SPECIFICATION

For

SWITCHING POWER SUPPLY

- **SNP-HFA9**
- SNP-HFA9-A
- SNP-HFA9-H

STANDARD PRODUCT

Reviewed by Product Engineer	Jim 6-16-20	Jim 8-4-20	Jim 5-21-23			
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SKYNET ELECTRONIC			**LAST REV. NO.**			

1.0 INTRODUCTIONS

SNP-HFA9 series is an open frame 100W power supply with built-in:
(1) Peak load (1.5 x rated current, Vo=rated for 5 sec)
(2) Meet 2 x MOPP, Earth leakage current < 300uA and Touch current < 100uA for BF application
(3) SNP-HFA9 is with no load <0.3W green power feature, input class I
(4) SNP-HFA9-A is without burst sound, input class I
(5) SNP-HFA9-H is for home healthcare application, input class II and EMI class B
(6) -40℃ to +70℃ 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
All specs under item 3.0 except with special notes are defined and tested at nominal line input, rated load and 25°C

3.1 Load range

Vo	min. load	rated load	max load	peak load
+24V	0A	4.17A	5.42A	8.4A

3.1.1 Factory adjustment
+23.8V to +24.2V (60% rated load, 115Vac)

3.1.2 Peak load max duration
5sec typ. (duty cycle < 50%, average power < rated power)

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)

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)

3.5 Capacitive load start-up
< 8,000uF

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-HFA9

＞86% typ. at 100% rated load

SNP-HFA9-A & SNP-HFA9-H

＞85% at 100% rated load

4.2 Hold up time

16 ms typical

4.3 No load input power

＜0.3W for SNP-HFA9.

＜3.5W for SNP-HFA9-A & SNP-HFA9-H, skip burst mode for preventing audible noise.

