

File E162077  
Project 06CA51672

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REPORT

On

UNINTERRUPTIBLE POWER SUPPLY EQUIPMENT

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## DESCRIPTION

## PRODUCT COVERED:

USL, CNL - Uninterruptible Power Supply, Models HORNET 1000, TOW-1000US,  
HORNET 800, TOW-800US, HORNET 600, TOW-600US, HORNET 200.

## GENERAL CHARACTER:

The equipment has the following features:

Cord connected  
Off-line type  
Battery internal to UPS

## ENGINEERING CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE USE):

USL indicates that these units were evaluated to UL 1778, the Standard for Uninterruptible Power Supply Equipment, dated October 25, 1994.

CNL indicates these units were evaluated to the requirements in the Standard for General Use Power Supplies, CAN/CSA-C22.2 No. 107.1.

## RATINGS:

When a range of electrical ratings is specified, any rating within the range is covered.

## ELECTRICAL:

UPS Units -

Model	Input Power, 50/60 Hz						
	V ac	A (1)		P.F.	W	VA	Phases(2)
		Phase	Neutral				
HORNET 1000, TOW-1000US	110-120	10	-	-	-	-	Single
HORNET 800, TOW-800US	110-120	10	-	-	-	-	Single
HORNET 600, TOW-600US	110-120	5	-	-	-	-	Single
HORNET 200	110-120	5	-	-	-	-	Single

Model	Battery/ Surge Output Power, 50/60 Hz						
	V ac	A (3)		P.F.	W	VA	Phase (2)
		Phase	Neutral				
# HORNET 1000, # TOW-1000US	120	-	-	0.5	500	1000	Single
# HORNET 800, # TOW-800US	120	-	-	0.5	400	800	Single
# HORNET 600, # TOW-600US	120	-	-	0.5	300	600	Single
# HORNET 200,	120	-	-	0.5	100	200	Single

(#) For output receptacles with ups function only.

Note: The total output current (including with ups function and without ups function) are 10 A (For Models HORNET 1000 and HORNET 800) or 5 A (For Models HORNET 600 and HORNET 200).

#### Notes:

- (1) Input current based on use of true RMS meter. For a unit having a 3 phase, 4-wire input, both the phase and neutral currents are indicated; for all others, only the phase current is indicated.
- (2) Number of phases indicated. In addition, for 3 phase units, delta or wye restriction, if applicable, is indicated.
- (3) For a unit having a 3 phase, 4-wire or a 1 phase, 3-wire output, the ampere ratings of both the phase and neutral conductors are indicated; for all others, only the phase current is indicated.

#### TEMPERATURE:

Temperature Rating - Units are considered acceptable for use in a maximum ambient of 40°C (104°F).

#### SPACINGS:

Refer to Table 1 - Controlled environment in Sec. Gen. for spacing.

#### CONSTRUCTION DETAILS:

These are in addition to those stated in Section General, see Section General for Method of Application.

## MODEL DIFFERENCE:

Models TOW-1000US, TOW-800US, TOW-600US, are identical to Models HORNET 1000, HORNET 800, HORNET 600 respectively except for model designation.

## MARKINGS:

General - See Sec. Gen. for method of application. The Listee's name, model number, date of manufacture, and electrical ratings marked where readily visible.

## ADDITIONAL MARKINGS:

These are in addition to those stated in Sec. Gen. See Sec. Gen. for Method of Application.

AC Circuits - Identified to indicate alternating current, frequency or frequency-range or the AC symbol - see Sec. Gen., ILL. 1. Provide adjacent to UPS AC input part and AC output part.

User Operated Handles, Knobs or Buttons - Operating positions are identified.

Controlled Environment - "Intended for installation in a controlled environment." For CNL unit, the above marking shall be followed by the following wording. "Refer to manual for environmental conditions." This marking is located outside the unit.

Max. Ambient Temperature - For CNL unit, the maximum ambient temperature 40°C should be marked on unit.

## CAUTIONARY MARKINGS:

The following cautionary markings are provided. The words "CAUTION", "WARNING" or "DANGER" in the following cautionary markings shall be in letters not less than 3.2 mm high, and the remaining letters shall not be less than 1.6 mm high.

1. Live Heat Sink - "CAUTION - Risk of electric shock - Heat sinks are live. Disconnect unit before servicing." The marking shall be located on or near the live part so as to make the risk of fire or electric shock known before the part is likely to be touched. A single marking for multiple number of parts may be used.
2. UPS Having Internal Battery - "CAUTION - Risk of electric shock - Hazardous live parts inside this UPS are energized from the battery supply even when the input AC power is disconnected." If marking is located on inside of unit, it is visible with any cover or panel opened.
3. No User Serviceable Parts - "CAUTION - Risk of electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel."
4. Nonisolated Battery Supply - "CAUTION - Risk of electric shock - Battery circuit is not isolated from AC input, hazardous voltage may exist between battery terminals and ground. Test before touching." The marking shall be provided internally adjacent to the batteries.
5. Non Sinusoidal Output - For CNL unit only, on unit surface - "NOTICE: THE OUTPUT OF THIS DEVICE IS NOT SINUSOIDAL. IT HAS A TOTAL HARMONIC DISTORTION OF A PERCENT AND MAXIMUM SINGLE HARMONIC OF B PERCENT". Where minimum value A and B listed below.

Model	A	B
HORNET 1000	39.8	25.1
HORNET 800	44.5	29.4
HORNET 600	44.3	29.4
HORNET 200	44.3	29.4

## PRINTED WIRING BOARDS:

Minimum requirements for PWBs are described in Sec. Gen.

## OUTPUT CIRCUIT GROUNDING:

The AC output power circuit of these UPS is grounded as described below.

Receptacles - For a UPS having a general-use attachment plug receptacle, the white or silver terminal is connected to the grounded (neutral) supply conductor of either (1) AC input circuit, or (2) output of the UPS for a receptacle supplied from the output AC circuit.

## INSTRUCTIONS MANUAL:

The important safety instructions shall appear before the preliminary guidelines for battery installations, the battery installation procedures, and maintenance.

The headings "IMPORTANT SAFETY INSTRUCTIONS" and "SAVE THESE INSTRUCTIONS" shall be entirely in upper case letters not less than 4.8 mm high or emphasized to distinguish them from the rest of the text. Upper case letters in the instructions shall not be less than 2.0 mm high, and lower case letters shall not be less than 1.6 mm high.

The instruction manual shall include important safety instructions as listed below. The statement "IMPORTANT SAFETY INSTRUCTIONS", and the statement "SAVE THESE INSTRUCTIONS" shall precede the list. The word "CAUTION" shall be entirely in upper case letters.

1. "SAVE THESE INSTRUCTIONS - This Manual Contains Important Instructions that should be followed during Installation and Maintenance of the UPS and Batteries."
2. "Intended for Installation in a temperature controlled, indoor area free of conductive contaminants."
3. "Maximum ambient temperature 40°C" (or "0 ~ 40°C" for Ambient Operation)".
4. Symbol for On/Off is displayed and defined.
5. Size of Branch Circuit Overcurrent Protection - "CAUTION - To reduce the risk of fire, connect only to a circuit provided with 20 amperes maximum branch circuit overcurrent protection in accordance with the National Electric Code, ANSI/NFPA 70".

## UPS MODEL HORNET 1000 - FIGS. 1 THRU 3

Enclosure - R/C (QMFZ2), Chi Mei Corporation (E56070), Type PA-765A, rated 5VA, 80°C, minimum 2.6 mm thick, two pieces construction, overall 242 by 152 by 91.3 mm high, secured together by screws. Provided with some louver type ventilation openings, see ILL. 1 thru ILL. 2 for details.

Power Supply Cord - Listed (ELBZ, ELBZ7), non-detachable type, rated minimum 10 A, 125 V, cord Type SJT, No. 18 AWG/3C, one end terminates in a grounding type attachment plug of 15 A, 125 V configuration (NEMA 5-15P), other end terminates in internal connection, minimum 1.8 m long.

Power Supply Cord Strain Relief - R/C (NZMT2), Heavy Power Co., Ltd. (E107293), Type 6P-4. Secured in a 15.9 by 14 mm (double-D shape) opening at rear enclosure.

Output Receptacles - Six provided, R/C (RTRT2, RTRT8), Sokao Enterprise Co., Ltd. (E182923), Type SO-11-1, rated 125 V ac, 15 A. Secured by fit of flange to opening of enclosure and secured to output PWB by soldering.

Alternate - Same as above except R/C (RTRT2, RTRT8), Rong Feng (E95905), Type SS-6B, rated 125 V ac, 15 A.

Input Supplementary Protector - R/C (QVNU2, QVNU8), Rong Feng (E142783), Type RFMB, rated 10 A, 250 V ac. Secured to enclosure by snap-fit.

Internal Wirings - R/C (AVLV2), CSA Certified, style 1015, No. 18 AWG, rated 600 V, 105°C, VW-1.

Quick Connect Terminals - All quick-connect terminals are Listed or R/C (RFWV2, RFWV8), and are uninsulated type or covered by R/C insulating tubing or sleeving.

Grounding and Bonding - Provided with R/C (AVLV2), CSA Certified, green or green with yellow stripe, minimum No. 18 AWG, appliance wiring material, connected from grounding wire of power supply cord to grounding terminal of output receptacles by screws and nuts. Also provided to connected between grounding terminal of output receptacles. No grounding or bonding connections accessible from outside of enclosure.

Battery Wirings - Four provided, R/C (AVLV2), CSA Certified, Style 1015, No. 12 AWG, rated 105°C, 600 V, VW-1.

Battery - One provided, sealed type, R/C (BAZR2), Shenzhen Ritar Power Co., Ltd. (MH28539), Type RT1290, rated 12 V, 9 Ah, physical fit inside enclosure.

Alternate - Same as above except for following type may be used.

<u>Manufacturer</u>	<u>Type</u>	<u>Rating</u>
FIRST POWER (MH28204)	FP1290	12 V, 9 Ah
CSB BATTERY (MH14533)	HR1234W	12 V, 8.5 Ah
B&B BATTERY (MH19884)	HR9-12	12 V, 8 Ah
SHENZHEN SUNNYWAY (MH26669)	12V9AH	12 V, 9 Ah

Communication Port (USB) - LVLE. Secured to USB PWB by soldering and fit of flange to Enclosure Opening.

Phone Jack Module - Unlisted Component (QVRG3), Sysgration Ltd., Type PC00017-068, see File E162077(SP), Vol. 3, Sec. 1, Issued Date: December 27, 2000 for details.



## MODEL HORNET 1000 MAIN PWB ASSEMBLY - FIG. 4 AND FIG. 5

Printed Wiring Board - R/C (ZPMV2), rated V-0, 130°C, measured 159 by 110 by 1.6 mm. Secured to integral slots of enclosure by fitting. See ILL. 3 thru ILL. 5 for component and foil trace layout on PWB for description.

Varistor (MOV4) - R/C (XUHT2, XUHT8), Thinking (E173642), Type TVR14271, rated 175 V ac.

Alternate - Same as above except R/C (XUHT2, XUHT8), Centra Science Corp., (E150709), Type CNR-14D271K, rated 175 V ac.

X-Capacitor (C5) - R/C (FOWX2, FOWX8), rated 0.1 uF, 250 V ac.

Backfeed Relay (RY1) - R/C (NLDX2, NLDX8), Song Chuan Precisions Co., Ltd. (E88991), Type 845H-2C-B-C, class 130(B) coil insulation system. (contacts rated 8 A, 277 V ac, coil rated 12 V dc).

Bridge Diodes (D10, D11, D12, D19) - Minimum rated 1000 V, 1 A.

Choke (L1) - Open type construction with ferrite core, overall measured 12 mm OD by 20 mm high. Coil with enameled copper wire, provided with R/C (OBMW2), rated 130°C, measured 0.55 mm diameter by 80 turns and wound on ferrite core, wire ends secured to PWB by soldering.

Transformer (TX2) - R/C (OBJY2), World Dragon Electronic Ltd. (E200878), Class 130(B) insulation system, designated UEC-130. Constructed as follow.

- A. Core - Ferrite core, E-E type, core size measured 25.4 by 19 by 6.3 mm thick.
- B. Bobbin - Two flange type, phenolic, minimum 1.5 mm thick. Provided with one layer of Mylar tape between windings and bobbin, see ILL. 6 for details.
- C. Windings - Enameled copper wire. See ILL. 7 for winding information and insulation.
- D. Impregnation - Varnish.
- E. Crossover Lead Insulation - R/C (OANZ2), two layer of Mylar tape, rated minimum 130°C.

