SPECIFICATION

and

PERFORMANCE

for

SWITCHING POWER SUPPLY

M/N : SNP-Z104-M

Reviewed by Project Manager						
Typed by Document Assistant						
SKYNET ELECTRONIC			LAST REV. NO.			

1.0 INTRODUCTIONS

The SNP-Z104-M SNP-Z10*-M is a triple output medical switching power supply and designed to meet Harmonics EN61000-3-2 class D.

2.0 INPUT SPECIFICATIONS

2.1 Input Voltage

a. The range of input voltage is from 90VAC to 264VAC. The nominal voltage is 115VAC 60Hz and 230VAC 50Hz.
b. The DC Input is from 130 ~370VDC.

2.2 Input frequency

The range of input frequency is from 47Hz to 63Hz.

2.3 Input current

The maximum input current is 2.6A at 115VAC or 1.3A at 230VAC.

2.4 Inrush current

The inrush current is 30A max at 115VAC, 60A max at 230VAC, cold start at 25 degree C.

2.5 Earth Leakage

250uA max at 240VAC, 60Hz.

3.0 OUTPUT SPECIFICATIONS

3.1 Load range

output	min. load	rated load	max. load	Total Tolerance
+5V	0.5A	10A	15A	+ -1%
+15V	0.05A	2.5A	4.1A	+ -5%
-15V	0A	0.8A	1.1A	+ -5%

At factory, all outputs in 60% rated load the +5V output is set to between 5.03V + -0.02V. The + -15V output is checked to be within the specified voltage accuracy range. (Test at nominal line input)

3.2 Output power

The max. power is
120W that works with 10CFM air forced cooling.
130W that works with 18CFM air forced cooling.

3.3 Ripple and noise

The peak to peak ripple and noise for each output is less than 1% of output voltage at rated load and nominal line. Measuring is done by 15MHz band width limited oscilloscope and terminated each output with a 47uF + 0.47uF capacitor.

3.4 Line regulation

The line regulation for each output is less than + -0.5%, measuring at rated load and changing input voltage from 90V ~ 264V.

3.5 Load regulation

The load regulation for +5V is less than + -1%, for + -15V is less than + -5%, measuring is done by changing the measured output load + -40% from 60% rated load and keep the other output at 60% rated load while the input at nominal line.

4.0 GENERAL FEATURES

4.1 Efficiency

The efficiency is 80% Typ. by measuring at nominal line and rated load.

4.2 Hold up time

The hold up time is 20mS typ at 115VAC input and rated load which is measured from the end of the last charging pulse to when the main output drops down to 95% output voltage.

4.3 Protection

a. O.V. P

The build-in over voltage protection circuit will shut down the outputs to prevent damaging external circuits, the trigger point is around 5.7V to 7.0V for +5V output.

b. O.C.P

The power supply will go into auto-recovery mode against short circuit or over load conditions.

The trigger point is 110% ~ 130% of max (130W) load.

4.4 Transient Response

Less than 4% deviation with a 25% load change at 1A/uS. Output returns to within 1% In less 500uS for +5V output.

4.5 Stability

The main output drift < +/-0.2% after 20 min warm up.

4.6 Temperature Coefficient

+/-0.05 per °C

5.0 ENVIRONMENT SPECIFICATIONS

5.1 Operating temperature

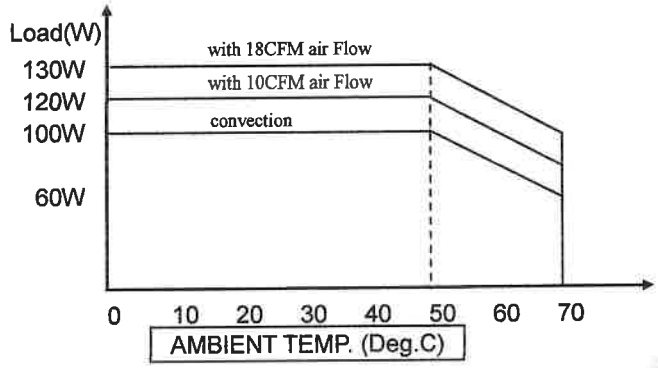
0°C to 50°C no derating, above 50 °C derate 2.5% /C up to 50% at 70 °C.

100W with convection cool.

120W with 10 CFM air Flow.

130W with 18 CFM air Flow.

The air direction is from the side of PCB.



5.2 Storage temperature

-40°C to 85°C

5.3 Operating humidity

5 ~95% RH, non-condensing .

