

8.1 T2008 Power Supply

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8.1.1 Operation

The T2008 Power Supply is a mains operated power supply designed to provide the DC supply requirements of the T2000 Series II radios. It uses switch mode technology to control the regulation of the output voltage, which results in a power supply with a higher temperature rating, improved efficiency and greater reliability.

The power supply can either be operated with the radio sitting on top as a desk top unit, or with the radio and power supply detached as two separate units (refer to Section 8.1.5, "Installation").

The T2008 has protection circuits for overcurrent, overtemperature and overvoltage protection circuitry. Current limiting is included to restrict the peak current to about 9.5A. In addition, a self-restoring thermal shutdown keeps the temperature of the switching transistor within the 'safe operation area ratings'. The point of thermal shutdown is also dependant on the load current, to allow for a higher duty cycle rating at lower output currents. The output voltage and thermal shutdown points are factory preset.

The power supply also has a limited capability to float charge a lead acid battery under constant voltage conditions (refer to Section 8.1.5, "Installation").

8.1.2 Performance Specifications

Input

T2000-21, -23, -24:

Voltage .. 230V \pm 10% (limits: 207-253V AC)
 Frequency .. 50Hz

T2000-22:

Voltage .. 115V \pm 10% (limits: 105-130V AC)
 Frequency .. 60Hz

Power .. 200VA maximum
 (mains input +10%, current limited output)

Mains Supply Plug:

T2008-21 .. New Zealand
 T2008-22 .. USA
 T2008-23 .. UK
 T2008-24 .. European

Output

Voltage .. 13.8V DC (adjustable 12.5 to 14.5V)

Current:

Intermittent Operation .. 6.5A at 33% duty cycle (maximum 2
 ($T_A = 25^\circ\text{C}$, input 230V) minutes on)
 Peak Rating .. 8A max. (duration limited by thermal
 shutdown)
 Continuous Rating .. 4.5A maximum
 ($T_A = 25^\circ\text{C}$, input 230V)

Voltage Regulation .. \pm 5%
 (supply variation \pm 10%, currents up
 to 6A, temp. range -10°C to $+60^\circ\text{C}$)

Protection

Current Limiting ($T_A = 25^\circ\text{C}$) .. 9.5A nominal
 (10A secondary fuse available)

Overvoltage .. 16V \pm 5% by zener transient
 suppression diode (not self-restoring)

Thermal Overload .. shutdown occurs at approximately
 ('cold' start @ 25°C , input = 115/230V) 95°C heatsink temperature (7A
 continuous after 1 hour)

Input:

Primary Fuse:	
T2008-21, -23, -24	.. 1A time delayed
T2008-22	.. 3A
Thermal Cutout	.. integral with transformer

General

Ripple and Noise .. less than 10mVrms
0 to 6.0A, mains voltage $\pm 10\%$

Operating Temperature Range .. -10°C to +40°C

Weight .. 3.0kg

Dimensions:

Height	.. 95mm
Length	.. 225mm
Width	.. 150mm

8.1.3 Precautions



Caution: Lethal Voltages

The power supply contains voltages that may be lethal. The unit should not be dismantled without first disconnecting the mains supply. Servicing should be carried out only by qualified technicians.



Caution: Ventilation

If the power supply is operated at high output currents and/or a high duty cycle rate for a prolonged period of time (e.g. more than 10 minutes), the heatsink will become very hot. **Do not touch.**

Do not operate the power supply in a sealed cabinet. Ensure that there is an adequate airflow past the unit, and in particular past the heatsink at the back of the unit.



Caution: Mains Supply Cord

If the mains supply cord needs replacing, it must be replaced with a mains supply cord of the same size and type as originally fitted.



Caution: Transmit Power

When using a T2008 and radio at a fixed location, it is advisable to check the maximum allowable transmit power, as defined by the local radio regulatory authority. This is commonly in the range of 1 to 5W, and exceeding this output power may result in prosecution.



Caution: Current Rating

If the duty cycle (33%) of the radio and power supply is likely to be exceeded, then the radio output power must be reduced to ensure that the current drawn from the power supply does not exceed its rating.

It is advisable to check the current drawn from the power supply, regardless of duty cycle, if the radio is operated at full power (25W). Variations in antenna VSWR can result in current drain, which may exceed the rating of the supply.

8.1.4 Circuit Operation

Refer to the diagram to the rear of this Section.

Input Rectifier

The mains supply is connected to the primary of the transformer via the supply cord, input fuse and on/off switch.

A conventional bridge rectifier is used across the secondary winding of the transformer, with both positive and negative leads being isolated from earth. Five PCB mounted smoothing capacitors are used to produce a 23V DC bus from the 18Vrms secondary of the transformer. The ripple on the DC bus is 4V peak to peak, with an output current of 6A.

The front panel LED is illuminated when mains power is applied.

Transistor Switch

Voltage regulation is provided by the complementary Darlington configuration of Q1 and Q2. The switching of this pair is derived directly from IC1 (TL494).

When Q1 is turned on, current flows in inductors L1, L2 and L3 to supply the output. Capacitors C6 and C7 hold the output voltage at a nominal 13.8V. When Q1 turns off, the current flowing in the inductors continues to flow, via diode D1.

C8, C9 and L3 form a common mode filter to suppress conducted noise at the output.

Control Circuit

A pulse width modulating IC (IC1) controls the switching of Q1 and thus the regulation of the output voltage. A voltage divider (R4, R5 and RV1) converts the output voltage to a 5V nominal level. It is then compared to IC1s temperature compensated internal 5V reference. The length of time Q1 is turned on is proportional to the difference between the reference and the output voltage. Feedback compensation is provided by C10, C11, R6 and R7, while R10 improves the transient response for the feedback circuit.

