301 FLUX	ALPHA CO.	XT9031-9898IA
			OR EQUIVALENT	
[12]	VARNISH	WP-2952F-2G 130℃ ADD 2% CT-48(C)	HITACHI CHEMICAL CO. E72979	XT9051-9988I XT9070-9949I
		TVB-2180T 155℃	KYOCERA	XT9051-9991I
		ADD 2% TEC9652(Catalyst)	CHEMICALCO. E83702	XT9051-9894I

Insulation System: B-8 Table II (E209189) Thermal Class: B

2. SCHEMATIC CIRCUIT :



3. WINDING CUTAWAY VIEW:



N191893330

ACBEL POLYTECH INC.	Source Control Drawing	REV:S4
SAFETY P/N: 25P06 PART NO.: P 25P06 -0001I T401 MAIN TRANSFORMER FSE052-000G		

4. WINDING CONSTRUCTION :

ORDER 順 序	S - F 開始 - 結束	WIRE SIZE 線 徑	TURN 圈 數	INSULATION TAPE	NOTES 說 明
#1	A - B	TRIPLE LITZ WIRE $\Phi (0.10*27)*1$	46	1 層	[1]

***A,B 出入線須裝 TEFLON TUBE.A 使用白色 TUBE 須伸入 BOBBIN 至少 10mm,B 使用黑色 TUBE 須伸入 BOBBIN 至少約 30mm. 伸出均至沾錫處

*** Pin1 and pin2 access lines shall be fitted with Teflon tube.Pin1 with white tube shall project into bobbin at least 10mm shall project into the pin2 with black tube the bobbin least approximately 30mm

說明:

[1] 第一個槽密繞 16 圈,第二個和第三個槽各繞 15 圈

To be wound 16 turns on the first groove. The second and third grooves each to be wound 15 turns.

5. ELECTRICAL REQUIREMENTS :

- [1] INDUCTANCE @ 40 KHZ, 1.0VRMS, L(A-B)= $7 \pm 10\%$ mH
- [2] Q VALUE @ 40 KHZ, 1.0VRMS, Q(A-B)= 200 MIN
- [3] DCR @ 20°C R(A-B)= 0.30 Ω MAX
- [4] HI-POT WINDING TO CORE.....1800Vac, 3 Sec, 1mA.
- [5] LAYER SHORT 測試電壓 1200Vac(REF)

6. ASSEMBLY NOTES:

- [1] 組裝 CORE 前,先將四組鐵片,分別組裝進 BOBBIN 內。
Four groups insulation sheet and core assembly core, were assembled into BOBBIN.
- [2] 將其中一 CORE 之中間腳磨掉約 0.25mm 之 AIR GAP,以求得所需感量.組裝時將磨有 GAP 之 CORE 放置於出腳處。
Gap the center leg of one core approximate 0.1mm to meet inductance requirement. Put gapped on the out pin.
- [3] 組裝 CORE 時,需將 CORE 反包一層 W33*58mm 3M#1350F-1 or CT-280 TAPE. CORE 中部豎向包一塊 W10*26mm 3M#1350F-1 or CT-280 TAPE.組裝時須將反包 TAPE 之 CORE 放在靠 PIN3~PIN6 側。
Before assembly, Apply a pieces of one layers insulation tape (W33mm x 58mm) on the cores (The core outlet direction), put the central vertical one layers (W10*26mm) tapped core. Put the taped core in the pin3~pin6 side of the bobbin. Shown as figure.
- [4] 兩 CORE 中柱之間的 GAP 須塗 80%~100% 3300ZH-F 的 EPOXY,另兩 CORE 邊柱之接合面及 PIN1 處 CORE 與 BOBBIN 間須塗 3300HF EPOXY 固定(注:BOBBIN 組裝 CORE 後,需置中固定),CORE 外面包二層 3M #1350F-1 or CT-280 22mm TAPE 固定,另銅片出腳側須加裝 BASE,凸點(圓點)銅外面且凸點(圓點)置於兩 PIN 側下方位置,BASE 與 CORE 需點 EPOXY 固定。
Fixing two cores with 80%~100% 3300ZH-F epoxy in the gap between two centers legs, Applying 3300HF epoxy between outer legs too. The epoxy must touch pin1 core and bobbin. Wrap two cores with two layers of 3M#1350F-1 or CT-280 22mm tape. And fix it with epoxy.
- [5] 組裝 CORE 後,需將出線方向的 CORE 反包一層 W34*42mm 3M#1350F-1 or CT-280 TAPE.如圖示。
After assembly, Apply a pieces of one layers insulation tape (W34mm x 42mm) on the cores (The core outlet direction)
- [6] 需在成品入線處之 BOBBIN 上打白點標示。
Required in the finished product into the line of play of white spots on the increase BOBBIN marked.
- [7] A 飛線線長 85mm $\pm$ 5mm,B 飛線線長 88mm $\pm$ 5mm(自銅網上,飛線在左邊平貼並垂直 Core 邊緣處開始量測.), PINS 長 3.3 $\pm$ 0.3mm. (飛線須打端子,R90609-9604I / R90609-9992I, OR EQUIVALENT.並在端子接口處添加長約 10mm 的熱縮套管).兩飛線出線包需裝長度為 60 $\pm$ 5mm 熱縮套管.如圖示。
The length of A in 85 $\pm$ 5mm. The length of B in 88 $\pm$ 5mm (From the core of the part).Two fly line outgoing packet needs to install the shrinkable sleeve length 60 $\pm$ 5mm.
- [8] MARKING(注意:必須使用噴碼作業)和 PITCHES 如圖示.整腳以 PCB 為準。
Marking and pitches are shown as figure. Neaten pin with PCB.
- [8] 成品組裝.如圖所示。
Finished assembly.
- [9] 以上 SCD 未明確定義之其餘共同性標準請依康舒<<磁性元件技術規範>>為準作業。
SCD is not well defined above the rest by AcBel common standards, please <<Magnetic Components Technical Specifications>> subject to operating.

ACBEL POLYTECH INC.

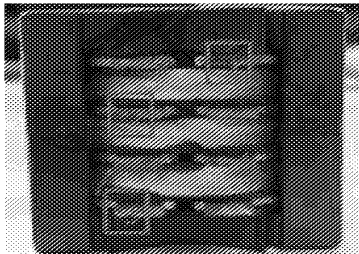
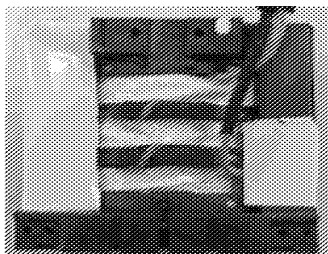
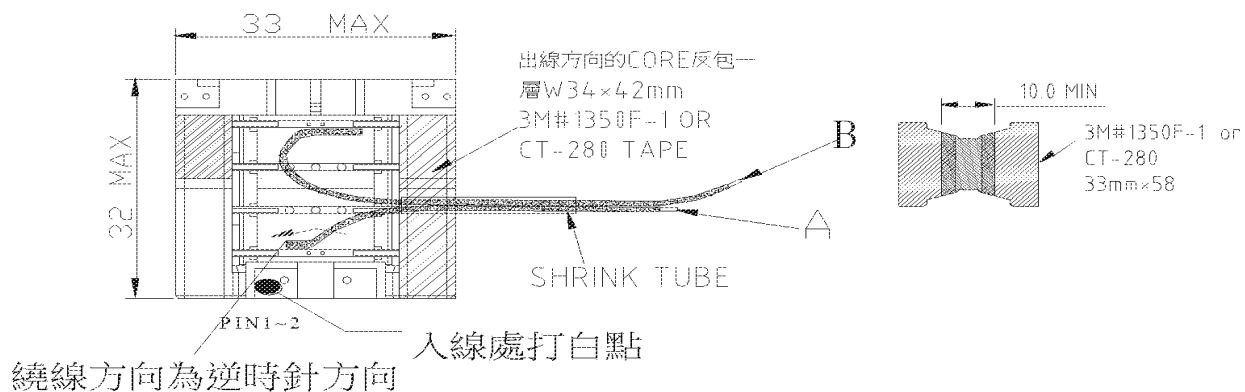
Source Control Drawing

REV: S4

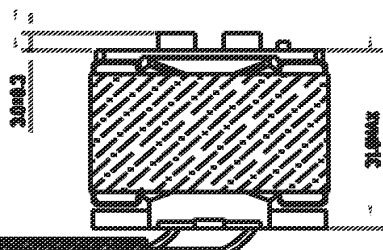
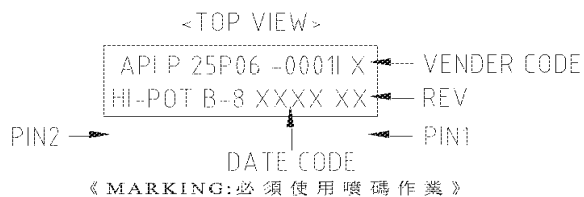
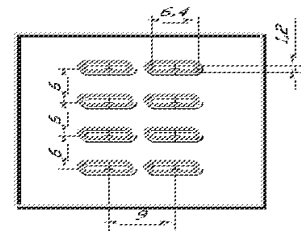
SAFETY P/N: 25P06 PART NO.: P 25P06 -0001I T401 MAIN TRANSFORMER

FSE052-000G

<SIDE VIEW>UNIT:mm



<TOP VIEW>UNIT:mm



ACBEL POLYTECH INC.

Source Control Drawing

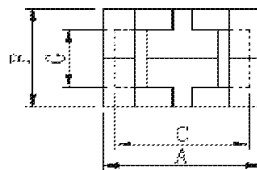
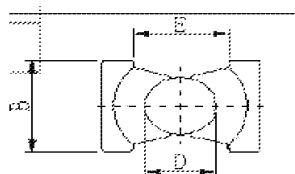
REV:S4

SAFETY P/N: 25P06 PART NO.: P 25P06 -0001I T401 MAIN TRANSFORMER

FSE052-000G

7. PQ32/30 CORE SPEC: (KP95, JPP-95, TPW33, NH9, DMR95, LP9)

[1] 尺寸 Dimension (mm) (PQ3230 KP95)



A	32.0±0.3
B	22.0±0.5
C	27.5±0.7
D	13.45±0.3
E	19.0 MIN
F	30.3±0.4
G	21.3±0.3

[2] 磁芯參數 Core set parameters

Manufactory name	KAI YUAN	A-CORE	TDG	LIANFENG	NEW CONDA	Unit
Core constant (Cl)	0.46	0.45	-	-	-	mm ⁻¹
Effective magnetic path length (Le)	74.6	68.3	75.29	75.5	74.6	mm
Effective cross-sectional area(Ae)	160	153	164.32	164.5	161	mm ²
Effective volume (Ve)	11936	10449.9	12371.2	12430.8	12000	mm ³
Weight(approx) (Wt)	56.0	56.1	55	27.25	55	g/set

[3] 電氣特性 Electrical characteristics

Manufactory name	KAI YUAN	A-CORE	TDG	LIANFENG	NEW CONDA	Test conditions	Test meter
Inductance (AL)	6500±25% nH/N ²	6800±25% nH/N ²	6300±25% nH/N ²	6000±25% nH/N ²	6000±25% nH/N ²	1kHz, 0.3V, 100Ts, 25±3℃	HP-4284A
Inductance (AL)	6500±25% nH/N ²	6800±25% nH/N ²	6800±25% nH/N ²	6800±25% nH/N ²	-	1kHz, 0.3V, 100Ts, 25±3℃	HP-4284A
Power loss (Pc) MAX	5.6W/Set	95mW/m ax	95mW/m ax	95mW/m ax	6.6 W/Set	100kHz, 200, 100±2℃	SY-8232 or Equivalent

[4] 材質特性 Material characteristics

Characteristics	Unit	KP95	JPP-95	TPW33	NH9	LP9
Initial permeability (μi)	-	3300±25%	3300±25%	3300±25%	-	3300±25%
Saturation flux density at 1194A/m(Bs)	25℃ mT 100℃ mT	530 410	530 410	520 410	- -	520 410
Remanence (Br)	25℃ mT 100℃ mT	85 60	80 60	120 90	- -	- 90
Coercivity (Hc)	25℃ A/m 100℃ A/m	10 7.5	9.5 6.5	12 9	- -	- 9
Core loss (Pc) at 100kHz, 200mT	25℃ kW ₃ /m	350	350	/	-	400
	60℃ kW ₃ /m	290	290	380	-	380
	80℃ kW ₃ /m	280	290	290	-	350
	100℃ kW ₃ /m	290	300	300	-	350
	120℃ kW ₃ /m	350	360	350	-	400
Electrical resistivity (ρ)	Ω-m	6	6.5	4	-	4
Curie Temperature (Tc)	℃	>215	>215	>220	>	×103210
Density (δ)	kg/m ³	4.9×10 ³	4.9×10 ³	4.9×10 ³	4.9×10 ³	4.8 ×10 ³

ACBEL POLYTECH INC.

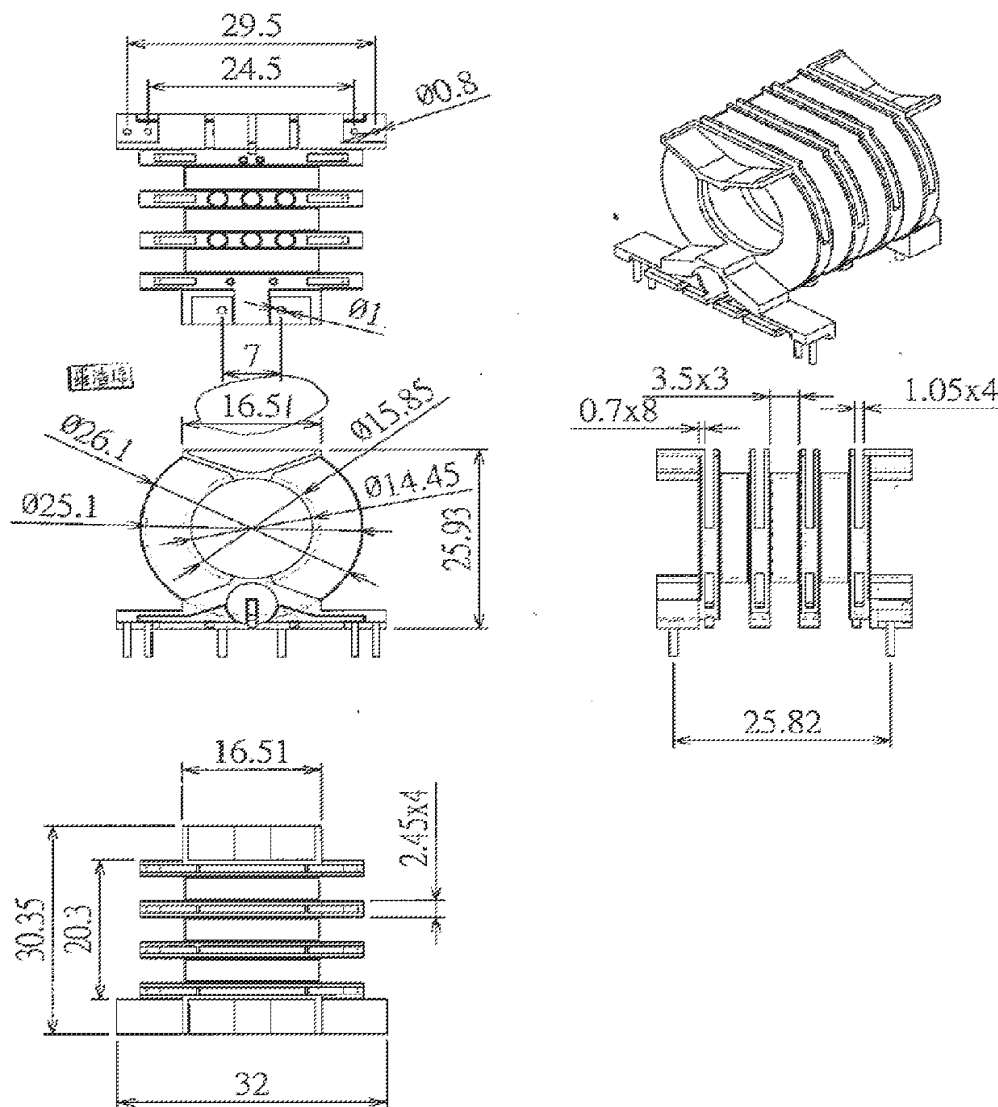
Source Control Drawing

REV:S4

SAFETY P/N: 25P06 PART NO.: P 25P06 -0001I T401 MAIN TRANSFORMER

FSE052-000G

[1] 尺寸 Dimension (mm) (PQ-32-30)



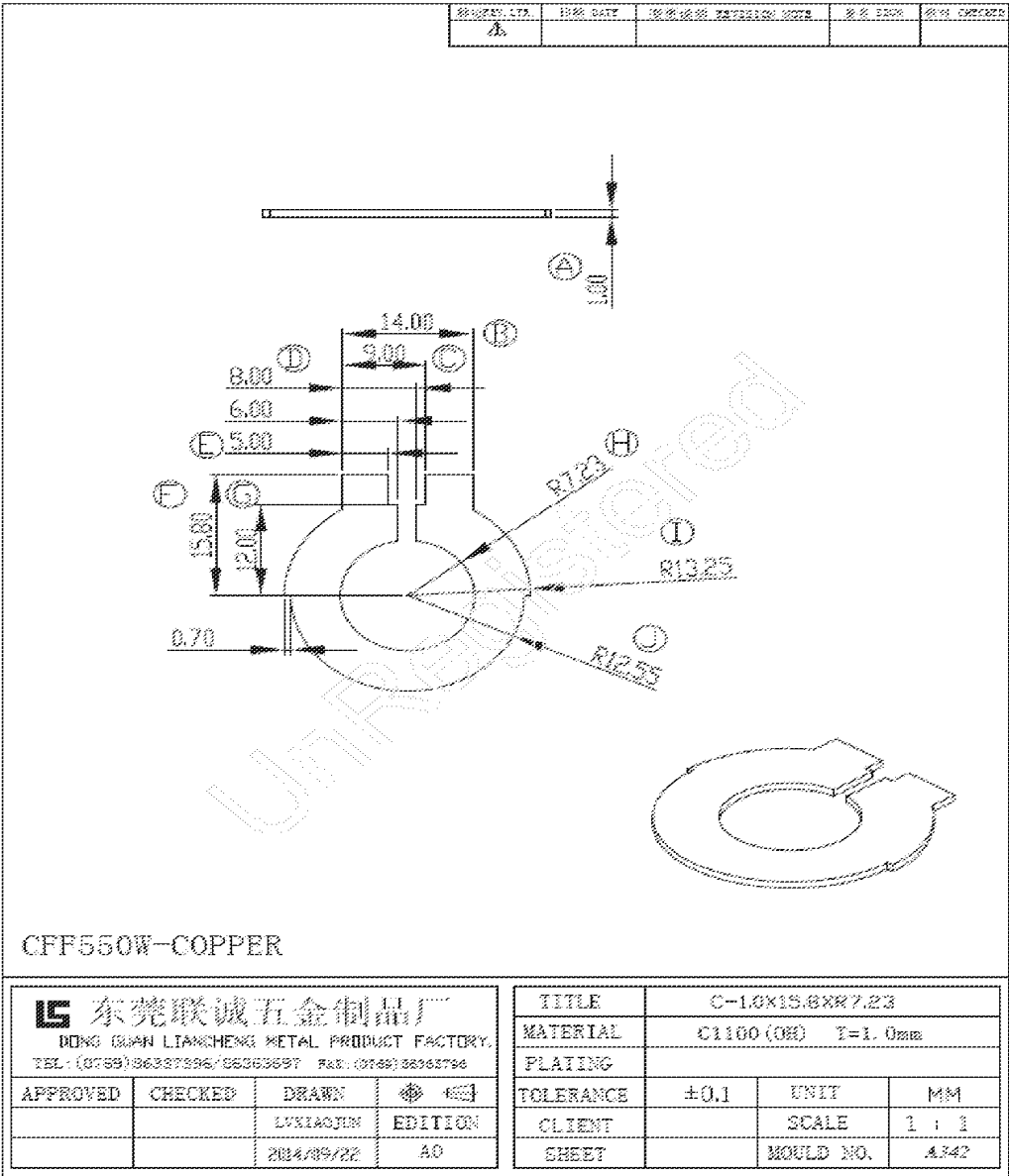
[2] 材質要求 Material requirement

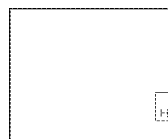
本體須使用 SUMITOMO BAKELITE CO LTD 之 LCPE4008 (UL No. E54705).

ACBEL POLYTECH INC.	Source Control Drawing	REV:S4
SAFETY P/N: 25P06 PART NO.: P 25P06 -0001I T401 MAIN TRANSFORMER		FSE052-000G

9. 銅片 SPEC:

[1] 尺寸 Dimension (mm) (C-1.0*15.8*R7.23 C1100)





POLYTECH INC.