6.0 INTERNATIONAL STANDARDS

6.1 Safety standards

Designed to meet the following standards:

3 Edition:

UL: ANSI/AAMI ES60601-1(2005+C1:09+A2:10)

CSA: CAN/CSA-C22.2 No. 60601-1 (2008)

TUV: EN 60601-1:2006

CB: IEC 60601-1:2005

3.1 Edition:

UL: ANSI/AAMI ES60601-1(2005+C1:09+A2:10+A1:12)

CSA: CAN/CSA-C22.2 No. 60601-1 (2014)

TUV: EN 60601-1:2006+A1:2013+A12:2014+A2:2021

CB: IEC 60601-1:2005+A1:2012

3.2 Edition:

UL: ANSI/AAMI ES60601-1:2005/(R)2012 and A1:2012/(R)2012 and A2:2021 CSA: C22.2 No. 60601-1 (Amendment 2:2022 (MOD) to CAN/CSA-C22.2 No. 60601-1:14

TUV: EN60601-1:2006+A1:2013+A12:2014+A2:2021

CB: IEC 60601-1:2005+A1:2012+A2:2020

6.2 EMI standards

Designed to meet the following limits :

FCC docket 20780 curve "B"

EN 55011 "B"

EN 60601-1-2

EN 61000-3-2

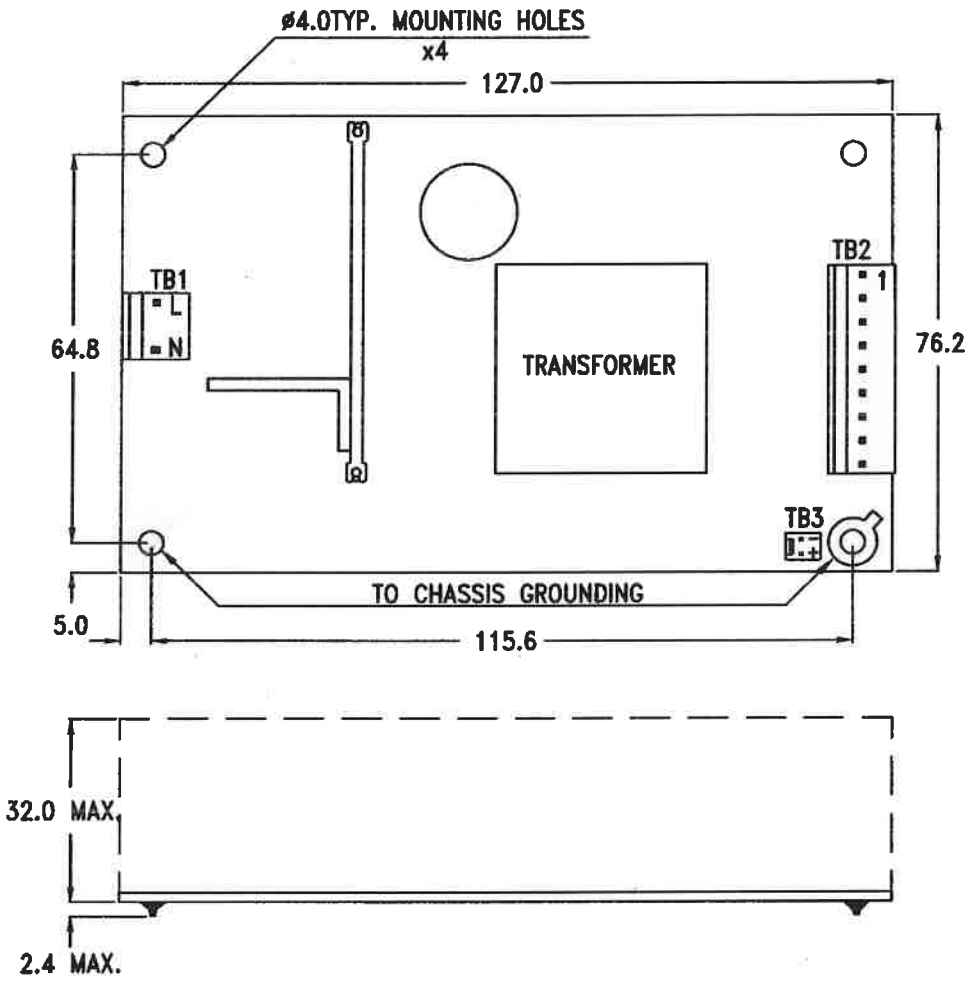
EN 6100-3-3

6.3 EMS standards

Designed to meet the following standards :

EN61000-4-2	8KV contact discharge, 15KV air discharge	Criterion A
EN61000-4-3	10V/m	Criterion A
EN61000-4-4	2KV (100KHz)	Criterion A
EN61000-4-5	2KV	Criterion A
EN61000-4-6	10V with 80% AM	Criterion A
EN61000-4-8	30A/M	Criterion A
EN61000-4-11	30 % dips 500 ms,	Criterion A
	60 % dips 200 ms,	Criterion B
	100 % dips 5000 ms,	Criterion B
	100 % dips 200 ms,	Criterion B
	100 % dips 10 ms,	Criterion A

7.0 MECHANICAL SPECIFICATION



7.1 Dimensions

Dimensions shown in mm as above. Tolerance specified is + -0.4mm.

