

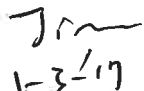
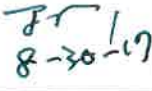
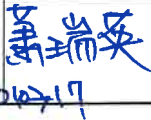
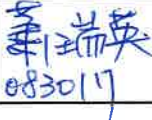
# SPECIFICATION

For

SWITCHING POWER SUPPLY

- SNP-HFAT
- SNP-HFAT-A
- SNP-HFAT-H

STANDARD PRODUCT

Reviewed by Product Engineer	 1-3-17	 8-30-17				
Typed by Document Assistant	 06/17	 0830/17				
<b>SKYNET ELECTRONIC</b>			<b>LAST REV. NO.</b>			

## 1.0 INTRODUCTIONS

SNP-HFAT series is an open frame 100W power supply with built-in:

- (1) Peak load (1.5 x rated current,  $V_o$ =rated for 5 sec)
- (2) Meet 2 x MOPP, Earth leakage current < 300uA and Touch current < 100uA for BF application
- (3) SNP-HFAT is with no load <0.1W green power feature, input class I
- (4) SNP-HFAT-A is without burst sound, input class I
- (5) SNP-HFAT-H is for home healthcare application, input class II and EMI class B
- (6) -40°C to +70°C operating temperature
- (7) 5,000m operation altitude

## 2.0 INPUT SPECIFICATIONS

### 2.1 Input voltage

Input voltage range : 90Vac to 264Vac

Nominal line voltage : 115Vac/230Vac

### 2.2 Input frequency

47Hz to 63Hz

### 2.3 Input current

$4A_{rms}$  max/115Vac,  $2A_{rms}$  max/230Vac

### 2.4 Inrush current

40A max/115Vac, 80A max/230Vac (EMI capacitors excluded, cold start at 25°C)

## 3.0 OUTPUT SPECIFICATIONS

### 3.1 Load range

$V_o$	min. load	rated load	max load	peak load
+48V	0A	2.1A	2.7A	3.36A

#### 3.1.1 Factory adjustment

+47.8V to 48.2V (60% rated load, 115Vac)

#### 3.1.2 Peak load max duration

5sec. (duty cycle < 50%, average power < rated power, nominal line input)

#### 3.1.3 Cooling

Rated load for convection cooling ; max load for 18 CFM forced air cooling.

### 3.2 Ripple and noise

< 1% (20MHz bandwidth limited, 1X probe with 0.47uF parallel capacitor, nominal line input)

### 3.3 Line regulation

< ±0.5% (90Vac to 264Vac, compare with 115Vac)

### 3.4 Load regulation

< ±1% (20% to 100% rated load, compare with 60% rated load, nominal line input)

### 3.5 Capacitive load start-up

> 4,000Uf (rated load, nominal line input)

**4.0 GENERAL FEATURES**

All specs under item 4.0 except with special notes are defined and tested at nominal line input, rated load and 25°C

**4.1 Efficiency**

**SNP-HFAT**

> 87% at 100% rated load

**SNP-HFAT-A & SNP-HFAT-H**

> 87% at 100% rated load.

**4.2 Hold up time**

16 ms typical

**4.3 No load input power**

< 0.1W for SNP-HFAT.

< 2.5W for SNP-HFAT-A & SNP-HFAT-H, skip burst mode for preventing audible noise.

**4.4 Protection**

**4.4.1 Over-voltage protection**

Trip point : +50V to +61V

Protection mode : Latch-off

**4.4.2 Short circuit and over-load protection**

Protection mode : Auto-recovery

**5.0 ENVIRONMENT SPECIFICATIONS**

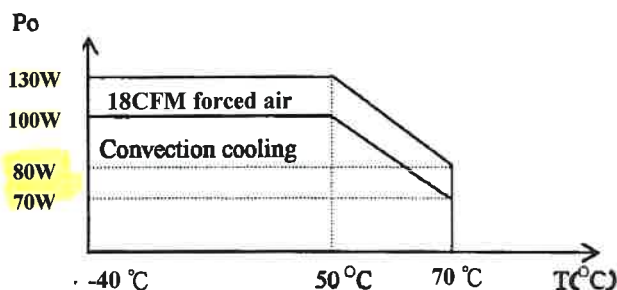
**5.1 Operating temperature**

-40°C to 70°C

(For both rated and max load.)