Current Limiting

Current limiting is provided by monitoring the voltage across the current sense resistor (R18). When the current is increased to approximately 9.5A, the voltage on pin 15 of IC1 decreases to a point where the pulse width of the switching waveform decreases. In addition, a 10A fuse is provided in the secondary circuit of the power supply.

Over Voltage

Overvoltage protection is provided by diode D2 and fuse F2. D2 is a 16V zener transient suppression diode that reacts instantly to overvoltage DC or spikes. If an overvoltage condition persists, causing excessive power dissipation in D2, it will become short circuit, causing F2 to blow. F2 will need to be replaced before operation of the power supply is possible. D2 will need to be replaced to restore overvoltage protection.

Thermal Shutdown

Transistor Q3 is mounted on the heatsink and its junction temperature therefore closely follows that of both the heatsink and Q1. Q3 is biased by R12 and RV2. As the temperature of the heatsink increases, the temperature of the base-emitter junction of Q3 also increases, which results in the V_{be} of Q3 decreasing. At 95°C, the base-emitter voltage is exceeded by the biasing voltage, and Q3 switches on. As a result, Q4 turns off, and the 'deadtime pin' (pin 4 of IC1) is pulled high. The 'deadtime' is now 100%, which means Q1 is completely turned off.

8.1.5 Installation

The T2008 power supply is designed to provide the DC supply requirements of the Tait T2000 two way radios. It can be operated either with the radio sitting on top as a desk top unit, or with the radio and power supply detached as two separate units. The bottom case includes two screw recesses for wall mounting. The two way radio then can be mounted in its cradle next to the supply, or operated away from it, e.g. on a desk top, etc.

If the radio and the power supply are operated away from each other, an extension cable for the DC supply would have to be used. To keep the voltage drop of this extension cable reasonably low, the wiring should be of sufficient gauge to carry the required load. It is recommended that a minimum wire size of 1.5mm is used.

The power supply requires a mains supply of 230V nominal 50Hz or 115V nominal 60Hz, as set out in Section 8.1.2.

If the power supply is run at a high duty cycle rate, high continuous output currents and/or high mains input voltage, it will generate a considerable amount of heat. An adequate flow of cooling air past the unit, particularly past the heatsink, is therefore essential for reliable operation. Do not operate the power supply in a completely enclosed cabinet.

Caution: Do not touch the heatsink after prolonged heavy duty operation. Keep the heatsink away from anything affected by heat (plastics, etc).

The microphone clip supplied with every power supply may be attached to the side of the top cover with the supplied screws and spacer, which fits between the clip and cover. The hook switch monitor wire should be connected as shown in the wiring diagram.

Float Charging A Lead Acid Battery

The power supply has a limited capability to float charge a lead acid battery under constant voltage conditions. The performance is limited by the way the power supply's continuous output current rating is limited (typically 4.5A at 20°C).

The following diagram shows an external protection circuit, consisting of two diodes with the appropriate ratings (i.e. 10A/50V), to be used when float charging a lead acid battery. This circuit prevents damage to the power supply due to reverse current, or the battery being connected with reverse polarity.

The current limit prevents charging from being excessive, should a discharged battery be connected. The output voltage of the power supply does not compensate for the temperature dependence of lead acid batteries.

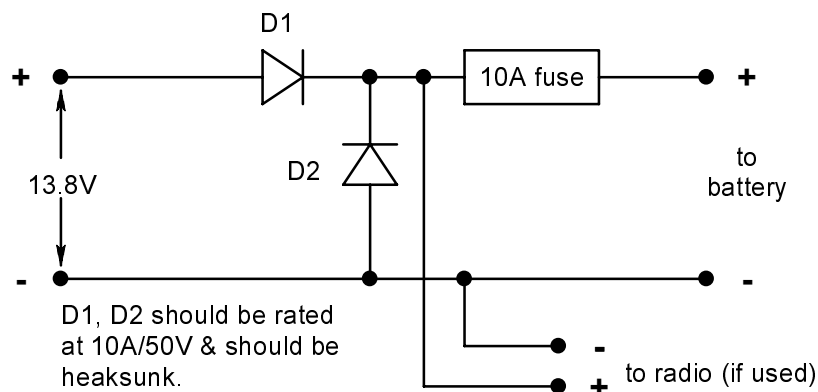


Figure 8.1.1 Float Charging Protection Circuit

8.1.6 Introduction To Servicing

All sub-assemblies within the T2008 power supply (e.g. transformer, PCB/heatsink) are housed in a specially moulded plastic case with no screws. The top and bottom halves of the plastic case are fastened by four self-tapping screws.

All electrical components except the transformer and LED are mounted on either the larger regulator/heatsink PCB or on the smaller mains input PCB. Disassembly

Caution: Disconnect the unit from the mains supply before attempting to remove the top case.



Caution: Lethal Voltages

The power supply contains voltages that may be lethal. The unit should not be dismantled without first disconnecting the mains supply. Servicing should be carried out only by qualified technicians.



Caution: Ventilation

If the power supply is operated at high output currents and/or a high duty cycle rate for a prolonged period of time (e.g. more than 10 minutes), the heatsink will become very hot. **Do not touch.**

Do not operate the power supply in a sealed cabinet. Ensure that there is an adequate airflow past the unit and in particular past the heatsink at the back of the unit.



Caution: Mains Supply Cord

If the mains supply cord needs replacing, it must be replaced with a mains supply cord of the same size and type as originally fitted.

To Remove The Top Case

Turn the unit upside down and remove the two self-tapping screws.

Turn the unit back on its feet and remove the two top screws.

Carefully lift the top case away from the unit.

All the sub-assemblies are now easily accessible, and can be lifted out as necessary.

To Replace the Switching Transistor (Q1)

Unsolder the leads of the transistor using solder wick or a solder sucker.

Remove the appropriate screws and carefully lift off the transistor.