7.2 Connectors

TB1--AC input : Molex 5277-02A or equivalent
TB2--DC output : Molex 5273-09A or equivalent
TB3 for Fan use : Molex 5045-02A or equivalent

7.3 DC output pin assignment

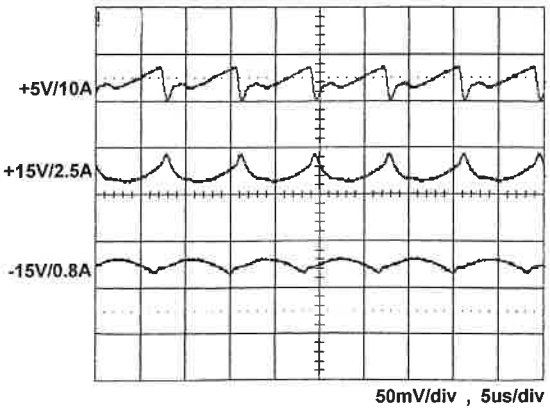
Pin 1.	+5V	4.	GND	7.	GND
2.	+5V	5.	GND	8.	+15V
3.	+5V	6.	GND	9.	-15V

7.4 Packing

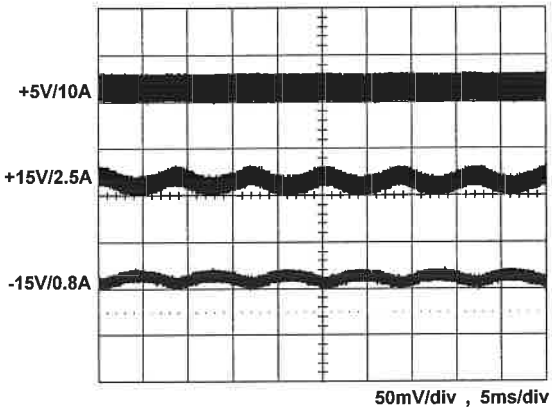
Net weight : 315g approx. / unit
Carton size (mm) : 397 (L) x 339 (W) x 327 (H)
Quantity : 48 units / carton
Gross weight : 17.5 kg approx. / carton

8.0 PERFORMANCE (input voltage is 115VAC, unless others specified)

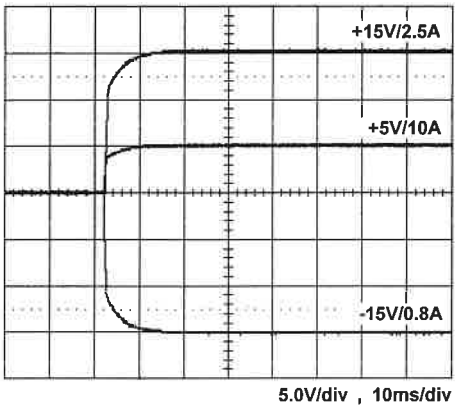
8.1 Switching frequency ripple



8.2 Line frequency ripple



8.3 Output turn on wave form



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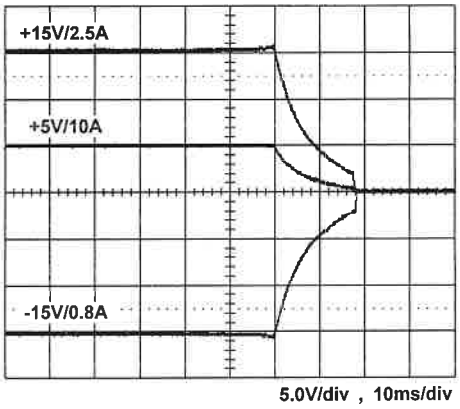
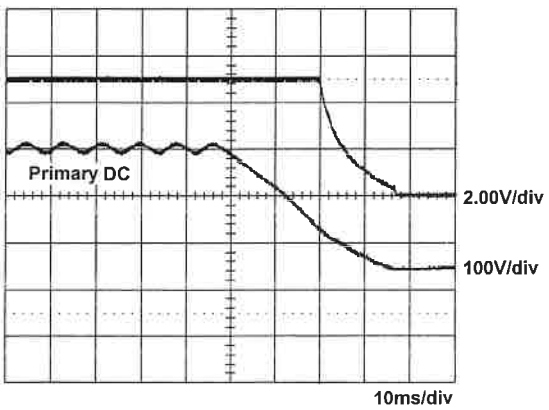
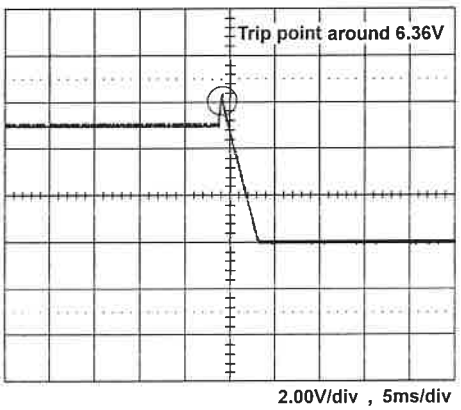


