

# SPECIFICATION

For

SWITCHING POWER SUPPLY

- **SNP-V309**
- **SNP-V309-C**
- **SNP-V309-U**
- **SNP-V309-F**

STANDARD PRODUCT

|                                 |                |  |                      |  |  |  |
|---------------------------------|----------------|--|----------------------|--|--|--|
| Reviewed by<br>Product Engineer | JRM<br>5-18-18 |  |                      |  |  |  |
| Typed by<br>Document Assistant  | 蕭瑞英<br>051718  |  |                      |  |  |  |
| <b>SKYNET ELECTRONIC</b>        |                |  | <b>LAST REV. NO.</b> |  |  |  |

## 1.0 INTRODUCTIONS

SNP-V309 is an active PFC 300W open frame universal power converter. It's high power density and is designed to comply with EN61000-3-2 regulations.

SNP-V309-U is with U-chassis.

SNP-V309-C is with enclosed case.

SNP-V309-F is with a built-in 21CFM fan on top of the enclosed case, output 400W.

## 2.0 INPUT SPECIFICATIONS

### 2.1 Input Voltage

The range of input voltage is from 90VAC to 264VAC. Nominal line 115VAC/230VAC. Withstand 300Vac surge input for 5sec.

### 2.2 Input frequency

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

### 2.3 Input current

The maximum input current is 6A at 115VAC or 3A at 230VAC.

### 2.4 Inrush current

The inrush current will not exceed 30A at 115VAC input or 60A at 230VAC input, cold start at 25°C. (EMI capacitors excluded)

### 2.5 Power Factor

PF > 0.93 at 115Vac/230Vac and rated load.

## 3.0 OUTPUT SPECIFICATIONS

### 3.1 Load range

| output | min. load | rated load | max. load | peak load | voltage range  |
|--------|-----------|------------|-----------|-----------|----------------|
| +24V   | 0A        | 12.5A      | 16.7A     | 20A       | 23.5V to 24.5V |

At factory, the output in 60% rated load and nominal line condition, the +24V output is set to between 23.9V and 24.1V.

At peak load and nominal line, the output can last for 5sec without shut down.

#### 3.1.1 Total output power

SNP-V309, SNP-V309-U, and SNP-V309-C are 300W with convection cooling; 300W~400W with 33CFM forced air cooling.

SNP-V309-F is 400W with 21CFM forced air cooling.

### 3.2 Ripple and noise

The peak to peak ripple and noise for each output is less than 200mV at rated load and nominal line. Measuring is done by 15MHz band width limited oscilloscope and terminated output with a 0.1uF +47uF capacitor.

### 3.3 Line regulation

The line regulation for +24V output is less than + -0.5% while measuring at rated load and + -10% of nominal line input voltage changing.

### 3.4 Load regulation

The load regulation for +24V output is less than  $\pm 1\%$  measuring are done by changing the measured output load  $\pm 40\%$  from 60% rated load and nominal line.

### 3.5 Capacitance loading capability

The capacitance load start-up capability can be up to 100000uF at rated load and nominal line.

## 4.0 GENERAL FEATURES

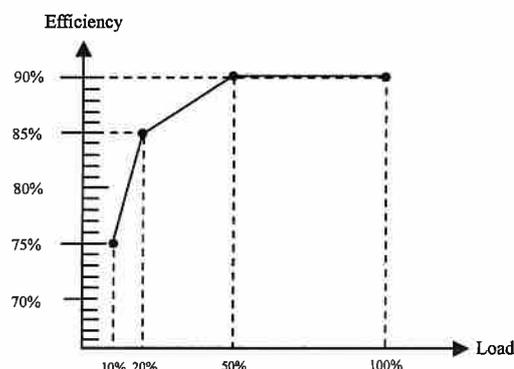
### 4.1 Efficiency

The efficiency is higher than 90% while measuring at nominal line and rated load.

