

SPECIFICATION

and

PERFORMANCE

for

SWITCHING POWER SUPPLY

M/N : SNP-P409

M/N : SNP-P409-S

All Rights Reserved

Reviewed by Product Engineer	Jimmy 12-03-20	Jim 2-25-21	Jim 11-10-21			
Typed by Document Assistant	蕭瑞英 12-03-20	蕭瑞英 02-25-21	蕭瑞英 11-10-21			
SKYNET ELECTRONIC			LAST REV. NO.			

1.0 INTRODUCTIONS

SNP-P409-S is an U-shape 400W power supply with built-in:

- (1) +5V standby power.
- (2) Remote on/off control & Remote sense function.
- (3) Power good/fail signal. (option)
- (4) with peak and surge load capability.
- (5) Fan speed controlled by loading.
- (6) Can start up 150,000 uF capacitive loading.

2.0 INPUT SPECIFICATIONS

2.1 Input voltage

The range of input voltage is from 90VAC to 264VAC. Nominal line 115VAC/230VAC.

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 3.2A at 230VAC.

2.4 Inrush current

The inrush current will not exceed 35A at 115VAC input or 70A at 230VAC input, cold start at 25°C. (EMI capacitors excluded)

2.5 Green power

Input power is less than 0.5W while 0.25W loading to 5Vsb (+24V at off) .

3.0 OUTPUT SPECIFICATIONS

3.1 Load range

output	rated load	max. load	peak load	Surge Load
+24V	16.66A	25A	33A	50A
+5Vsb	1A	1.5A		

3.1.1 Factory adjustment

+24V : 23.9V to +24.1V

+5V : 5.0V ±0.1V

(60% rated load, 115Vac)

3.1.2 Total output power

400W with convection cooling, 400W~600W with forced air cooling.(refer to 5.1)

The output can last for more than 1.2 sec. and then shut down while draw the output over the peak current. And will auto-recover again within 10 sec.

3.2 Ripple and noise

< 1% (Measuring is done by 15MHz band width limited oscilloscope and terminated output with a 0.47uF +47uF capacitor.)

3.3 Line regulation

< 1% (measuring at rated load and + -10% of nominal line input voltage changing.)

3.4 Load regulation

< 1% (output load + -40% from 60% rated load and nominal line.)

3.5 Capacitive load capability

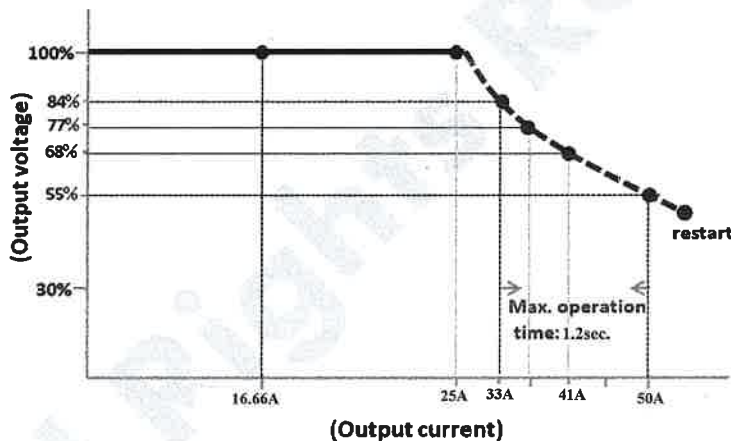
Can start up capacitive loading up to 150,000uF.

3.6 Remote sense

The +24V output has remote sense capability and can compensate for 0.5V due to output line drop at least.

3.7 Surge load capability

The output current can provide 3 times of rated current within 1.2 sec, and output voltage won't drop down to 55% of output voltage.

**3.8 Power good / fail (option)****3.8.1 Power good signal**

When power is turned on, the power good signal will go high between 10ms to 50ms after output DC voltages are within the regulation limits.

3.8.2 Power fail signal

The power fail signal will go low at least 15ms typical before the output voltage fall below the regulation limits.

3.9 Remote on / off control

The TTL compatible signal (active low) is use to switch on the output. When remote pin is disconnected from secondary common (means open), the output will turn off

4.0 GENERAL FEATURES

4.1 efficiency

The efficiency is typical 91% while measuring at nominal line and rated load.

4.2 Hold up time

The hold up time is higher than 17 ms 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

4.3.1 Over current protection

The over current protection will be detected after the end of peak or surge load period. The trip point is 120% ±10% of maximum load. And will auto recovery within 10 sec.

4.3.2 Short protection

This protection will be taken place within 10ms and will try to recover within 10 sec.

4.3.3 Over voltage protection

+24V trip point : +26.2V to 31V.
Protection mode : Latch-off.