Source Control Drawing

REV:S4

-TOP VIEW-

P/N: 25P06

PART NOs:

P 25P06 -0001I T401 MAIN TRANSFORMER

FSE052-000G

PART N 25P06 -0001I T401 MAIN TRANSFORMER

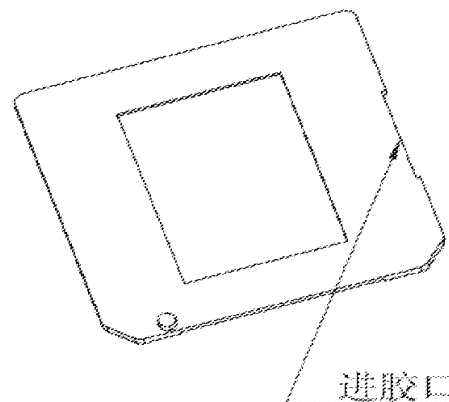
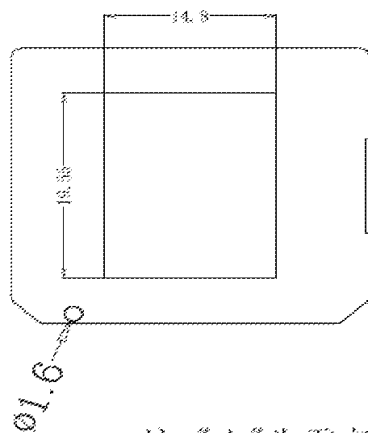
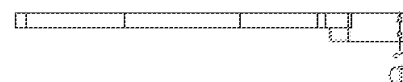
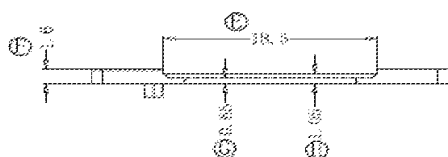
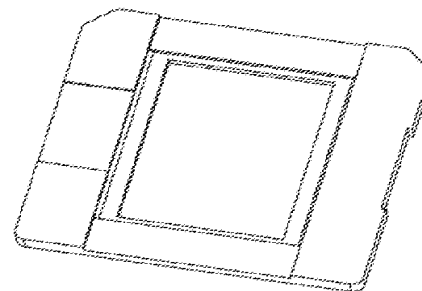
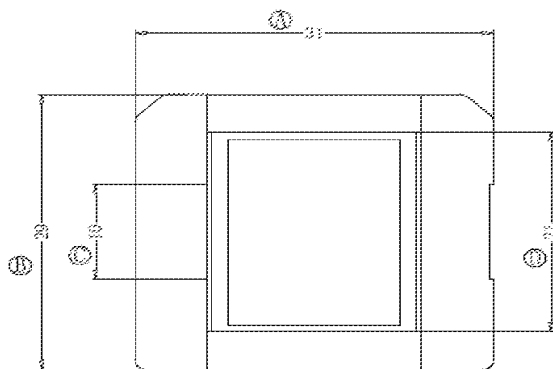
FSE052-000G

REV

DATE CODE

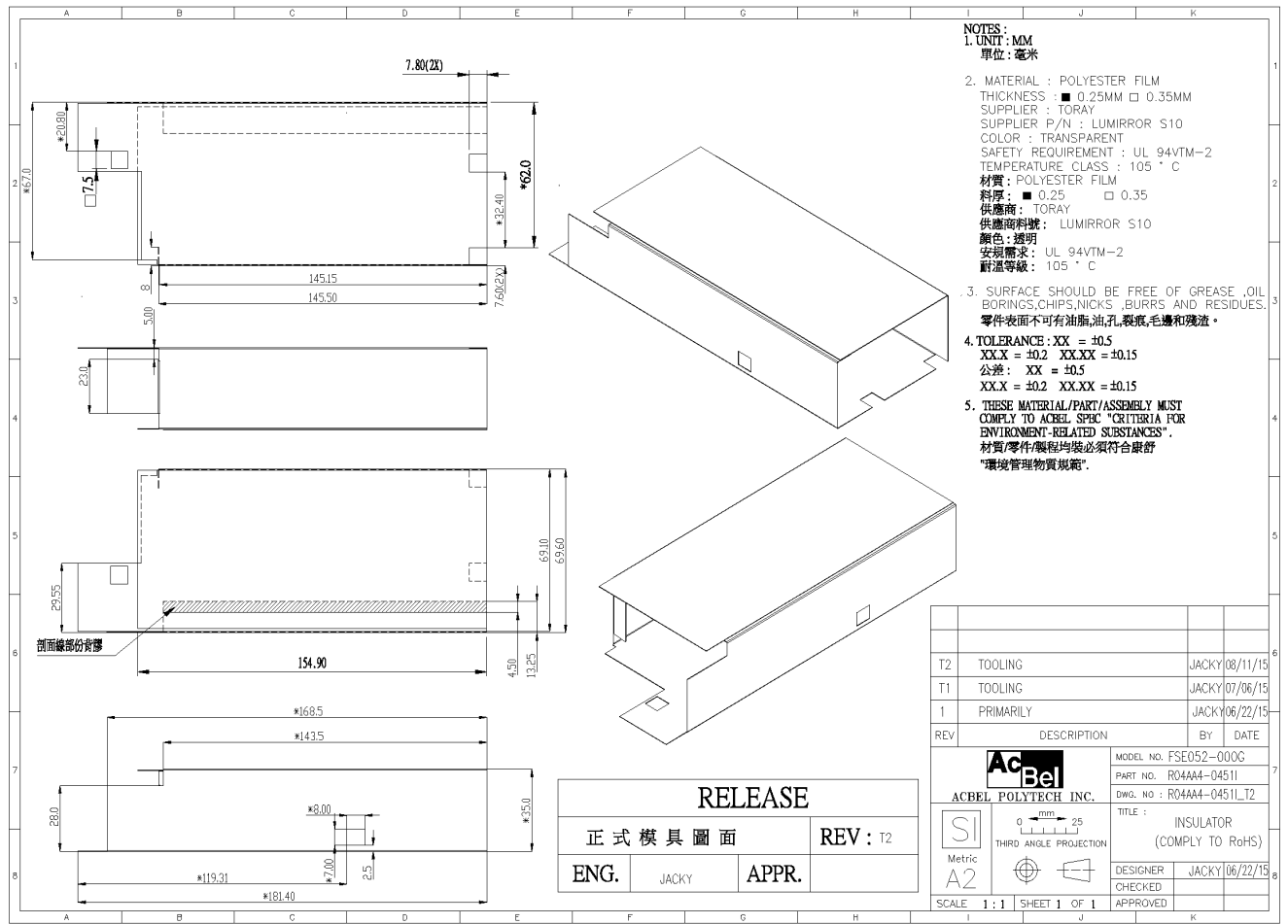
10.BASE SPEC: (B-B112 PM-9820)

[1] 尺寸 Dimension (mm)

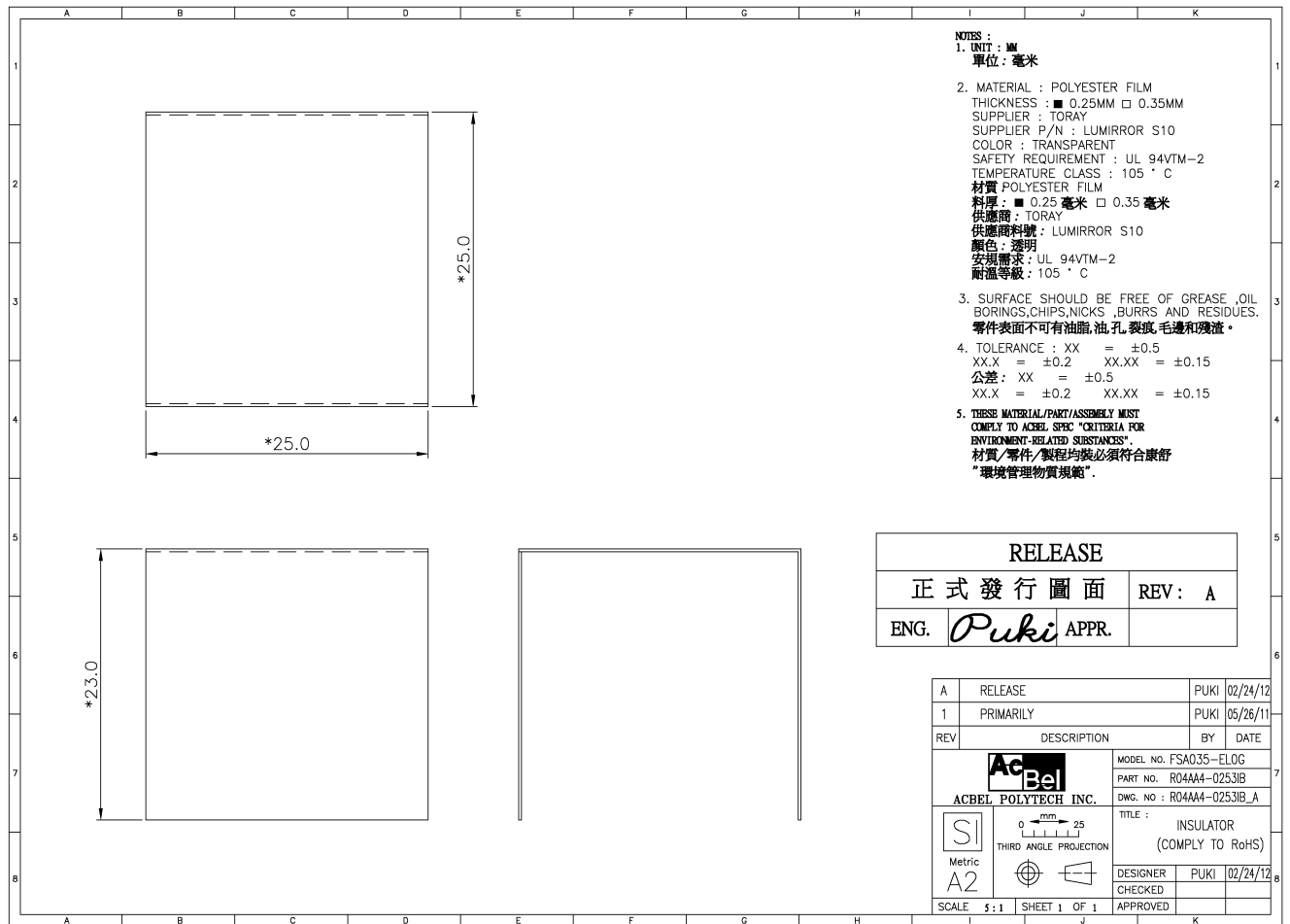


注: "★"为重点尺寸, 未注R角为0.3

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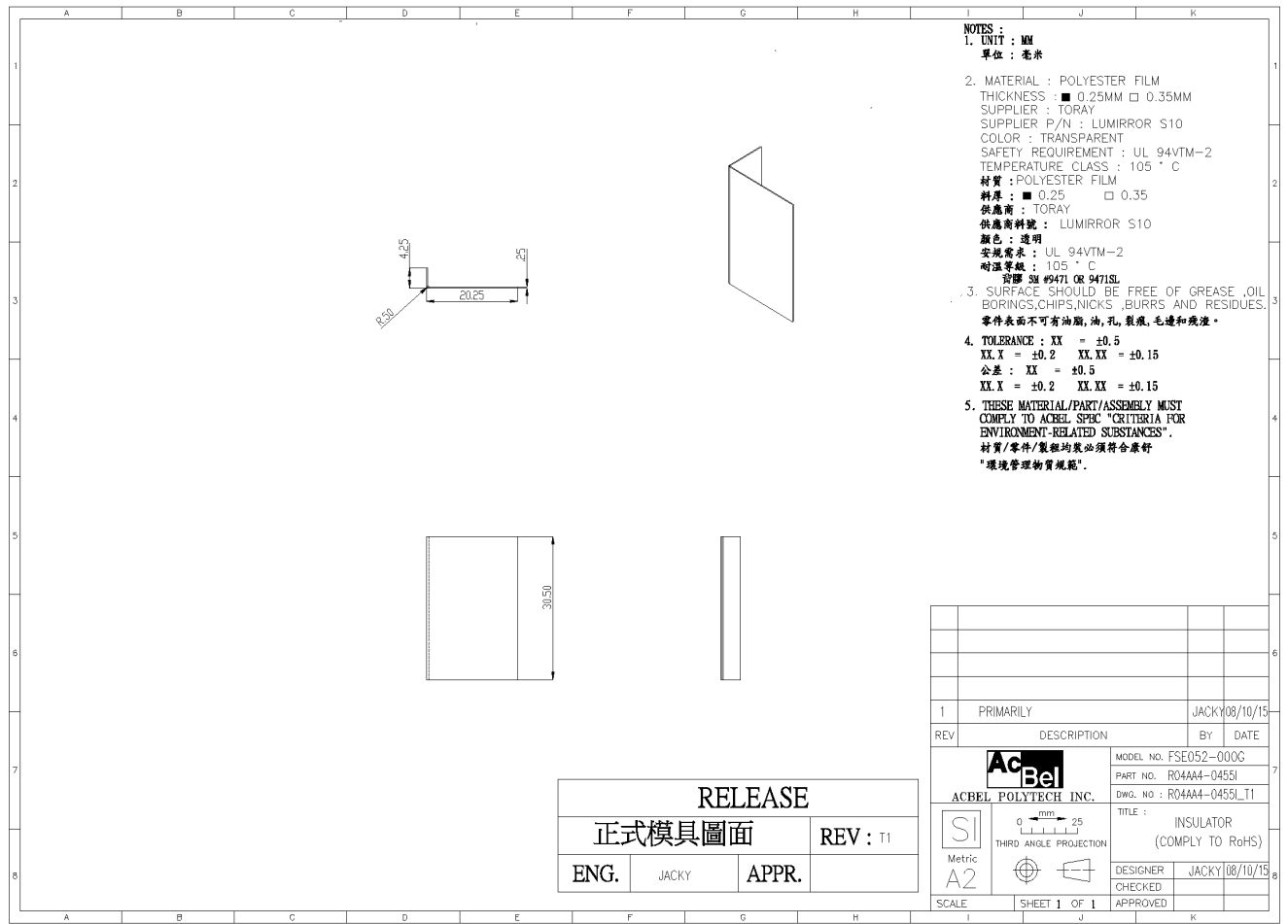


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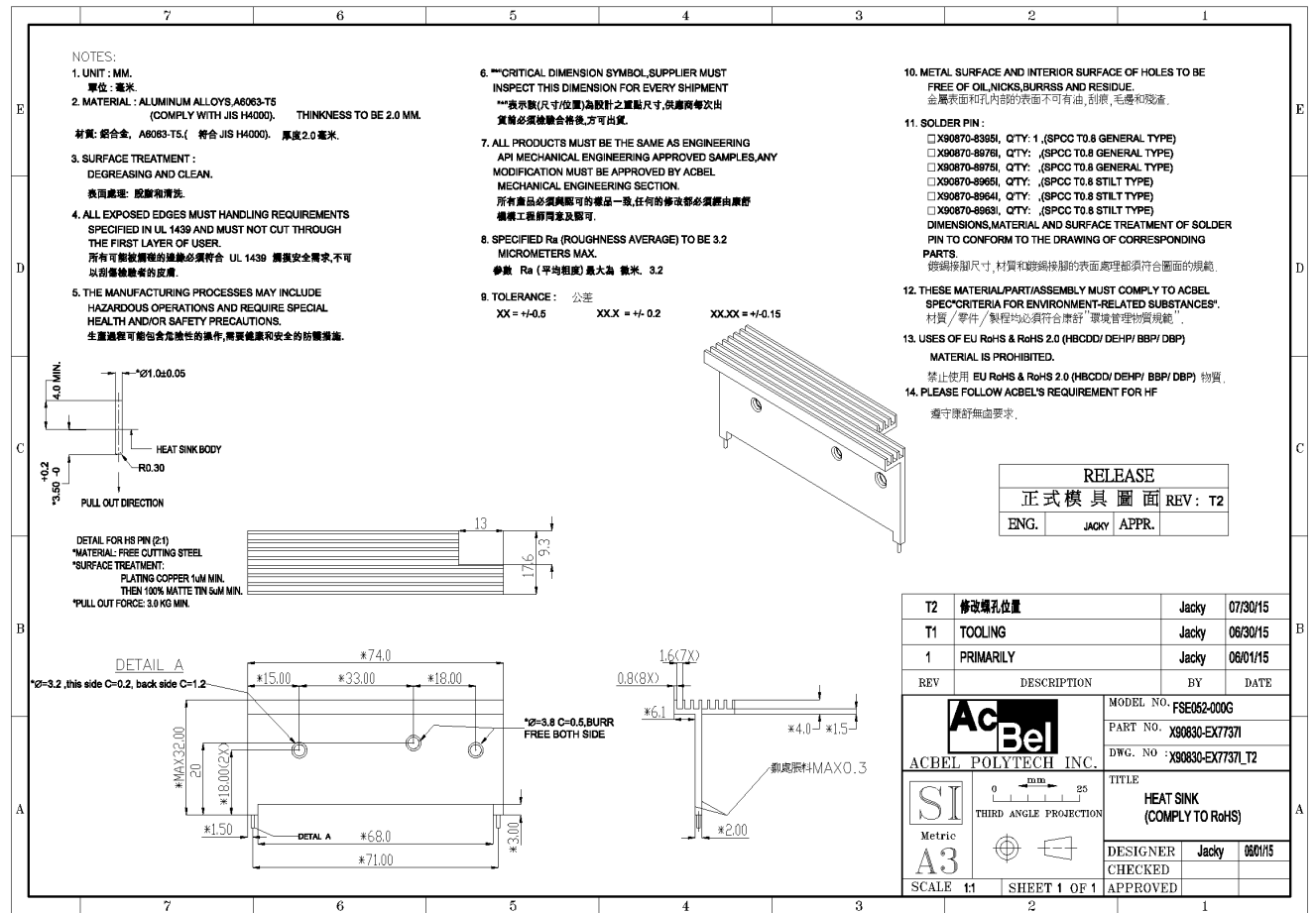