### 4.2 Step efficiency

- > 75 % at 10% rated Load
- > 85 % at 20% rated Load
- > 90 % at 50% rated Load
- > 90 % at 100% rated Load

### 4.3 Efficiency Curve



### 4.4 Hold up time

The hold-up time is higher than 30mS 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.

### 4.5 Protection

#### 4.5.1 Over current protection

Trip point : 110% to 130% of max load.  
Protection mode : Auto-recovery.

#### 4.5.2 Short protection

Protection mode : Auto-recovery

#### 4.5.3 Over voltage protection

Trip point : 26.2 to 31.0V.  
Protection mode : Latch-off.

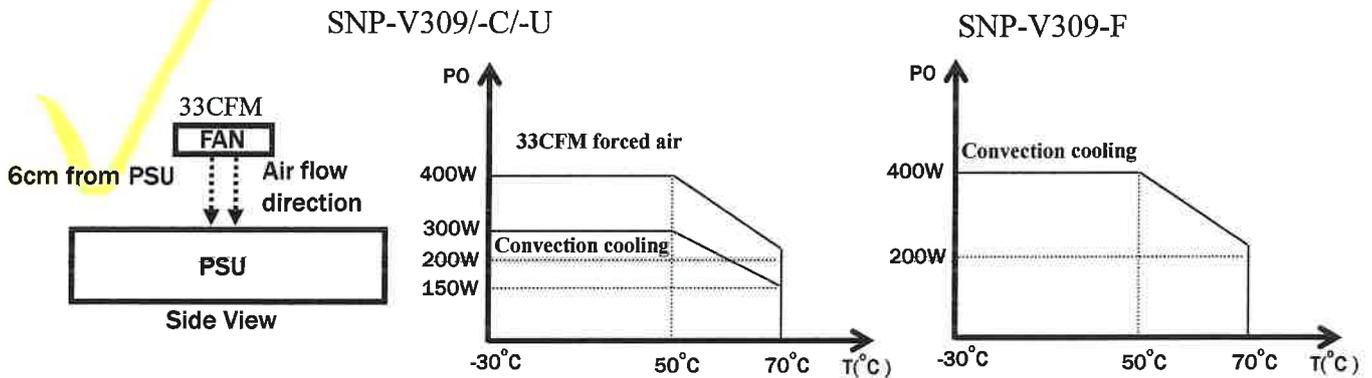
### 4.6 Fan control

The fan output should be stopped if the output load is less than  $30\% \pm 5\%$  of rated load.

**5.0 ENVIRONMENT SPECIFICATIONS**

**5.1 Operating temperature**

-30°C to 70°C, -30°C to 50°C no derating, above 50°C, derate at 2.5% per degree from 50°C to 70°C. (start up at -30°C/ nominal line and -20°C/ Low Line)



**5.2 Storage temperature**

-20°C to 85°C

**5.3 Operating humidity**

5% to 95% RH, non-condensing

**5.3 Altitude**

Will operate properly at any altitude between 0 to 5000m.

**5.5 MTBF**

>200Khrs(based on SR-332, rated load, 50°C)

**6.0 INTERNATIONAL STANDARDS**

**6.1 Safety standards** (Label voltage: 100Vac to 240Vac)

UL/CSA/EN 60950-1, 2<sup>nd</sup> edition

ANSI/AMMI/CSA/EN 60601-1, 3<sup>rd</sup> edition

**6.2 EMI standards**

FCC level "B"

EN55022, level "B"

EN55011, level "B"