(Rated load with convection cooling; max load with 18 CFM forced air cooling)

Output derating curve



**5.2 Storage temperature**

-40°C to 85°C

**5.3 Operating humidity**

5% to 95% RH, non-condensing

**5.4 Altitude**

0 to 5000m

**6.0 INTERNATIONAL STANDARDS**

**6.1 Safety standards**

Label voltage: 100Vac to 240Vac

Designed to meet:

ITE:

UL 60950-1, 2nd Edition, 2014-10-14

CAN / CSA C22.2 No.60950-1-07 2nd Edition , 2014-10

IEC 60950-1:2005+A1+A2

EN 60950-1:2006+A11+A1+A12+A2

Medical:

3.1 Edition:

ANSI /AAMI ES60601-1(2005 / (R) 2012+A1:2012, C1:2009 / (R) 2012+A2:2010 / ( R) 2012)

CAN/CSA-C22.2 No.60601-1:14

IEC 60601-1:2005+A1

EN 60601-1:2006+A11+A1+A12

3rd Edition:

ANSI /AAMI ES 60601-1(2005+C1:09+A2:10)

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

IEC 60601-1:2005

EN 60601-1:2006+A11+A12

2nd Edition:

UL 60601-1 , 1st Edition

CAN/CSA-C22.2 No.601.1-M90,2005

IEC 60601-1:1988+A1+A2

EN 60601-1:1990+A1+A2+A13

**6.2 EMI standards**

FCC docket 20780 curve "B"

EN55022, level "B"

EN55011, level "B"

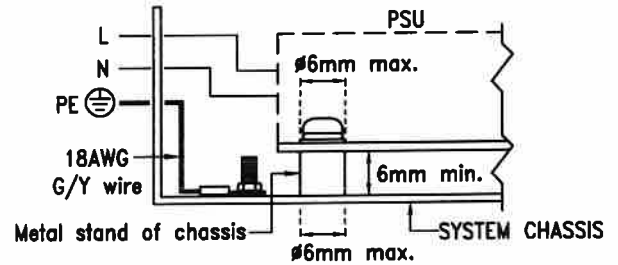
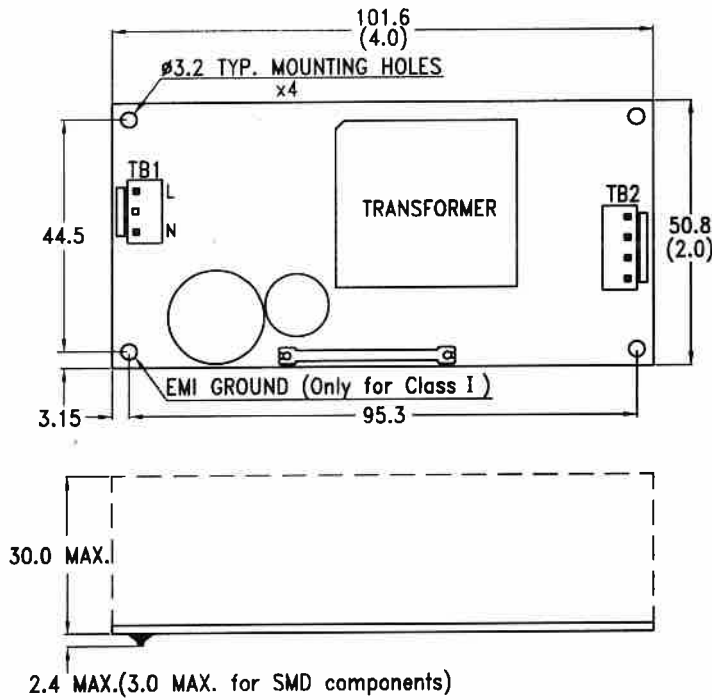
EN 61000-3-2 class "A"

EN 61000-3-3

**6.3 EMS standards**

EN61000-4-2	6kV/contact discharge, 8kV/air discharge	Criterion A
EN61000-4-3	10V/M with 80% AM	Criterion A
EN61000-4-4	2kV	Criterion A
EN61000-4-5	2kV/Line-Line, 4kV/Line-Earth (for SNP-HFAT and SNP-HFAT-A)	Criterion A
EN61000-4-6	10V with 80% AM	Criterion A
EN61000-4-8	10A/m	Criterion A
EN61000-4-11	100% dips 10ms,	Criterion A
	100% dips 20ms,	Criterion B
	30% dips 500ms,	Criterion A
	60% dips 200ms,	Criterion B
	100% dips 5000ms,	Criterion B

**7.0 MECHANICAL SPECIFICATION**



**Installation drawing**

Note :

To meets the requirement of safety and EMI, the above installation must be followed.