Alternate - Same as above except R/C (OBJY2), Yann Shnn Co., Ltd. (E215086), Class 130(B) insulation system, designated YS-130-1.

Alternate - Same as above except R/C (OBJY2), Jepuls Technology (E306571), Class 130(B) insulation system, designated JEPULS-UL-001.

Transistor (Q17) - Minimum rated 500 V, 8 A. Secured to heat sink (HS4) by screw and secured to PWB by soldering.

Heat Sink (HS4) - Aluminum alloy, overall 22 by 15 by 10.3 mm. Secured to PWB by soldering. Surface is conductive anodized.

Diode (D21) - Minimum rated 200 V, 2 A.

Capacitor (C40) - Electrolytic type, rated 50 V, 47 uF, 105°C.

DC Fuses (F3, F4) - Listed (FHXT, FHXT7), rated 32 V, 40 A. Secured to PWB by soldering.

Capacitors (C8, C9) - Electrolytic type, rated 16 V, 3300 uF, 105°C.

Transistors (Q9 thru Q12) - Minimum rated 30 V, 75 A. Secured to heat sinks (HS1 and HS2) by screw and secured to PWB by soldering.

Heat Sinks (HS1, HS2) - Aluminum alloy, overall 40 by 40 by 15 mm. Secured to PWB by soldering. Surface is conductive anodized.

Transformer (TX1) - R/C (OBJY2), World Dragon Electronic Ltd. (E200878), Class 130(B) insulation system, designated UEC-130. Constructed as follow.

- A. Core - Ferrite core, E-E type, core size measured 41.4 by 35 by 11.3 mm thick.
- B. Bobbin - Two flange type, phenolic, minimum 1.5 mm thick. Provided with one layer of Mylar tape between windings and bobbin, see ILL. 6 for details.
- C. Windings - Enameled copper wire. See ILL. 8 for winding information and insulation.
- D. Impregnation - Varnish.
- E. Crossover Lead Insulation - R/C (YDPU2) or (UZFT2), tubing, rated minimum 150 V, 200°C.

Alternate - Same as above except R/C (OBJY2), Yann Shnn Co., Ltd. (E215086), Class 130(B) insulation system, designated YS-130-1.

Alternate - Same as above except R/C (OBJY2), Jepuls Technology (E306571), Class 130(B) insulation system, designated JEPULS-UL-001.

Diodes (D26, D31) - Minimum rated 600 V, 8 A. Secured to heat sink (HS3) by screw and secured to PWB by soldering.

Heat Sink (HS3) - Aluminum alloy, overall 30 by 16 by 16 mm. Secured to PWB by soldering. Surface is conductive anodized.

X-Capacitor (C4) - R/C (FOWX2, FOWX8), rated 0.1 uF, 250 V.

Transistors (Q13 thru Q16) - Minimum rated 200 V, 16 A. Secured to heat sinks (HS5 thru HS8) by screw and secured to PWB by soldering.

Heat Sinks (HS5 thru HS8) - Aluminum alloy, overall 22 by 15 by 10.3 mm. Secured to PWB by soldering. Surface is conductive anodized.

Optical Isolators (U7 thru U9) - R/C (FPQU2, FPQU8), Fairchild (E90700), Type H11A817C, isolation voltage 5000 V ac.

Alternate - Same as above except R/C (FPQU2, FPQU8), Everlight (E214129), Type EL817, isolation voltage 5000 V ac.

Alternate - Same as above except R/C (FPQU2, FPQU8), Cosmo (E169586), Type K1010, isolation voltage 5000 V ac.

#### Output PWB Assembly -

1. PWB - R/C (ZPMV2), rated V-0, 105°C, overall 124.5 by 106.5 by 1.6 mm thick, see ILL. 9 thru ILL. 10 for component and foil trace layout.
2. X-Capacitor (C1) - R/C (FOWX2, FOWX8), rated 1 uF, 250 V.
3. X-Capacitor (C4) - R/C (FOWX2, FOWX8), rated 0.22 uF, 250 V.
4. Y-Capacitors (C2, C3, C5, C6) - R/C (FOWX2, FOWX8), rated 4700 pF, 250 V.

## UPS MODEL HORNET 800

General - Model HORNET 800 is similar to Model HORNET 1000 described in Fig. 1 thru Fig. 5 except for noted below.

Battery - One provided, sealed type, R/C (BAZR2), CSB Battery (MH14533), Type GP1272, rated 12 V, 7.2 Ah, physical fit inside enclosure.

Alternate - Same as above except for following type may be used.

Manufacturer	Type	Rating
FIRST POWER (MH28204)	FP1270	12 V, 7 Ah
SHENZHEN RITAR POWER(MH28539)	RT1270	12 V, 7 Ah
B&B BATTERY (MH19884)	BP 7-12	12 V, 7 Ah
SHENZHEN SUNNYWAY (MH26669)	12V7AH	12 V, 7 Ah

Battery Wirings - Two provided, R/C (AVLV2), CSA Certified, Style 1015, No. 10 AWG, rated 105°C, 600 V, VW-1.

DC Fuses (F3, F4) - Listed (FHXT, FHXT7), rated 32 V, 30 A. Secured to PWB by soldering.

Transistors (Q9 thru Q12) - Minimum rated 60 V, 50 A. Secured to heat sinks (HS1 and HS2) by screw and secured to PWB by soldering.

## UPS MODEL HORNET 600 - FIGS. 6 THRU 8

General - Model HORNET 600 is similar to Model HORNET 1000 described in Fig. 1 thru Fig. 5 except for noted below.

Enclosure - R/C (QMFZ2), Chi Mei Corporation (E56070), Type PA-765A, rated 5VA, 80°C, min. 2.6 mm thick, two pieces construction, overall 211 by 110 by 77 mm high, secured together by screws. Provided with some louver type ventilation openings, see ILL. 11 thru ILL. 12 for details.

Input Supplementary Protector - R/C (QVNU2, QVNU8), Rong Feng (E142783), Type RFMB, rated 5 A, 250 V ac. Secured to enclosure by snap-fit.

Battery Wirings - Two provided, R/C (AVLV2), CSA Certified, Style 1015, No. 12 AWG, rated 105°C, 600 V, VW-1.

Battery - One provided, sealed type, R/C (BAZR2), CSB Battery (MH14533), Type HR1221W, rated 12 V, 5.25 Ah, physical fit inside enclosure.

Alternate - Same as above except for following type may be used.

Manufacturer	Type	Rating
FIRST POWER (MH28204)	FP1250	12 V, 5 Ah
SHENZHEN RITAR POWER(MH28539)	RT1250	12 V, 5 Ah
B&B BATTERY (MH19884)	BP 5-12	12 V, 5 Ah
SHENZHEN SUNNYWAY (MH26669)	12V5AH	12 V, 5 Ah

Communication Port (USB) - Not provided.

Phone Jack Module - Not provided.

## MODEL HORNET 600 MAIN PWB ASSEMBLY - FIG. 9 AND FIG. 10

Printed Wiring Board - R/C (ZPMV2), rated V-0, 130°C, measured 140 by 94 by 1.6 mm thick. Secured to integral slots of enclosure by fitting. See ILL. 13 thru ILL. 14 for component and foil trace layout on PWB for description.

Varistor (MOV2) - R/C (XUHT2, XUHT8), Thinking (E173642), Type TVR14271, rated 175 V ac.

Alternate - Same as above except R/C (XUHT2, XUHT8), Centra Science Corp., (E150709), Type CNR-14D271K, rated 175 V ac.

X-Capacitor (C2) - R/C (FOWX2, FOWX8), rated 0.1 uF, 250 V.

Backfeed Relay (RY1) - R/C (NLDX2, NLDX8), Song Chuan Precision Co., Ltd., (E88991), Type 845H-2C-C, (contacts rated 8 A, 277 V ac, coil rated 12 V dc).

Bridge Diodes (D3 thru D6) - Minimum rated 1000 V, 1 A.

Choke (L1) - Open type construction with ferrite core, overall measured 12 mm OD by 20 mm high. Coil with enameled copper wire, provided with R/C (OBMW2), rated 130°C, measured 0.55 mm diameter by 80 turns and wound on ferrite core, wire ends secured to PWB by soldering.

Transformer (TX2) - R/C (OBJY2), World Dragon Electronic Ltd. (E200878), Class 130(B) insulation system, designated UEC-130. Constructed as follow.

- A. Core - Ferrite core, E-E type, core size measured 25.4 by 19 by 6.3 mm thick.
- B. Bobbin - Two flange type, phenolic, minimum 1.5 mm thick. Provided with one layer of Mylar tape between windings and bobbin, see ILL. 6 for details.
- C. Windings - Enameled copper wire. See ILL. 7 for winding information and Insulation.
- D. Impregnation - Varnish.
- E. Crossover Lead Insulation - R/C (OANZ2), two layer of Mylar tape, rated minimum 130°C.

Alternate - Same as above except R/C (OBJY2), Yann Shnn Co., Ltd. (E215086), Class 130(B) insulation system, designated YS-130-1.

Alternate - Same as above except R/C (OBJY2), Jepuls Technology (E306571), Class 130(B) insulation system, designated JEPULS-UL-001.

Transistor (Q15) - Minimum rated 500 V, 8 A. Secured to heat sink (HS4) by screw and secured to PWB by soldering.

Diode (D10) - Minimum rated 200 V, 2 A.

Capacitor (C38) - Electrolytic type, rated 50 V, 47 uF, 105°C.

DC Fuse (F1) - Listed (FHXT, FHXT7), rated 32 V, 40 A. Secured to PWB by soldering.

Capacitor (C4) - Electrolytic type, rated 16 V, 3300 uF, 105°C.

Transistors (Q13, Q14) - Minimum rated 30 V, 75 A. Secured to heat sinks (HS1 and HS3) by screw and secured to PWB by soldering.

Heat Sinks (HS1, HS3) - Aluminum alloy, overall 40 by 16 by 16 mm. Secured to PWB by soldering. Surface is conductive anodized.

Transformer (TX1) - Constructed as follow:

- A. Core - Ferrite core, E-E type, core size measured 33.5 by 28 by 10.6 mm thick.
- B. Bobbin - Two flange type, phenolic, minimum 1.5 mm thick.
- C. Windings - Enameled copper wire. See ILL. 15 for winding information and insulation.
- D. Impregnation - Varnish.
- E. Crossover Lead Insulation - R/C (OANZ2), two layer of Mylar tape, rated minimum 130°C.

Diodes (D8, D9) - Minimum rated 400 V, 3 A.

X-Capacitor (C33) - R/C (FOWX2, FOWX8), rated 0.1 uF, 250 V.

Transistors (Q9 thru Q12) - Minimum rated 200 V, 16 A.

## Output PWB Assembly -

1. PWB - R/C (ZPMV2), rated V-0, 105°C, overall measured 92 by 92 by 1.6 mm thick, see ILL. 16 for component and foil trace layout.
2. X-Capacitors (C1, C4) - R/C (FOWX2, FOWX8), rated 0.68 uF, 250 V.
3. Y-Capacitors (C2, C3, C5, C6) - R/C (FOWX2, FOWX8), rated 4700 pF, 250 V.



## UPS MODEL HORNET 200

General - Model HORNET 200 is similar to Model HORNET 600 described in Fig. 6 thru Fig. 10 except for noted below.

Battery - One provided, sealed type, R/C (BAZR2), CSB Battery (MH14533), Type GP1245, rated 12 V, 4.5 Ah, physical fit inside enclosure.

Alternate - Same as above except for following type may be used.

Manufacturer	Type	Rating
FIRST POWER (MH28204)	FP1245	12 V, 4.5 Ah
SHENZHEN RITAR POWER(MH28539)	RT1245	12 V, 4.5 Ah
B&B BATTERY (MH19884)	BP 4.5-12	12 V, 4.5 Ah
SHENZHEN SUNNYWAY (MH26669)	12V4.5AH	12 V, 4.5 Ah

DC Fuse (F1) - Listed (FHXT, FHXT7), rated 32 V, 30 A. Secured to PWB by soldering.

Transistors (Q13, Q14) - Minimum rated 60 V, 50 A. Secured to heat sinks (HS1 and HS3) by screw and secured to PWB by soldering.

Heat Sinks (HS1, HS3) - Aluminum alloy, overall 30 by 16 by 16 mm. Secured to PWB by soldering. Surface is conductive anodized.