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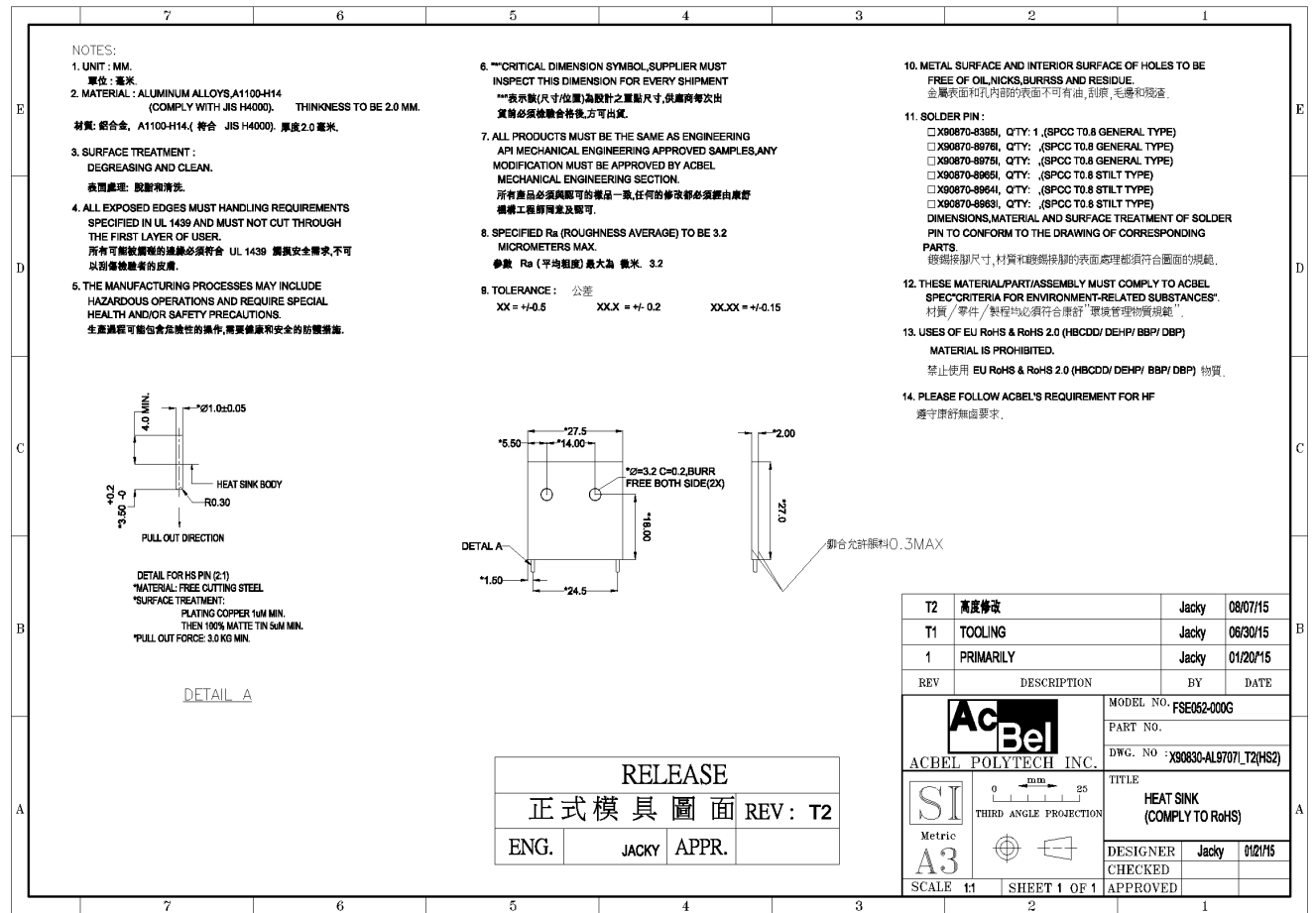
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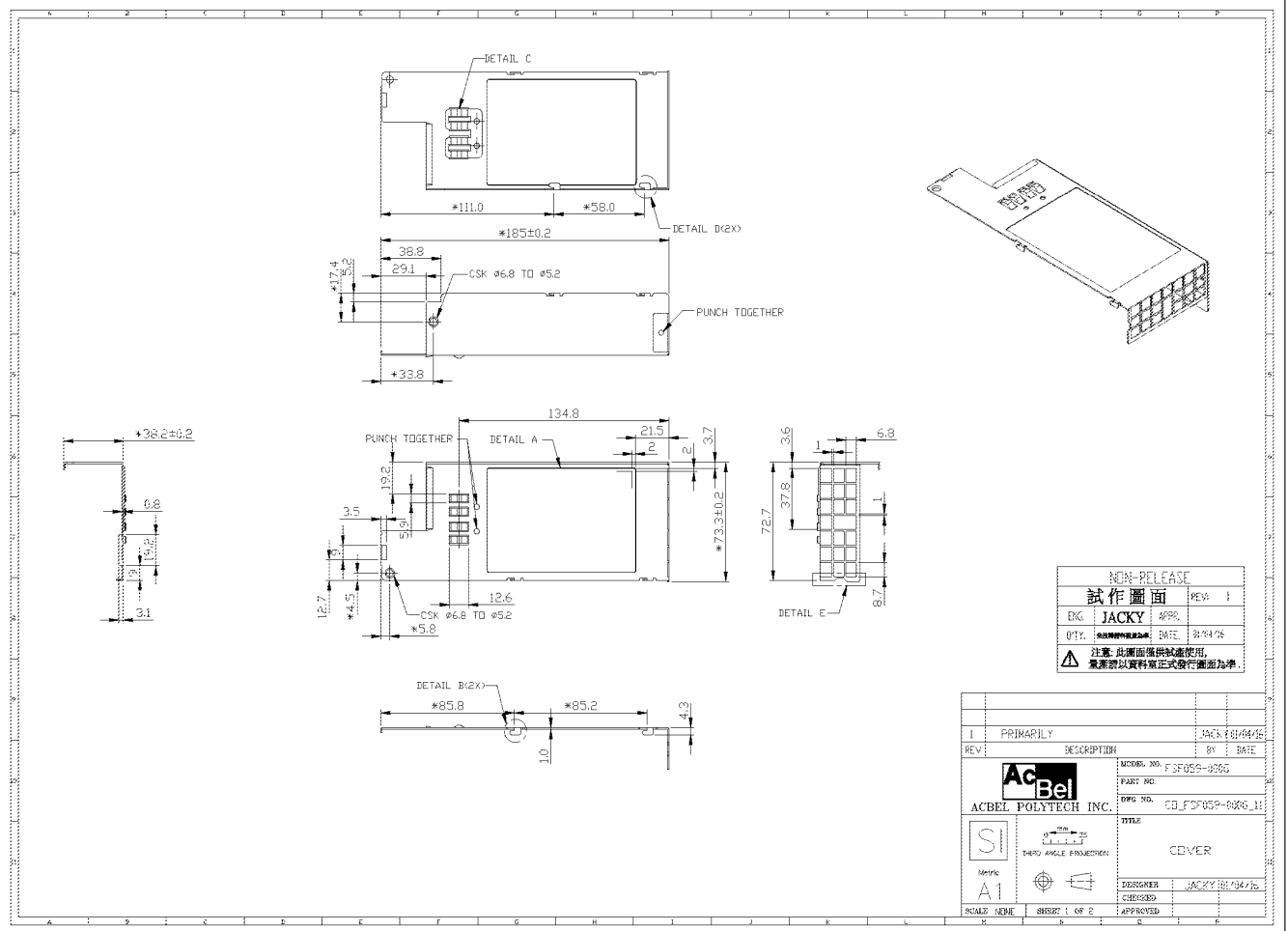
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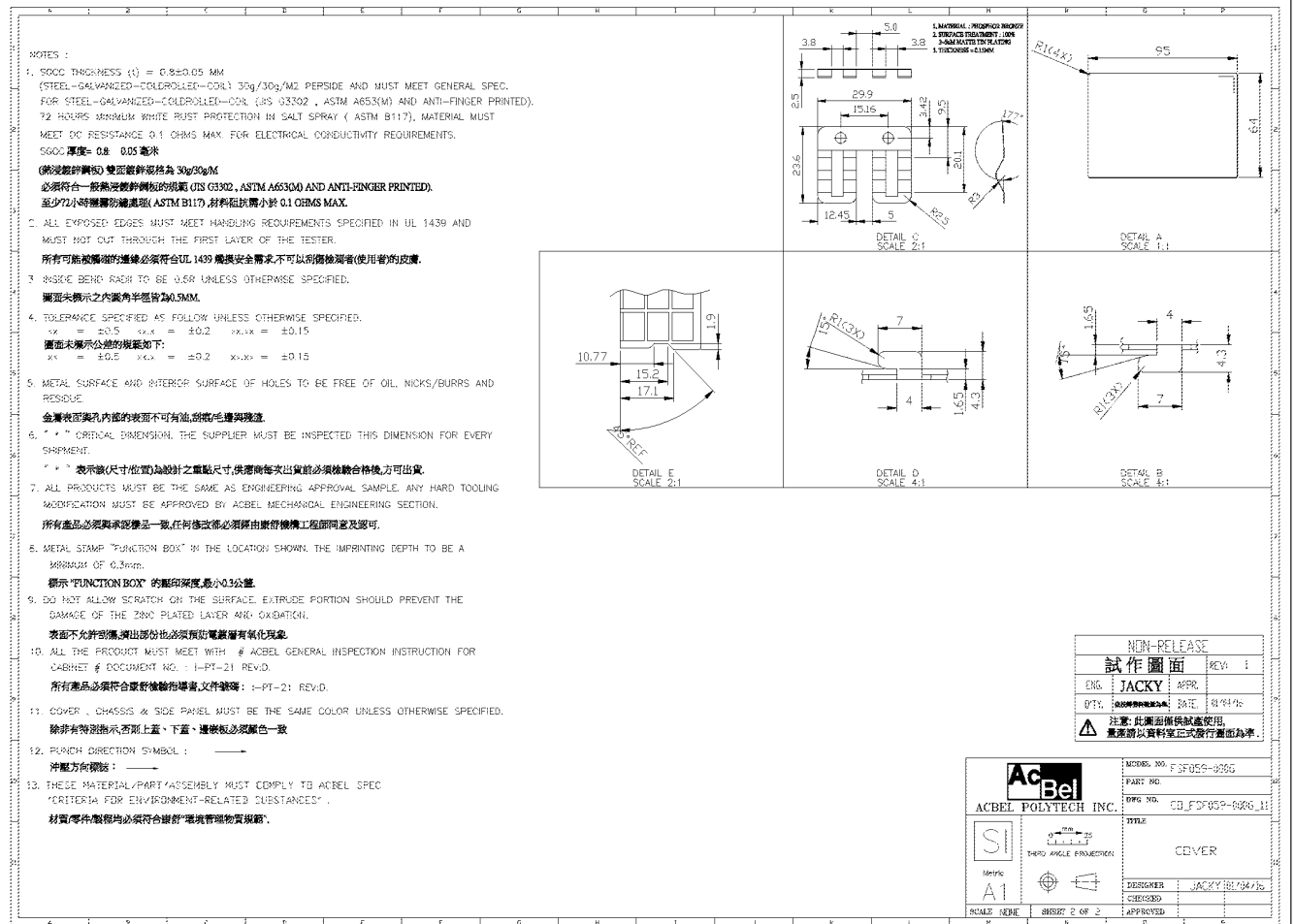
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N191893335

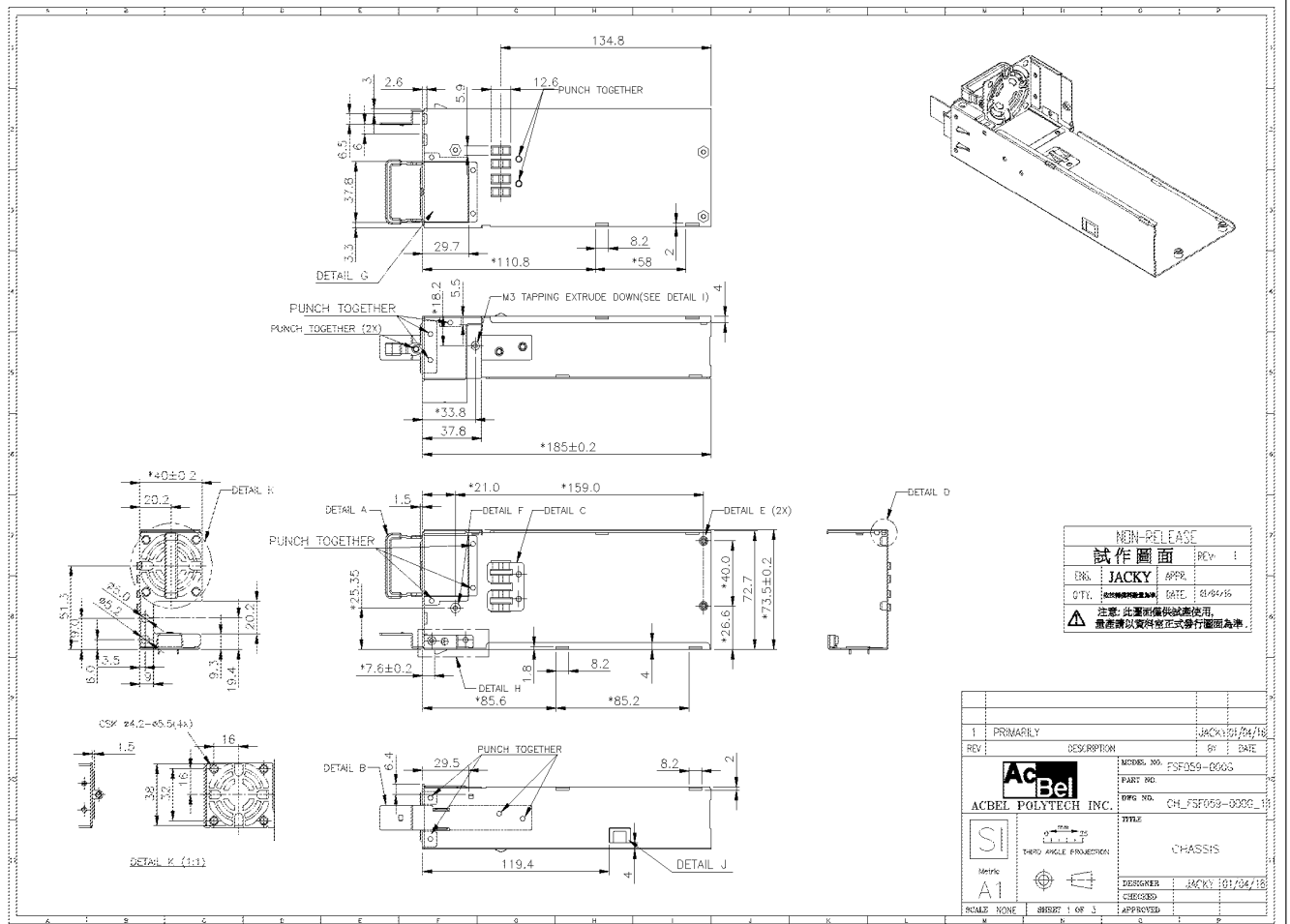


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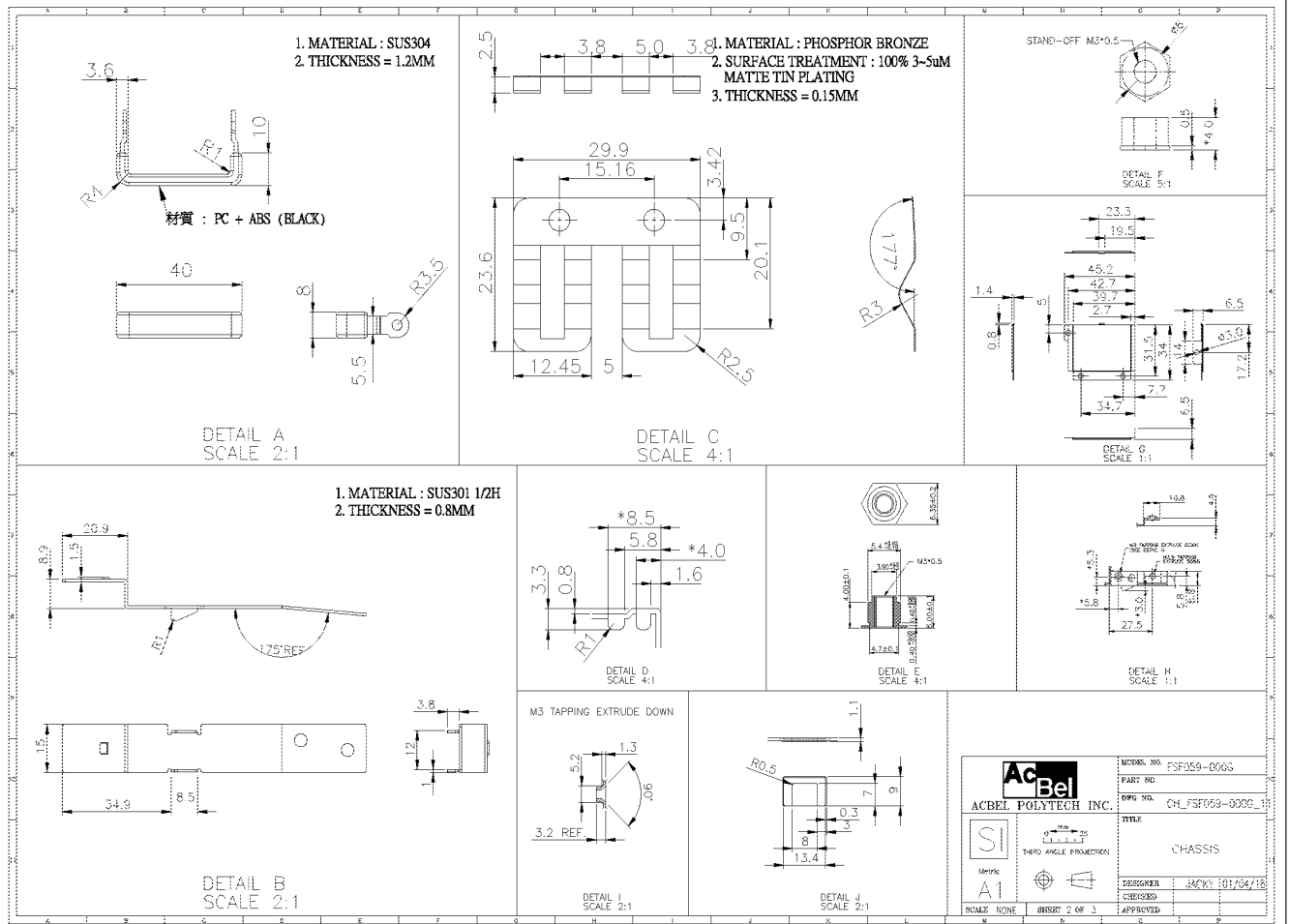


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And Report



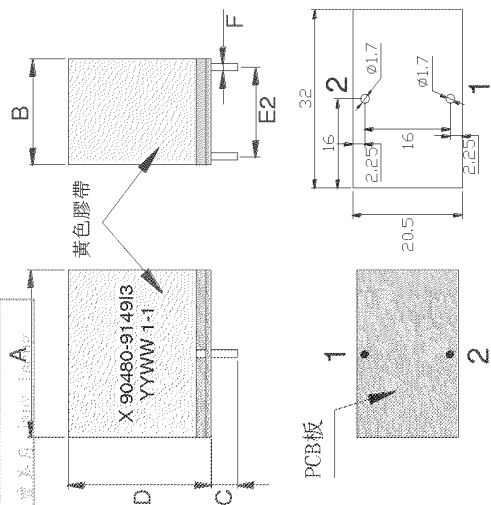
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SPECIFICATION FOR APPROVAL

Dimensions (Unit: mm)		
A		31.5 (Max)
B		20.0 (Max)
C		5.0 ± 0.5
D		26.5 (Max)
E		16.0 ± 0.8
F		1.3 ± 0.3
REMARK		
(1) MARKING: 短面, 柱身, 翼, 距		
“YYWW”中 YY 表示生产年份, WW 表示生产周期; L 表示版本信息		



PCB Layout

NOTE:

1. 使用咬合線(咬)線板
2. 綠色蔗包 2層 #92 or PF-301膠帶
3. 兩引繩需加 TFL-150 套管
4. CORE內槽需貼 1圈 #92 or PF-301 膠帶
5. CORE線向需包 2圈 #1389Y-1 or CT-280膠帶

N191893337

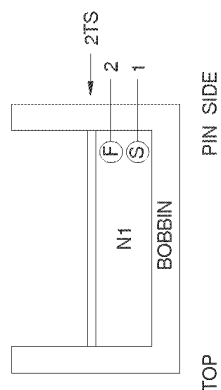
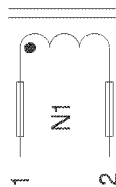
SPECIFICATION FOR APPROVAL

Winging Construction Insulation:

[illegible]

Schematic:

Winding Stack UP:



- INDICATE WINDING START

TOP
PIN SIDE

N191893337

N191893337

SPECIFICATION FOR APPROVAL

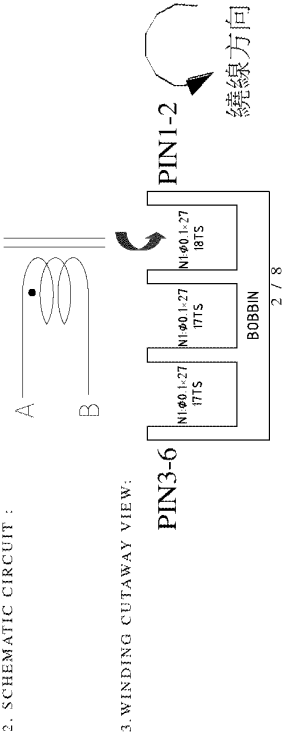
Materials (All RoHS Compliant):

AS-236480-91481-01

MATERIAL IDENTIFICATION

NO.	NAME	MATERIAL	RATING	UL NO.	MANUFACTURER
1	FERRITE R CORE	W-TP40 U29.7*24*9.35	N/A	N/A	TAK
		P47 UU29.7/24	N/A	N/A	ACME
2	ALLOY R CORE	ASS100I27-75	N/A	N/A	ACE
		S75 I110*10*12.7	N/A	N/A	MAGIC
3	WIRE	SINGLE INSULATION ANSI MW-79C/MW-80C	155℃	E201757	PACIFIC ELECTRONICS WIRE&CABLE CO.,LTD
				E85640	TAI-H ELECTRIC WIRE & CABLE CO.,LTD
				E84201	TA YA ELECTRIC WIRE & CABLE CO.,LTD
				E174837	JUNG SHING WIRE CO.,LTD
4	PCB	FR-1 (KB-3152)	130℃	E123995	KINGBOARD LAMINATES HOLDINGS LTD.
5	Kraft	#92	180℃	N/A	DONGGUAN ZHENTAI INSULATING MATERIAL CO.,LTD
				E17385	3M COMPANY
				E165111	JINGJIANG YAHUA CO.,
				E17385	3M COMPANY
6	TAPE	POLYESTER TAPE 25μm (YELLOW)3M #1388Y-	130℃	E165111	JINGJIANG YAHUA CO.,
		CT-280			
7	TEFLON TUBE	TFL-150	200℃	E156256	GREAT HOLDING INDUSTRIAL CO LTD
8	EPOXY	3300	N/A	E218090	DONGGUAN EATTO ELECTRONIC MATERIAL CO LTD
9	VARNISH	V1630FS	155℃	E87039	ELANTAS ELECTRICAL INSULATION ELANTAS PDG INC
Safety and Compliance Requirements:					
1) The transformer must meet RoHS Directive 2002/95/EC					
2) FBP-RHS-500 MAGIC TECHNOLOGY Banned Substances					
3) All materials must meet compliant with UL class B (130°) temperature rating.					
4) Materials on this product comply with Sumitomo CHS.04 Insulation system supplier must manufacture per UL recognized insulation system that list these materials					
MAGIC TECHNOLOGY / TAIPEI / TEL: 886-2-52273366 / FAX: 886-2-52273377 CHINA FACTORY / TEL: 86-755-27222227 / FAX: 86-755-27222476					

ACBEL POLYTECH INC.			Source Control Drawing		REV:S1
SAFETY P/N: 25P27 PART NO.: P 25P27 -00011 T401 MAIN TRANSFORMER FSF059-000G					
1. MATERIALS' LIST :					
Item	Material Name 材料名稱	Manufacture Part No. 製造商品名規格	Manufacture name 製造廠商名稱	Acbel P/N 零件料號	
[1]	CORE TYPE: PQ3230	PQ3230 KP95 AL6500±25%	KAI YUAN CO.	Y90485-8831IU1	
		PQ32/30 JPP-95 AL6800±25%	A-CORE CO.	Y90485-8831ID1	
		PQ32/30 TPW33 AL6300±25%	TDG CO.	X90485-8831IE1	
		PQ32/30 NH9 AL6000±25%	LIANFENG CO.	X90485-8831IW1	
[2]	BOBBIN PQ3230 臥式 3 SECTION	PQ32/30 LP9 AL6000±25%	NEW CONDA CO.	X90485-8737IX1	
		SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (PQ-32-30)	SHULIN CO.	X90486-8578IC	
[3]	BASE	SUMITOMO BAKELITE CO. PHENOLIC PM-9820 PM-9630 150℃ (B-B112)	BOSCOM CO.	X90484-9176IS	
[4]	TRIPLE WIRE	TRIPLE INSULATED WINDING WIRE TIW-2LZ 130℃	TOTOKU CO. E166483		
[5]	INSULATION TAPE	3M#1350F-1 130℃ GROUP II CT-280 130℃ GROUP II	3M CO. E17385 JINGJIANG YAHUA CO. E165111		
[6]	TEFLON TUBE	TEFLON TUBE CB-TT-L 200℃ TEFLON TUBE TFL 200℃	CHANGYUAN CO. E180908 GREAT HOLDING CO. E156256		
[7]	SHRINK TUBE	TUBE HEAT SHRINK φ 3.0 BLACK CB-HFT TYPE	CHANG YUAN CO.	X90680-9244I	
[8]	銅片	C-1.0*15.8*RT.23 C1100	LIANCHENH. CO	X40D00-9999I	
[9]	EPOXY	I*15.8*AT7.23 C1100 3300HF(灰色)	MEILI CO EATTO CO.	X40D00-9999IN XT9041-9943I	
[10]	SOLDER	3300ZH-F(灰白色) SACX0300 SOLDER BAR SACX0307 SOLDER WIRE	EATTO CO. ALPHA CO. OR EQUIVALENT.	XT9041-9948I XT5002-9936IA XT5001-9898IA	
[11]	SOLDERING FLUX	EF-9301 FLUX	ALPHA CO. OR EQUIVALENT	XT9031-9898IA	
[12]	VARNISH	WP-2952F-2G 130℃ ADD 2% CT-48(C)	HITACHI CHEMICAL CO. E72979	XT9051-9988I XT9070-9949I	
		TVB-2180T 155℃ ADD 2% TEC9652(Catalyst)	KYOCERA CHEMICAL CO. E83702	XT9051-9991I XT9051-9894I	
Insulation System: B-8 Table II (E209189) Thermal Class: B					



N191893338

ACBEL POLYTECH INC.			Source Control Drawing		REV: S1
SAFETY P/N: 25P27 PART NO.: P 25P27 -00011			T401 MAIN TRANSFORMER		FSF059-000G

4. WINDING CONSTRUCTION :

ORDER 順序	S - F 開始 - 結束	WIRE SIZE 線 徑	TURN 圈 數	INSULATION TAPE	NOTES 說 明
#1	A - B	TRIPLE LITZ WIRE Φ (0.10*27)*1	52	1 圈	{1}

***A,B出入線繞繞 TEFLON TUBE,A使用白色 TUBE 須伸入 BOBBIN 至少 10mm,B 使用黑色 TUBE 須伸入 BOBBIN 至少約 30mm。伸出均至法螺處。
*** Pin1 and pin2 access lines shall be fitted with Teflon tube,Pin1 with white tube shall project into bobbin at least 10mm shall project into the pin2 with black tube the bobbin least approximately 30mm 說明:

- {1} 第一個槽密繞 18 圈,第二個和第三個槽各繞 17 圈
To be wound 18 turns on the first groove. The second and third grooves each to be wound 17 turns.