Mount the new transistor using a silicon insulating gasket on the underside. Do not use any other insulators (mica, etc) as they are unlikely to fit under Q1 and/or would require thermal compound.

Refit the two screws for Q1 from the copper side of the PCB. Isolate each of these two mounting screws from touching the heatsink with a 3mm length of silicone rubber sleeving. Use spring washers under the two nuts.

Carefully position the PCB onto the heatsink before tightening the two screws/nuts.

Ensure that Q3 sits firmly against the walls in its slot on the heatsink.

Resolder the leads of the transistor.

Reassembly

Reassembly is carried out in the reverse order to disassembly.

8.1.7 Setting Up The Power Supply

Test Equipment Required

- Ammeter: 10A DC
- Voltmeter: 0 - 20V DC
- Load Resistor: 0 - 100 Ω , 10A (variable)
- Short circuit plug-in link: IPN 240-04020-62
- Ohmmeter: infinity to 0 Ω

Preliminary

Refer to the T2008 circuit and wiring diagrams to the rear of this Section.

Check with the ohmmeter that the heatsink is electrically isolated from the negative output.

Connect the variable load in series with the ammeter across the output terminals (see wiring diagram for the pin configuration of the output plug).

Set the load to maximum resistance (minimum load current).

Connect the DC voltmeter across the power supply output terminals.

The DC output wiring should be of sufficient gauge to carry the load current required. It is recommended that a minimum wire size of 1.5mm is used.

Plug in the mains connector.

Output Voltage

Switch on the power supply.

Set RV1 for an output voltage of 13.8V.

Switch off the power supply.

Thermal Shutdown (TSD)

Before setting up the temperature shutdown, ensure that the power supply is at ambient temperature, i.e. it has not been running recently with any significant load current. The temperature shutdown is based on a heatsink ambient temperature of 25°C.

Disconnect the load resistor.

Insert the plug-in link (1 - 2).

Switch on the power supply.

Set RV2 (TSD) so that the power supply just shuts down.

Switch off the power supply.

Remove the plug-in link.

Output Current Limit

Reconnect the load resistor.

Switch on the power supply.

Decrease the load resistance (current rises) and set it for an output current of approximately 9.5A.

Decrease the load resistance and the voltage output should drop, indicating that current limiting is in progress.

If the power supply is very hot, the current limit circuit may cause the unit to switch off completely. If this occurs, switch off the mains supply and wait approximately one minute. The power supply should now operate normally.

8.1.8 Fault Finding

The checks listed below have been included to provide assistance in locating faults. It is sometimes convenient to disable a complete section of the power supply in order to isolate a fault. If individual sections are isolated the rest of the unit should operate normally (refer to Figure 8.1.2, "Typical Waveforms" for details).

Component Checks

Faulty diodes and transistors can generally be found by a simple ohmmeter check, as follows (an AVO model 8 or equivalent meter should be used for taking the measurements, using only the medium or low resistance ranges):

Set the ohmmeter to the ohms x 1 range.

Measure the forward and reverse resistance of each junction. The resistance in one direction should be low (generally 30 to 100 Ω), and the resistance in the other direction should be high. In a faulty transistor or diode, the junctions will usually be either short or open circuited.

Note: Other components in the circuit may affect these readings unless the junctions are isolated.

The collector current drawn by multijunction transistors is a further guide to their operating performance.

Typical Voltages

The following table shows voltages under normal operating conditions, and those following thermal shutdown:

	Normal Operation (V)	Thermal Shutdown Operating (V)
output voltage	13.8	0
Q3 base-emitter voltage	0.2 approx.	0.7 approx.
Q4 base-emitter voltage	0.7 approx.	0 approx.
IC1 pin 4 voltage	0	5
IC1 pin 14 (voltage reference)	5	5

Typical Waveforms

The following waveforms can be expected under the stated conditions.

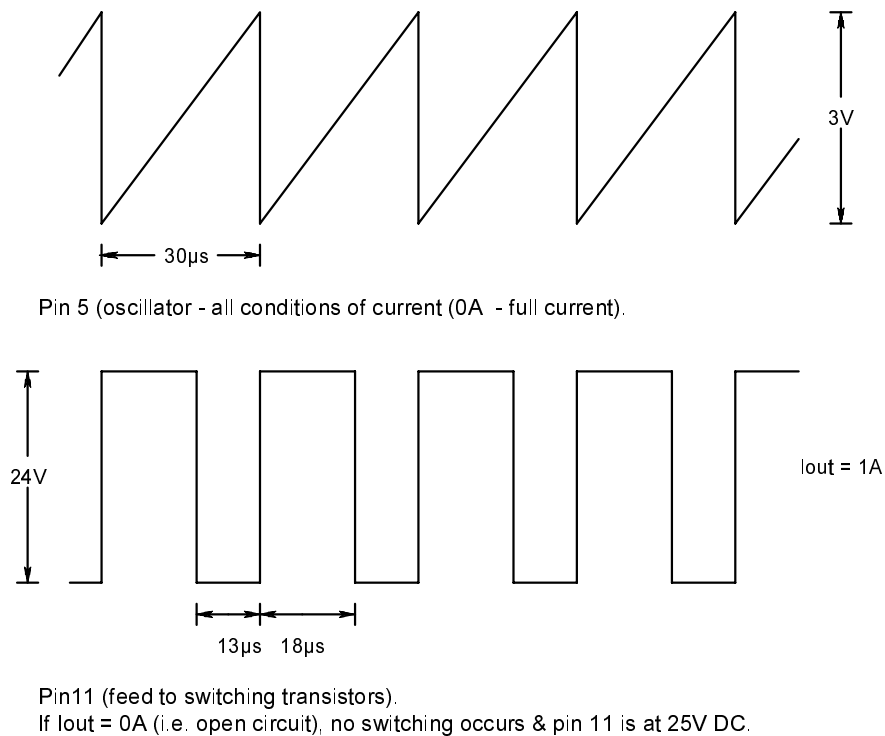


Figure 8.1.2 Typical Waveforms

8.1.9 Repair

The T2008 power supply requires specialised component replacement techniques. Before attempting repair, refer to Section 3.4, "Repair".