**7.1 Dimensions**

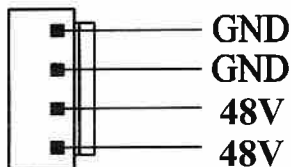
Dimensions shown in mm (inch) as above. Tolerance specified is  $\pm 0.4\text{mm}$  (0.016 inch).

**7.2 Connectors**

TB1--AC Input : JST B2P3-VH or equivalent.

TB2--DC Output : JST B4P-VH or equivalent.

**7.3 DC Output pin assignment**



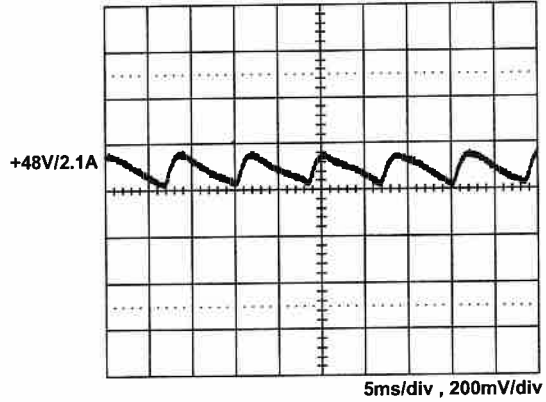
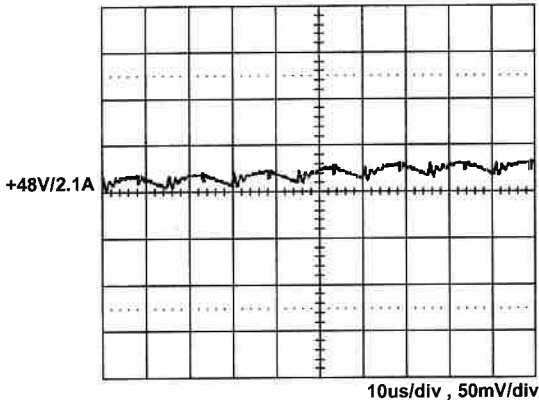
**7.4 Packing**

- Net weight : 160g approx. / unit
- Carton size(mm) : 382(L) x 374(W) x 277(H)
- Quantity : 80 units / carton
- Gross weight : 15.0kg approx. / Carton

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

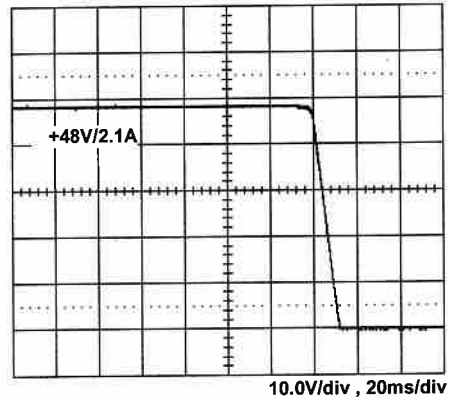
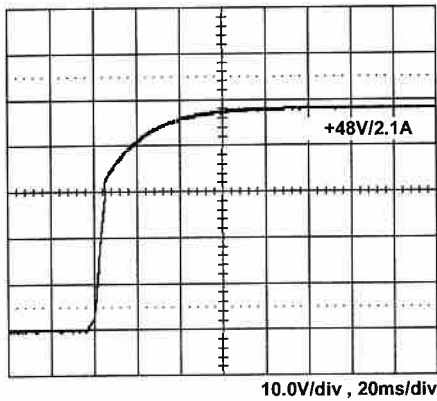
8.1 Switching frequency ripple

8.2 Line frequency ripple



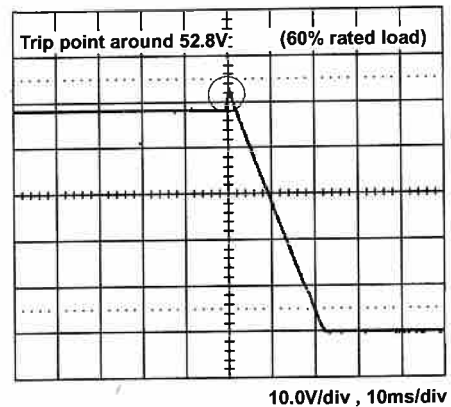
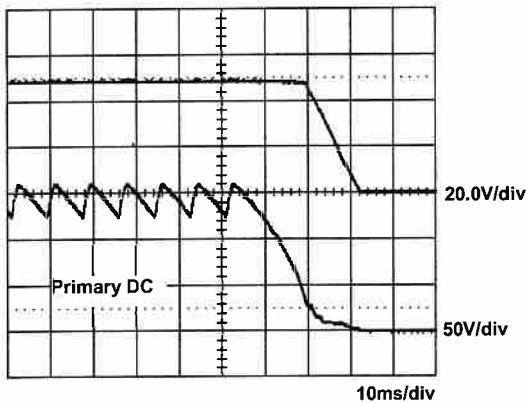
8.3 Output turn on wave form