5. ELECTRICAL REQUIREMENTS :

- {1} INDUCTANCE @ 40 KHZ, 1.0VRMS, L(A-B)= $3 \pm 10\%$ mH
{2} Q VALUE @ 40 KHZ, 1.0VRMS, Q(A-B)= 200 MIN
{3} DCR @ 20°C R(A-B)= 0.30Ω MAX
{4} HI-POT WINDING TO CORE.....1800Vac, 3 Sec, 1mA.
{5} LAYER SHORT 測試電壓 1200Vac(REF)

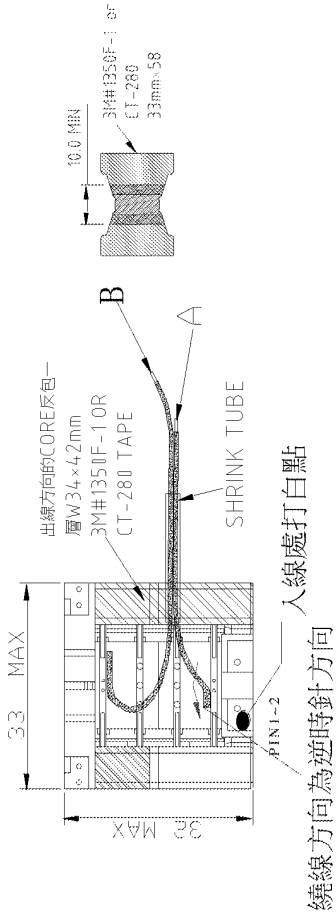
6. ASSEMBLY NOTES:

- {1} 組裝 CORE 前,先將四組鐵片,分別組裝進 BOBBIN 內。
Four groups insulation sheet and core assembly core, were assembled into BOBBIN.
{2} 將其中一 CORE 之中間層磨掉約 0.25mm 之 AIR GAP,以求得所需磁量,組裝時將磨有 GAP 之 CORE 放置於出膠處。
Gap the center leg of one core approximate 0.1mm to meet inductance requirement. Put gapped on the out pin.
{3} 組裝 CORE 時,需將 CORE 反包一層 W33*58mm 3M#1350F-1 or CT-280 TAPE,組裝時須將反包 TAPE 之 CORE 放在靠 PIN3-PIN6 側,如圖示
Before assembly, Apply a pieces of one layers insulation tape (W33mm x 58mm) on the cores (The core outlet direction), put the central vertical one layers (W10*26mm) tapped core. Put the taped core in the pin3-pin6 side of the bobbin. Shown as figure.
{4} 將 CORE 中柱之間的 GAP 須塗 80%-100% 3300ZH-F 的 EPOXY,另兩 CORE 邊柱之接合面及 PIN1 處 CORE 與 BOBBIN 間須塗 3300HF EPOXY 固定(注:BOBBIN 組裝 CORE 後,需置中固定),CORE 外面包二層 3M #1350F-1or CT-280 22mm TAPE 固定,另銅片出腳處須加墊 BASE-凸點(圖貼)銅片面且凸點(圖貼)置於兩 PIN 側下方位置,BASE 與 CORE 需黏 EPOXY 固定。
Fiting two cores with 80%-100% 3300ZH-F epoxy in the gap between two centers legs. Applying 3300HF epoxy between outer legs too. The epoxy must touch pin1 core and bobbin. Wrap two cores with two layers of 3M#1350F-1 or CT-280 22mm tape. And fix it with epoxy.
{5} 組裝 CORE 後,需將出線方向的 CORE 反包一層 W34*42mm 3M#1350F-1 or CT-280 TAPE,如圖示。
After assembly, Apply a pieces of one layers insulation tape (W34mm x 42mm) on the cores (The core outlet direction)
{6} 需將成品入線處之 BOBBIN 上打白點標示。
Required in the finished product into the line of play of white spots on the increase BOBBIN marked.
{7} A.飛線線長 85mm $\pm$ 5mm,B.飛線線長 88mm $\pm$ 5mm(白點朝上,飛線在左邊平貼於通孔,Core 邊線邊線在右邊測),PINS 長 3.3 $\pm$ 0.3mm。(飛線須打端子,R90609-96041 / R00609-99921, OR EQUIVALENT, 在飛線子接口處添置長約 10mm 的熱縮套管),兩飛線出線包需裝長度為 60 $\pm$ 5mm 熱縮套管,如圖示。
The length of A in 85 $\pm$ 5mm. The length of B in 88 $\pm$ 5mm (From the core of the part). Two fly line outgoing packet needs to install the shrinkable sleeve length 60 $\pm$ 5mm.
{8} MARKING(注意:必須使用噴碼作業)和 PITCHES 如圖示,標腳以 PCB 為準。
Marking and pitches are shown as figure. Neaten pin with PCB.
{8} 成品組裝如圖所示。
Finished assembly.
{9} 以上 SCD 未明確定義之其餘共同性標準請依康舒<<磁性元件技術規範>>為運作案。
SCD is not well defined above the rest by AcBel common standards, please <<Magnetic Components Technical Specifications>> subject to operating.

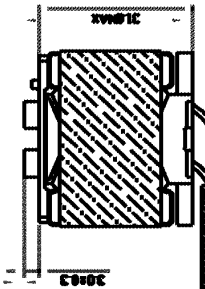
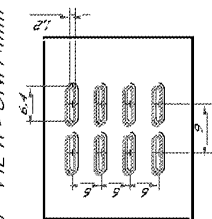
N1918933338

ACBEL POLYTECH INC. Source Control Drawing REV: S1
SAFETY P/N: 25P27 PART NO.: P 25P27 -00011 T 401 MAIN TRANSFORMER FSP059-000G

<SIDE VIEW>UNIT:mm



<TOP VIEW>UNIT:mm



<TOP VIEW>
API P 25P27 -00011 X VENDER CODE
HI-POT B-8 XXXX XX REV
DATE CODE
PIN1
PIN2

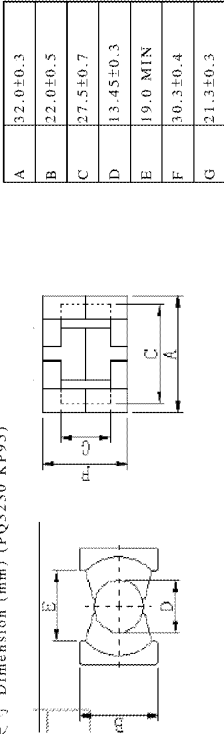
《 MARKING:必須使用噴碼作業 》



N191893338

ACBEL POLYTECH INC.	Source Control Drawing	REV: S1
SAFETY P/N: 25P27 PART NO.: P 25P27 -00011	T401 MAIN TRANSFORMER	FSF059-000G

7. PQ32/30 CORE SPEC: (KP95,JPP-95, TPW33,NH9,DMR95, LP9)
[1] 尺寸 Dimension (mm) (PQ3230 KP95)



[2] 磁芯参数 Core set parameters

Manufactory name	KAI YUAN	A-CORE	TDG	LIANFENG	NEW CONDA	Unit
Core constant (C1)	0.46	0.45	-	-	-	mm ³
Effective magnetic path length (Le)	74.6	68.3	75.29	75.5	74.6	mm
Effective cross-sectional area(Ae)	160	153	164.32	164.5	161	mm ²
Effective volume (Ve)	11936	10449.9	12371.2	12430.8	12000	mm ³
Weight(approx) (Wt)	56.0	56.1	55	27.25	55	g/set

[3] 磁芯特性 Electrical characteristics

Manufacturer y name	KAI YUAN	A-CORE	TDG	LIANFENG G	NEW CONDA	Test conditions	Test meter
Inductance (AL)	6500±25% nH/N ²	6800±25% nH/N ²	6300±25% nH/N ²	6000±25% nH/N ²	6000±25% nH/N ²	1kHz, 0.3V, 100Ts, 25±3℃	HP-4284A
Inductance (AL)	6500±25% nH/N ²	6800±25% nH/N ²	6800±25% nH/N ²	6800±25% nH/N ²	-	1kHz, 0.3V, 100Ts, 25±3℃	HP-4284A
Power loss (Pc) MAX	5.6W/Set	95mW/m ax	95mW/m ax	95mW/ma x	6.6 W/Set	100kHz, 200, 100±2℃	SY-8232 or Equivalent

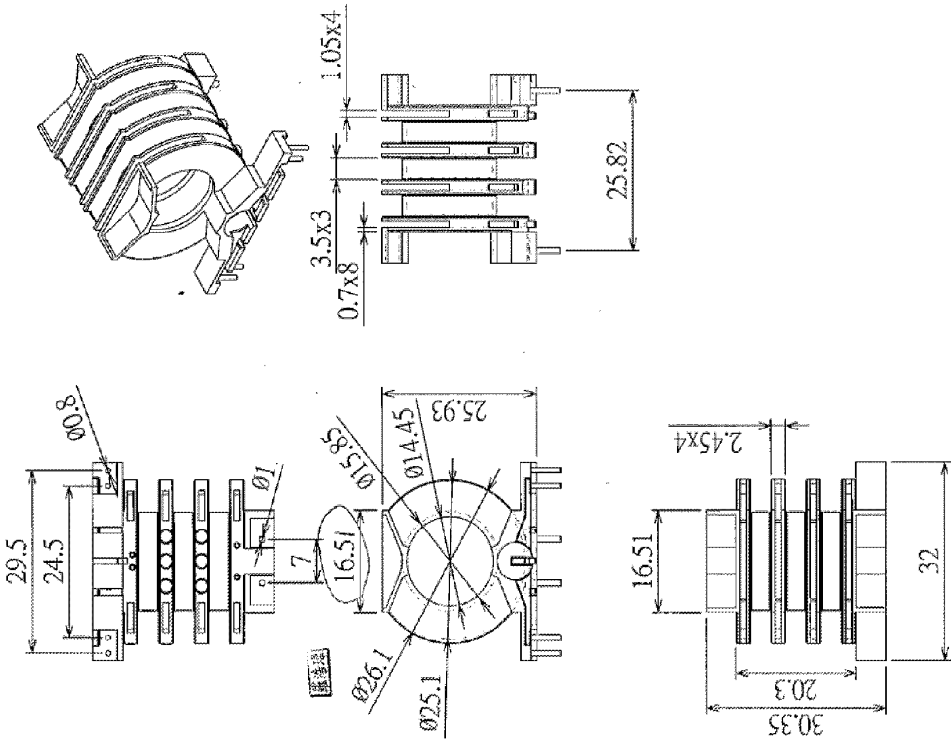
[4] 材料特性 Material characteristics

Characteristics	Unit	KP95	JPP-95	TPW33	NH9	LP9
Initial permeability (μi)	-	3300±25%	3300±25%	3300±25%	-	3300±25%
Saturation flux density at 1194A/m(Ts)	mT	530	530	520	-	520
Remanence (Br)	mT	410	410	410	-	410
Coercivity (Hc)	mT	85	80	120	-	-
	mT	60	60	90	-	90
	A/m	10	9.5	12	-	-
	A/m	7.5	6.5	9	-	9
	kW/m ³	350	350	/	-	400
	kW/m ³	290	290	380	-	380
Core loss (Pc) at 100kHz, 200mT	kW/m ³	280	290	290	-	350
	kW/m ³	290	300	300	-	350
	kW/m ³	350	360	350	-	400
Electrical resistivity (ρ)	Ω·m	6	6.5	4	-	4
Curie Temperature (Tc)	℃	>215	>215	>220	>	x103210
Density (δ)	kg/m ³	4.9x10 ³	4.9x10 ³	4.9x10 ³	4.9x10 ³	4.8 x10 ³

N191893338

ACBEL POLYTECH INC.	Source Control Drawing	REV: S1
SAFETY P/N: 25P27 PART NO.: P 25P27 -00011	T 401 MAIN TRANSFORMER	FSF059-000G

(1) 尺寸 Dimension (mm) (PQ-32-30)



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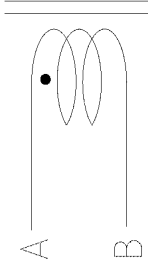
(2) 材質要求 Material requirement
本機須使用 SUMITOMO BAKELITE CO LTD 之 LCPE4008 (UL No. E54705).

ACBEL POLYTECH INC.				Source Control Drawing		REV:SI
SAFETY P/N: 25P59 PART NO.: P 25P59 -0001I T401 MAIN TRANSFORMER				FSE052-00AG		
1. MATERIALS' LIST :						
Item	Material Name 材料名稱	Manufactory Part No. 製造商品名規格	Manufactory name 製造廠商名稱	Abel P/N 零件料號		
{1}	CORE TYPE: PQ3230	PQ3230 KPP5 AL6500±25%	KAI YUAN CO.	Y90485-8831IU1		
		PQ32/30 JPP-95 AL6800±25%	A-CORE CO.	Y90485-8831ID1		
		PQ32/30 TPW33 AL6300±25%	TDG CO.	X90485-8831HE1		
		PQ32/30 NH9 AL6000±25%	LIANFENG CO.	X90485-8831IW1		
		PQ32/30 LP9 AL6000±25%	NEW CONDA CO.	X90485-8737IX1		
{2}	BOBBIN PQ3230 臥式 3 SECTION	SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (PQ-32-30)	SHULIN CO.	X90486-8578IC		
		SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (B-3242)	BOSCOM CO.	X90486-8578IS		
		SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (HD-1295)	HAO DA CO.	X90486-8578IQ		
		SUMITOMO BAKELITE CO. PHENOLIC-PM-9820-PM-9630-150℃ (B-B112)	BOSCOM CO.	X90484-9176IS		
{4}	TRIPLE WIRE	TRIPLE INSULATED WINDING WIRE TILW-B 130℃	TA YA CO. E225803			
{5}	INSULATION TAPE	3M#1350F-I 130℃ GROUP II CT-280 130℃ GROUPII	3M CO. E17385 JINGJIANG YAHUA CO. E165111			
{6}	TEFLON TUBE	TEFLON TUBE CB-TT-L 200℃	CHANGYUAN CO. E180908			
		TEFLON TUBE TFL 200℃	GREAT HOLDING CO. E156256			
{7}	SHRINK TUBE	TUBE HEAT SHRINK φ 3.0 BLACK CB-HFT TYPE	CHANG YUAN CO.	X90680-9244I		
{8}	銅片	C-1.0*15.8*7.23 C1100	LIANCHENH. CO	X40D80-9999I		
		I*15.8*AT7.23 C1100	MEILI CO	X40D80-9999IN		
{9}	EPOXY	3300HF(灰色)	EATTO CO.	XT9041-9943I		
		3300ZH-F(灰白色)	EATTO CO.	XT9041-9948I		
{10}	SOLDER	AD-3B	JASDI CO.	PT9041-9935IJ		
		SACX0300 SOLDER BAR	ALPHA CO.	XT5002-9936IA		
{11}	SOLDERING FLUX	SACX0307 SOLDER WIRE	OR EQUIVALENT.	XT5001-9898IA		
		EF-9301 FLUX	ALPHA CO. OR EQUIVALENT	XT9031-9898IA		
{12}	VARNISH	WP-2952F-2G 130℃ ADD 2% CT-48(C)	HITACHI CHEMICAL CO. E72979	XT9051-9988I XT9070-9949I		
		V4630FS 130℃	ELANTASELECTRI CAL INSULATION ELANTASPDG INC. E87039	XT9051-9997I		
		468-2FC 130℃	ELANTASELECTRI CAL INSULATION ELANTASPDG INC. E75225	PT9051-9996I		
Insulation System: TaYa 130-I Table III (E254098)				Thermal Class: B		

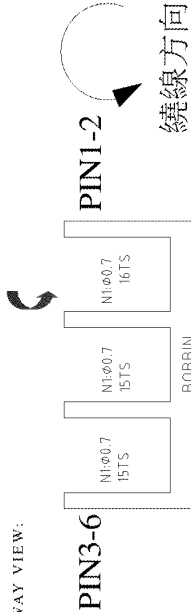
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ACBEL POLYTECH INC.	Source Control Drawing	REV: S1
SAFETY P/N: 25P59	PART NO.: P 25P59 -00011	T401 MAIN TRANSFORMER FSE052-00AG

2. SCHEMATIC CIRCUIT :



3. WINDING CUTAWAY VIEW:



4. WINDING CONSTRUCTION :

ORDER 順序	S - F 開始 - 結束	WIRE SIZE 線 徑	TURN 圈 數	INSULATION TAPE	NOTES 說 明
#1	A - B	TRIPLE WIRE Φ0.7	46	I 層	{1}

**A,B出入線須裝 TEFLON TUBE,A 使用白色 TUBE 須伸入 BOBBIN 至少 10mm,B 使用黑色 TUBE 須伸入 BOBBIN 至少約 30mm. 伸出均至沾觸處

*** Pin1 and pin2 access lines shall be fitted with Teflon tube.Pin1 with white tube shall project into bobbin at least 10mm shall project into the pin2 with black tube the bobbin least approximately 30mm

說明:

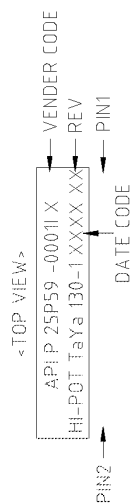
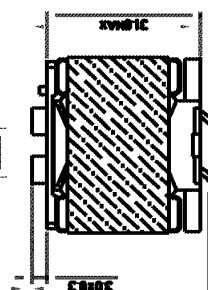
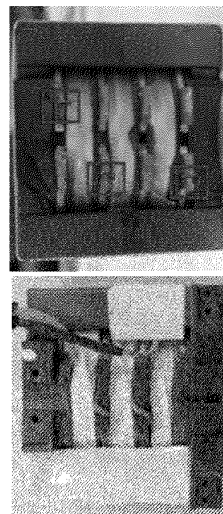
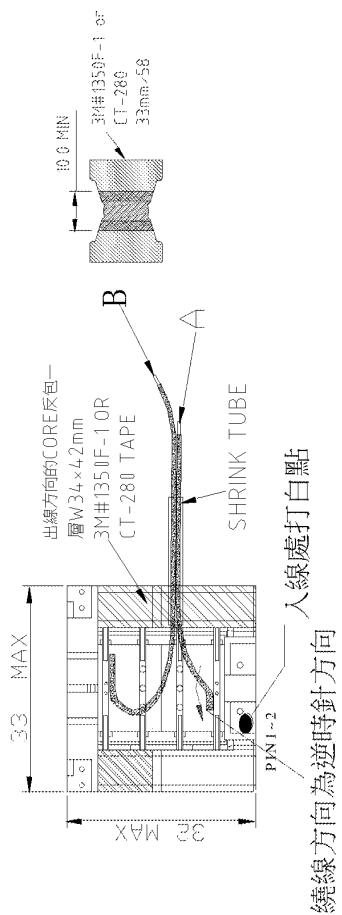
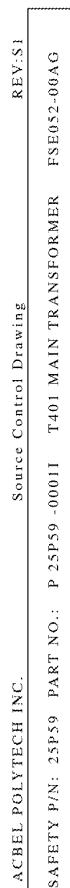
{1} 第一銅線密繞 16 圈,第二層和第三個槽各繞 15 圈

To be wound 16 turns on the first groove. The second and third grooves each to be wound 15 turns.