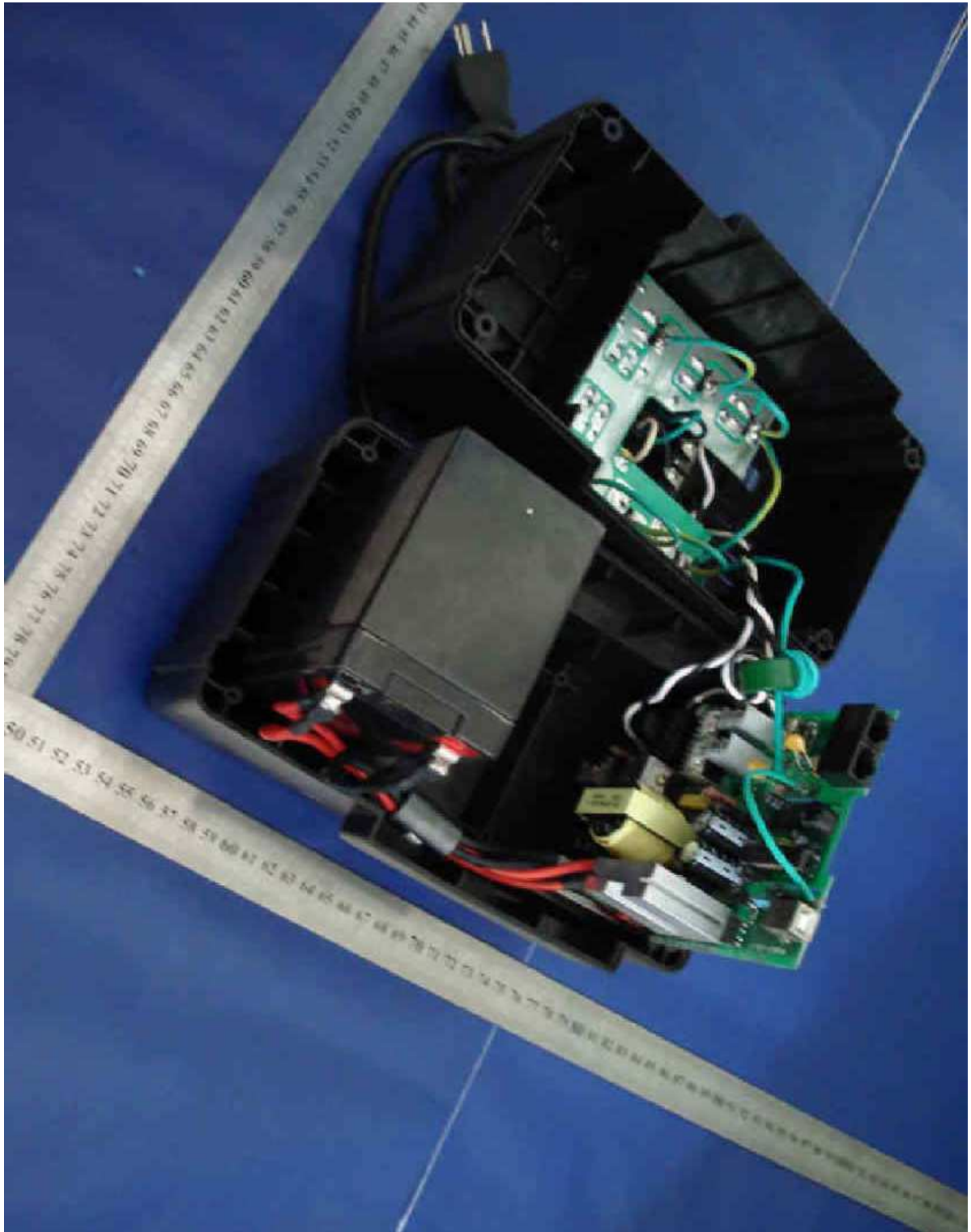
Transistors (Q9 thru Q12) - Minimum rated 200 V, 10 A.



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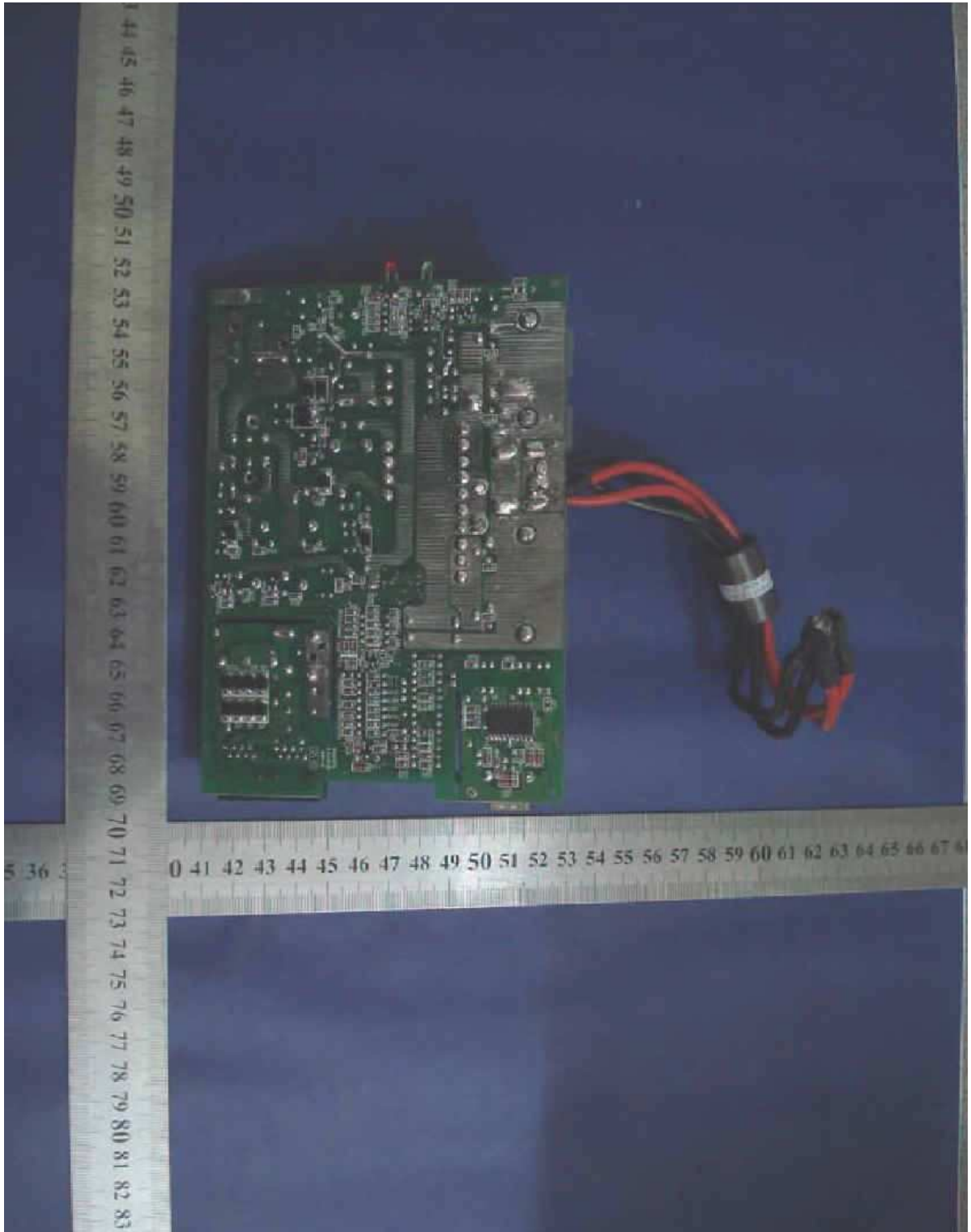
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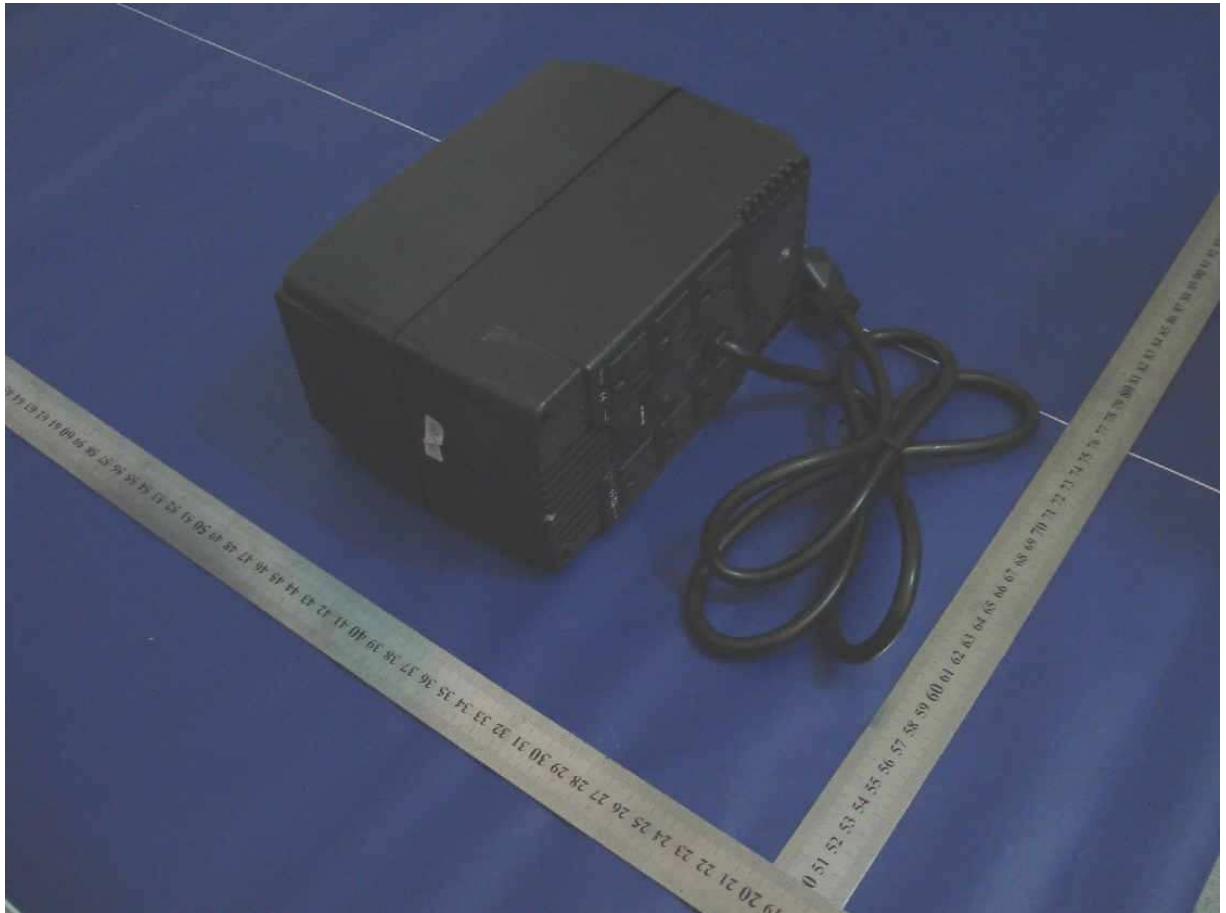
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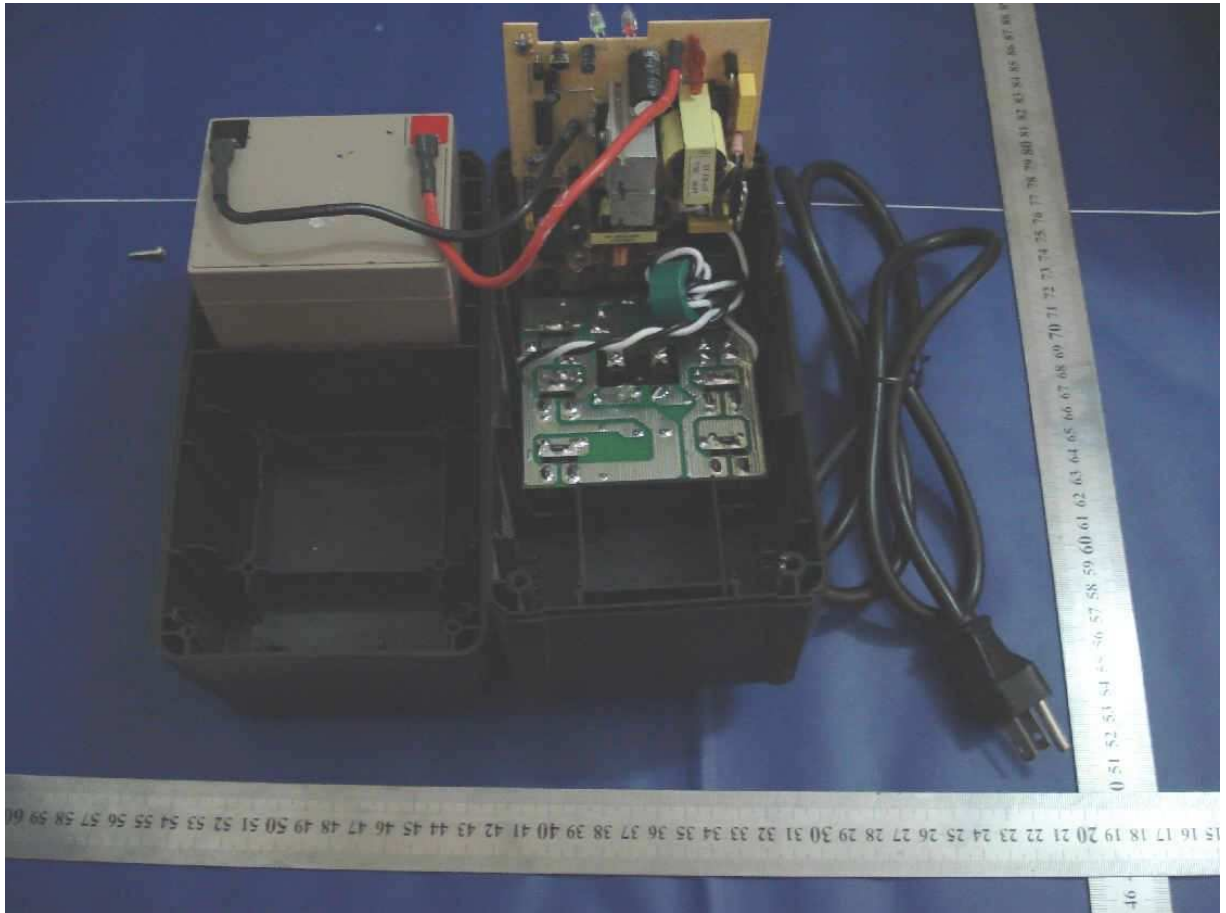