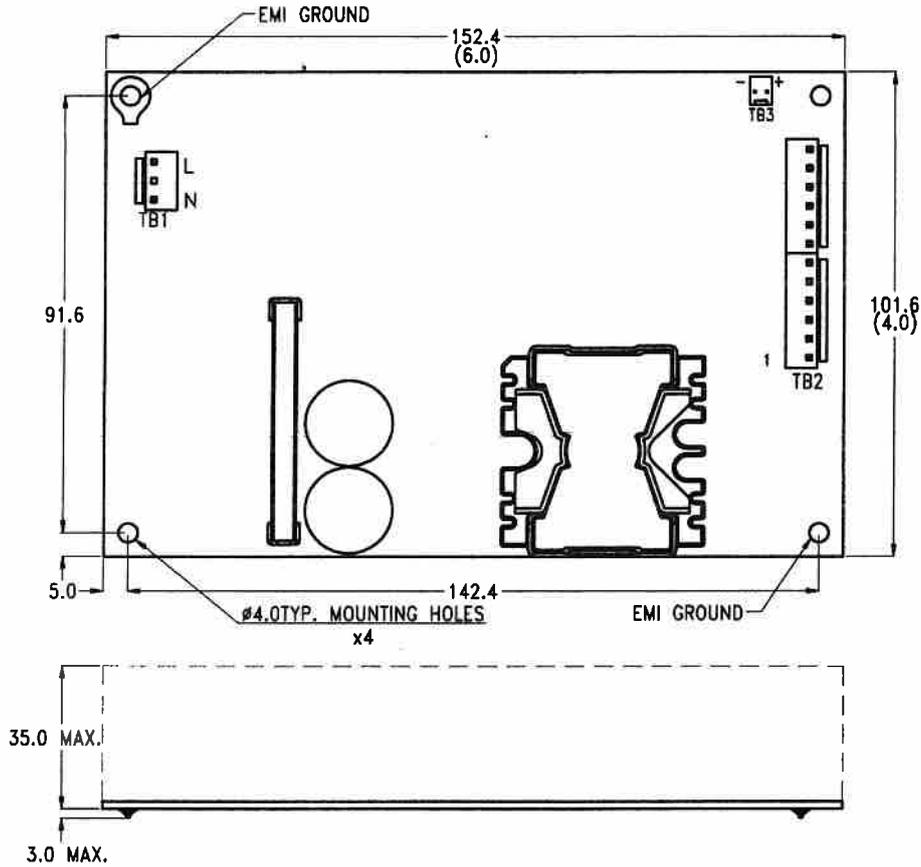
EN 61000-3-2 class "D"

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                                       | 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 500mS                            | Criterion A |
|              | 60% dips 200mS                            | Criterion B |
|              | 100% dips 10mS                            | Criterion A |
|              | 100% dips 5000mS                          | Criterion B |
|              | 100% dips 20mS                            | Criterion B |

7.0 MECHANICAL SPECIFICATION



7.1 Dimensions

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

7.2 Connectors

- TB1--AC input : JST B2P3-VH or equivalent, mating with JST NVAR-02VS or equivalent.
- TB2--DC output : JST B6P-VH x 2pcs or equivalent.  
(mating with JST VHR-6N x 2pcs or TKP HVH-12 or equivalent.)
- TB3--For 24V fan use : MOLEX 5045-02A or equivalent, mating with MOLEX 5051-02 or equivalent.

7.3 DC output pin assignment

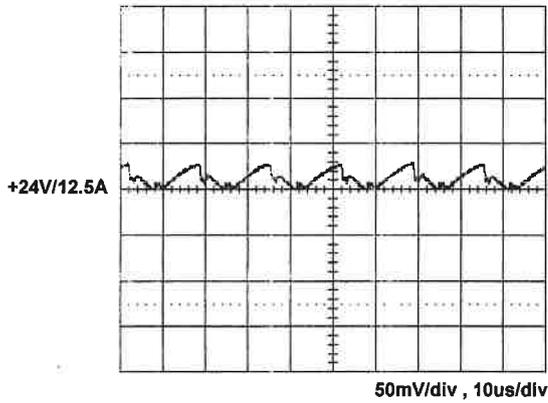
|       |     |   |      |    |      |
|-------|-----|---|------|----|------|
| Pin 1 | GND | 5 | GND  | 9  | +24V |
| 2     | GND | 6 | GND  | 10 | +24V |
| 3     | GND | 7 | +24V | 11 | +24V |
| 4     | GND | 8 | +24V | 12 | +24V |