4.3.4 Over temperature protection

The temperature sensor is attached to the case of switching power MOS. When the case temperature is higher than 120°C, the power supply will shut down and will recover after the temperature going down.

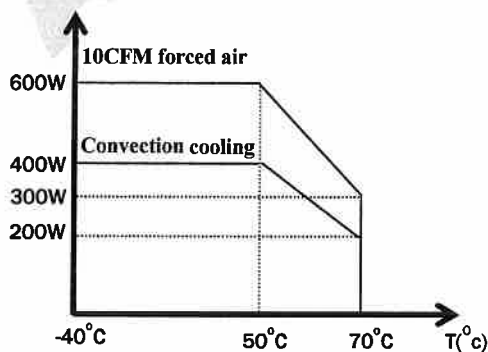
4.4 Fan speed control

The fan output won't be activated until loading goes over around 50% and the speed will increase proportionally to loading.

5.0 ENVIRONMENT SPECIFICATIONS

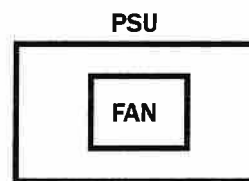
5.1 Operating temperature

-40°C to 50°C no derating, above 50°C, derate at 2.5% per degree from 50°C to 70°C.

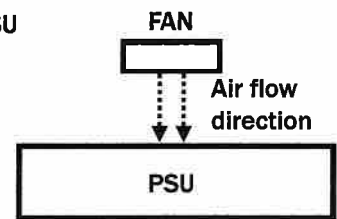


MAX Load Fan location

6cm above center of PSU



Top View



Side View

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 the following regulations :

UL/CSA/EN/IEC 62368-1

ANSI/AMMI/CSA/EN/IEC 60601-1,3.1 edition

6.2 EMI standards

Designed to meet the following limits :

FCC level "B"

EN55032, level "B"

EN55011, level "B"

EN61000-3-2 class "D"

EN 61000-3-3

6.3 EMS standards

Designed to meet the following limits :

IEC60601-1-2:2014

IEC61000-4-2

level 1	level 2	level 3	level 4
+2KV	+4KV	+6KV	+8KV
+2KV	+4KV	+6KV	+8KV
+2KV	+4KV	+6KV	+8KV
+2KV	+4KV	+8KV	+15KV

Vertical non-direct contact

+2KV	+4KV	+6KV	+8KV
+2KV	+4KV	+6KV	+8KV
+2KV	+4KV	+6KV	+8KV
+2KV	+4KV	+8KV	+15KV

Criterion A

Horizontal non-direct contact

+2KV	+4KV	+6KV	+8KV
+2KV	+4KV	+6KV	+8KV
+2KV	+4KV	+6KV	+8KV
+2KV	+4KV	+8KV	+15KV

Criterion A

Contact discharge

+2KV	+4KV	+6KV	+8KV
+2KV	+4KV	+6KV	+8KV
+2KV	+4KV	+6KV	+8KV
+2KV	+4KV	+8KV	+15KV

Criterion A

Air discharge

+2KV	+4KV	+8KV	+15KV
------	------	------	-------

Criterion A

IEC61000-4-3 : 2006 +A1

10V/M with 80M --2.5GHz

Criterion A

IEC61000-4-4 : 2012

Line to Line +2KV ; Line to ground +2KV.

Criterion A

IEC61000-4-5 : 2014

Line to Line 0.5,1.0KV;Line to ground 0.5,1.0,2.0KV.

Criterion A

IEC61000-4-6 : 2013

10V with 0.15MHZ --80MHZ

Criterion A

IEC61000-4-8 : 2009

30 A/M test at 50,60Hz

Criterion A

IEC61000-4-11 : 2004

Test at 100VAC, 50Hz +-2%, 100% rated load

Phase degree	interval time	test cycle
*	10 sec	3
*	10 sec	3
0°	10 sec	3
0°,180°	7 sec	3
0°	10 sec	3