8.1.10 PCB Information

T2008 Parts List (IPN 220-01170-03)

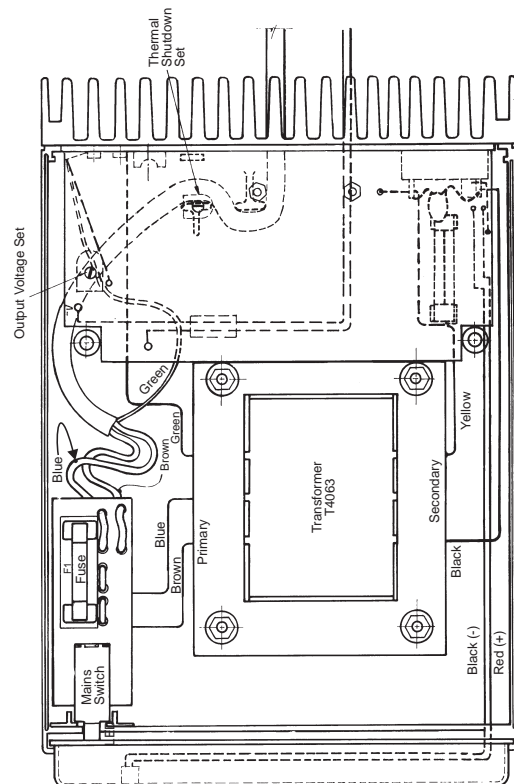
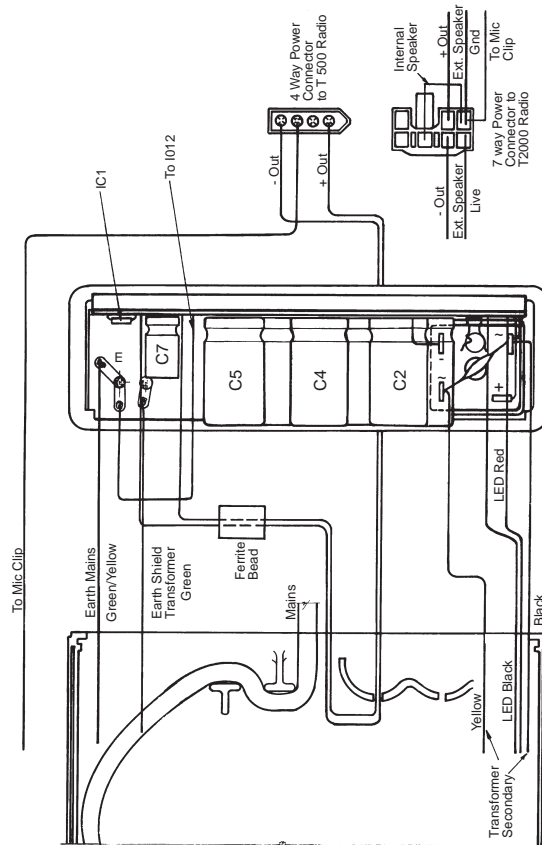
Ref	VAR	IPN	Description	Ref	VAR	IPN	Description
CBR		017-15470-01	CAP CER SURFACE BARRIER 47N 20% 50				
C1		020-19220-03	CAP ELECT RADL 2200M 35V 16X31MM				
C2		020-19220-03	CAP ELECT RADL 2200M 35V 16X31MM				
C3		020-19220-03	CAP ELECT RADL 2200M 35V 16X31MM				
C4		020-19220-03	CAP ELECT RADL 2200M 35V 16X31MM				
C5		020-19220-03	CAP ELECT RADL 2200M 35V 16X31MM				
C6		020-19220-03	CAP ELECT RADL 2200M 35V 16X31MM				
C7		020-09470-02	CAP ELECT RADL 470M 16V 10X20MM				
C8		017-15470-01	CAP CER SURFACE BARRIER 47N 20% 50				
C9		051-00006-06	WIRE LINK T/C				
C10		022-05150-01	CAP MYLAR 15N 10% 50V				
C11		022-04220-01	CAP MYLAR 2N2 10% 50V				
C14		022-05100-01	CAP MYLAR 10N 10% 50V				
D1		001-00011-50	(S) DIODE MUR810 8A 100V FAST RECOV				
D2		001-00012-91	(S) DIODE 16V TRANSIENT SUPPRESSOR				
F1	21	265-00010-45	FUSE 1A CARTRIDGE 6*32MM SLOBLOW				
F1	22	265-00010-05	FUSE 3A CARTRIDGE 6*32MM BS4265				
F1	23	265-00010-45	FUSE 1A CARTRIDGE 6*32MM SLOBLOW				
F1	24	265-00010-45	FUSE 1A CARTRIDGE 6*32MM SLOBLOW				
F2		265-00010-07	FUSE 10A CARTRIDGE 6*32MM BS4265				
IC1		002-00016-63	(S) IC TL494/594 SMPS PWM CTRL				
LED1		008-00012-52	(S) LED 2MM TOWER 5MM BASE RED				
L1		056-00010-47	IND FXD 125UH PWR CHOKE TOROIDAL				
L2		056-00010-20	IND FXD 25UH PWR CHOKE				
PL1		240-00020-68	HEADER 2WAY PCB MTG STD				
Q1		000-00022-07	(S) XSTR 2N3772 NPN PWR TO-204				
Q2		000-00012-15	(S) XSTR BD234 PNP AF PWR TO126				
Q3		000-00011-10	(S) XSTR BC548B/BC547B NPN AF SML S1				
Q4		000-00011-10	(S) XSTR BC548B/BC547B NPN AF SML S1				
R1		030-53120-20	RES FILM AI 120E 5% 0.4W 4X1.6MM				
RV1		042-03470-01	RES PRESET 470E CARBON 10MM FLAT				
RB1		001-00011-37	(S) DIODE BRIDGE RECT 50V/25AMP				
RV2		042-03470-01	RES PRESET 470E CARBON 10MM FLAT				
R2		033-03330-00	RES MP816 PWR FILM 330E 10% 16W TO-2				
R3		030-52330-20	RES FILM AI 33E 5% 0.4W 4X1.6MM				
R4		030-54680-20	RES FILM AI 6K8 5% 0.4W 4X1.6MM				
R5		030-54390-20	RES FILM AI 3K9 5% 0.4W 4X1.6MM				
R6		030-54180-20	RES FILM AI 1K8 5% 0.4W 4X1.6MM				
R7		030-55100-20	RES FILM AI 10K 5% 0.4W 4X1.6MM				
R8		030-54470-20	RES FILM AI 4K7 5% 0.4W 4X1.6MM				
R9		030-53120-20	RES FILM AI 120E 5% 0.4W 4X1.6MM				
R10		030-55680-20	RES FILM AI 68K 5% 0.4W 4X1.6MM				
R11		030-55100-20	RES FILM AI 10K 5% 0.4W 4X1.6MM				
R12		030-54330-20	RES FILM AI 3K3 5% 0.4W 4X1.6MM				
R13		030-54390-20	RES FILM AI 3K9 5% 0.4W 4X1.6MM				
R14		030-55220-20	RES FILM AI 22K 5% 0.4W 4X1.6MM				
R15		030-54330-20	RES FILM AI 3K3 5% 0.4W 4X1.6MM				
R16		030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6MM				
R17		030-53470-20	RES FILM AI 470E 5% 0.4W 4X1.6MM				
R18		039-10018-63	RES WIRE WOUND 0.017E A4M1863 T508				
R20		030-56220-20	RES FILM AI 220K 5% 0.4W 4X1.6MM				
R21		030-53100-20	RES FILM AI 100E 5% 0.4W 4X1.6MM				
SW1		232-00010-21	SWITCH PUSH SPST MAINS ON/OFF				
*T1	21	053-00010-53	XFMR T4063A 230V MAINS PROTECTED				
*T1	22	053-00010-51	XFMR T4065 115V MAINS T508				
*T1	23	053-00010-53	XFMR T4063A 230V MAINS PROTECTED				
*T1	24	053-00010-53	XFMR T4063A 230V MAINS PROTECTED				