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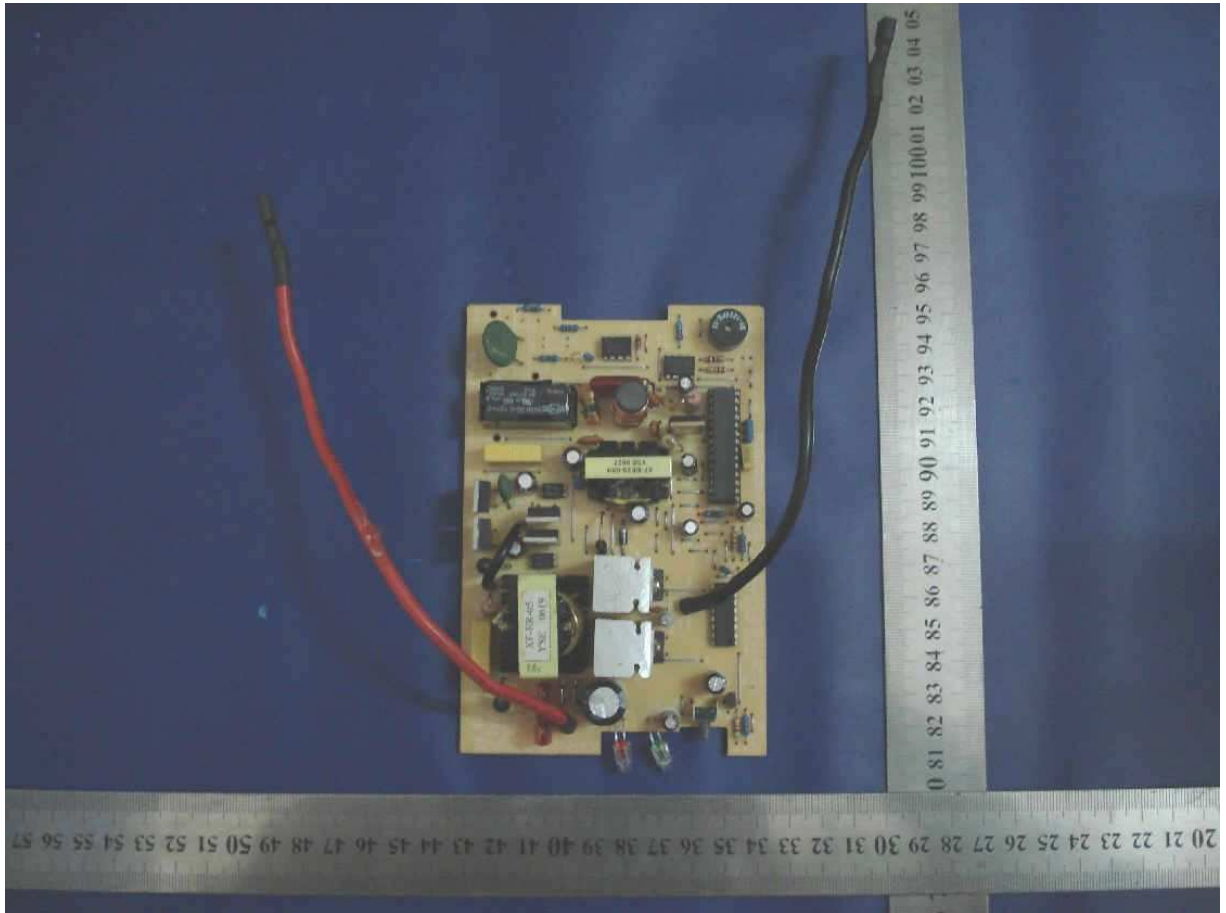


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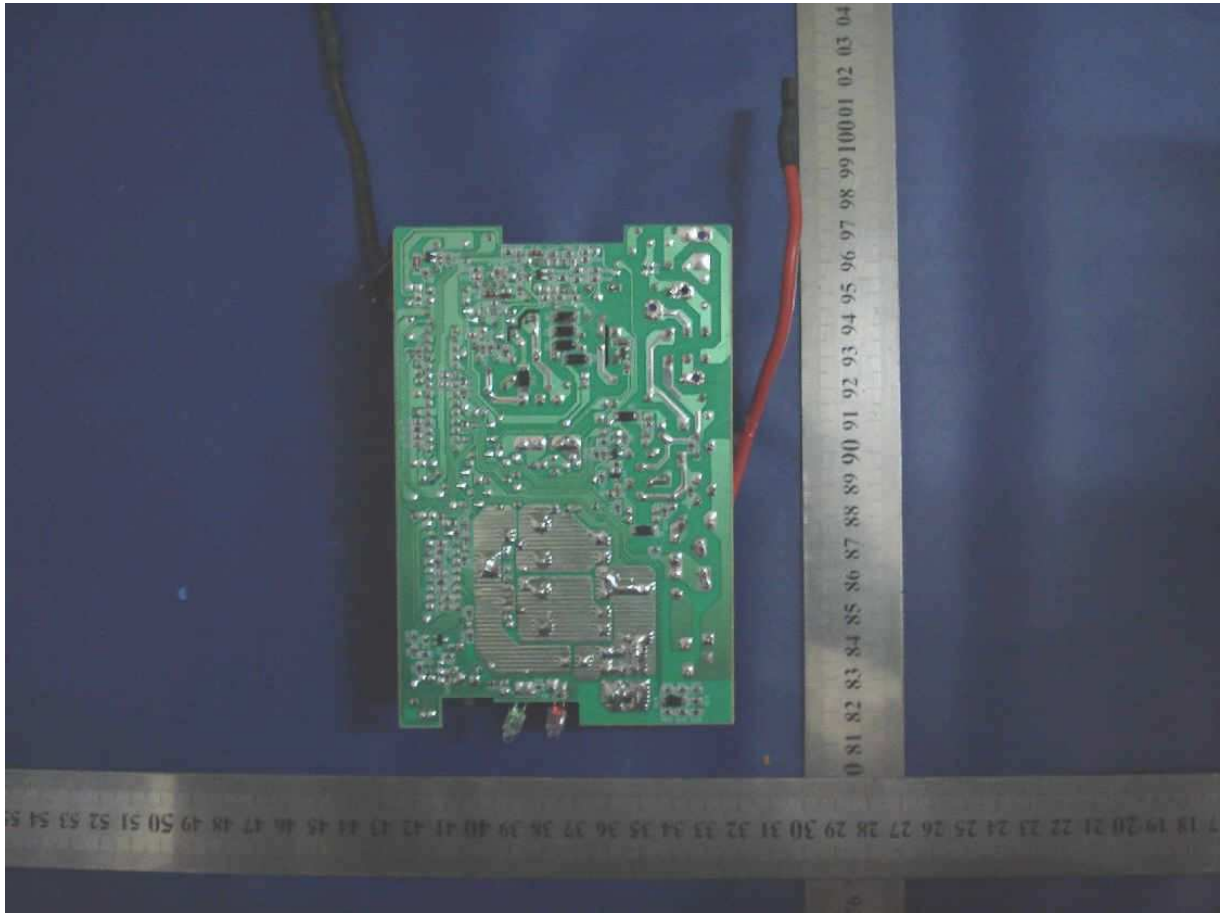