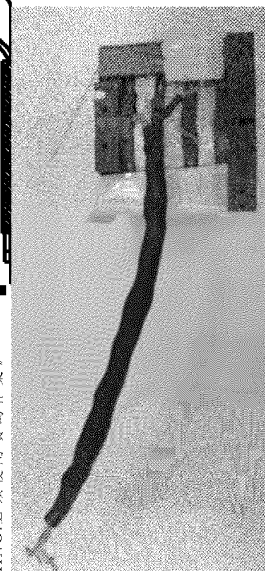
5. ELECTRICAL REQUIREMENTS :

- {1} INDUCTANCE @ 40 KHZ, 1.0VRMS, L(A-B)=7±10% mH
- {2} Q VALUE @ 40 KHZ, 1.0VRMS, Q(A-B)= 200 MIN
- {3} DCR @ 20℃ R(A-B)= 0.30 Ω MAX
- {4} HI-POT WINDING TO CORE.....1800Vac, 3 Sec. 1mA.
- {5} LAYER SHORT 測試電壓 1200Vac(REF)

N191893339



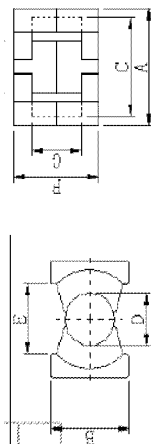
《MARKING:必須使用噴碼作業》



AFETY P/N: 25P59 PART NO.: P 25P59 -00011 T401 MAIN TRANSFORMER FSE052-00AG

7. PQ32/30 CORE SPEC: (KP95,JPP-95, TPW33,NH9,DMR95, LP9)

[1] 尺寸 Dimension (mm) (PQ3230 KP95)



A	32.0±0.3
B	22.0±0.5
C	27.5±0.7
D	13.45±0.3
E	19.0 MIN
F	30.3±0.4
G	21.3±0.3

[2] 磁芯參數 Core set parameters

Manufacture name	KAI YUAN	A-CORE	TDG	LIANF ENG	NEW CONDA	Unit
Core constant (C1)	0.46	0.45	-	-	-	mm ⁻¹
Effective magnetic path length (Le)	74.6	68.3	75.29	75.5	74.6	mm
Effective cross-sectional area(Ae)	160	153	164.32	164.5	161	mm ²
Effective volume (Ve)	11936	10449.9	12371.2	12430.8	12000	mm ³
Weight(approx.) (wt)	56.0	56.1	55	54.5	55.5	g/set

[3] 電氣特性 Electrical characteristics

Manufacturer	KAI YUAN	A-CORE	TDG	LIANFE NG	NEW CONDA	Test conditions	Test meter
Yuan name	6500±25 % nH/N ²	6800±25 % nH/N ²	6300±25 % nH/N ²	6000±25 % nH/N ²	6000±25 % nH/N ²	1kHz, 0.3V, 100Ts, 25±3°C	HP-4284 A
Inductance (AL)	6500±25 % nH/N ²	6800±25 % nH/N ²	6800±25 % nH/N ²	6800±25 % nH/N ²	-	1kHz, 0.3V, 100Ts, 25±3°C	HP-4284 A
Inductance (AL)	6500±25 % nH/N ²	6800±25 % nH/N ²	95mW/m ax	95mW/m ax	6.6W/Set	100kHz, 200, 100±2	SY-4232 or Equivalent
Power loss (P _{max})	5.6W/Set	95mW/m ax	95mW/m ax	95mW/m ax	6.6W/Set	100kHz, 200, 100±2	SY-4232 or Equivalent

[4] 材質特性 Material characteristics

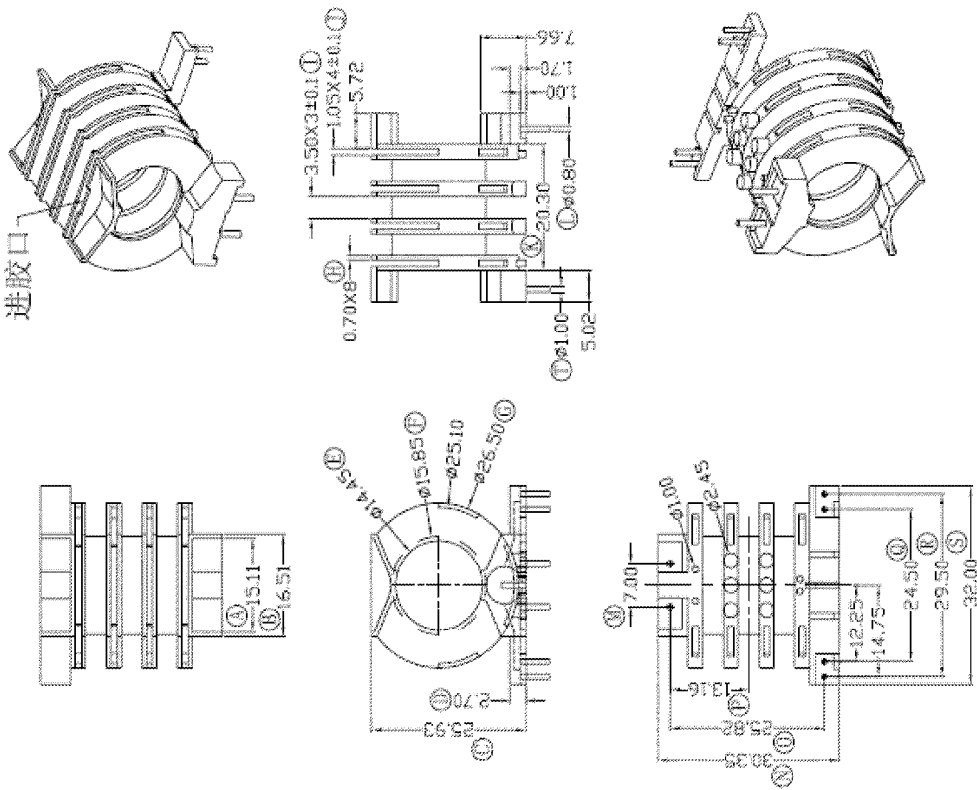
Characteristics	Unit	KP95 %	JPP-95 %	TPW33 %	NH9	LP9 %
Initial permeability (μ i)	-	3300 $\pm$ 25	3300 $\pm$ 25	3300 $\pm$ 25	-	3300 $\pm$ 25
Saturation flux density at 1194A/mBs)	25 $^{\circ}$ C 100 $^{\circ}$ C mT	530 410	530 410	520 410	-	520 410
Remanence (Br)	25 $^{\circ}$ C 100 $^{\circ}$ C mT	85 60	80 60	120 90	-	- 90
Coercivity (Hc)	25 $^{\circ}$ C 100 $^{\circ}$ C A/m	10 7.5	9.5 6.5	1.2 9	-	- 9
	25 $^{\circ}$ C kW/m	350	350	/	-	400
	60 $^{\circ}$ C kW/m	290	290	380	-	380
Core loss (Pc) at 100kHz, 200mT	80 $^{\circ}$ C 100 $^{\circ}$ C kW/m	280 290	290 300	290 300	-	350 350
	120 $^{\circ}$ C kW/m	350	360	350	-	400
Electrical resistivity (ρ)	Ω m	6	6.5	4	-	4
Curie Temperature (Tc)	$^{\circ}$ C	>215	>215	>220	>	$\geq$ 210
Density (d)	kg/m 3	4.9 $\times$ 10 3	4.9 $\times$ 10 3	4.9 $\times$ 10 3	4.9 $\times$ 10 3	4.8 $\times$ 10 3

N191893339

ACBEL POLYTECH INC. Source Control Drawing REV: S1

SAFETY P/N: 25P59 PART NO.: P 25P59 -00011 T401 MAIN TRANSFORMER FSE052-00AG

8. BOBBIN SPEC:
[1] 尺寸 Dimension (mm) (B-3242)

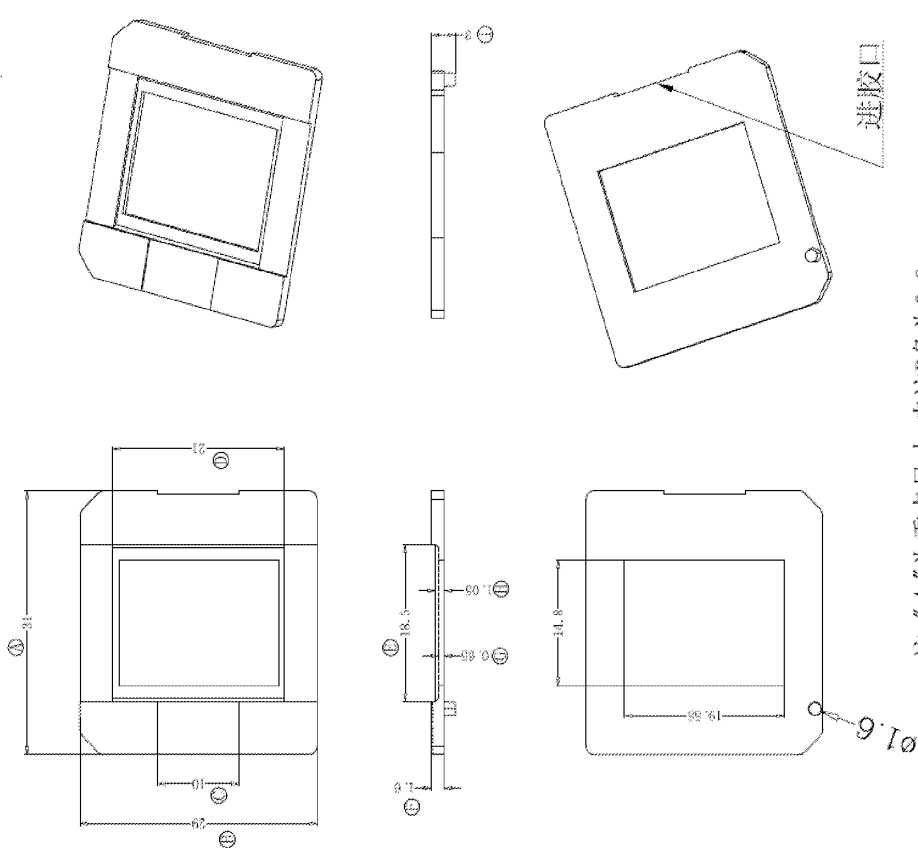


[2] 材質要求 Material requirement
本體須使用 SUMITOMO BAKELITE CO LTD 之 LCPE4008 (UL No. E54705).

N191893339

ACBEL POLYTECH INC.	Source Control Drawing	REV: S1
SAFETY P/N: 25P59 PART NO.: P 25P59 -00011	T401 MAIN TRANSFORMER	FSE052-00AG

10. BASE SPEC: (B-B112 PM-9820)
{1} 尺寸 Dimension (mm)



---END---

ACBEL POLYTECH INC.				Source Control Drawing		REV:SI
SAFETY P/N: 25P60 PART NO.: P 25P60 -00011 T401 MAIN TRANSFORMER FSF059-7LAG						
1. MATERIALS' LIST :						
Item	Material Name 材料名稱	Manufacture Part No. 製造商品名規格	Manufacture name 製造廠商名稱	Acbel P/N 零件料號		
[1]	CORE TYPE: PQ3230	PQ3230 KP95 AL6500±25%	KAI YUAN CO.	Y90485-8831IU1		
		PQ32/30 JPP-95 AL6800±25%	A-CORE CO.	Y90485-8831ID1		
		PQ32/30 TPW33 AL6300±25%	TDG CO.	X90485-8831IE1		
		PQ32/30 NH9 AL6000±25%	LIANFENG CO.	X90485-8831IW1		
[2]	BOBBIN PQ3230 臥式 3 SECTION	SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (PQ-32-30)	SHULIN CO.	X90485-8737IX1		
		SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (B-3242)	BOSCOM CO.	X90486-8578IS		
		SUMITOMO CHEMICAL CO. E54705 LCPE4008 130℃ (HD-1295)	HAO DA CO.	X90486-8578IQ		
		SUMITOMO BAKELITE CO. PHENOLIC PM-9820 PM-9630 150℃ (B-B112)	BOSCOM CO.	X90484-9176IS		
[3]	BASE					
[4]	TRIPLE WIRE	TRIPLE INSULATED WINDING WIRE TILW-B 130℃	TA YA CO. E225803			
[5]	INSULATION TAPE	3M#1350F-1 130℃ GROUP II	3M CO. E17385			
[6]	TEFLON TUBE	CT-280 130℃ GROUPII	JINGJIANG YAHUA CO. E165111			
		TEFLON TUBE CB-TT-L 200℃ E180908	CHANGYUAN CO. E180908			
		TEFLON TUBE TFL 200℃	GREAT HOLDING CO. E156256			
[7]	SHRINK TUBE	TUBE HEAT SHRINK φ 3.0 BLACK CB-HFT TYPE	CHANG YUAN CO.	X90680-9244I		
[8]	銅片	C-1.0*15.8*7.23 C1100	LIANCHENH. CO	X40D80-9999I		
		I*15.8*AT7.23 C1100	MELLI CO	X40D80-9999IN		
[9]	EPOXY	3300HF(灰色)	EATTO CO.	XT9041-9943I		
		3300ZH-F(灰白色)	EATTO CO.	XT9041-9948I		
[10]	SOLDER	SACX0300 SOLDER BAR SACX0307 SOLDER WIRE	ALPHA CO. OR EQUIVALENT.	XT5002-9936IA XT5001-9898IA		
[11]	SOLDERING FLUX	EF-9301 FLUX	ALPHA CO. OR EQUIVALENT	XT9031-9898IA		
[12]	VARNISH	WP-2952F-2G 130℃ ADD 2% CT-48(C)	HITACHI CHEMICAL CO. E72979	XT9051-9988I XT9070-9949I		
		V1630FS 130℃	ELANTASELECTRI CAL INSULATION ELANTASPDG INC. E87039	XT9051-9997I		
		468-2FC 130℃	ELANTASELECTRI CAL INSULATION ANTASPDG INC. E75225	PT9051-9996I		
Insulation System: TaYa 130-1 Table III (E254098)				Thermal Class: B		

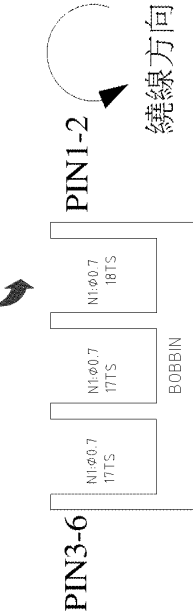
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ACBEL POLYTECH INC.	Source Control Drawing	REV:SI
SAFETY P/N: 25P60 PART NO.: P 25P60 -0001I T401 MAIN TRANSFORMER FSF059-7LAG		

2. SCHEMATIC CIRCUIT :



3. WINDING CUTAWAY VIEW:



4. WINDING CONSTRUCTION :

ORDER 順序	S - F 開始 - 結束	WIRE SIZE 線徑	TURN 圈數	INSULATION TAPE	NOTES 說明
#1	A - B	TRIPLE WIRE Φ 0.7	52	1 層	{1}

***A,B出入繞須裝 TEFLON TUBE,A使用白色 TUBE 須伸入 BOBBIN 至少 10mm,B 使用黑色 TUBE 須伸入 BOBBIN 至少約 30mm. 伸出均至沾觸處.

*** Pin1 and pin2 access lines shall be fitted with Teflon tube.Pin1 with white tube shall project into bobbin at least 10mm shall project into the pin2 with black tube the bobbin least approximately 30mm

說明:

{1} 第一層繞線 18 圈,第二個和第三個槽各繞 17 圈

To be wound 18 turns on the first groove. The second and third grooves each to be wound 17 turns.

5. ELECTRICAL REQUIREMENTS :

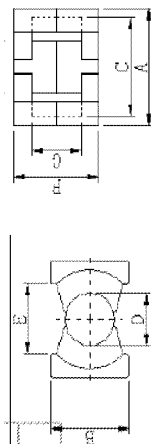
- {1} INDUCTANCE @ 40 KHZ, 1.0VRMS, L(A-B)=3±10% mH
- {2} Q VALUE @ 40 KHZ, 1.0VRMS, Q(A-B)= 200 MIN
- {3} DCR @ 20℃ R(A-B)= 0.33Ω MAX
- {4} HI-POT WINDING TO CORE.....1800Vac, 3 Sec, 1mA.
- {5} LAYER SHORT 測試電壓 1200Vac(REF)

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AFETY P/N: 25P60 PART NO.: P 25P60 -00011 T401 MAIN TRANSFORMER FSF059-7LAG

7. PQ32/30 CORE SPEC: (KP95,JPP-95, TPW33,NH9,DMR95, LP9)

[11] 尺寸 Dimension (mm) (PQ3230 KP95)



A	32.0±0.3
B	22.0±0.5
C	27.5±0.7
D	13.45±0.3
E	19.0 MIN
F	30.3±0.4
G	21.3±0.3

[2] 磁芯參數 Core set parameters

Manufacture name	KAI YUAN	A-COR E	TDG	LIANPE NG	NEW CONDA	Unit
Core constant (Cf)	0.46	0.45	-	-	-	mm ¹
Effective magnetic path length (Le)	74.6	68.3	75.29	75.5	74.6	mm
Effective cross-sectional area(Ae)	160	153	164.32	164.5	161	mm ²
Effective volume (Ve)	11936	10449.9	12371.2	12430.8	12000	mm ³
Weight(approx.) (wt)	56.0	56.1	55	54.5	54.5	g/set

[3] 電氣特性 Electrical characteristics

Manufacturer name	KAI YUAN	A-CORE	TDG	LIAN FENG	NEW CONDA	Test conditions	Test meter
Inductance (AL)	6500±25% nH/N ²	6800±25% nH/N ²	6300±25% nH/N ²	6000±25% nH/N ²	6000±25% nH/N ²	1kHz, 0.3V, 100T ₂ ,25±3℃	HP-4284A
Inductance (AL)	6500±25% nH/N ²	6800±25% nH/N ²	6800±25% nH/N ²	6800±25% nH/N ²	-	1kHz, 0.3V, 100T ₂ ,25±3℃	HP-4284A
Power loss (P _{ce}) MAX	5.6W/Set	95mW/m ax	95mW/m ax	95mW/m ax	6.6 W/Set	100kHz, 200, 100±2℃	SY-8232 or Equivalent

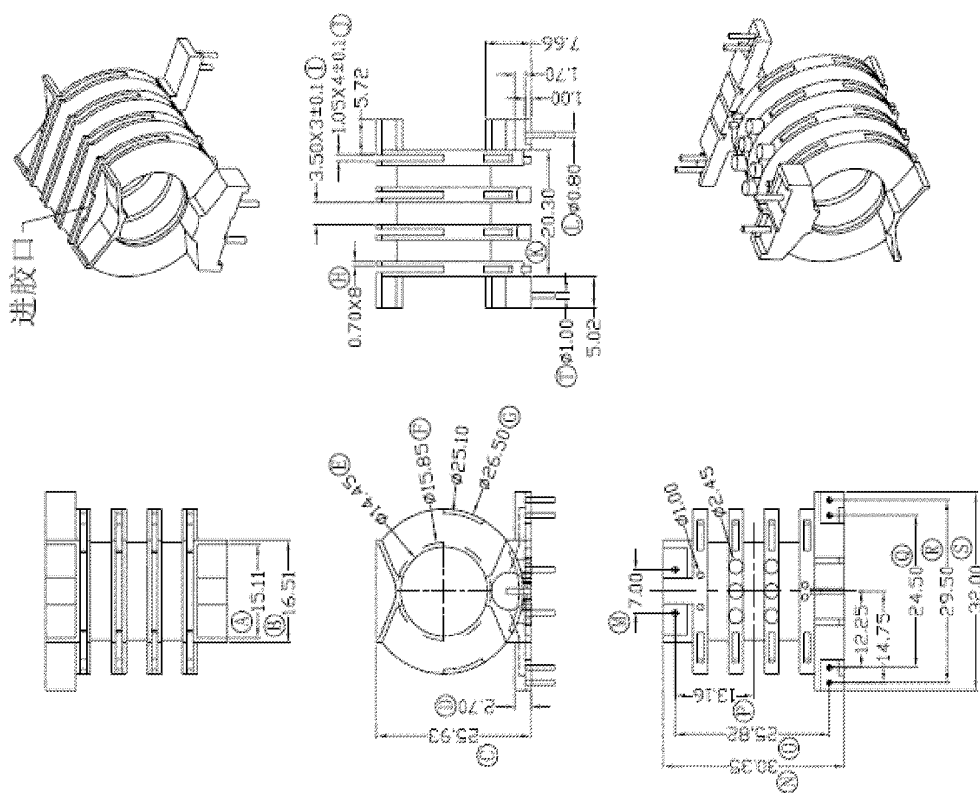
4) 材料特性 Material characteristics

Characteristics	Unit	KP95 3300±25 %	JPP-95 3300±25 %	TPW33 3300±25 %	NH9 -	LP9 3300±25 %
Initial permeability (μi)	-					
Saturation flux density at 1194 A/m(Bs)	25℃ 100℃ mT	530 410	530 410	520 410	-	520 410
Remanence (Br)	25℃ 100℃ mT	85 60	80 60	120 90	-	- 90
Coercivity (Hc)	25℃ 100℃ A/m	10 7.5	9.5 6.5	12 9	-	- 9
	25℃ kW/m ³	350	350	/	-	400
Core loss (Pc) at 100kHz, 200mT	60℃ 80℃ 100℃ 120℃ kW/m ³	290 280 290 350	290 290 300 360	380 290 300 350	-	380 350 350 400
Electrical resistivity (ρ)	Ω·m	6	6.5	4	-	4
Curie Temperature (Tc)	℃	>215	>215	>220	>	×103210
Density (δ)	kg/m ³	4.9×10 ³	4.9×10 ³	4.9×10 ³	4.9×10 ³	4.8×10 ³

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8. BOBBIN SPEC:

[11] 尺寸 Dimension (mm) (B-3242)



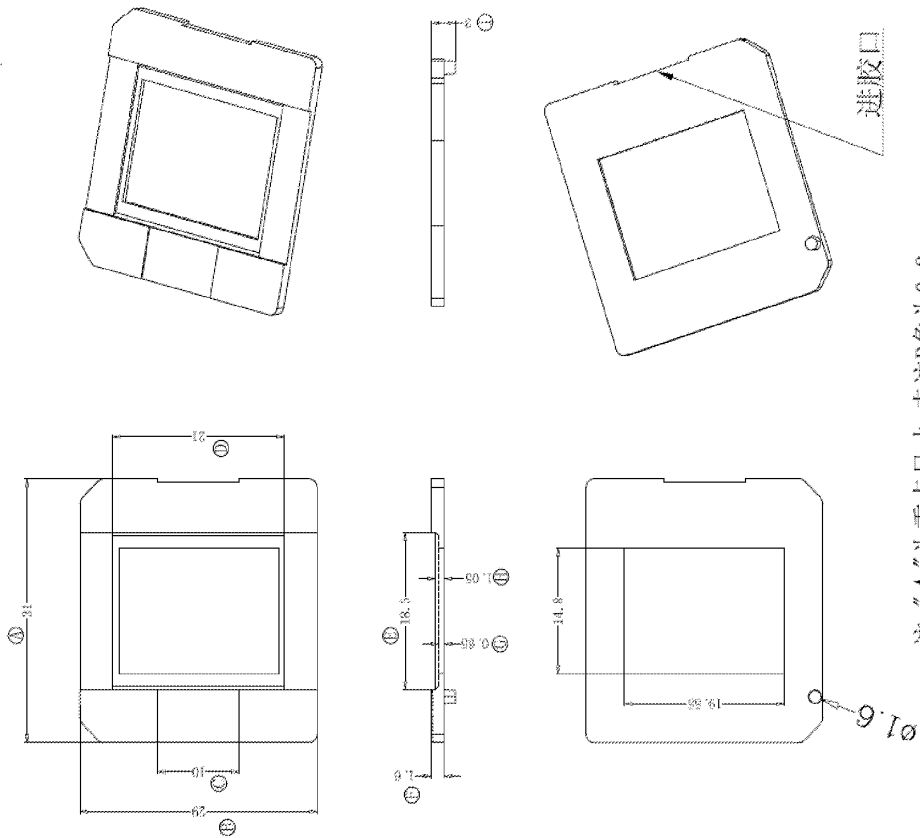
[2] 材質要求 Material requirement

本體領使用 SUMITOMO BAKELITE CO LTD 之 LCPE4008 (UL No. E54705).