T2008 Mechanical & Miscellaneous Parts

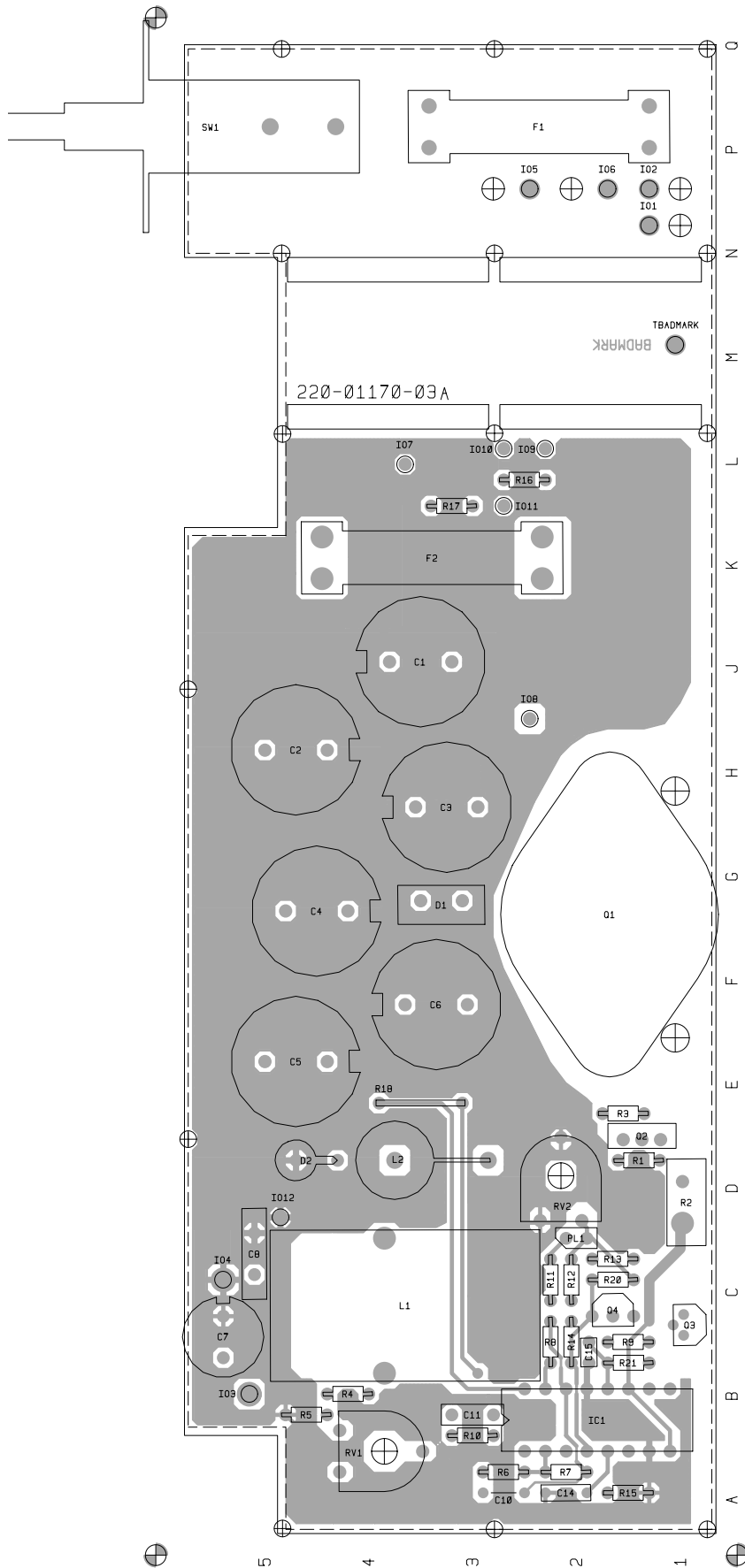
IPN	Description	IPN	Description
065-00010-20	BEAD FERRITE BALUN 4B1 PHILIPS		2X5MM OVER M3X12MM PAN POZI SCREWS.
200-00010-03	WIRE T/C 0.9MM	400-00020-03	SLEEVEING 1MM SIL RUBBER D1 WIRING
201-00030-02	WIRE #1 T/C WIRE 7/0.2MM PVC RED LED WIRING-330MM	400-00020-05	SLEEVEING 1.5MM SIL RUBBER LED WIRES, Q1
201-00030-04	WIRE #1 T/C WIRE 7/0.2MM PVC YELLOW INTERNAL SPEAKER LINK (REFER TO WIRING DIAG.)	409-20008-01	USER GUIDE T2008 PWR SUPPLY
201-00030-05	WIRE #1 T/C WIRE 7/0.2MM PVC GREEN C8 & C9 WIRING TO HEATSINK	410-00010-36	PKG POLY FOAM 2 PCS T508 A1M1860
201-00030-10	WIRE #1 T/C WIRE 7/0.2MM PVC BLACK	410-01038-01	PKG SLEEVE CARD T2008 KIWI P.O.
201-00030-10	WIRE #1 T/C WIRE 7/0.2MM PVC BLACK LED WIRING - 330MM, MIC CLIP - 300MM.	410-01087-00	CRTN T508/T2008PS OUTER (5 X UNITS)
205-00010-03	CABLE TWIN CYCLE FLEX 2/7/0.2MM BLACK	T2008-21 VARIANT PARTS	
205-00010-06	CABLE TWIN AUTO 153 2/28/0.3 RED & BLACK	240-00010-18	PLUG 3 PIN MLDED ON 2.4M 0.75MM2 230V MAINS NEW ZEALAND MAINS SUPPLY PLUG (T2008-21)
220-01170-03	PCB T508-21	T2008-22 VARIANT PARTS	
232-00010-21	SWITCH PUSH SPST MAINS ON/OFF	240-00010-19	PLUG US 3PIN MOULDED ON 2.4M FLEX 120V 10A USA MAINS SUPPLY PLUG (T2008-22)
240-00026-19	PLUG HOUSING 7-POS CONN 172495-1	T2008-23 VARIANT PARTS	
240-00026-20	PLUG RECEPTL 7-POS CONN 172773-1	240-00010-22	PLUG MLDED 3PIN ON 2.0M 5AMP 240V MAINS UK MAINS SUPPLY PLUG (T2008-23)
240-02010-75	SKT RECEPTL T2000 172775-1	T2008-24 VARIANT PARTS	
240-04021-63	CONN 2WAY 24AWG (BLACK) INLINE HRMAPHR.	240-00010-20	(L) PLUG EURO SAFETY PLUG WITH 2.5M CABLE EUROPEAN MAINS SUPPLY PLUG (T2008-24)
252-00010-02	CLIP MIC MTG		
265-00010-07	FUSE 10A CARTRIDGE 6*32MM BS4265		
302-05220-00	(L) BRKT HEAT TRANSFER T508/T2008		
303-03031-00	CASE 1 PR TOP/BTTM PLASTIC COMPL		
308-13064-01	HSINK A1M1755 DCAST T508/2008		