4.4 Protection

4.4.1 Over-voltage protection

Trip point : +26V to +30V

Protection mode : Latch-off

4.4.2 Short circuit and over-load protection

Protection mode : Auto-recovery

5.0 ENVIRONMENT SPECIFICATIONS

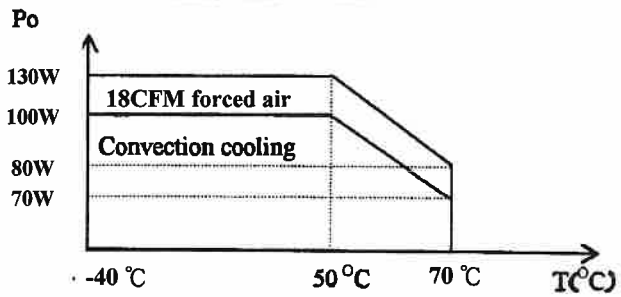
5.1 Operating temperature

-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

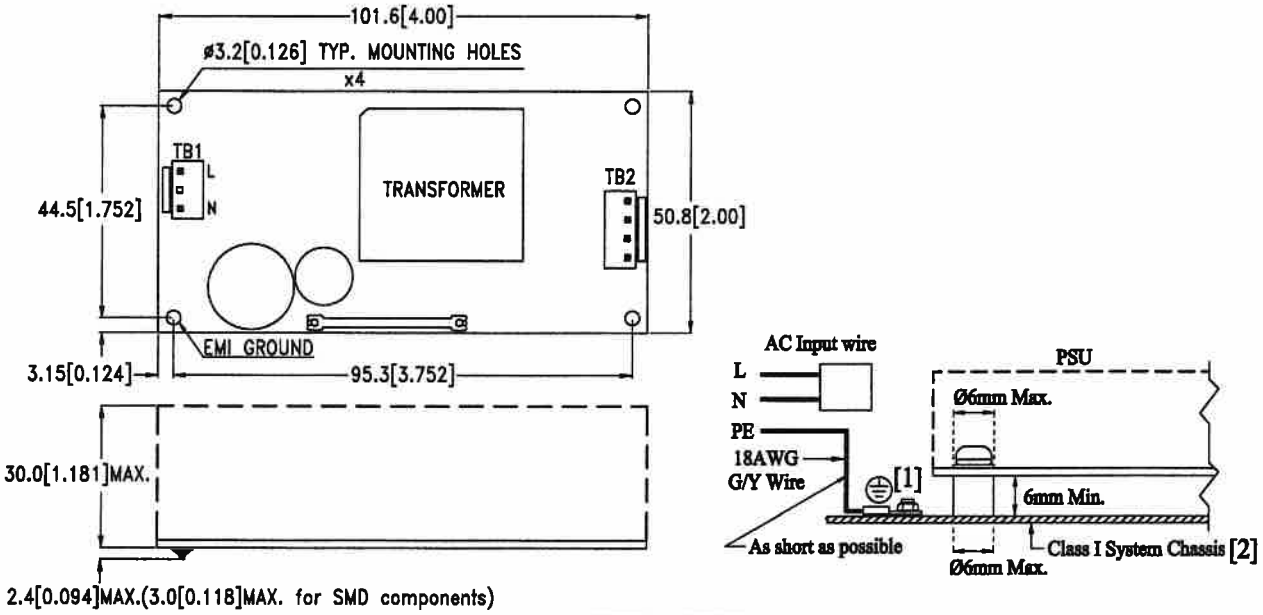
6.3 EMS standards

EN61000-4-2	8kV/contact discharge, 15kV/air discharge	Criterion A
EN61000-4-3	10V/M with 80% AM	Criterion A
EN61000-4-4	2Kv (100KHz)	Criterion A
EN61000-4-5	2kV/Line-Line, 4kV/Line-Earth	Criterion A
EN61000-4-6	10V with 80% AM	Criterion A
EN61000-4-8	30A/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

7.1 Dimensions

Dimensions shown in mm [inch] as below. Tolerance specified is + -0.4mm [0.016].



Note :

[1]. Must be fixed properly after the ground wire go into chassis for safety reason.

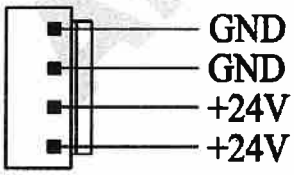
[2]. It is designed for Class I system.

7.2 Connectors

TB1--AC Input : JST B2P3-VH or TKP PVHI-03N2.
(Mating Housing : JST VHR-3N or TKP HVH-03)

TB2--DC Output : JST B4P-VH or TKP PVHI-04.
(Mating Housing : JST VHR-4N or TKP HVH-04)

7.3 DC Output pin assignment

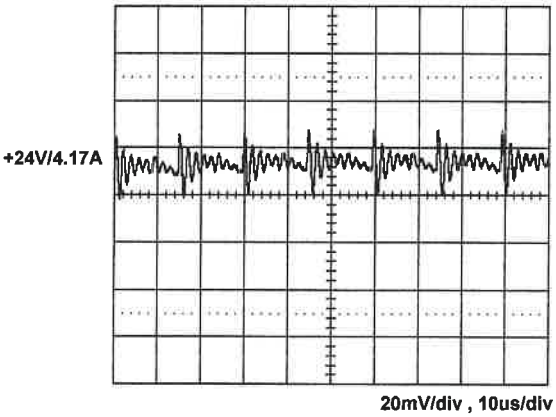


7.4 Packing

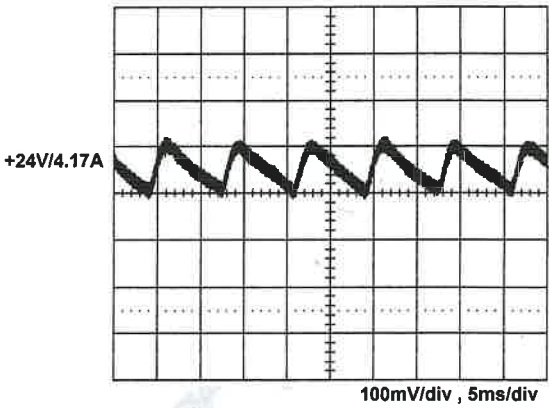
Net weight	:	170g approx. / unit
Carton size(mm)	:	382(L) x 374(W) x 277(H)
Quantity	:	80 units / carton
Gross weight	:	16kg approx. / carton