N191893340

ACBEL POLYTECH INC.	Source Control Drawing	REV: S1
SAFETY P/N: 25P60 PART NO.: P 25P60 -00011	T 401 MAIN TRANSFORMER	FSF059-7LAG

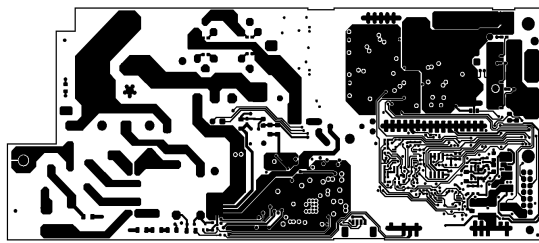
10. BASE SPEC: (B-B112 PM-9820)
{1} 尺寸 Dimension (mm)



N191893340

---END---

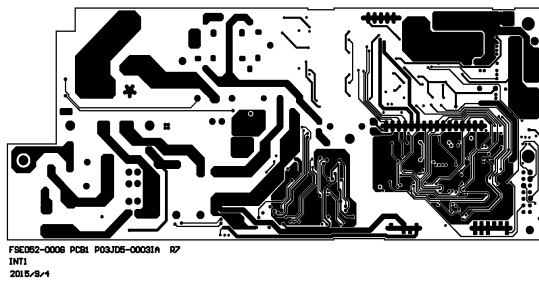
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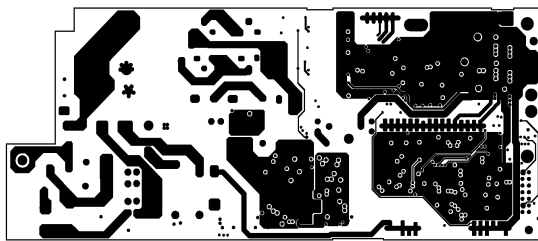
F8E062-0006 PCB P03JD5-0003IA R7
Top Layer
2015/8/4

N191893341

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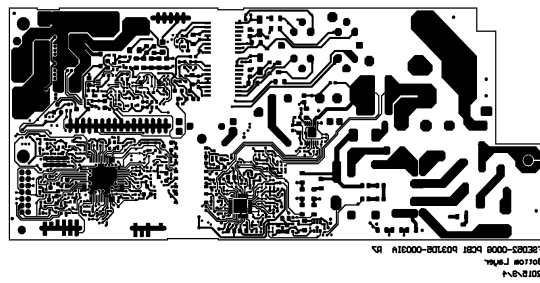


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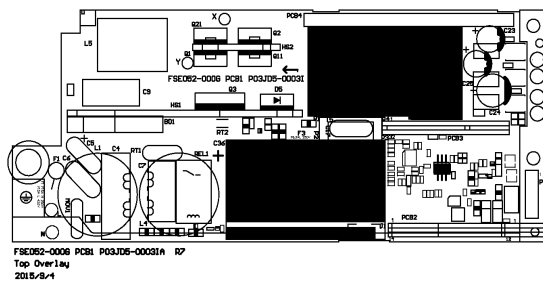
F0E002-0008 PCB P03J05-00031A R7
INT2
2015/8/4

N191893341



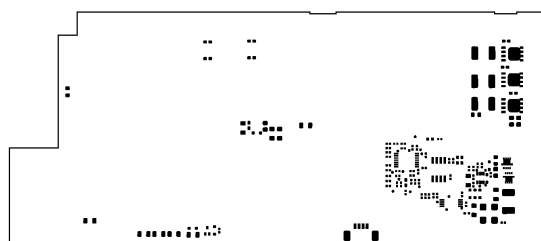
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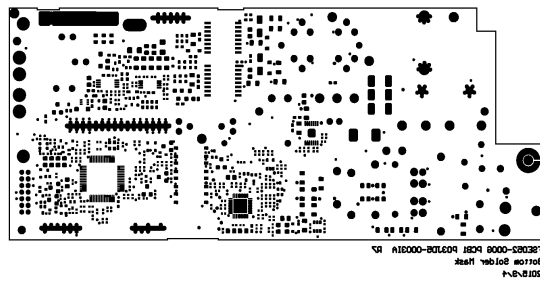
F8E062-0008 PCB P03J05-0003IA R7
Top Paste
2015/8/4

N191893341



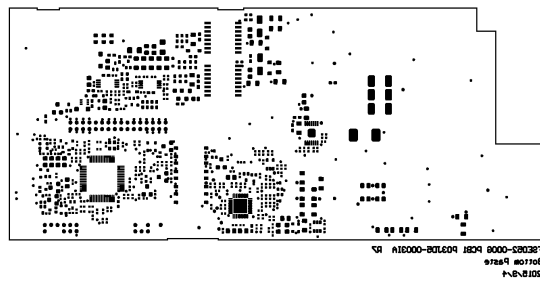
F5E062-0008 PCB P03JD5-0003IA R7
Top Solder Mask
2015/8/4

N191893341

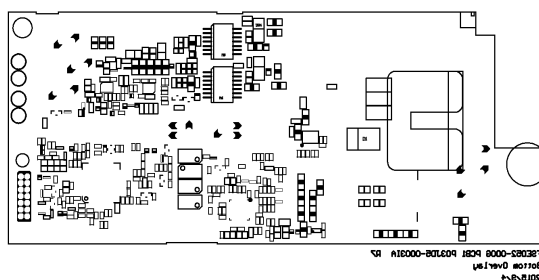


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CAMtasticDXP (TM): p03jd5-0003ia.gbp



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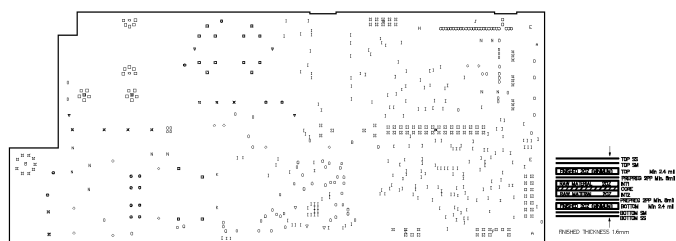


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And Report

CAMtasticDXP (TM): p03jd5-0003ia.gdl

Symbol	Hit	Count	Crushed Hole Size	Plated	Hole Type	Physical Length	Route Path Length
			1.400in (.55,1.2in)	NPTH	Slot	11.900in (.492,7.0in)	10.100in (.397,6.4in)
S	1		1.400in (.55,1.2in)	NPTH	Slot	12.700in (.500,8.0in)	11.300in (.444,6.8in)
F	1		1.400in (.55,1.2in)	NPTH	Slot	13.900in (.551,7.5in)	12.100in (.476,7.3in)
I	1		1.400in (.55,1.2in)	PTH	Slot	23.400in (.921,2.6in)	22.000in (.866,1.9in)
H	1		1.400in (.55,1.2in)	NPTH	Slot	23.900in (.938,9.0in)	22.100in (.875,7.9in)
V	1		1.800in (.70,6.7in)	PTH	Slot	5.700in (.224,4.1in)	3.800in (.153,5.4in)
O	2		0.800in (.31,6in)	NPTH	Slot	2.500in (.98,4.2in)	1.700in (.66,5.3in)
D	2		1.400in (.55,1.2in)	PTH	Round		
O	2		1.800in (.99,5.6in)	PTH	Round		
O	2		1.700in (.66,5.3in)	PTH	Round		
H	2		2.000in (.78,7.4in)	PTH	Round		
F	2		2.500in (.98,2.1in)	NPTH	Round		
S	2		3.000in (.18,1.1in)	PTH	Round		
F	2		4.000in (.157,4.6in)	NPTH	Round		
V	3		0.300in (.11,6in)	PTH	Round		
D	4		1.300in (.51,1.6in)	PTH	Round		
M	4		3.200in (.125,9.8in)	PTH	Round		
K	7		1.600in (.62,9.9in)	PTH	Round		
H	10		1.600in (.31,5.0in)	PTH	Round		
O	12		1.000in (.39,3.7in)	PTH	Round		
O	12		1.200in (.47,2.4in)	PTH	Round		
H	18		0.450in (.17,2.2in)	PTH	Round		
H	18		1.100in (.43,3.2in)	PTH	Round		
O	20		0.200in (.5,8.9in)	PTH	Round		
D	27		0.300in (.11,6in)	PTH	Round		
O	71		0.45in (.17,7.6in)	PTH	Round		
D	78		0.300in (.58,3.8in)	PTH	Round		
H	205		0.30in (.12,2.0in)	PTH	Round		
		511	Total				



FSE052-0006 PCB1 P03JD5-00031A R7
Drill Drawing (Top Layer, Bottom Layer)
2015/9/4

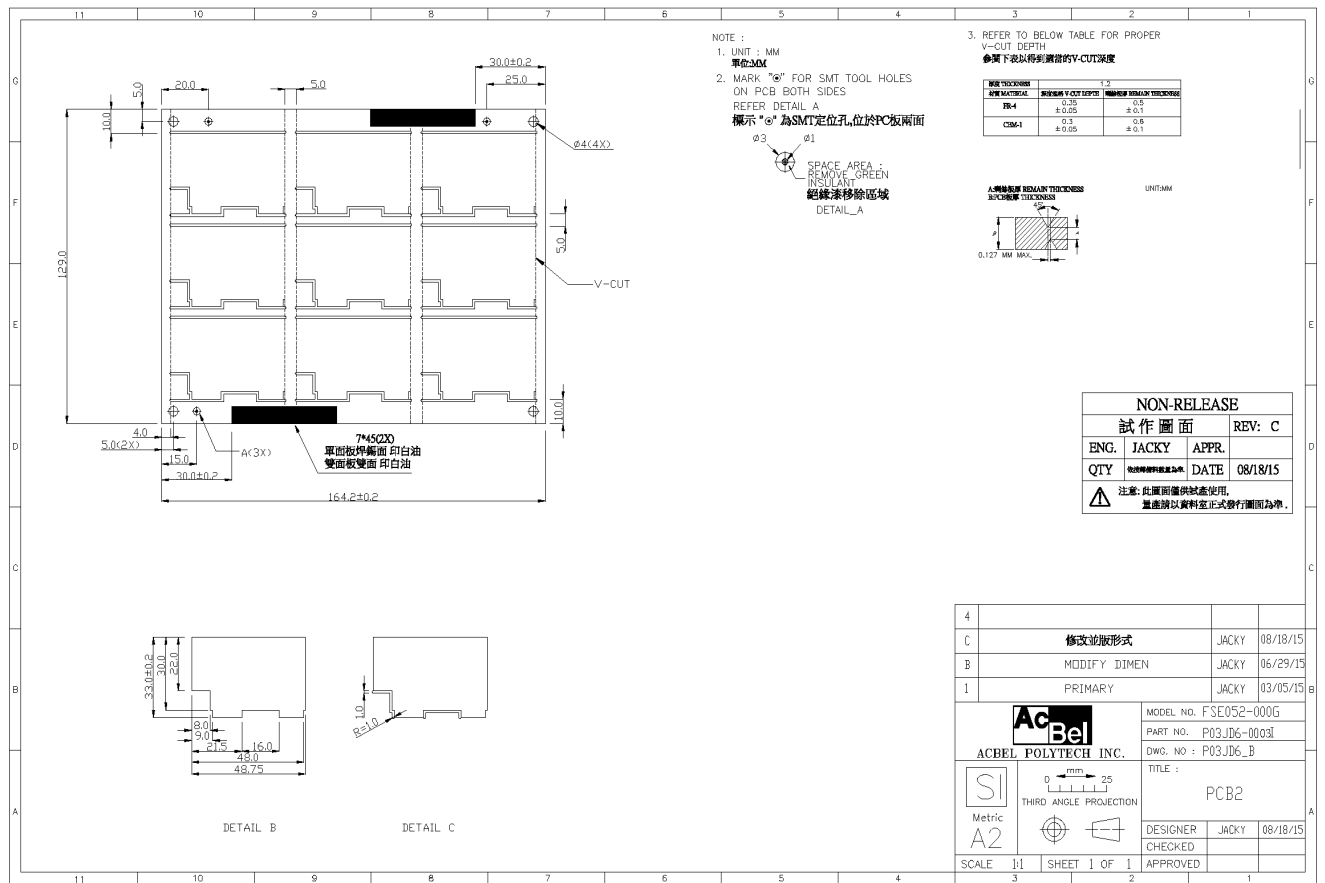
N191893341

CAMrasticEXP (TM): p03jd5-0003ia.ggl



F8E062-0008 PCB P03J05-0003A R2
Drill Guide (Top Layer, Bottom Layer)
2015/8/4

N191893341



N191893342

DOCUMENT LIST(文件表)				
FILE NAME :	POSID6-0003-LFS			
MODEL NO :	FSE052-0000 PCB2			
RELEASED DATE :	8/28/2015			
SHIPPING DATE :				
SAMPLE Q'TY :				
費用歸屬單位(工令號碼) :				
API RELEASED				
DOCUMENT NAME & Q'TY				
1. COMPONENT SIDE 零件面		1		
2. SOLDER MASK 防焊面		2		
3. CONDUCT SIDE 線路面		1		
4. SILK SCREEN 文字面		2		
5. HOLE LIST 孔徑資料		1		
6. HOLE LIST DRAWING 孔徑圖		1		
7. PASTE SIDE 鋼板圖		2		
8. PCB OUTLINE DRAWING 機構圖		1		
9. THE MATERIAL STOCK-UP 材料疊疊				
10. SPECIFICATION LIST 1 規格表		1		
COMMENT: ☐ RELEASE / EC ☐ 傳大陸 ☐ 做SAMPLE ☐ OTHER_____				
A/W DESIGNER	ELEC ENGINEER	ELEC LEADER	MECH ENGINEER	DFM
施小菁	黃健峻	林鈺琅	黃宗鴻	

A850416-3

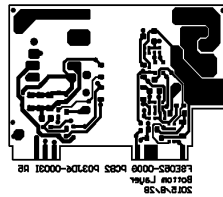
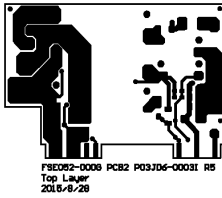
N191893342

PCB SPECIFICATION LIST(規格表)		符合無鉛制程
MODEL: FSE062-0006 PCB2		PCR PN: P0306-0003
SPECIFICATION		SELECTED
Manufacture and environmental policies 環境管理辦法 DW-401-01	3	(1)NORMAL (2)符合ACBEL RoHS+RoHS2.0(禁用HCBDDMBHPBPFDBP) (3)符合ACBEL RoHS+RoHS2.0+HF (4)OTHER'S
PCB RAW MATERIAL & SOURCE & UL MARKING 材 質(原材料供應商)	4	(1)FR-1 (CHANG CHUN) (2)CEM-1 (ISOLA, NAN YA, CHANG CHUN, SY) (3)CEM-3 (4)FR-4 (ISOLA, NAN YA, SY, ITEQ) Td>310度, Tg>140+/-5度, MOT>130度 (5)FR-4 (ISOLA, NAN YA, SY, ITEQ) Td>325度, Tg150+/-5度, MOT>130度 (6)FR-4 (ISOLA, NAN YA, SY, ITEQ) Td>340度, Tg170+/-5度, MOT>130度 (7)POLYIMIDE (ARLON) (8)MPCB (TERMACON, ARLON) (9)OTHER
COPPER THICKNESS 銅 厚	2	RAW MATERIAL (1)1 OZ (2)2 OZ (3)OTHER'S
COPPER FOIL 單雙面板選擇	2	(1)SINGLE SIDE (2)DOUBLE SIDE (3)MULTI-LAYER L (4)FLEXIBLE (5)OTHER'S
FLAMMABILITY I 耐 燃 等 級	1	(1)94 V-0 (2)94 V-1 (3)OTHER'S
Solder Mask (color: green) 防焊材料選擇	1	(1)TATYO, TAMURA (2)COVER_LAYER (3)OTHER'S
SILK SCREEN 文 字 顏 色	1	(1)WHITE (2)BLACK (3)NON (4)綠漆標空 (5)GERBER (6)OTHER'S
OXIDATION PROTECT TREMENS SELECTED 氧化保護選擇	5	(1)SOLDER (GLASS) (2)42金 3-5 U" (鍍100U-120U") (3)O.S.P. (膜厚: 0.2-0.4UM) ENTEK PLUS HT, GLICOAT-SMD P2, Cu-Coat GV) (4)GOLDEN FINGER U" (5)LEAD FREE SOLDER (GLASS) (6)O.S.P. (膜厚: 0.2-0.4UM) GOLD Finger (7)Immersion Tin, ATOTECH Shumatech, 鍍厚 Min 1.2um (8)ENTEK PLUS CU-106A(0), GLICOAT-SMD P2LY
BOARD THICKNESS (TOLERANCE $\pm 10\%$) 板 厚 差 率	5	(1)0.4mm (2)0.6mm (3)0.8mm (4)1.0mm (5)1.2mm (6)1.6mm (7)OTHER'S
ACCEPTANCE CRITERIA 允 收 規 格	2	依照 IPC-A-600E 檢驗規範等級允收 (1)CLASS 1 (2)CLASS 2 (3)CLASS 3
HOLE SIZE TOLERANCE 孔 徑 公 差: 機械圖上未標示孔徑公差者, 公差為 $\pm 0.15, \pm 0$		
PTH CU PLATING THICKNESS: PTH孔 孔鍍厚 0.0010" 以上		
注意 事項	☐ 需作FOT測試, 測試條件如附件 ☒ 光學顯微鏡保 10 MM 真圓	
NOTE ALL CRITERION FOLLOW AS: 1 IPC-A-600E 2 UT 796 3 API-PCB GENERAL REQUIREMENT 4 V-CUT 斜度/角度: 請依圖樣標註製作 5 MULTI-LAYER 層合厚度需依 API GERBER 內的"層間厚度"層 6 PCB表面處理須完全覆蓋銅箔 7 廠商LOGO, UL TYPE, UL MARK, UL FILE NO. & DATE CODE 不可使用線路蝕刻, 必須用文字印刷或放置 SOLDER MASK 著 8 GERBER 作任何修改需由 API APPROVED. 9 防焊 minimal 要求: trace 與 trace 之間, trace 與 pad 之間, pad 與 pad 之間, 需有綠漆隔開。 10 FOR SINGLE SIDE: 鑽孔表之 0.9mm 需 PUNCH/DRILL 方式 若其加工方式改為 NC, 則 0.9 mm 孔徑改為 1.0mm。 11 PCB 所有材料需有UL認證 12 出貨報告需附"離子污染測試報告", 離子污染測試值須<6.45ug.NaCl/sq.in, 若有特殊要求則另訂之。 13 出貨報告需附O.S.P.膜厚, 焊錫厚度報告。 14 PCB 需遵守"環境管理物質規範"中所需求之含氯標準。		
CAD	施小菁	ELEC 黃健峻

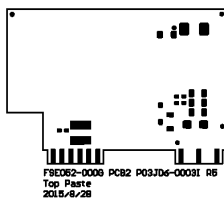
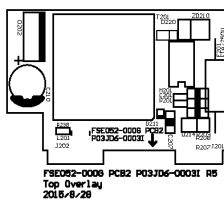
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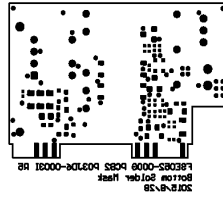
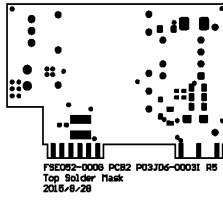
CAMtasticDXP (TM): p03jd6-0003i.gtl, p03jd6-0003i.gbl



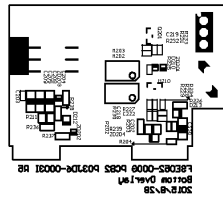
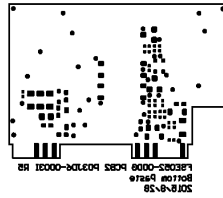
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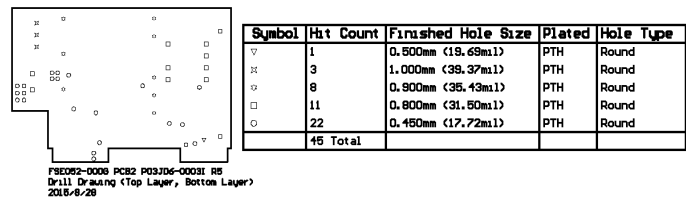
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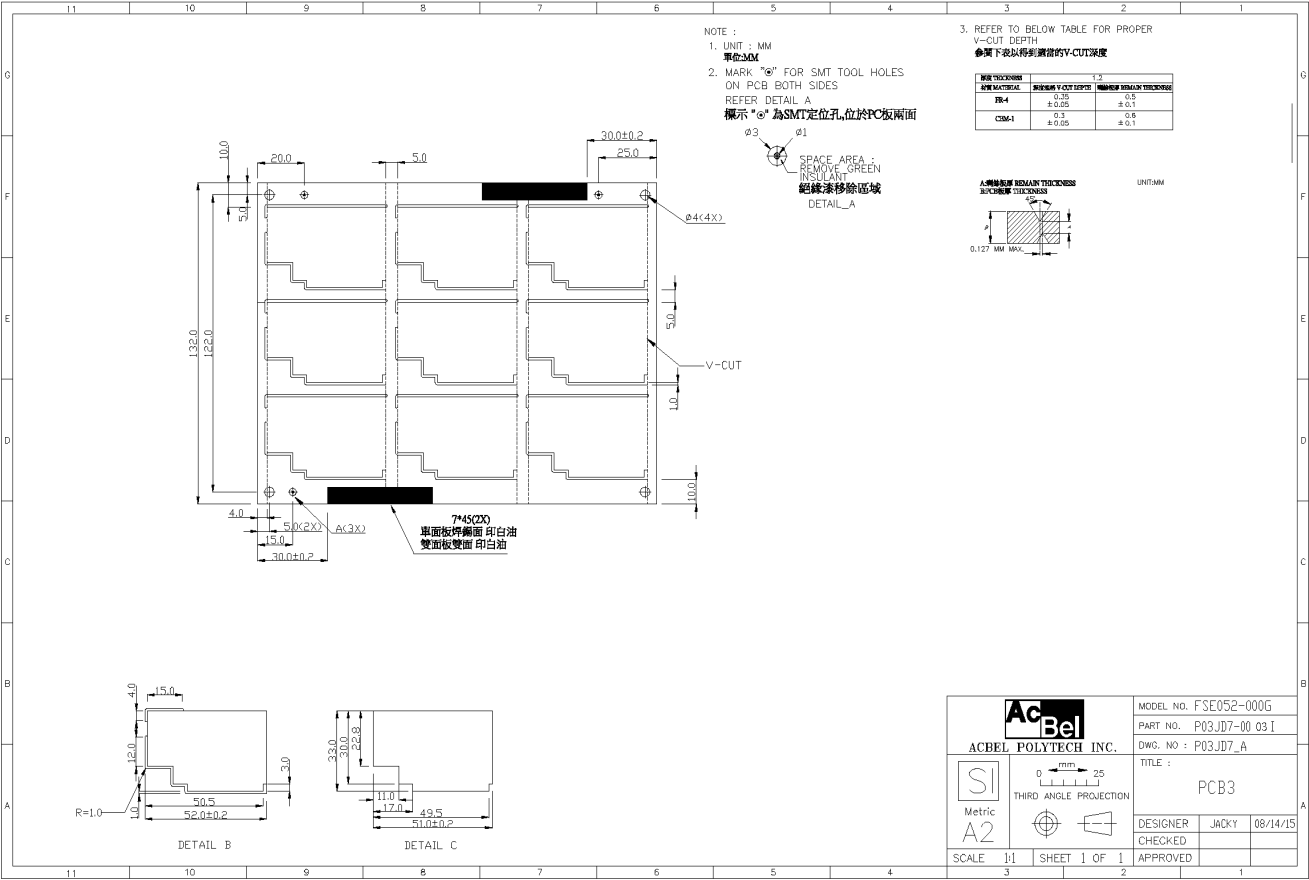
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N191893342