316-06442-00	PNL FRT A3A697 COMPL T2008 PWR SUPPLY		
319-30055-00	SPACER A4M2615 MIC MTG T2008		
340-00010-06	FUSE CLIP PCB MTG 6.3MM CARTRIDGE FUSE		
340-00011-52	COVER INSULATING FUSEHLD R PCB MTD		
345-00040-08	SCREW M3*12MM PAN POZI ST BZ Q1 MOUNTING AND PCB TO HEATSINK		
349-00010-28	SCREW NO6X1/2 PAN POZI TYPE 25		
349-00010-33	SCREW SLFTAP NO 6*3/4IN TYPE AB PAN PZI BZ FOR WALL MOUNTING		
349-00010-40	SCREW SELFTAP NO 8X3/8IN AB PAN SLOT BZ		
349-00010-40	SCREW SELFTAP NO 8X3/8IN AB PAN SLOT BZ		
349-00020-30	SCREW TAPTITE M3X6MM PAN PZI BZ EARTH PCB TO HEATSINK MOUNTING X 2		
349-00020-31	SCREW TAPTITE M3X10MM PAN POZI BZ		
349-00020-45	SCREW TAPTITE M4X20MM PAN POZI BZ BRIDGE RECTIFIER MOUNTING		
352-00010-08	NUT M3 COLD FORM HEX ST BZ Q1 MOUNTING		
353-00010-10	WASHER M3 FLAT 7MM*0.6MM ST BZ		
353-00010-12	WASHER M3 SPRING BZ Q1 MOUNTING		
353-00010-24	WASHER M4 FLAT ST BZ A4M1957		
353-00010-24	WASHER M4 FLAT ST BZ A4M1957 BRIDGE RECTIFIER MOUNTING		
356-00010-04	TAG SOLDER 3MM HEAVY DUTY EARTH MAINS EARTH TAG TO HEATSINK		
356-00010-05	TAG SOLDER 4MM LONG M6144/4.2		
362-00010-09	GASKET SIL INSULATING TO-3 Q1		
365-00011-54	LABEL WHITE RW1556/2 90*24MM SPECIAL ADHESV		
365-00100-03	LABEL BLANK 10.8X30MM S/A METLSD POLYES		
365-00100-04	LABEL BLANK 30X6.7MM S/A METALLISED POLYES		
365-00100-07	LABEL BLANK 47X30MM S/A METLSD POLYES		
365-00100-20	LABEL WHITE S/A 28X11MM QUIKSTIK RW718/4		
365-01372-00	LABEL POWER CORD CODE/WARNING		
369-00010-05	FOOT PLASTIC 10MM SQ SELF ADHESIVE BLACK		
369-00010-14	TIE CABLE NYLON 100*2.6MM		
369-00020-25	SPONGE RUBBER 3/8 INCH SQ SKELLERUP S3 TOP CASE 2 X 56MM		
369-00020-45	TAPE AL FOIL S/A 3M NO 425		
399-00010-10	RUBBER BAND NO 33 MAINS PLUG		
399-00010-51	BAG PLASTIC 75*100MM		
399-00010-59	BAG PLASTIC 225*300MM		
400-00010-30	SLEEVEING 3MM PVC 2X 3.5MM		
400-00010-30	SLEEVEING 3MM PVC		