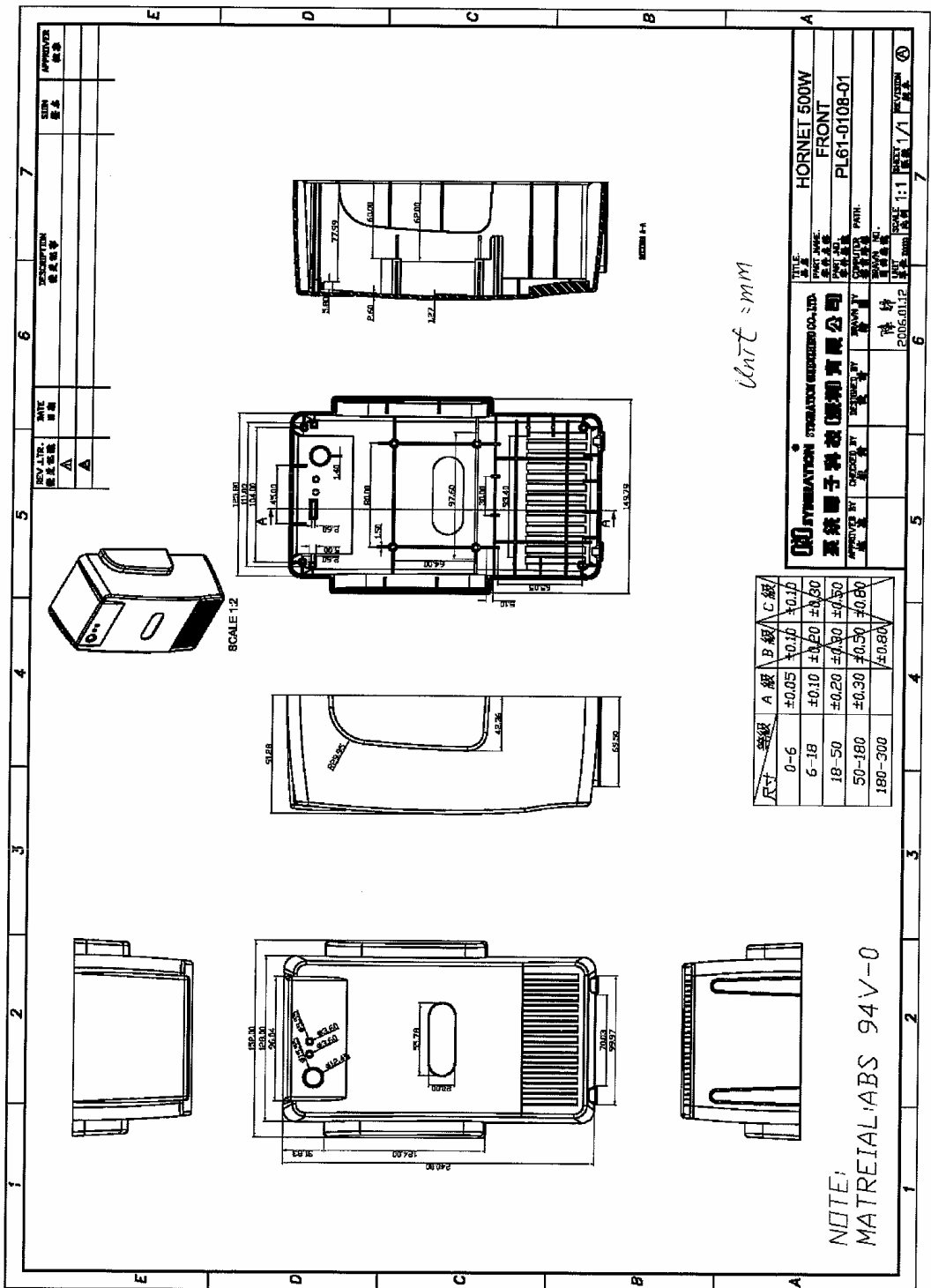
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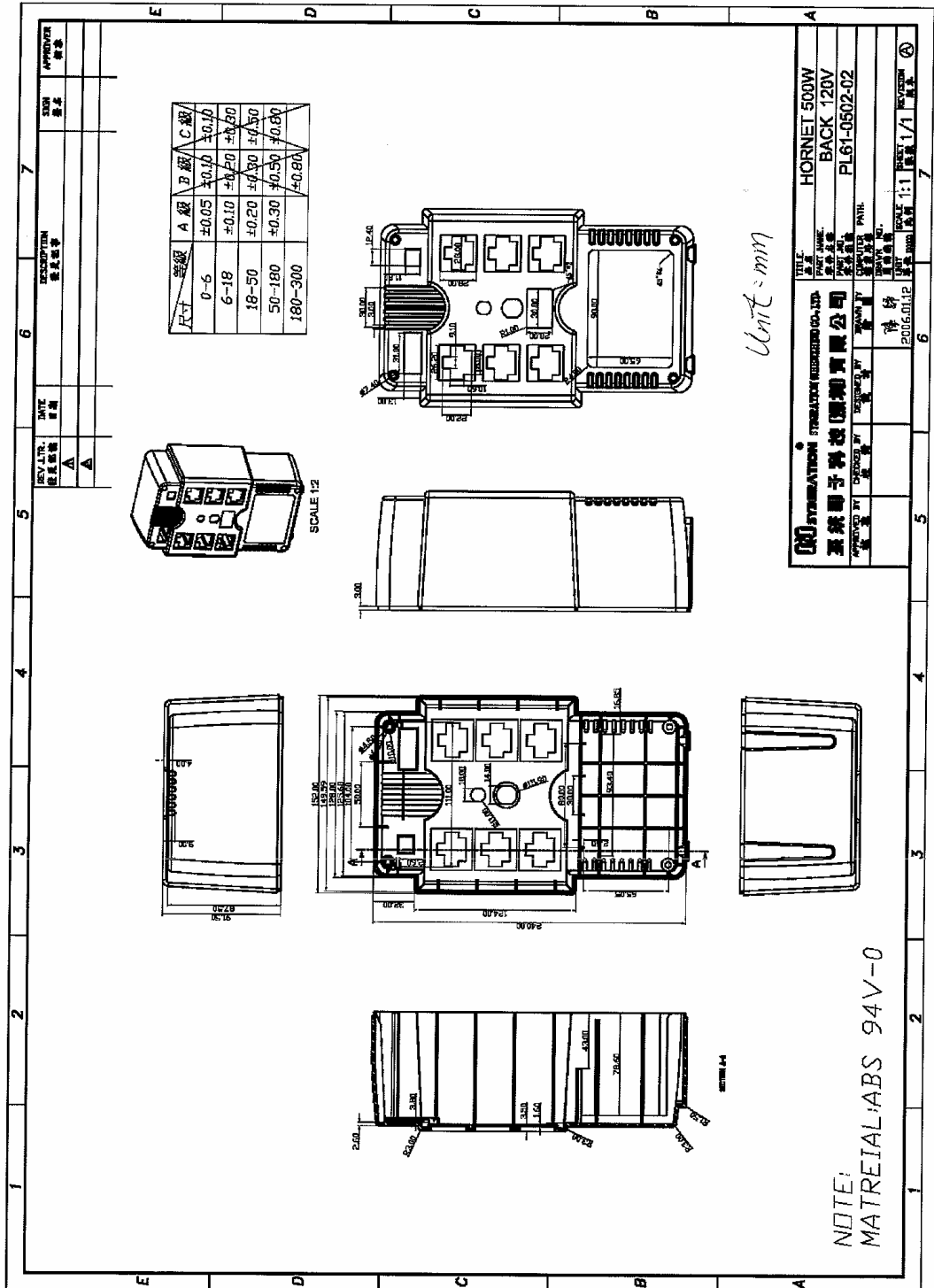


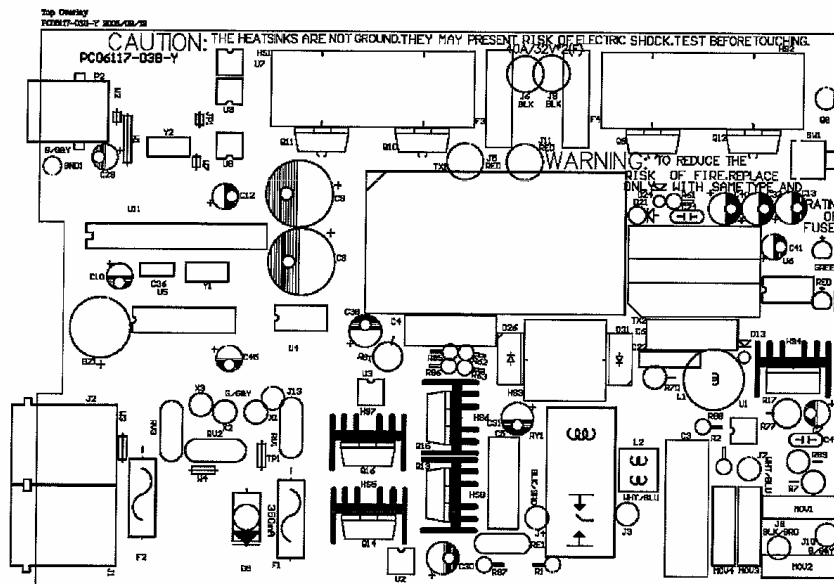
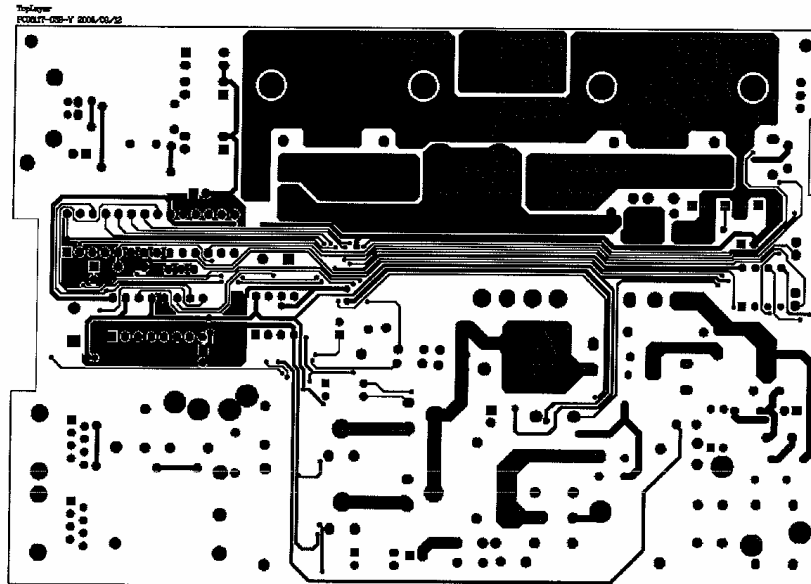
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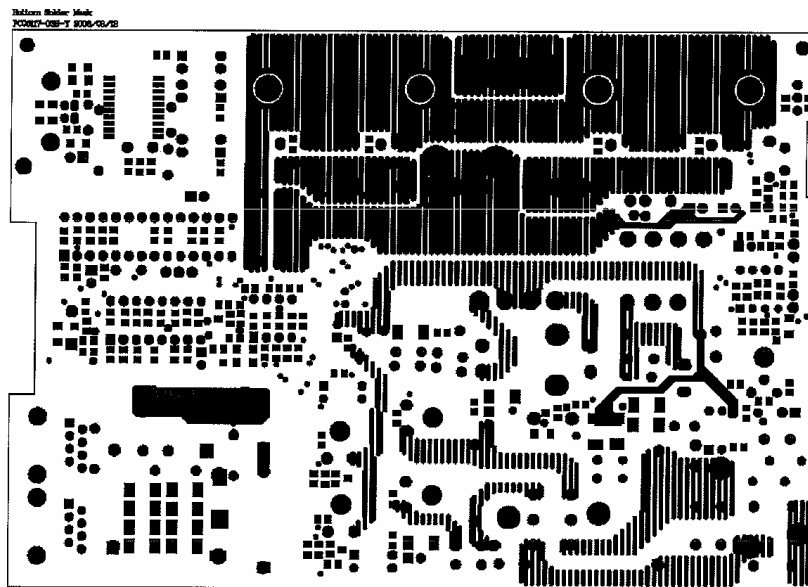
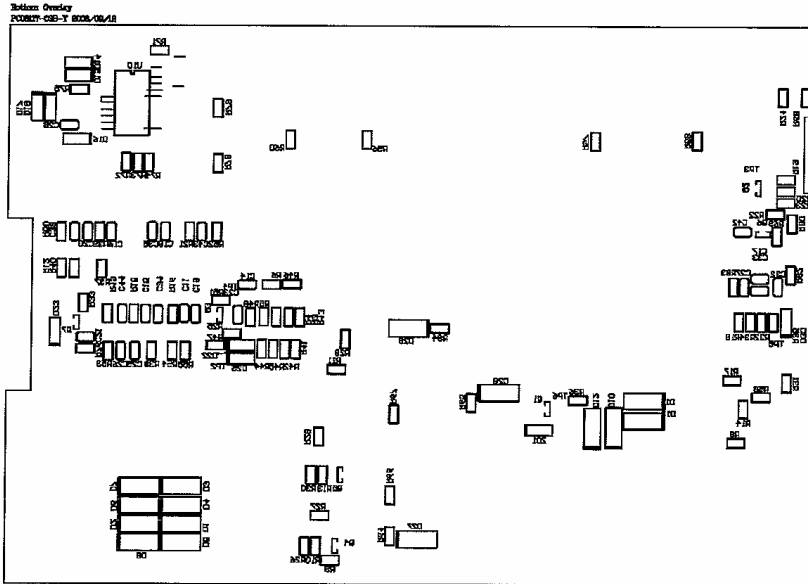
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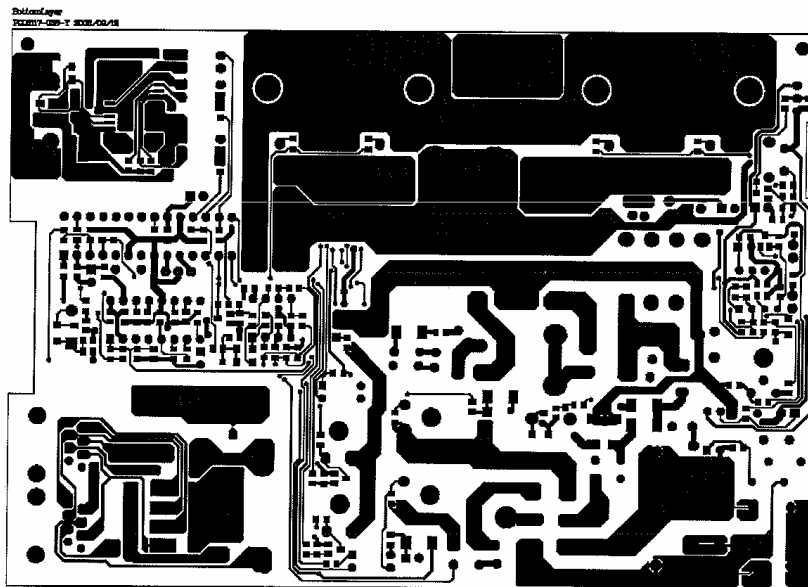
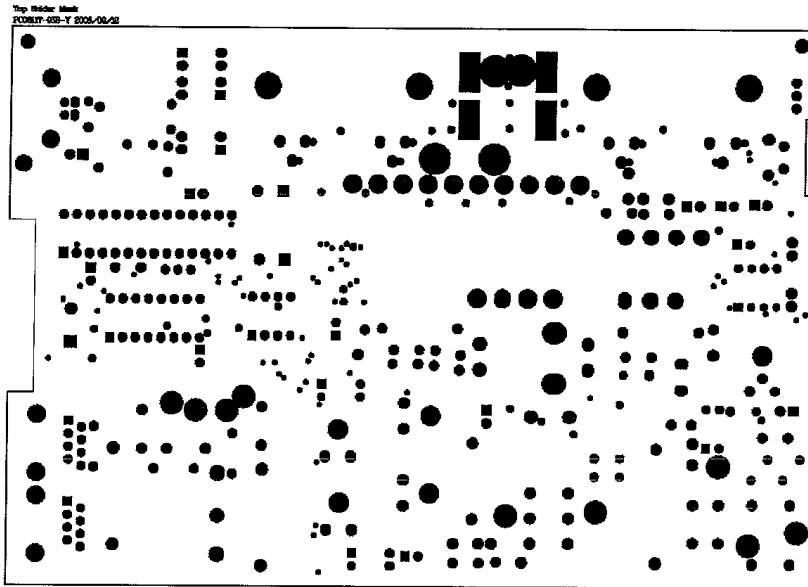