N191893343

DOCUMENT LIST(文件表)				
FILE NAME :	PD3JD7-00031-LFS			
MODEL NO :	FSE052-000G-PCB3			
RELEASED DATE :	08/27/2015			
SHIPPING DATE :				
SAMPLE QTY :				
費用歸屬單位(工令號碼):				
API RELEASED				
DOCUMENT NAME & QTY				
1. COMPONENT SIDE 零件面		1		
2. SOLDER MASK 防焊面		2		
3. CONDUCT SIDE 線路面		3		
4. SILK SCREEN 文字面		2		
5. HOLE LIST 孔徑資料		1		
6. HOLE LIST DRAWING 孔徑圖		1		
7. PASTE SIDE 鋼板圖		2		
8. PCB OUTLINE DRAWING 機構圖		1		
9. THE MATERIAL STOCK -UP 材料疊構		1		
10. SPECIFICATION LIST 1 規格表		1		
COMMENT: VIA 0.451 mm 正反面蓋綠漆 VIA 0.41 mm 正反面蓋綠漆 VIA 0.31 mm 正反面蓋綠漆 VIA 0.351 mm 正反面蓋綠漆 ☐ RELEASE / EC ☐ 傳大陸 ☐ 做SAMPLE ☐ OTHER_____				
A/W DESIGNER	ELEC ENGINEER	ELEC LEADER	MECH ENGINEER	DPM
施小菁	黃健峻	林鈺琅	黃宗鴻	

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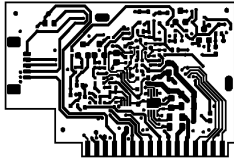
PCB SPECIFICATION LIST(規格表)		符合無鉛制程
MODEL: FSE052-000G-PCB3		PCB PN: P03JD7-0003I
SPECIFICATION		SELECTED
International environmental policies	(1)NORMAL (2)符合ACBEL RoHS+RoHS2.0 (3)禁用HCDD/DEHP/BBP/DBP	
環境管理辦法 DW-401-01	(4)符合ACBEL RoHS+RoHS2.0+HF (4)OTHER'S	
PCB RAW MATERIAL & SOURCE & UL MARKING	(1)FR-1 (CHANG CHUN) (2)CEM-1 (ISOLA,NAN YA,CHANG CHUN,SY) (3)CEM-3	
材 質(原材料供應商)	(4)FR-4 (ISOLA,NAN YA,SY,ITEQ)TG>310度,TG>140+/-5度,MOI>1.30度	
4	(5)FR-4 (ISOLA,NAN YA,SY,ITEQ)TG>325度,TG>150+/-5度,MOI>1.30度	
	(6)FR-4 (ISOLA,NAN YA,SY,ITEQ)TG>340度,TG>170+/-5度,MOI>1.30度	
	(7)POLYIMIDE (ARLON)	
	(8)IMPCB (THERMACON,ARLON)	
	(9)OTHER	
COPPER THICKNESS	RAW MATERIAL	
銅 厚	(1)1 OZ (2)2 OZ (3)OTHER'S	
COPPER FOIL	(1)SINGLE SIDE (2)DOUBLE SIDE (3)MULTI-LAYER	4 L
單雙面板選擇	(4)FLEXIBLE (5)OTHER'S	
3		
FLAMMABILITY I	(1)94 V-0 (2)94 V-1 (3)OTHER'S	
耐 燃 等 級		
1		
Solder Mask (color:green)	(1)TAIYO,TAMURA (2)COVER_LAYER	
防焊材料選擇	(3)OTHER'S	
1		
SILK SCREEN	(1)WHITE (2)BLACK (3)NON (4)綠漆遮空	
文 字 顏 色	(5)依GERBER (6)OTHER'S	
1		
OXIDATION PROTECT	(1)SOLDER(H.A.S.I.) (2)化金 3-5 U" (鍍:100-120U")	
TREMBENS SELECTED	(3)O.S.P. (鍍厚: 0.2-0.4UM)(ENTEK PLUS HT, GLICOAT-SMD F2, Cu-Coat CV)	
氧化保護選擇	(4)GOLDEN FINGER U"	
5	(5)LEAD FREE SOLDER(L.F.H.A.S.I.)	
	(6)O.S.P. (鍍厚: 0.2-0.4UM) GOLD Finger	
	(7)Immersion Tin, ATOTECH Stannatech, 錫厚 Min 1.2um	
	(8)ENTEK PLUS CU-106A(X),GLICOAT-SMD F2LX)	
BOARD THICKNESS	(1)0.4mm (2)0.6mm (3)0.8mm (4)1.0mm	
(TOLERANCE +/-10%)	(5)1.2mm (6)1.6mm (7)OTHER'S	
板 厚 選 擇		
5		
ACCEPTANCE CRITERIA	依IPC-A-600E 檢驗規範等級允收	
允 收 規 格	(1)CLASS 1 (2)CLASS 2 (3)CLASS 3	
2		
HOLE SIZE TOLERANCE	孔徑公差: 參照圖上未標示孔徑公差者公差為+0.15, 0	
PTH CU PLATING THICKNESS:	PTH孔孔銅厚0.001" 以上	
注意	☐ 需作HI-POT測試, 測試條件如附件	
事項	☒ 光學顯微鏡保 1.0MM 真圓	
NOTE ALL CRITERION FOLLOW AS:		
1 IPC-A-600E		
2 UL796		
3 API-PCB GENERAL REQUIREMENT		
4 V-CUT 深切角度: 請依照檢驗圖製作		
5 MULTI-LAYER 層合厚度需依 API GERBER 內附"層間厚度圖"		
6 PCB表面處理須完全覆蓋銅箔		
7 廠標/LOGO/UL TYPE/UL MARK,UL FILE NO.及DATE CODE不可使用絲印蝕刻, 必須用文字印刷或放置SOLDER MASK 層		
8 GERBER 作任何修改需由AHT APPROVED		
9 防焊 minimal 要求, trace 與 trace 之間, trace 與 pad 之間, pad 與 pad 之間,需有綠漆隔開.		
10 FOR SINGLE SIDE: 鑽孔表之0.9mm為 PUNCH加工方式 若其加工方式改為CNC則 0.9 mm孔徑改為 1.0mm.		
11 PCB 所有材料需有UL認證		
12 出爐報告需附 " 離子污染測試報告 ", 離子污染限每個值須<6.45ug./sq.in.若有特殊要求則另訂之.		
13 出爐報告需附 O.S.P.膜厚, 銅厚測試報告.		
14 PCB 需遵守 " 環境管理物質規範 " 中所需求之含量標準.		

CAD	施小菁	ELEC	黃健峻
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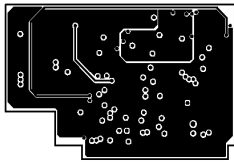
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N191893343

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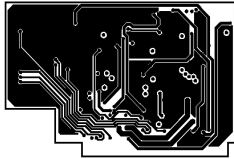


2015/8/28
FSE052-0006 PCB3 P03JD7-0003I R5
Top Layer

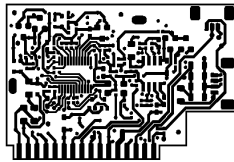


2015/8/28
FSE052-0006 PCB3 P03JD7-0003I R5
INT1

N191893343

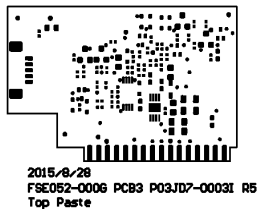
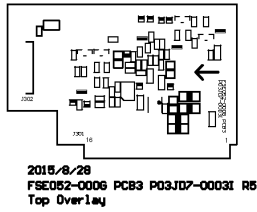


2015/8/28
FSE052-0006 PCB3 P03JD7-0003I R5
INT 2

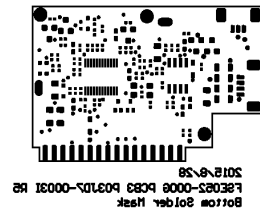
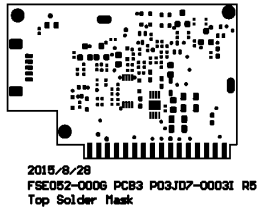


2015/8/28
FSE052-0006 PCB3 P03JD7-0003I R5
Bottom Layer

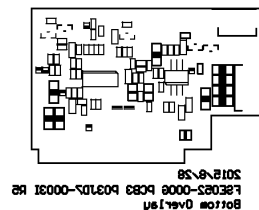
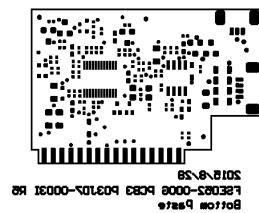
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N191893343



N191893343

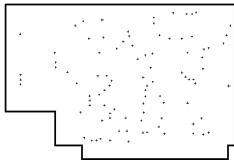


N191893343

Symbol	Hit Count	Finished Hole Size	Plated	Hole Type
▽	1	0.451mm (17.76mil)	PTH	Round
○	2	0.410mm (16.14mil)	PTH	Round
○	2	0.600mm (23.62mil)	PTH	Slot
▽	88	0.351mm (13.82mil)	PTH	Round
93 Total				

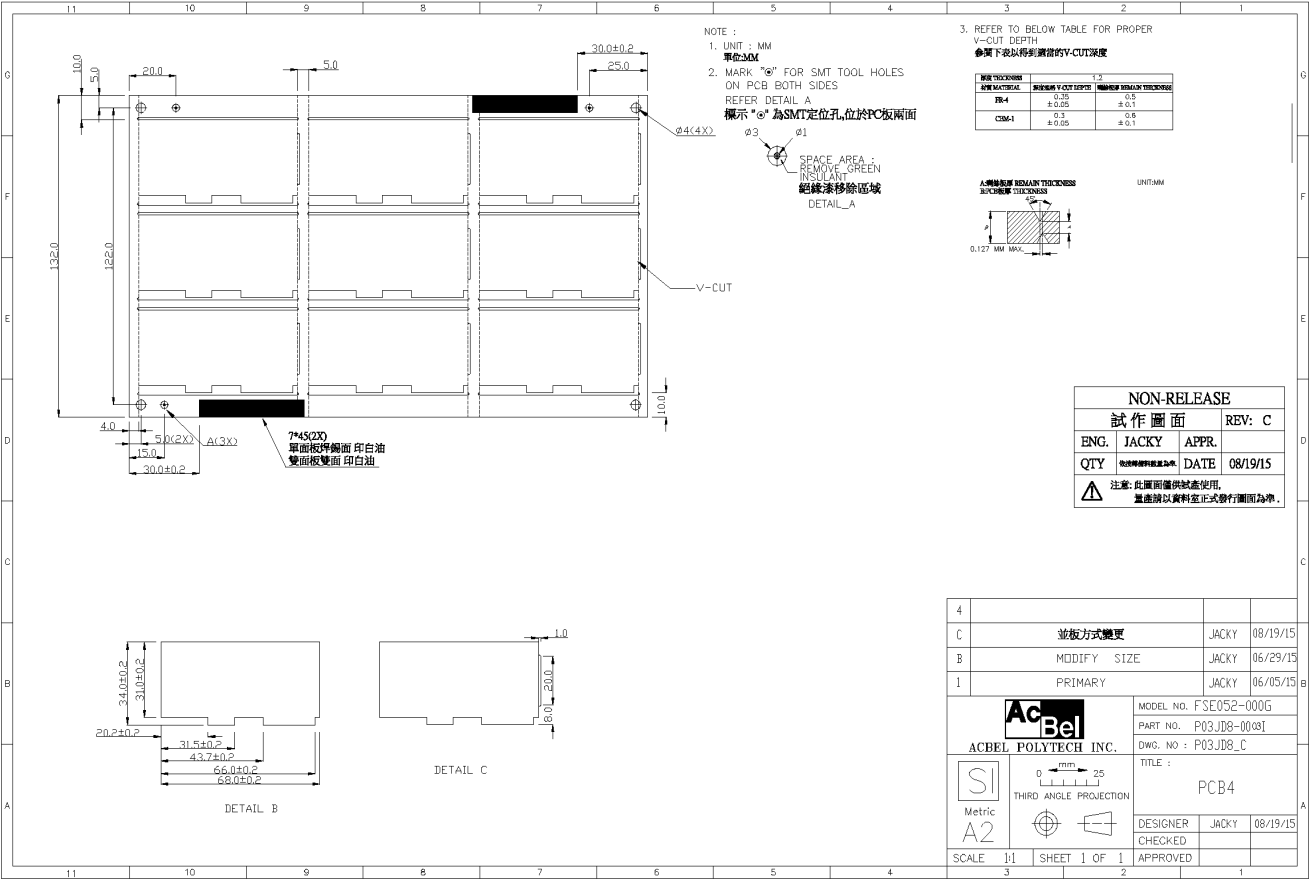


2015/8/28
FSE052-0006 PCB3 P03JD7-0003I R5
Drill Drawing (Top Layer, Bottom Layer)



2015/8/28
FSE052-0006 PCB3 P03JD7-0003I R5
Drill Guide (Top Layer, Bottom Layer)

N191893343



N191893344

DOCUMENT LIST(文件表)				
FILE NAME :	P03JD8-0003I-LFS			
MODEL NO :	FSE052-0006 PCB4			
RELEASED DATE :	8/28/2015			
SHIPPING DATE :				
SAMPLE QTY :				
費用歸屬單位(工令號碼) :				
API RELEASED				
DOCUMENT NAME & Q'TY				
1. COMPONENT SIDE 零件面		1		
2. SOLDER MASK 防焊面		2		
3. CONDUCT SIDE 線路面		3		
4. SILK SCREEN 文字面		2		
5. HOLE LIST 孔徑資料		1		
6. HOLE LIST DRAWING 孔徑圖		1		
7. PASTE SIDE 鋼板圖		2		
8. PCB OUTLINE DRAWING 機筒圖		1		
9. THE MATERIAL STOCK -UP 材料盤標		1		
10. SPECIFICATION LIST 1 規格表		1		
COMMEND: VIA 0.451mm TOP 面綠漆封孔，背面開防焊				
☐ RELEASE / EC ☐ 傳大陸 ☐ 做SAMPLE ☐ OTHER_____				
A/W DESIGNER	ELEC ENGINEER	ELEC LEADER	MRCH ENGINEER	DFM
施小菁	黃健峻	林鈺琅	黃宗鴻	

A8S0416-3

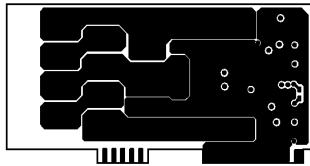
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PCB SPECIFICATION LIST(規格表)		符合無鉛制程
MODEL: FSE052-0006 PCB4		PCB PN: P03JD8-0003I
SPECIFICATION	SELECTED	
International environmental policies 環境管理辦法 DW-401-01	(1)NORMAL (2)符合ACBEL RoHS+RoHS2.0(禁用HBCDD/DEHP/BBP/DBP) (3)符合ACBEL RoHS+RoHS2.0+HF (4)OTHER'S	
PCB RAW MATERIAL & SOURCE & UL MARKING 材 質(原材料供應商)	(1)FR-1 (CHANG CHUN) (2)CEM-1 (ISOLA,NAN YACHANG CHUN,SY) (3)CEM-3 (4)FR-4 (ISOLA, NAN YA, SY,ITEQ)TG>310度,TG>140+/-5度,MOT>130度 (5)FR-4 (ISOLA, NAN YA, SY,ITEQ)TG>325度,TG150+/-5度,MOT>130度 (6)FR-4 (ISOLA, NAN YA, SY,ITEQ)TG>340度,TG170+/-5度,MOT>130度 (7)POLYIMIDE (ARLON) (8)MPCB (THERMAGON, ARLON) (9)OTHER	
COPPER THICKNESS 銅 厚	RAW MATERIAL (1) 0Z (2) 0Z (3)OTHER'S	
COPPER FOIL 單雙面板選擇	(1)SINGLE SIDE (2)DOUBLE SIDE (3)MULTI-LAYER	4 L
FLAMMABILITY I 耐 火 等 級	(1)94 V-0 (2)94 V-1 (3)OTHER'S	
Solder Mask (color:green) 防焊材料選擇	(1)TATYO,TAMURA (2)COVER_LAYER (3)OTHER'S	
SILK SCREEN 文 字 顏 色	(1)WHITE (2)BLACK (3)NON (4)藍漆線空 (5)依GERBER (6)OTHER'S	
OXIDATION PROTECT TREMENS SELECTED 氧化保護選擇	(1) SOLDER(H.A.S.L) (2)化金 3-5 U" (線100U-120U") (3)O.S.P. (膜厚: 0.2-0.4UM)(ENTEK PLUS HT, GLICOAT-SMD F2, Cu-Coat OV) (4)GOLDEN FINGER U" (5)LEAD FREE SOLDER(L-F H.A.S.L) (6)O.S.P. (膜厚: 0.2-0.4UM) GOLD Finger (7)Immersion Tin, ATTYTECH Stannatech, 錫厚 Min 1.2um (8)ENTEK PLUS CU-105A(3),GLICOAT-SMD F2LX	
BOARD THICKNESS (TOLERANCE = +/-10%) 板 厚 選 擇	(1)0.4mm (2)0.6mm (3)0.8mm (4)1.0mm (5)1.2mm (6)1.6mm (7)OTHER'S	
ACCEPTANCE CRITERIA 允 收 規 格	依IPC-A-600E 檢驗規範等級九取 (1)CLASS 1 (2)CLASS 2 (3)CLASS 3	
HOLE SIZE TOLERANCE 孔 徑 公 差 : 根據圖上未標示孔徑公差者公差為 +0.15, -0		
PTH CU PLATING THICKNESS : PTH孔,孔銅厚 0.0010" 以上		
注 意 事 項	☐ 需作HI-POT測試,測試條件如附件 ☒ 光學顯微鏡倍 1.0 MM 真四.	
NOTE ALL CRITERION FOLLOW AS : 1 IPC-A-600E 2 UL94 3 API-PCB GENERAL REQUIREMENT 4 V-CUT 深度/角度 : 前依機械結構圖製作 5 MULTI-LAYER 膠合厚度需依 API GERBER 內的"層間厚度圖" 6 PCB表面處理須完全覆蓋銅箔 7 廠標,LOGO,UL TYPE,UL MARK,UL FILE NO.及DATE CODE不可使用線路蝕刻,必須用文字印刷或放置SOLDER MASK 層 8 GERBER 作任何修改需由API APPROVED. 9 防焊 minimal 要求, trace 與 trace 之間, trace 與 pad 之間, pad 與 pad 之間,需有線路隔開。 10 FOR SINGLE SIDE : 鑽孔表之0.9mm為 PUNCH加工方式若其加工方式改為NC,則0.9 mm孔徑改為1.0mm. 11 PCB 所有材料需有UL認證 12 出貨報告需附 "離子污染測試報告",離子污染限制值須<0.45ug NaCl/mqin,若有特殊要求則另訂之。 13 出貨報告需附O.S.P.膜厚,膜厚強度報告。 14 PCB 需遵守 "環境管理辦法規範" 中所需求之色澤標準。		
CAD	施小菁	ELEC 黃健峻

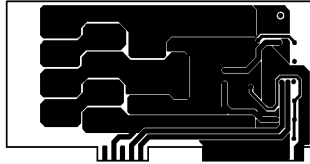
A850416-3

N191893344

CAMtasticDXP (TM): p03jd8-0003i.gtl, p03jd8-0003i.g1



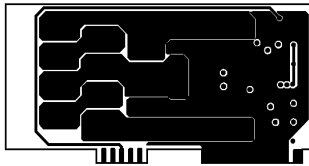
FSE052-0006 PCB4 P03JD8-0003I R5
2015/6/28
Top Layer



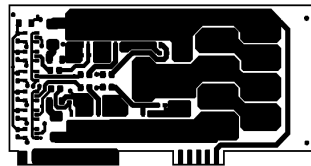
FSE052-0006 PCB4 P03JD8-0003I R5
2015/6/28
INT1