T2008 Grid Reference Index (IPN 220-01170-03)

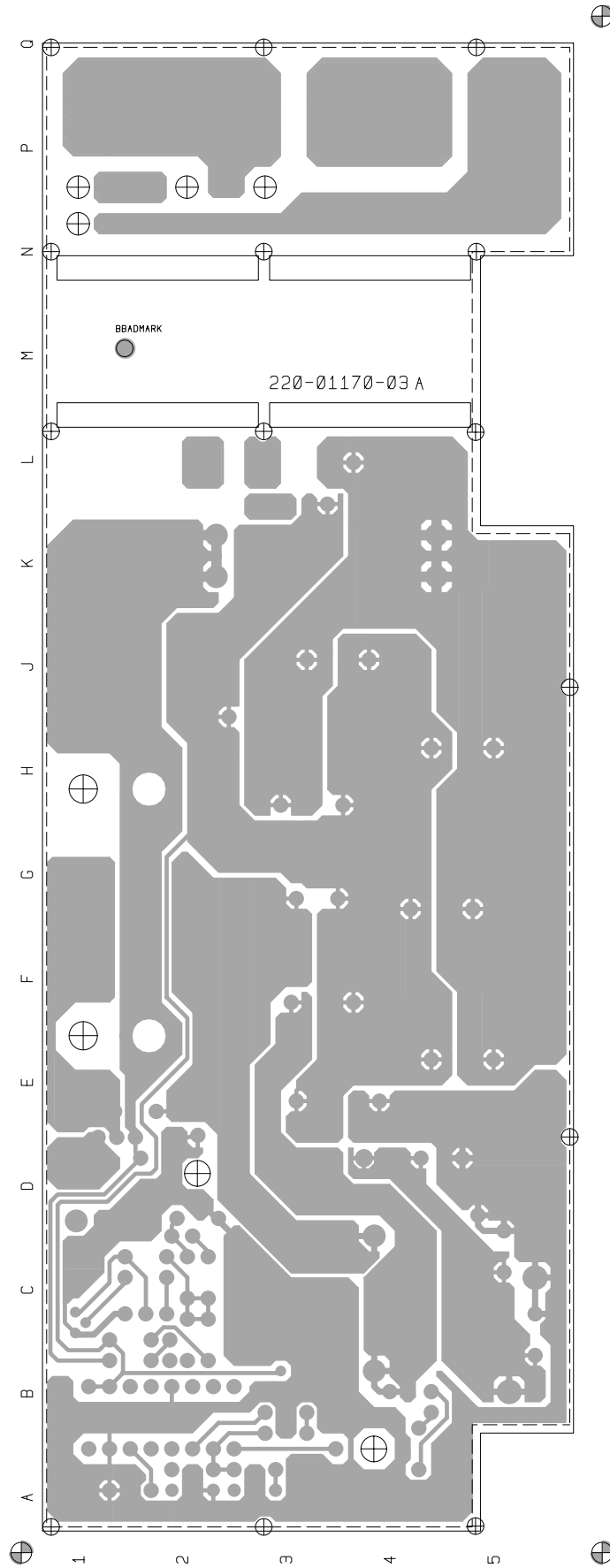
Device	PCB	Circuit	Device	PCB	Circuit	Device	PCB	Circuit
C1	1:J4	1-E7	R18	1:E4	1-J6			
C2	1:H5	1-E7	R20	1:C2	1-F1			
C3	1:H3	1-F7	R21	1:B1	1-G4			
C4	1:G5	1-F7						
C5	1:E5	1-F7	SW1	1:P5	1-A7			
C6	1:F3	1-J7						
C7	1:C5	1-K7	*T1		1-B7			
C8	1:C5	1-L7						
C10	1:A3	1-E4						
C11	1:B3	1-F3						
C14	1:A2	1-G1						
C15	1:C2	1-G4						
D1	1:G3	1-J7						
D2	1:D5	1-K6						
F1	1:P1	1-B7						
F2	1:K5	1-G7						
IC1	1:B3	1-G2						
IO1	1:N1	1-A7						
IO2	1:P1	1-A7						
IO3	1:B5	1-L7						
IO4	1:C5	1-L6						
IO5	1:P3	1-B8						
IO6	1:P2	1-B6						
IO7	1:L4	1-D8						
IO8	1:J3	1-D6						
IO9	1:L2	1-D6						
IO10	1:L3	1-D5						
IO11	1:L3	1-D5						
IO12	1:D5	1-L7						
LED1		1-C5						
L1	1:B4	1-J7						
L2	1:D4	1-K7						
PL1	1:D2	1-D2						
		1-D1						
		1-D0						
Q1	1:G2	1-H7						
Q2	1:E2	1-H7						
Q3	1:C1	1-E1						
Q4	1:C2	1-F2						
RB1		1-D7						
R1	1:D1	1-H7						
RV1	1:B4	1-J6						
RV2	1:D2	1-E1						
R2	1:D1	1-H5						
R3	1:E2	1-H7						
R4	1:B4	1-J7						
R5	1:B4	1-J6						
R6	1:A3	1-E4						
R7	1:A2	1-E3						
R8	1:C2	1-E3						
R9	1:C2	1-F2						
R10	1:B3	1-F3						
R11	1:C2	1-E2						
R12	1:C2	1-E2						
R13	1:C2	1-E2						
R14	1:C2	1-F2						
R15	1:A2	1-G1						
R16	1:L3	1-D6						
R17	1:L3	1-D5						