350 V 5.0 . Mon Sep 18 10:54:50 2006 (Untitled)

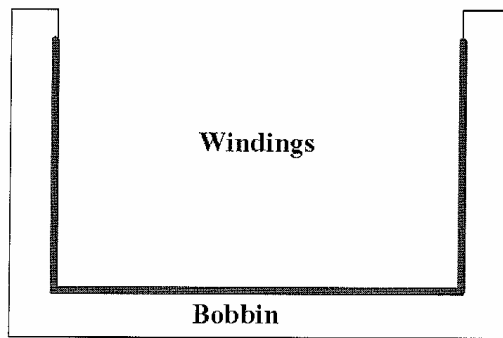


CAM350 V 5.0 . Mon Sep 18 10:53:55 2006 (Untitled)



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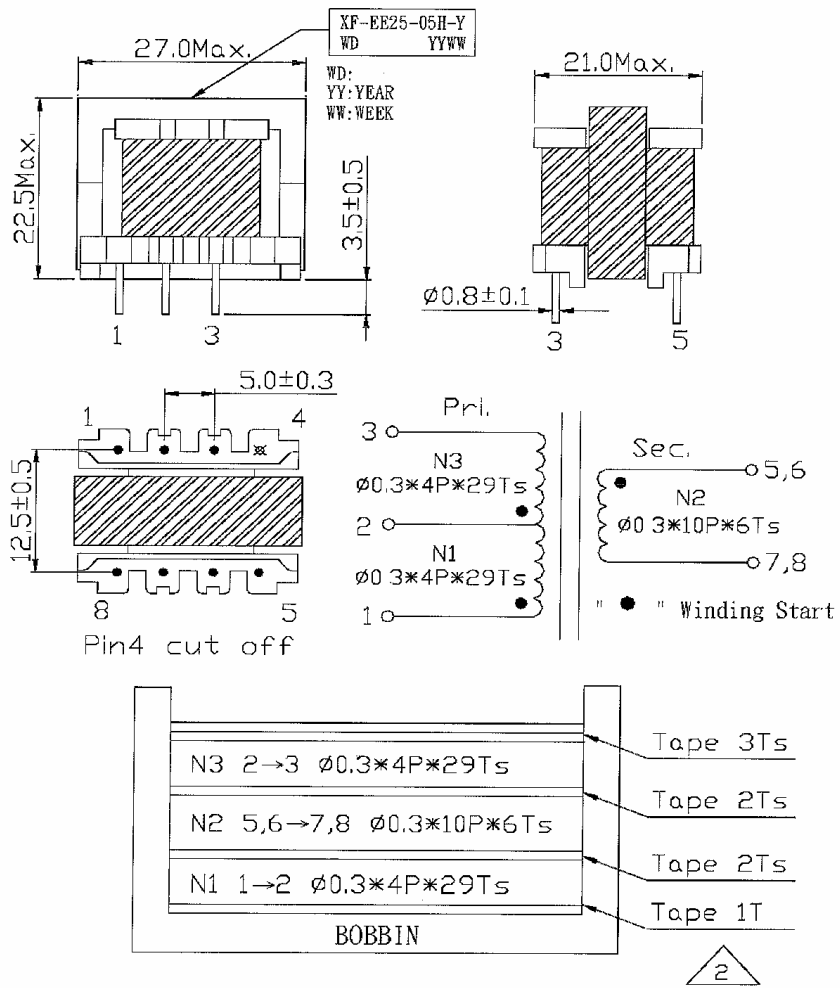




Note:  Mylar Tape

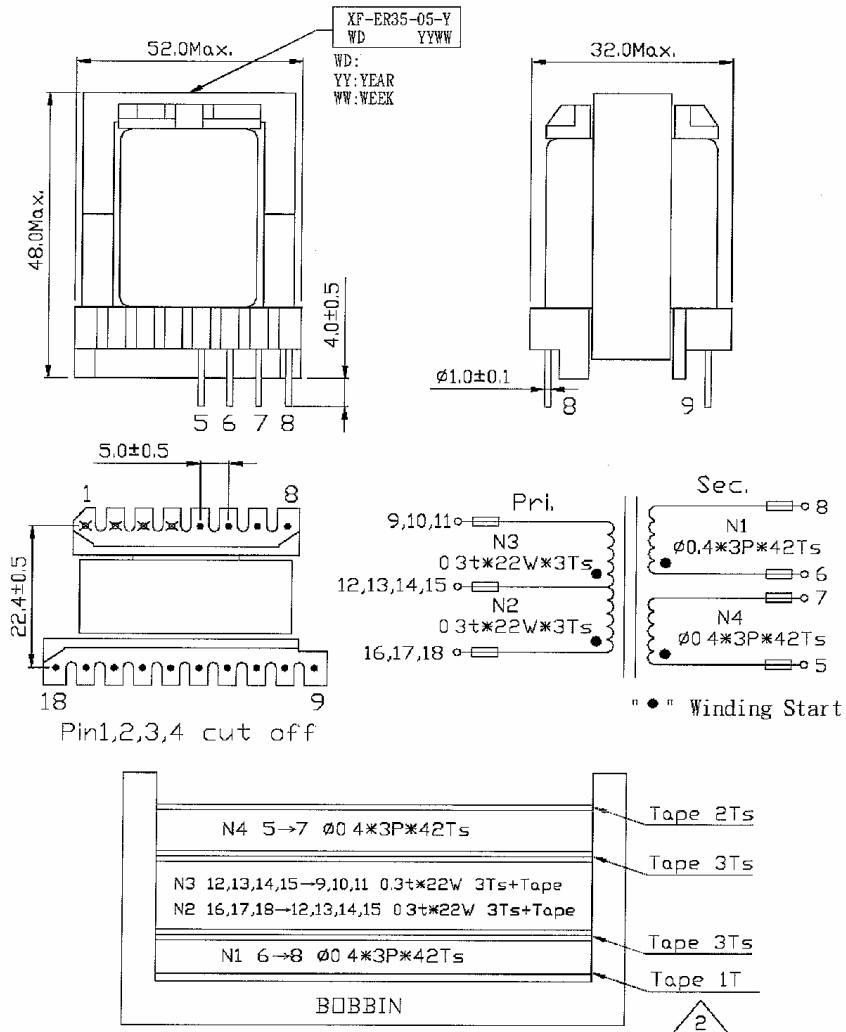
5.0 MECHANICAL SPECIFICATION:

5.1 Construction & Dimensions(m/m)

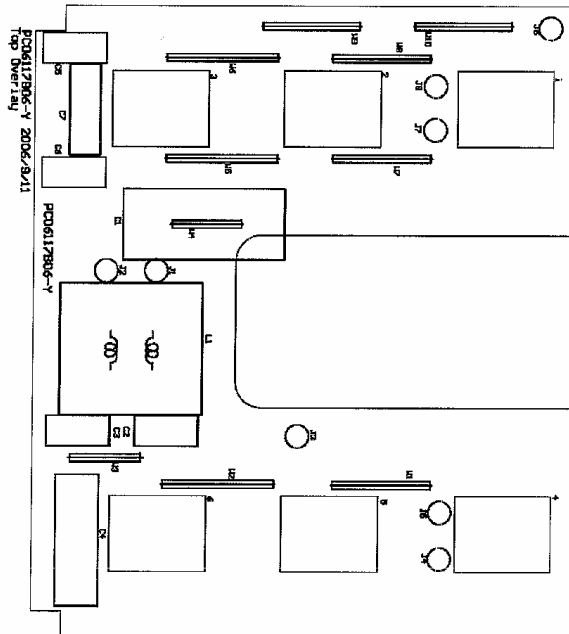


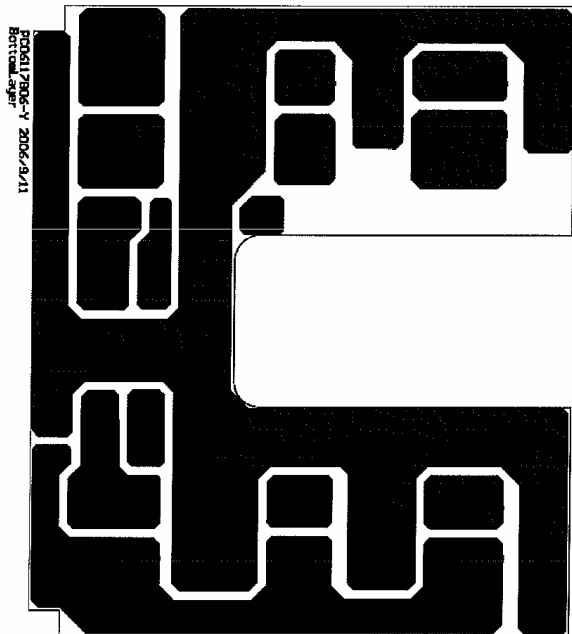
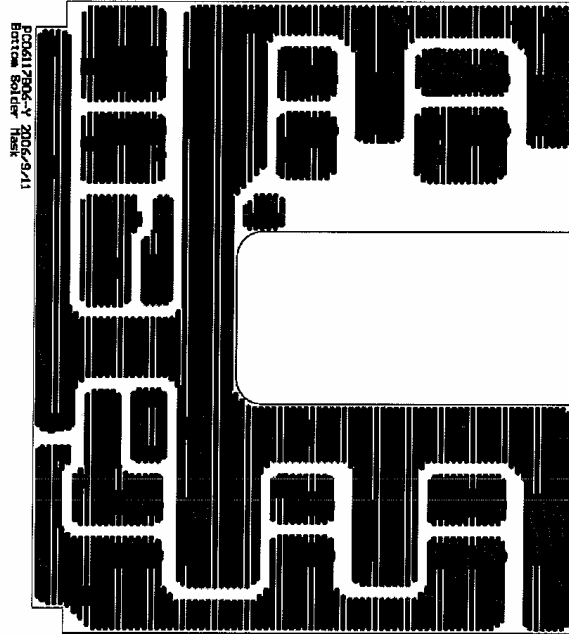
5.0 MECHANICAL SPECIFICATION:

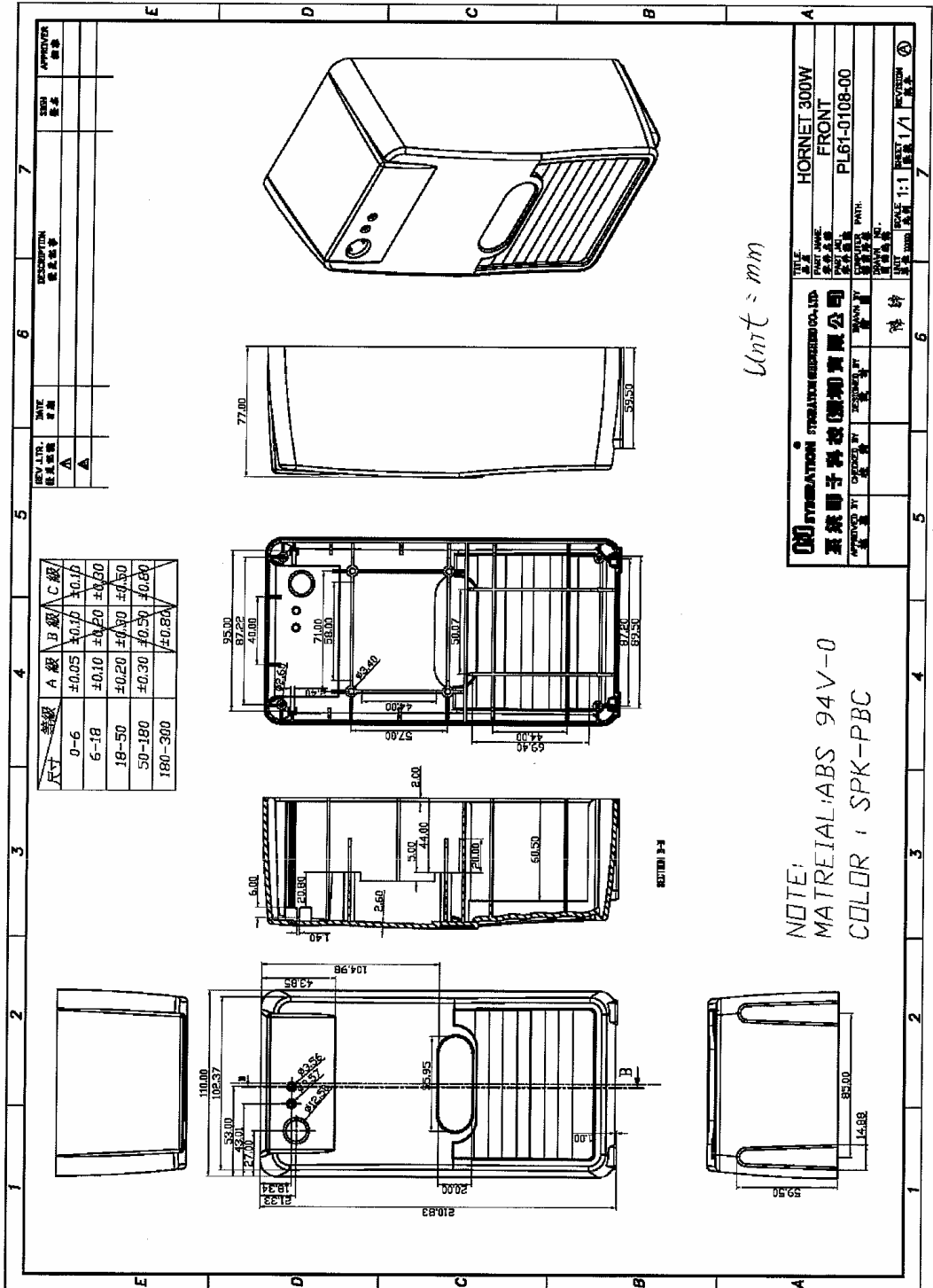
5.1 Construction & Dimensions(m/m)

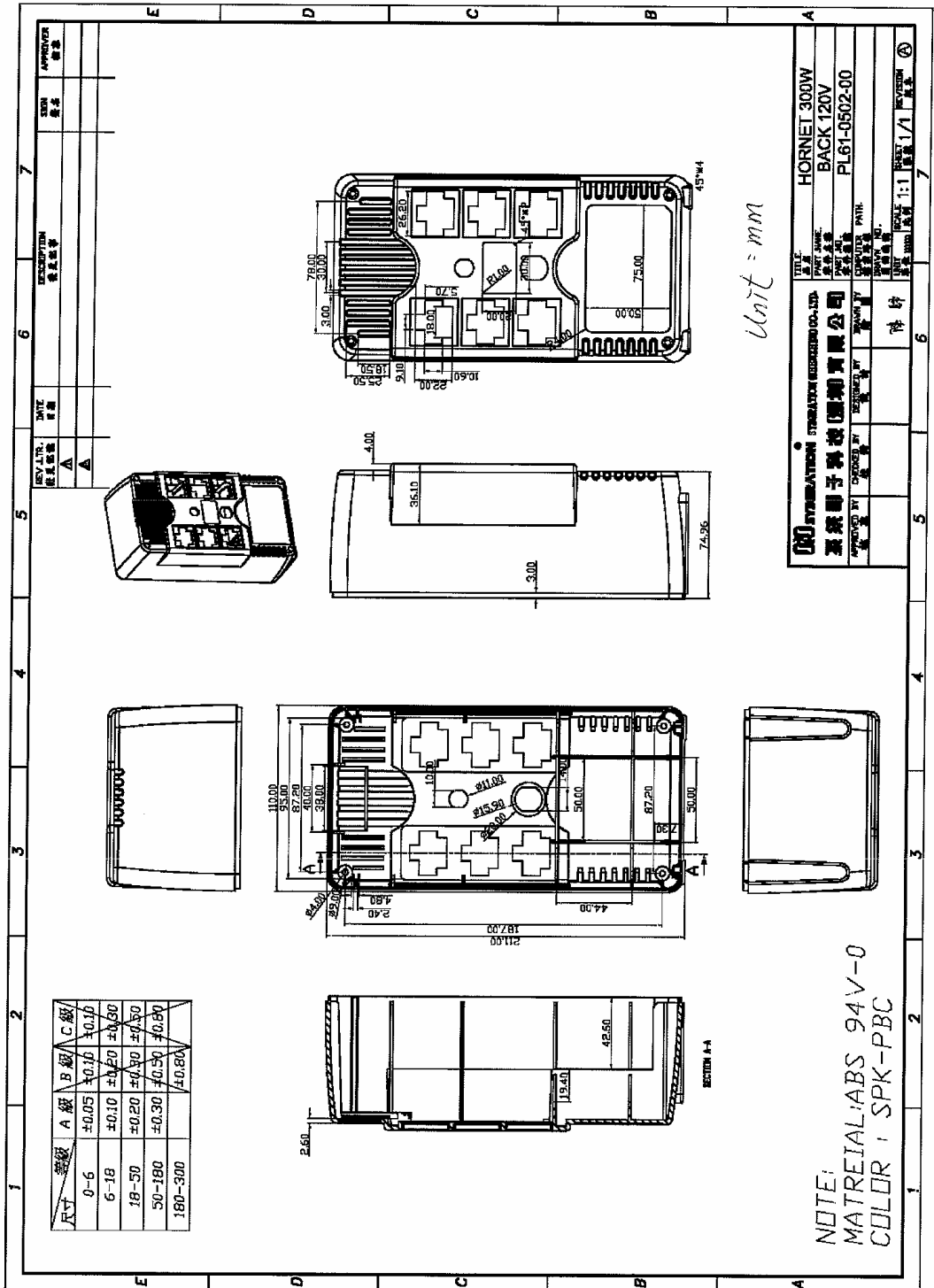


NOTE: N2, N3為同一條銅箔, Pin1, 2與Pin5, 6之間為ø0.7\*3P引線, Pin3, 4之間為ø0.7\*4P引線.



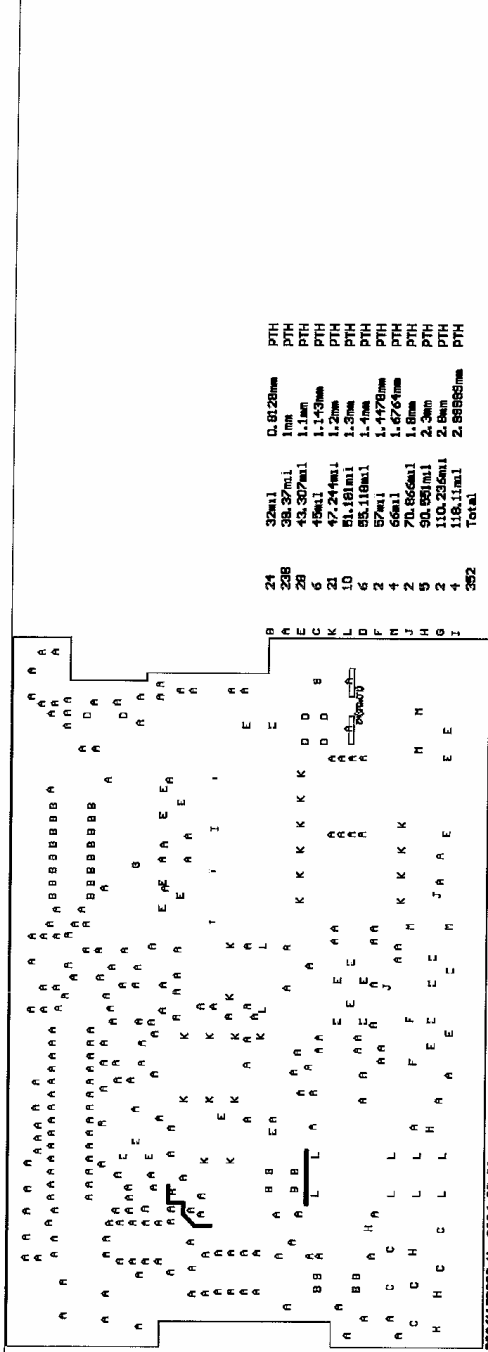






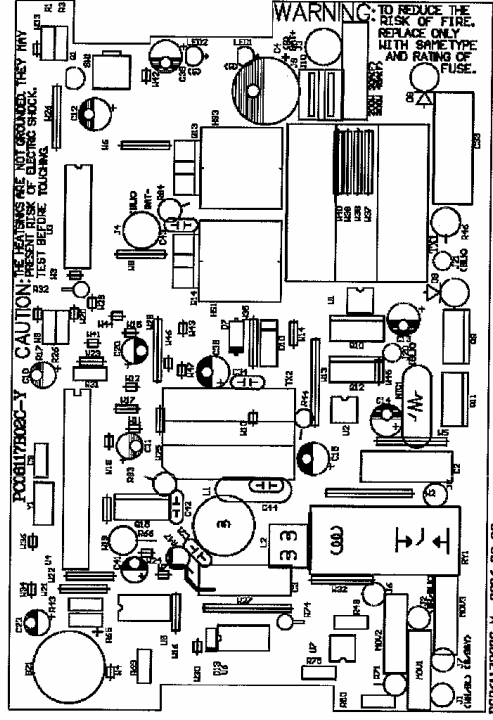
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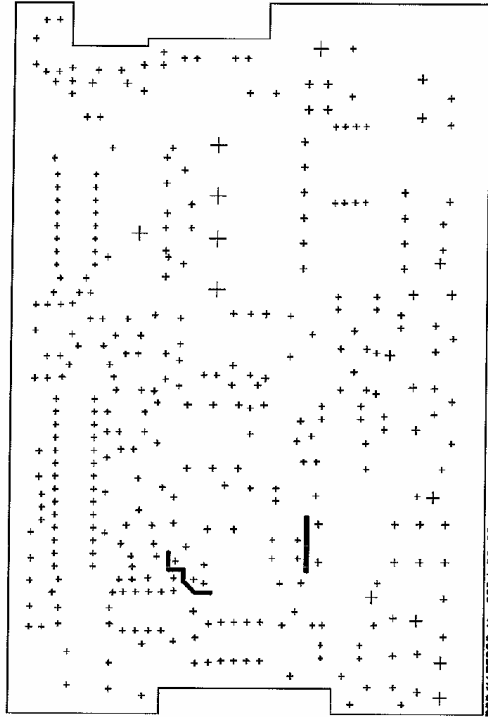
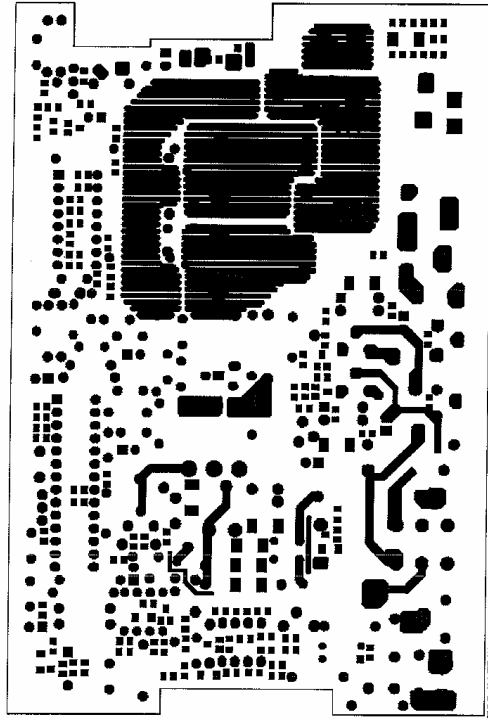
32mil	0.8128mm	PTH
38.37mil	1mm	PTH
43.307mil	1.1mm	PTH
49mil	1.143mm	PTH
47.244mil	1.2mm	PTH
51.181mil	1.3mm	PTH
57mil	1.4mm	PTH
55.118mil	1.4178mm	PTH
66mil	1.678mm	PTH
70.866mil	1.8mm	PTH
90.891mil	2.3mm	PTH
110.236mil	2.8mm	PTH
118.11mil	2.98885mm	PTH
Total		