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

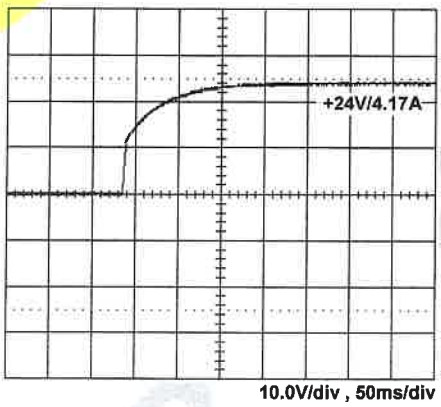
8.1 Switching frequency ripple



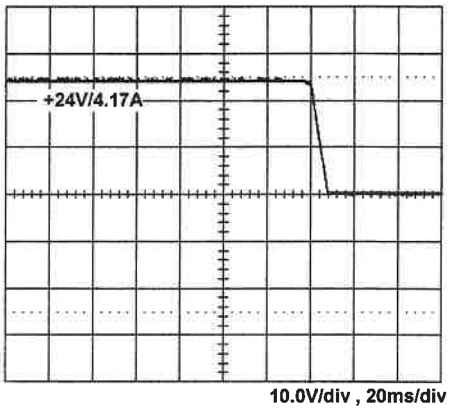
8.2 Line frequency ripple



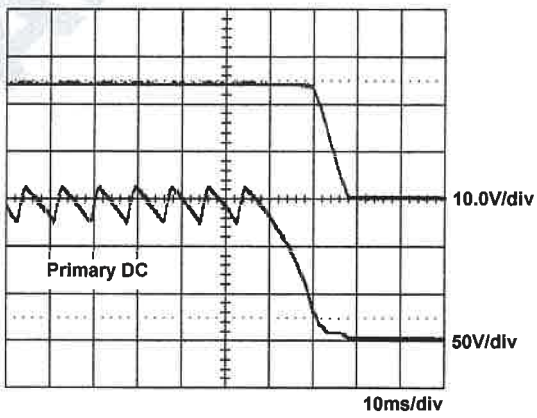
8.3 Output turn on wave form



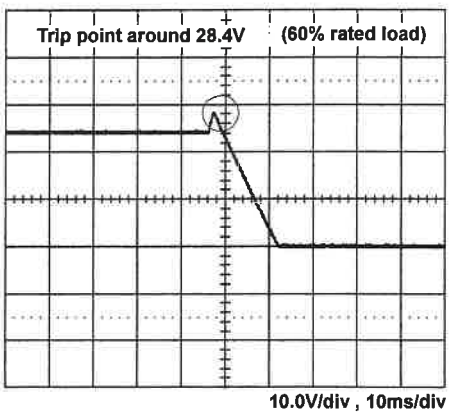
8.4 Output turn off wave form



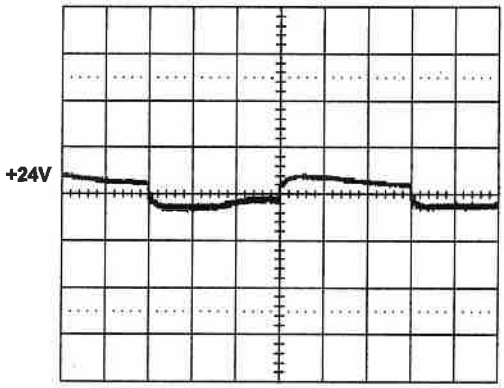
8.5 Hold-up time



8.6 Over voltage protection

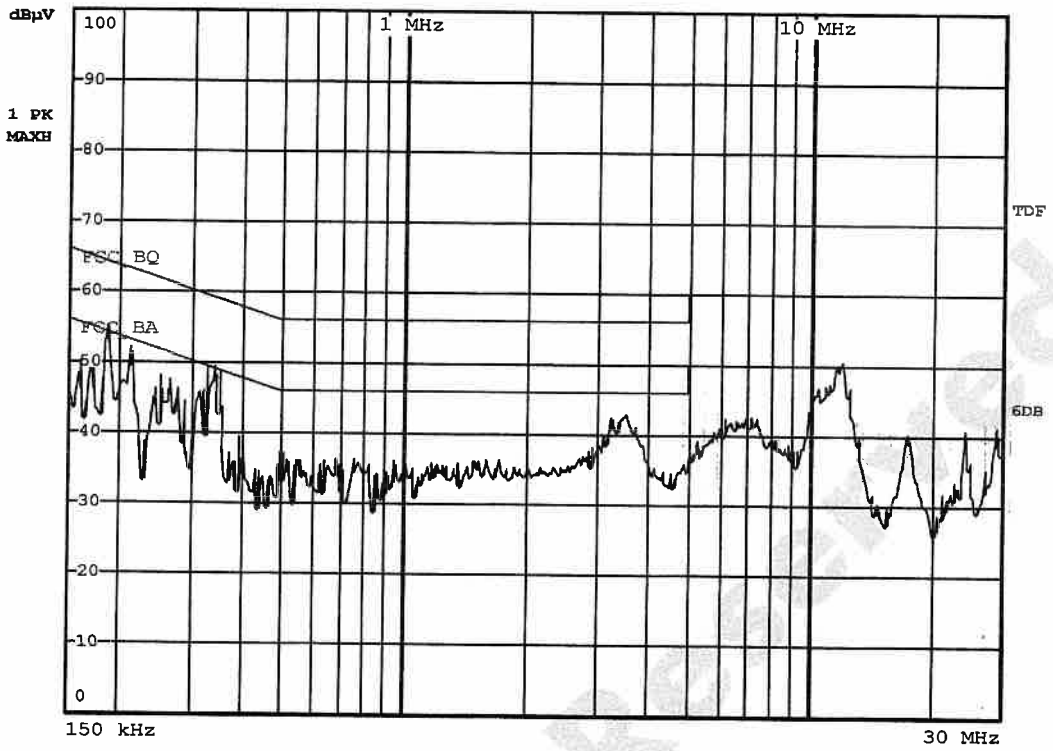


8.7 +24V Step response



+24V step from 0.83A to 4.17A

8.8 FCC "B" QP performance



8.9 EN55011 22 "B" QP performance