7.4 Packing

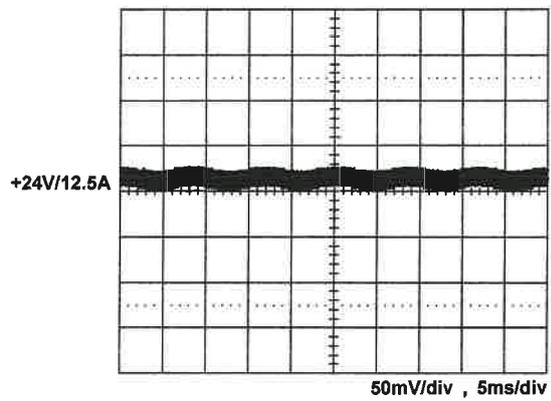
Net weight: 510 g approx. /unit  
 Carton size(mm): 405 (L) x 333 (W) x 277 (H)  
 Quantity : 24 units / carton  
 Gross weight : 14.7 kg approx. / carton

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

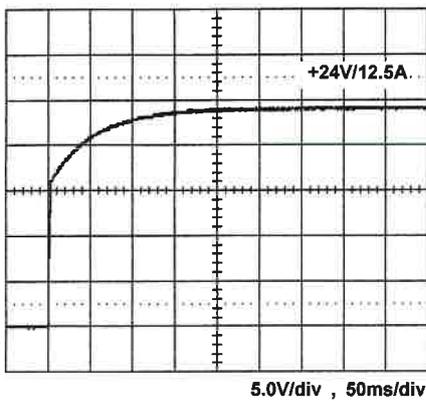
**8.1 Switching frequency ripple**



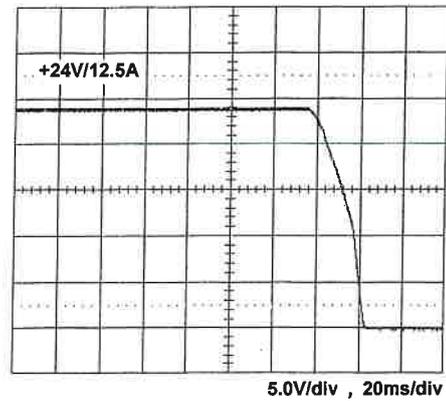
**8.2 Line frequency ripple**



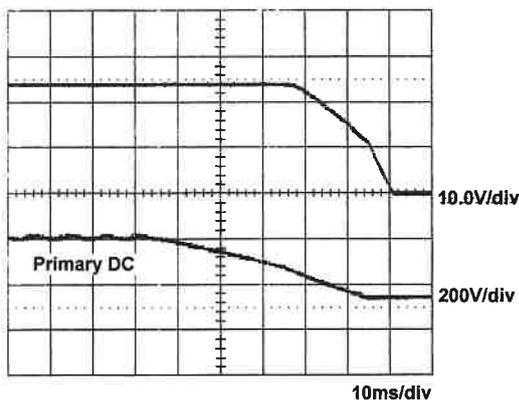