24	B
238	A
28	C
6	K
21	L
10	D
6	F
2	N
4	M
2	J
5	H
2	G
4	O
392	I

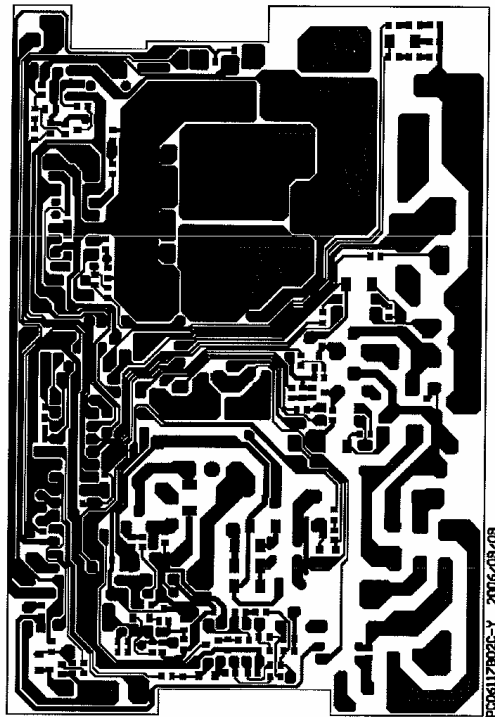
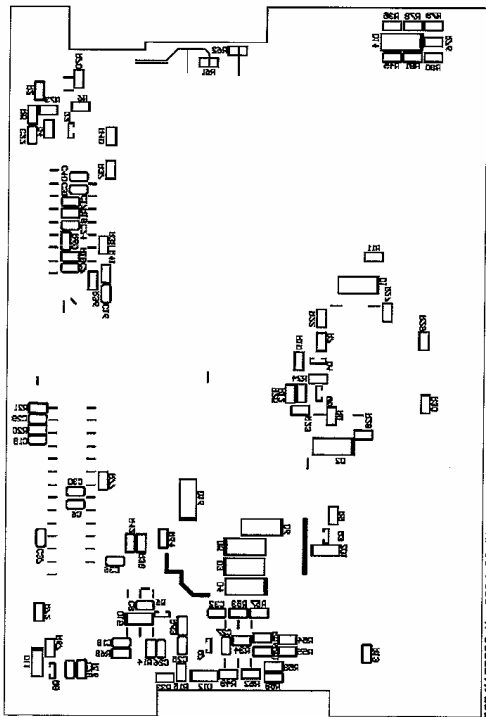


PC0617802E-Y 2006/09/08  
Top Over Lay





CAM350 V 5.0 : Mon Sep 18 10:58:18 2006 - (Untitled)



N060257639

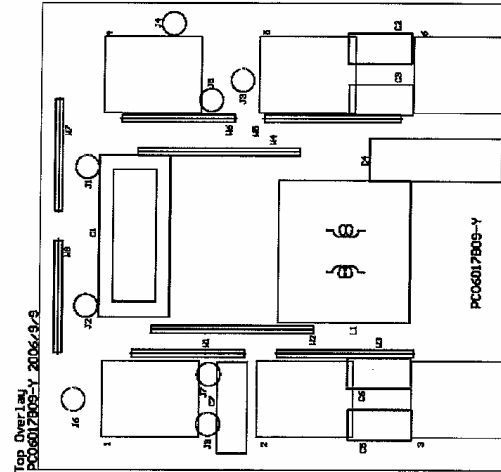
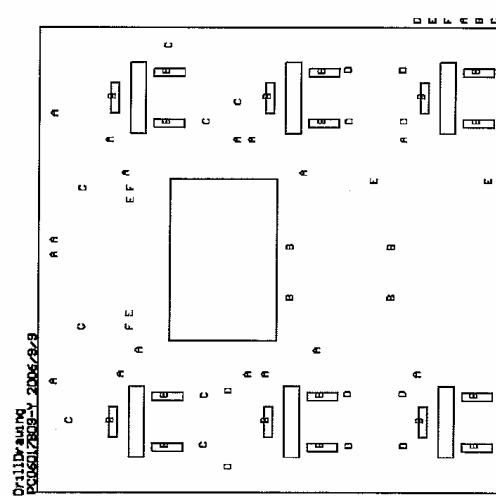
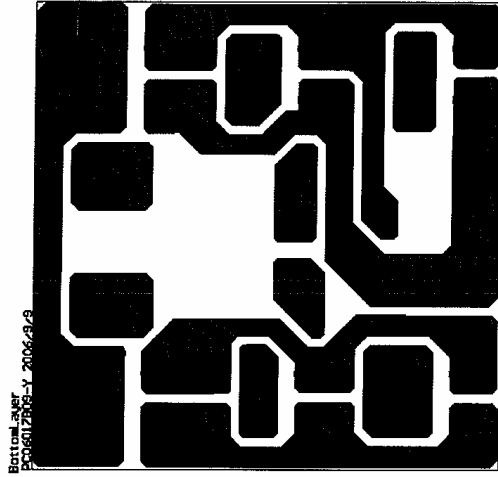
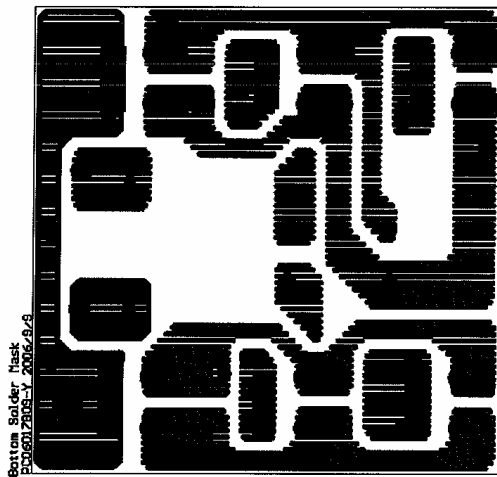
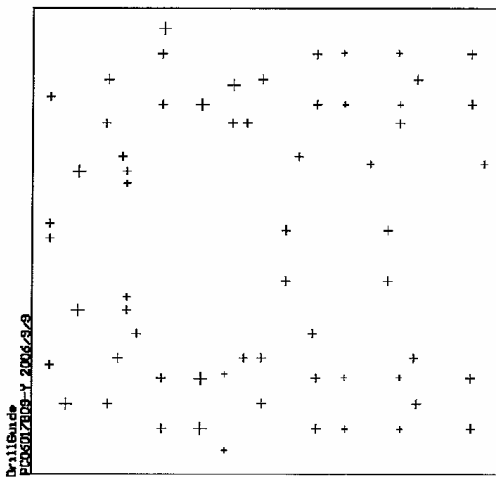
SPECIFICACION FOR APPROVAL

Y.S.E

PAGE 2 OF 3

CUSTOMER	系統	YSE NO	ER28-06050445-6
PART NO	XF-ER28-05	PART NAME	TRANSFORMER
REV NO	F	ISSUE DATE	2006/6/12
2 WINDING SEQUENCE:			
<p style="text-align: center;">BOBBIN</p>			
<p>NOTE: N2,N3 為同一條銅箔,PIN1,2 與 PIN5,6 之間為 0.7Φ*2C 引線,PIN3,4 之間為 0.7Φ*4C 引線.</p>			
3 SCHEMATIC:			
PREPARED BY	CHECKED BY	APPROVED BY	3.
			2.
			REV 1.

CAM350 V 5.0 . Mon Sep 18 11:23:56 2006 - (Untitled)



	PTH	PTH	PTH	PTH	PTH	PTH	PTH
10	98.37mil	1.2mm					
4	42.24mil	1.2mm					
2	85.115mil	1.2mm					
16	85.115mil	1.2mm					
22	62.582mil	1.2mm					
6	90.551mil	2.3mm					
62	Total						

N060257641

TEST RECORD NO. 1

SAMPLES:

Samples of the UPS equipment indicated below were submitted by the manufacturer. The equipment was found to be constructed as described in the preceding section of this Report and was subjected to the following tests.

Models:

Uninterruptible power supplies, Models HORNET 1000, TOW-1000US, HORNET 800, TOW-800US, HORNET 600, TOW-600US, HORNET 200.

The following tests were conducted.

UL Standard Tests	Para. No. of UL1778	Canadian Standard Test	Para. No. of C22.2, 107.1-01
Initial Leakage Current Test	42	Leakage Current Test	6.4
Input Test	44	Rating (Input)	11.3.1
Temperature Test	45	Temperature (Normal)	11.3.2
Dielectric Voltage-Withstand Test	47	Dielectric Strength	6.5
Dielectric Voltage Withstand (Transformer Insulating Materials)	35	Dielectric Strength	6.5
Backfeed Protection Test	48	Backfeed Protection	11.2.5
Neutral to Ground Potential Measurement Test	51	Neutral to Ground Voltage Measurement	11.3.3
ABNORMAL TESTS			
Transformer Burnout Test	52.2	-	-
Output Overload Test	52.4	Overload	6.8
Short Circuit Test	52.5	Output Short Circuit	6.6.1
Overcharge Test	52.6	-	-
Forced Ventilation Test	52.9	Abnormal Operation	6.6.1
Component Short- and Open-Circuit Test	52.10	Abnormal Operation	6.6.7
Strain Relief Test	54	Strain Relief Test	6.18

<u>UL Standard Tests</u>	<u>Para. No. of UL1778</u>	<u>Canadian Standard Test</u>	<u>Para. No. of C22.2, 107.1-01</u>
Stability Test	63	-	-
Impact Test	65	Impact Test	6.13.1
Harmonic Distortion	40	Harmonic Distortion	10.5.2
-	-	Reverse Polarity Test	8.4.6.5
Mold Stress Relief Distortion Test	35 of UL746C	-	-

The test methods and results of the above tests have been reviewed and found in accordance with the requirements in the Standard for Uninterruptible Power Supply Equipment, UL 1778, Second Edition, Dated October 25, 1994 and for General Use Power supplies, CSA C22.2 No. 107-01, September 1, 2001.

Test results relate only to the items tested.

Unless otherwise specified in the individual test Methods and Results, UPS units were operated as follows:

Normal Mode - Sample employed fully charged batteries, was connected to a 120 V, 60 Hz, single phase supply, and one output was capacitively loaded to deliver:

<u>Model No.</u>	<u>Output No.</u>	<u>Wattage</u>	<u>Volts</u>	<u>VA</u>	<u>No. of Phase</u>
HORNET 1000, TOW-1000US	1	500	120	1000	Single
HORNET 800, TOW-800US	1	400	120	800	Single
HORNET 600, TOW-600US	1	300	120	600	Single
HORNET 200	1	100	120	200	Single

Reserve Mode - Sample's AC source was not energized. The grounding connection remained connected. At the start of the test, the batteries were fully charged. The test was continued until the batteries were discharged to until the unit shut down due to low battery charge. The output was loaded as in the normal mode.

Recharge Mode - With the batteries discharged from operating during the reserve mode, the sample was connected to an AC supply as in the normal mode. The output was also loaded as in the normal mode. The unit was operated until batteries were fully charged or temperatures stabilized.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in Standard for Uninterruptible Power Supply Equipment, UL 1778, Second Edition, Dated October 25, 1994 and for General Use Power supplies, CSA C22.2 No. 107-01, September 1, 2001, and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

CONCLUSION

Samples of the products covered by this Report have been found to comply with the requirements covering the category and the products are judged to be eligible for Listing and Follow-Up Service. The manufacturer is authorized to use the UL Mark on such products which comply with the Follow-Up Service Procedure and any other applicable requirements of Underwriters Laboratories Inc. Only those products which properly bear the UL Mark are considered as Listed by Underwriters Laboratories Inc.

Report by:  
RICHARD LEE  
Project Engineer

Reviewed by:  
JOE YANG  
Senior Project Engineer

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