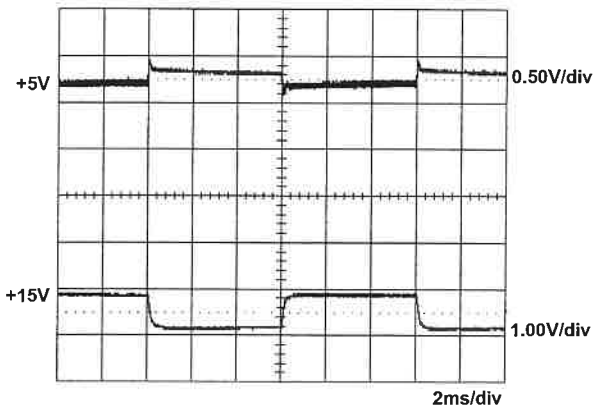
8.5 Hold-up time



8.6 Over voltage protection

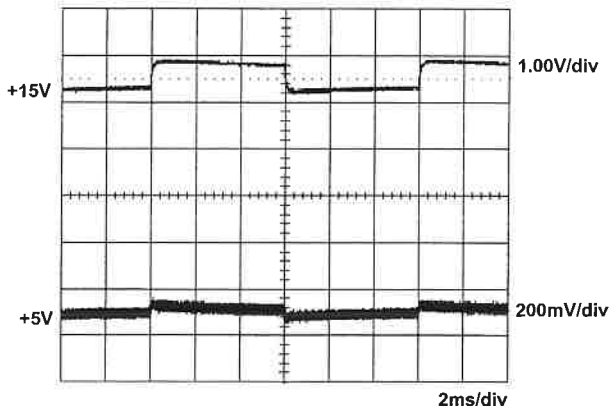


8.7 +5V step response



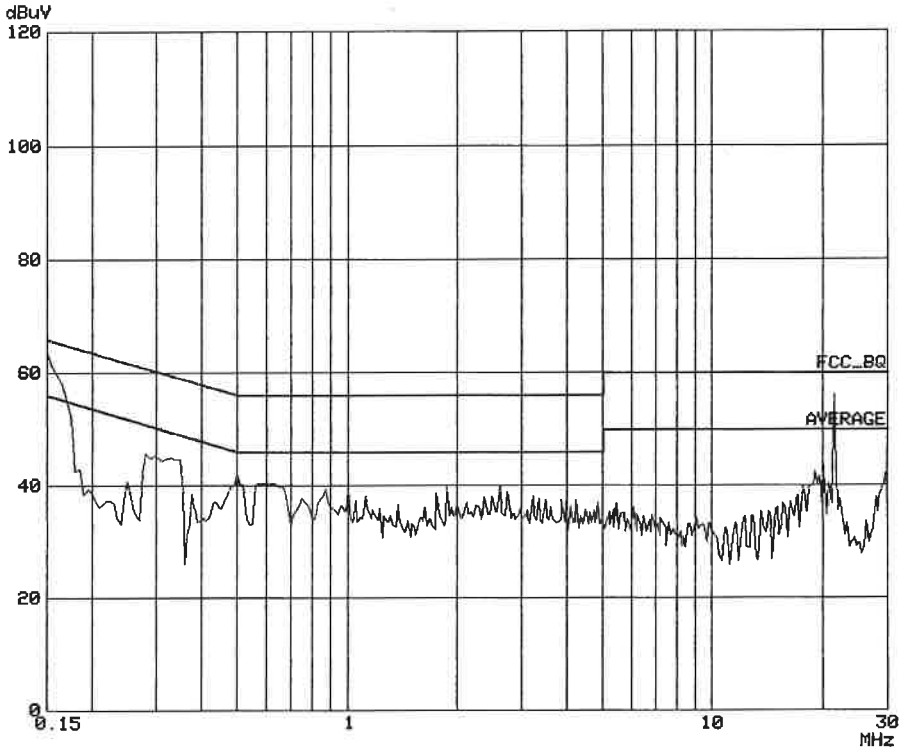
+5V step from 2A to 10A
other output at 60% load

8.8 +15V step response



+15V step from 0.5A to 2.5A
other output at 60% load

8.9 FCC B performance



8.10 CISPR 22 B