N191893344

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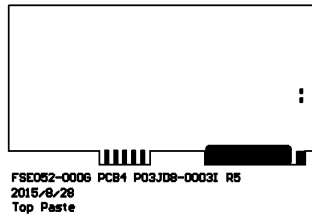
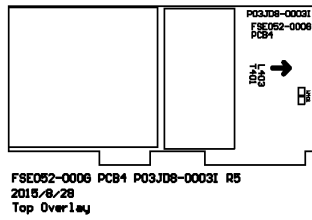


F5E052-0006 PCB4 P03JD8-0003I R5
2018/8/28
INT2



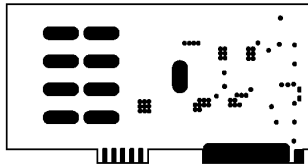
F5E052-0006 PCB4 P03JD8-0003I R5
2018/8/28
Bottom View

N191893344

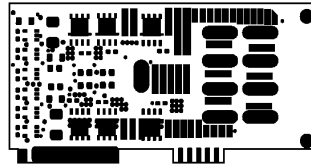


N191893344

CAMtasticDXP (TM): p03jd8-0003i.gts, p03jd8-0003i.gbs



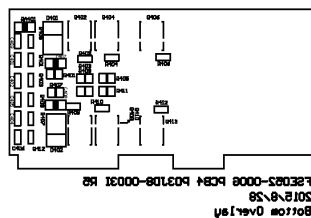
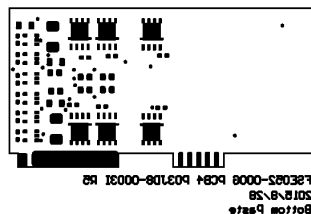
F5E052-0006 PCB+ P03JD8-0003I R5
2018/8/28
Top Solder Mask



F5E052-0006 PCB+ P03JD8-0003I R5
2018/8/28
Bottom Solder Mask

N191893344

CAMtasticDXP (TM): p03jd8-0003i.gbp, p03jd8-0003i.gbo

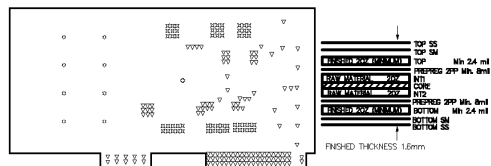


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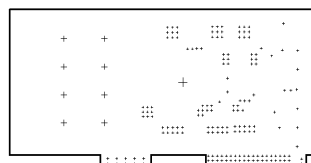
And Report

CAMtasticDXP (TM): p03jd8-0003i.gd1, p03jd8-0003i.gg1

Symbol	Hit Count	Finished Hole Size	Plated	Hole Type
○	1	1.90mm (74.80mil)	PTH	Slot
○	8	1.200mm (47.24mil)	PTH	Slot
⊖	57	0.451mm (17.76mil)	PTH	Round
▽	129	0.450mm (17.72mil)	PTH	Round
196 Total				

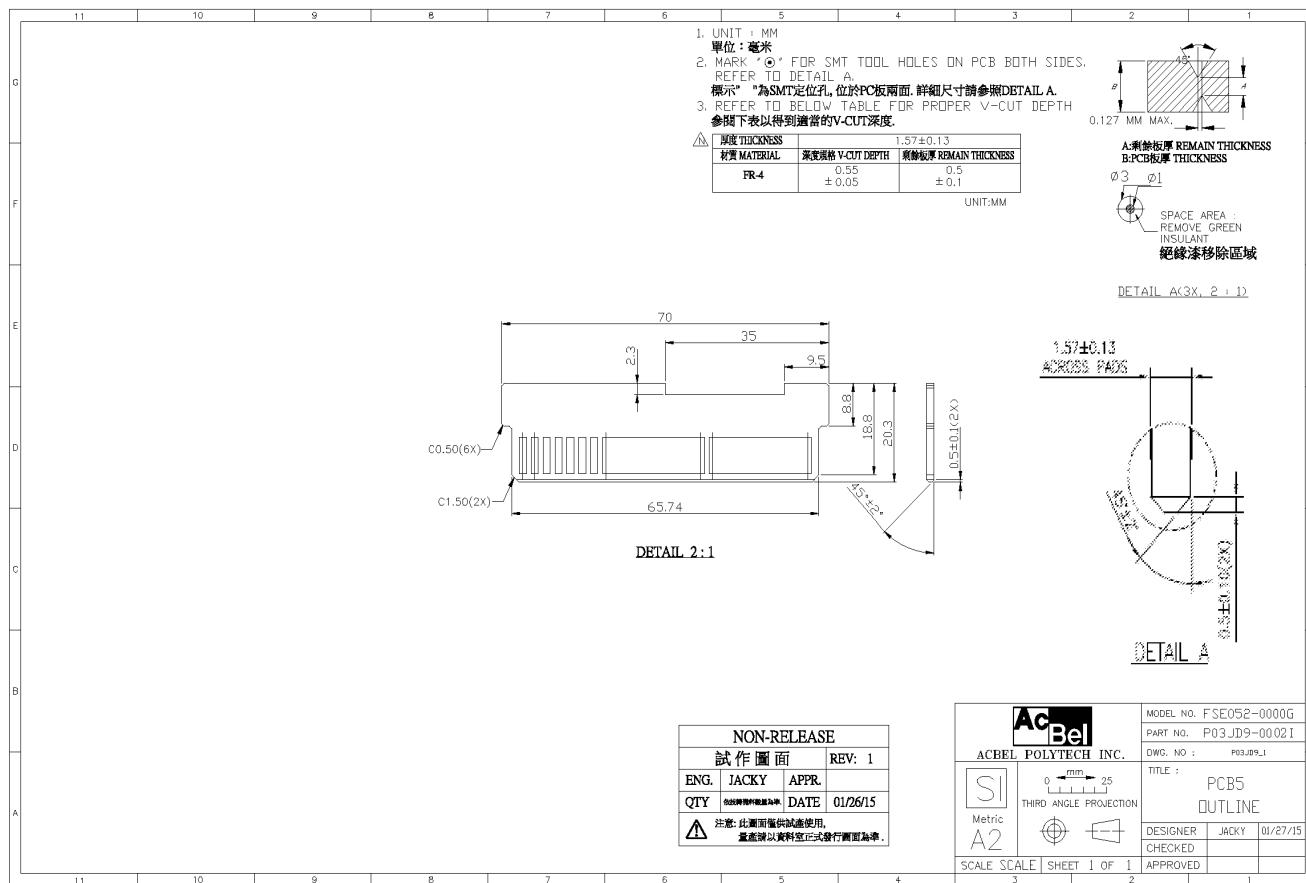


FSE052-0006 PCB4 P03JD8-0003I R5
2015/8/28
Drill Drawing (Top Layer, Bottom Layer)



FSE052-0006 PCB4 P03JD8-0003I R5
2015/8/28
Drill Guide (Top Layer, Bottom Layer)

N191893344



N191893345

DOCUMENT LIST(文件表)				
FILE NAME :	<u>P03JD9-00021-LFS</u>			
MODEL NO :	<u>FSE052-0006</u>			
RELEASED DATE :	<u>8/28/2015</u>			
SHIPPING DATE :	_____			
SAMPLE Q'TY :	_____ (PS)			
費用歸屬單位(工令號碼) :	_____			
API RELEASED				
DOCUMENT NAME & Q'TY				
1. COMPONENT SIDE 零件面		1		
2. SOLDER MASK 防焊面		2		
3. CONDUCT SIDE 線路面		3		
4. SILK SCREEN 文字面		2		
5. HOLE LIST 孔徑資料		1		
6. HOLE LIST DRAWING 孔徑圖		1		
7. PASTE SIDE 網板圖		2		
8. PCB OUTLINE DRAWING 機構圖		1		
9. THE MATERIAL STOCK -UP 材料盤構		1		
10. SPECIFICATION LIST 1 規格表		1		
COMMENT: ☐ RELEASE / EC ☐ 傳大陸 ☐ 做SAMPLE ☐ OTHER _____				
A/W DESIGNER	ELEC ENGINEER	ELEC LEADER	MECH ENGINEER	DFM
施小菁	黃健峻	林鈺琅	黃宗鴻	

A850416-3

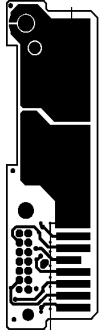
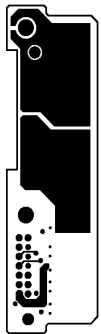
N191893345

PCB SPECIFICATION LIST(規格表)		符合無鉛制程
MODEL: FSE052-000G		PCB PN: PD3JD9-0002I
SPECIFICATION		SELECTED
International environmental policies 環境管理辦法 DW-401-01	2	(1)NORMAL (2)符合ACBHL RoHS+RoHS LK(禁用HCB,CB,DDH,HF,BSP,DBP) (3)符合ACBHL RoHS+RoHS2.0+HF (4)OTHER'S
PCB RAW MATERIAL & SOURCE & UL MARKING 材 質(原材料供應商)	4	(1)FR-1 (CHANG CHUN) (2)CEM-1 (ISOLA,NAN YA,CHANG CHUN,SY) (3)CEM-3 (4)FR-4 (ISOLA,NAN YA,SY,ITEC)Tb>310度,TG>140+/+5度,MOT>130度 (5)FR-4 (ISOLA,NAN YA,SY,ITEC)Tb>325度,TG150+/+5度,MOT>130度 (6)FR-4 (ISOLA,NAN YA,SY,ITEC)Tb>340度,TG170+/+5度,MOT>130度 (7)POLYIMIDE (ARLON) (8)IMPCB (THERMAGON, ARLON) (9)OTHER
COPPER THICKNESS 銅 厚	2	RAW MATERIAL (1)1 OZ (2)2 OZ (3)OTHER'S
COPPER FOIL 單雙面板選擇	3	(1)SINGLE SIDE (2)DOUBLE SIDE (3)MULTI-LAYER 4 L (4)FLEXIBLE (5)OTHER'S
FLAMMABILITY I 耐 燃 等 級	1	(1)94 V-0 (2)94 V-1 (3)OTHER'S
Solder Mask (col:green) 防焊材料選擇	1	(1)TAIYO,TAMURA (2)COVER LAYER (3)OTHER'S
SILK SCREEN 文 字 顏 色	1	(1)WHITE (2)BLACK (3)NON (4)綠漆鍍金 (5)依GERBER (6)OTHER'S
OXIDATION PROTECT TREMENS SELECTED 氧化保護選擇	4,5	(1)SOLDER(PLA.SIL) (2)化金 3-5 U" (鍍100U-120U") (3)O.S.P. (膜厚: 0.2-0.4UM)(INTEK PLUS HT, GLICOAT-SMD P2, Cu-Coat GV) (4)GOLDEN FINGER 入路29 U" (5)LEAD FREE SOLDER(L.F.H.A.S.L) (6)O.S.P. (膜厚: 0.2-0.4UM) GOLD Finger (7)Immersion Tin, ATOTTECH Starnatech, 膜厚 Min 1.2um. (8)INTEK PLUS CU-106A(XO,GLICOAT-SMD P2LX)
BOARD THICKNESS (TOLERANCE $\pm$ +/-10%) 板 厚 選 擇	6	(1)0.4mm (2)0.6mm (3)0.8mm (4)1.0mm (5)1.2mm (6)1.6mm (7)OTHER'S
ACCEPTANCE CRITERIA 允 收 規 格	2	依據 IPC-A-600B 檢驗規範等級允收 (1)CLASS 1 (2)CLASS 2 (3)CLASS 3
HOLE SIZE TOLERANCE 孔 徑 公 差: 鑄鑽圖上未標示孔徑公差者公差為 +0.15, 0		
PTH CU PLATING THICKNESS: PTH孔孔鍍厚 0.0010" 以上		
注 意 事 項	☐ 需作HI-POT測試, 測試條件如附件 ☒ 光學點檢確保 1.0 MM 真圖	
NOTE ALL CRITERION FOLLOW AS : 1 IPC-A-600B 2 UL796 3 API-PCB GENERAL REQUIREMENT 4 V-CLT 預製角度: 請依照機板圖製作 5 MULTI-LAYER 需合單價需依 API GERBER 內的"層間厚度圖" 6 PCB表面處理須完全覆蓋銅箔 7 廠牌LOGO,UL TYPE,UL MARK,UL FILE NO及DATE CODE不可使用鋼箔蝕蝕, 必須用文字印刷或砂膠SOLDER MASK 膠 8 GERBER 作任何修改需由API APPROVED. 9 防焊 minimal 要求, trace 與 trace 之間, trace 與 pad 之間, pad 與 pad 之間,需有線漆隔開. 10 FOR SINGLE SIDE: 鍍孔深之0.9mm為 PUNCH加工方式若其加工方式改為NC,則0.9mm孔徑改為1.0mm. 11 PCB 所有材料需有UL認證 12 出貨報告需附"離子污染測試報告",離子污染測試值須<6.45ug.Na+/sqm,若有特殊要求則另訂之. 13 出貨報告需附O.S.P.膜厚, 焊錫厚度報告. 14 PCB 需遵守"環境管理物質規範"中所需求之含量標準.		
CAD 施小菁		ELEC 黃健峻

ARS0410-3

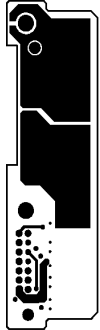
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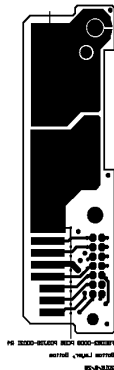
P03JD9-0002 PCB POLY-0002 04
Top Layer, Top
2016-05-28P03JD9-0002 PCB POLY-0002 04
Bot-Layer 1, DMT
2016-05-28

N191893345

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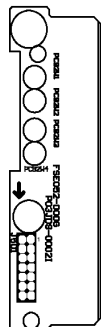
PCB002-0028 PCB002-0028 04
Top-Layer 2, 1472
2016/6/28



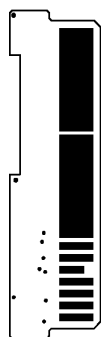
PCB002-0028 PCB002-0028 04
Bottom-Layer 2, 1472
2016/6/28

N191893345

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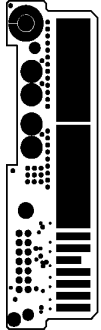
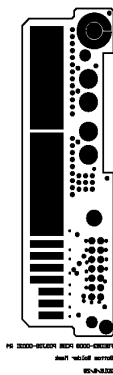
PCB 03JD9-0002
Top View
2018-05-28



PCB 03JD9-0002
Top View
2018-05-28

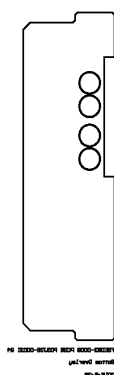
N191893345

CAMtasticDXP (TM): p03jd9-0002i.gts, p03jd9-0002i.gbs

P03JD9-0002I.P03JD9-0002I.D1
Top: Right: Page
2019-02-19P03JD9-0002I.P03JD9-0002I.D1
Left: Right: Page
2019-02-19

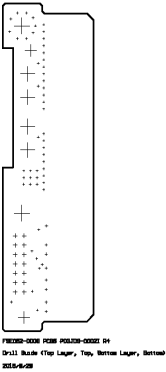
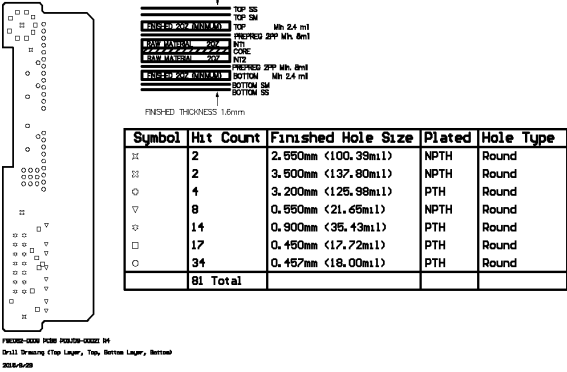
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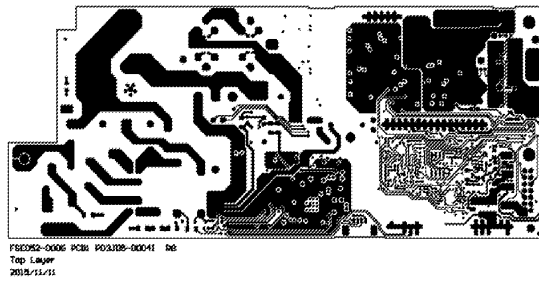
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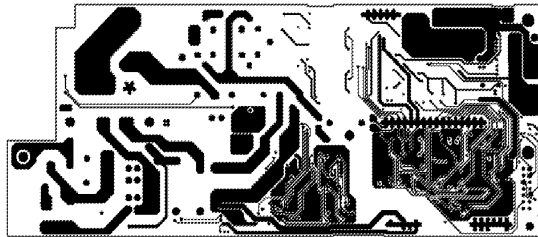


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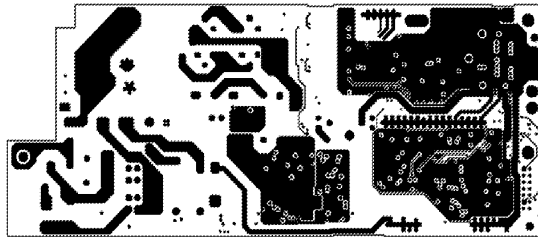
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FSE052-0006 PCMs PO3378-00041 de
INT1
2015/11/11

N191893346

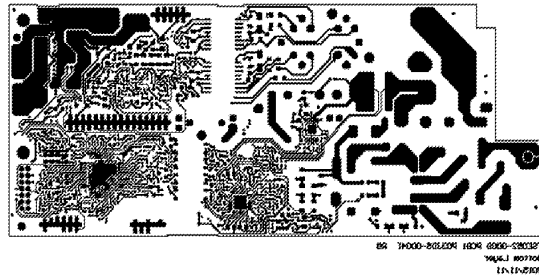
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F000952-0006 PCB P031875-00041 R6
IMT2
2018/11/11

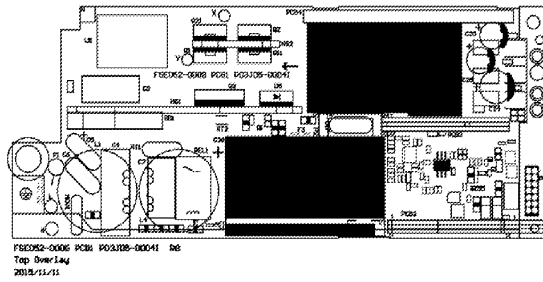
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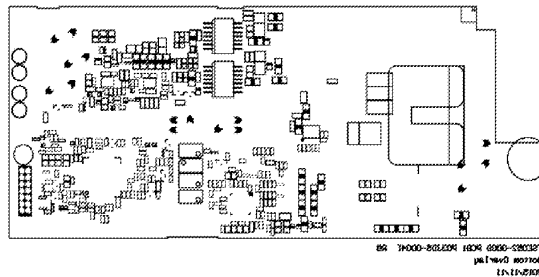
N191893346

C:\Users\jcs271\My Documents\60341.gra



N191893346

Order: 1000 (3); 0010-0001.gro



N191893346

1. 原型號FSE052(R1CA2801A),
加報系列型號:
550W:FSF059; R1CA2551B (out-blowing);
550W:FSF065; R1CA2551C (in-blowing)

2. 差異:

Item	Location	Prototype model(old model) FSE052-00AG MVT	Modify Model(new model) FSF059/FSF065 -7LAG MVT
1	BD1	600V/25A	600V/15A
2	Q1, Q11, Q2, Q21	600V/13.8A	600V/7A
3	T401	型號:25P06, 46T/7mH	型號:25P27, 52T/3mH
4	C36	450V/560uF	450V/470uF
5	L5	21Q79	APCDX301924MS-291L-49

新增Fan source*3 (CFM變小20.1CFM)

N191893347

TEST RECORD NO. 1

SAMPLES:

A sample of the SWITCHING POWER SUPPLY, Models FSE052, R1CA2801A, FSF037, R1CA2801B, FSF059, R1CA2551B, FSF065, R1CA2551C as indicated below and constructed as described herein, was submitted by the manufacturer for examination and test.

GENERAL:

Testing of SWITCHING POWER SUPPLY, Models FSE052, R1CA2801A, FSF037, R1CA2801B, FSF059, R1CA2551B, FSF065, R1CA2551C was not considered necessary based upon previous evaluation under CB Scheme. The CB Scheme Test Certificate No. and Report Ref. No were prepared by UL DEMKO as follows:

Test Certificate No. DK-80784-UL, DK-80802-UL date 2019-02-18 and Report Ref. No. E131875-4788853595-1 Original, date 2019-01-16.

Test Record Summary:

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

Standard	Title	Edition or Publication Date	Revision Date
UL 62368-1	Audio/video, information and communication technology equipment - Part 1: Safety requirements	2 nd Edition, issued 2014-12-01	--
CAN/CSA C22.2 No.62368-1-14	Audio/video, information and communication technology equipment - Part 1: Safety requirements	2 nd Edition, issued December, 2014	--

CONCLUSION

A sample of the product covered by this Report has been found to comply with the requirements covering the category and the product is 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 UL certification or that the product(s) described are covered under UL's Follow-Up Service Program. When covered under UL's Follow-Up Service Program, the manufacturer is authorized to use the Certification Mark of UL on such products which comply with UL's Follow-Up Service Procedure and any other applicable requirements of UL LLC. The Certification Mark of UL on the product, or the UL symbol on the product and the Certification Mark of UL 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 Listing and Follow-Up Service.

This Report is intended solely for the use of UL LLC (UL) and the Applicant for establishment of UL certification coverage of the described product(s) under UL's Follow-Up Service. UL retains all rights, title and interest (including exclusive ownership) in this Report and all copyright therein. The Applicant or its designated agent shall not disclose or otherwise distribute this Report or its contents to any third party, except as required for purposes of compliance with laws, regulations, or other existing agreements or schemes in which UL is currently a participant. Any other use of this Report including, without limitation, evaluation or certification by a party other than UL is prohibited 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. UL shall not otherwise be responsible to anyone for the use of or reliance upon the contents of this Report.

Report by:

Reviewed by:

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Engineer/ Project Engineer
Underwriters Laboratories Taiwan Co.,
Ltd.

Patrick Tsai
Senior Project Engineer
Underwriters Laboratories Taiwan Co.,
Ltd.