**8.3 Output turn on wave form**



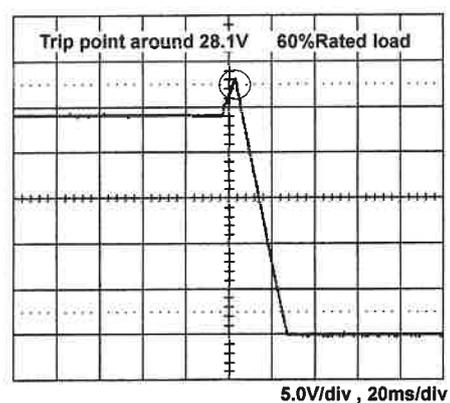
**8.4 Output turn off wave form**



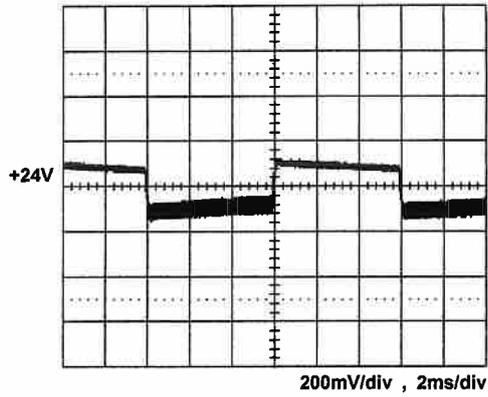
**8.5 Hold-up time**



**8.6 Over voltage protection**

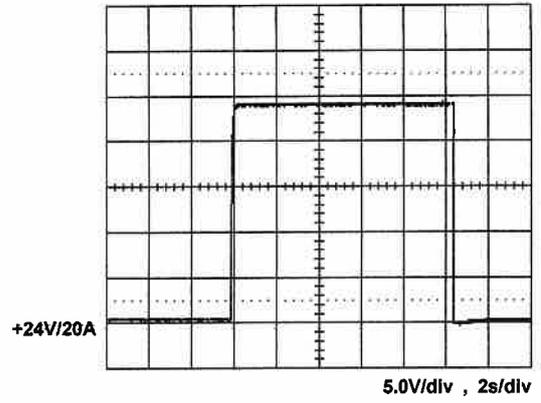


8.7 +24V Step response

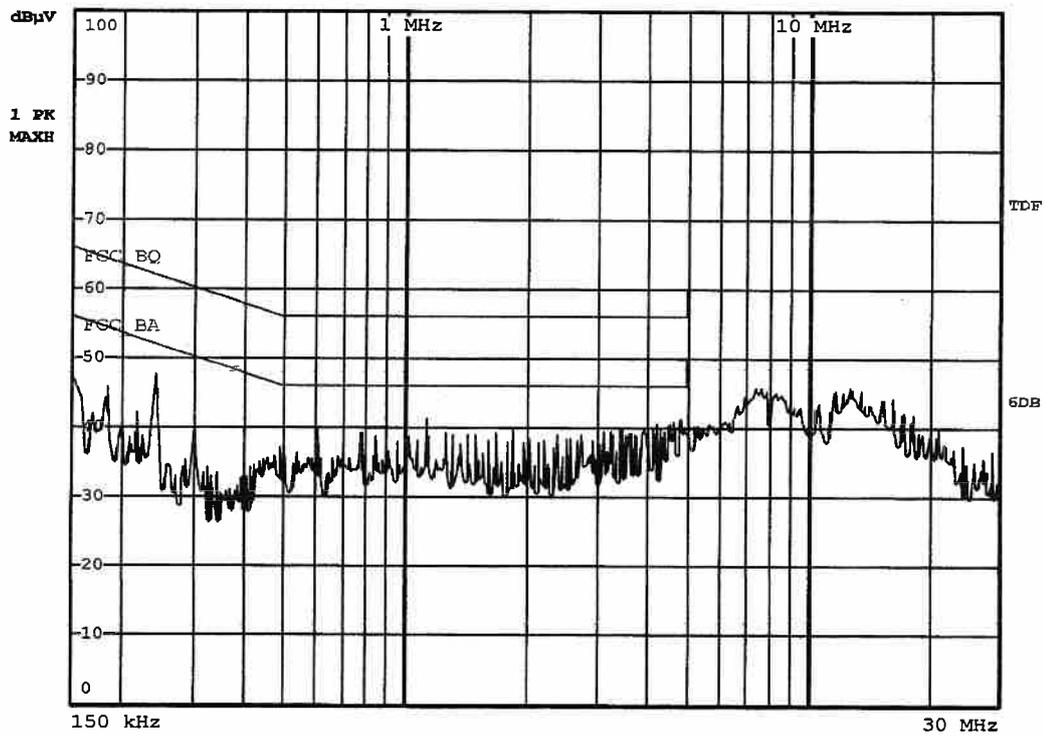


+24V step from 2.5A to 12.5A

8.8 Peak Load



8.9 FCC B QP performance



8.10 EN55011 22 "B" QP performance