8.4 Output turn off wave form

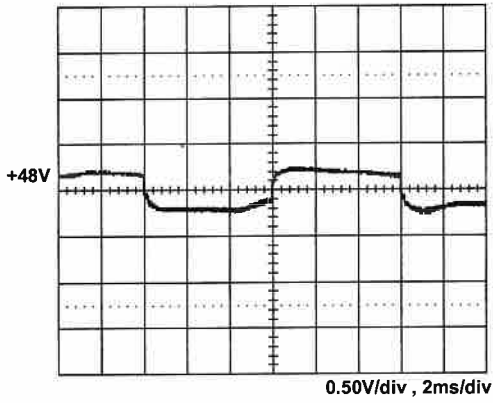


8.5 Hold-up time

8.6 Over voltage protection

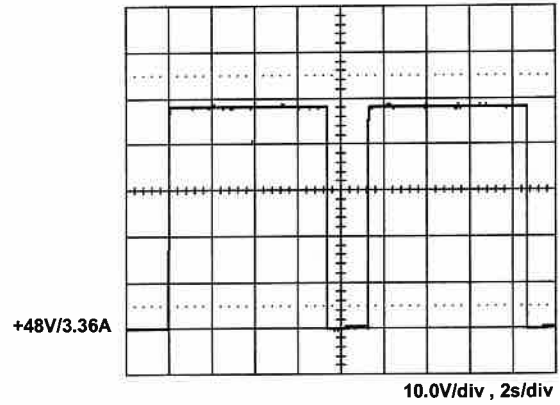


8.7 +48V Step response

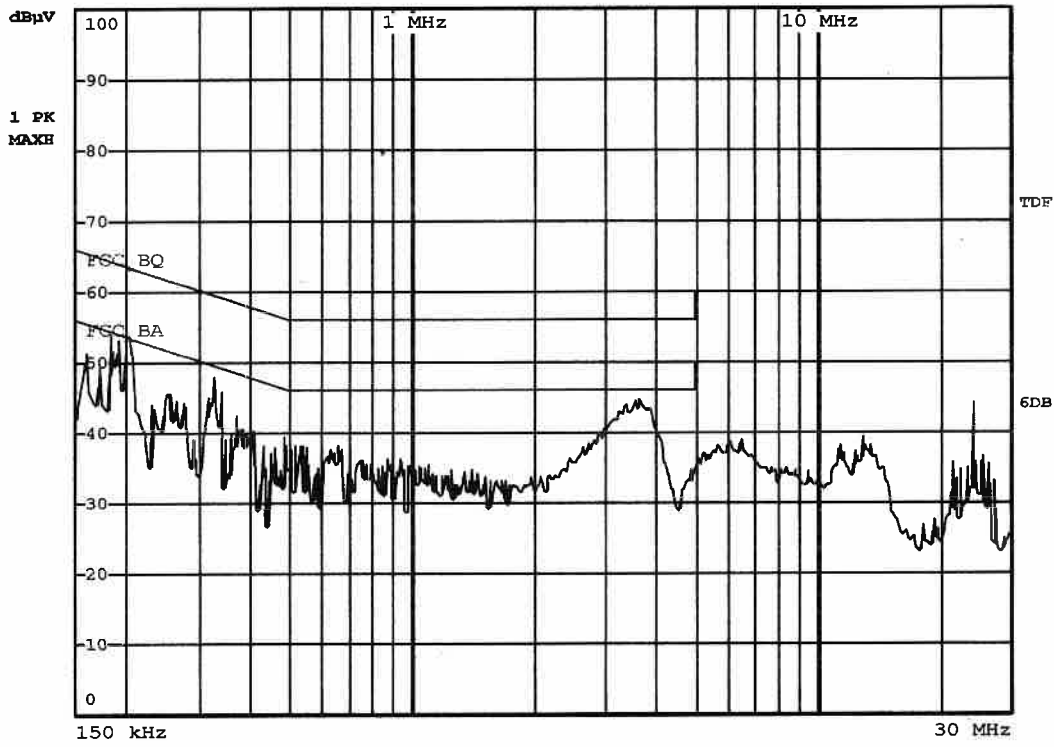


+48V step from 0.42A to 2.1A

8.8 Peak load



8.9 FCC "B" QP performance



8.10 EN55022 "B" QP performance