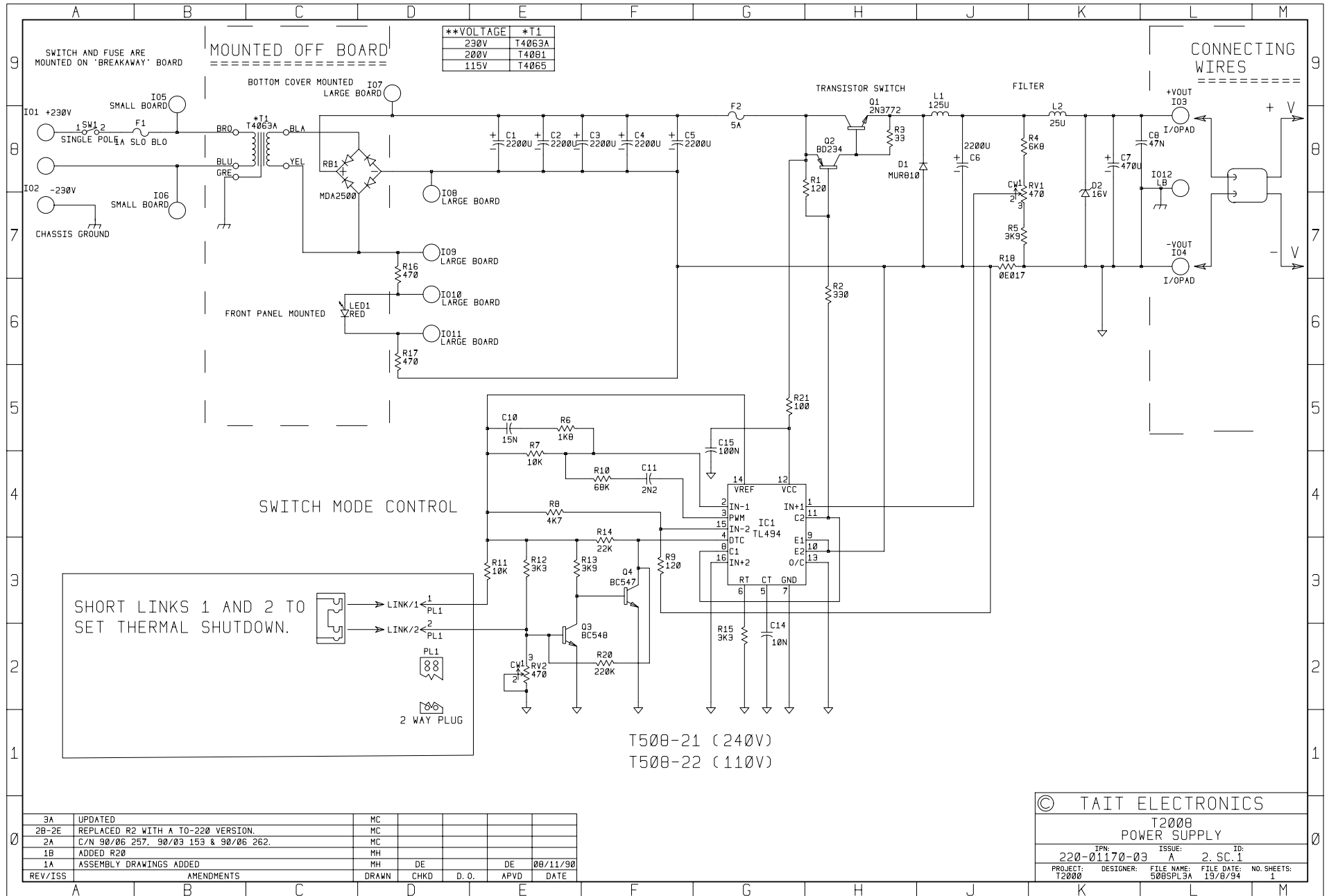
T2008 Power Supply Wiring Diagram (IPN 220-01170-02 shown)



T2008 Power Supply PCB Layout - Top Side (IPN 220-01170-03)



T2008 Power Supply PCB Layout - Bottom Side (IPN 220-01170-03)



REV/ISS	AMENDMENTS	DRAWN	CHKD	D.O.	APVD	DATE
3A	UPDATED		MC			
2B-2E	REPLACED R2 WITH A T0-220 VERSION.		MC			
2A	C/N 90/06 257, 90/03 153 & 90/06 262.		MC			
1B	ADDED R20		MH			
1A	ASSEMBLY DRAWINGS ADDED		MH	DE	DE	00/11/90

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T2008 POWER SUPPLY			
IPN:	ISSUE:	ID:	
220-01170-03	A	2. SC. 1	
PROJECT:	DESIGNER:	FILE NAME:	FILE DATE:
T2000	5085PL3A	19/8/94	NO. SHEETS: 1