100 % dips 10 ms

*

10 sec

3

Criterion A

60 % dips 200 ms,

*

10 sec

3

Criterion B

30 % dips 500 ms,

0°

10 sec

3

Criterion A

100% dips 5000ms

0°,180°

7 sec

3

Criterion B

100% dips 20ms

0°

10 sec

3

Criterion B

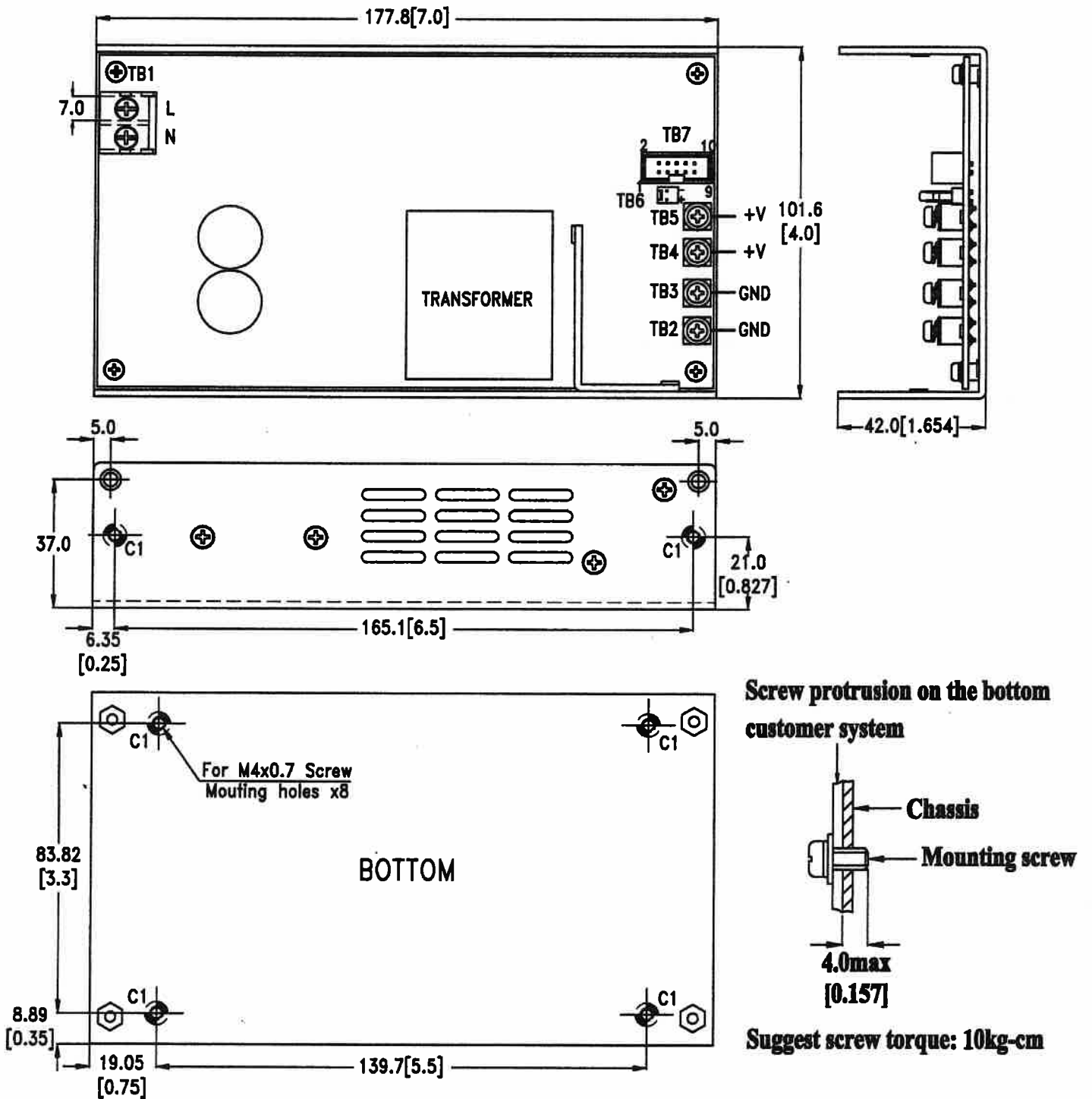
* : 0,45,90,135,180,225,270,315 degree.

7.0 MECHANICAL SPECIFICATION

7.1 Dimensions

Dimensions shown in mm[inch] as above.

Tolerance specified is $\pm 0.4\text{mm}[0.016]$ between mounting holes, $\pm 0.8\text{mm}[0.032]$ other dimension.



7.2 Connectors

TB1--AC Input : 2P/Terminal Blocks with cover (M3 screw)

TB2,TB5--DC Output : Terminal (#6-32 screw)

TB6--For 12V Fan use : LCU P2050-02

TB7—Signals (+5Vsb) : 2x5(10 pins), 2.54mm pitch header

7.3 TB2~TB5 & TB7 output pin assignment

TB2 GND	TB7 Pin	1. +5V(sb)	2. +5V(sb)
TB3 GND		3. GND(sb)	4. GND(sb)
TB4 +		5. PG/PF	6. P.G GND
TB5 +		7. GND(Remote)	8. Remote
		9. RS-	10. RS+

7.4 Packing

Net weight : 887g approx. / unit

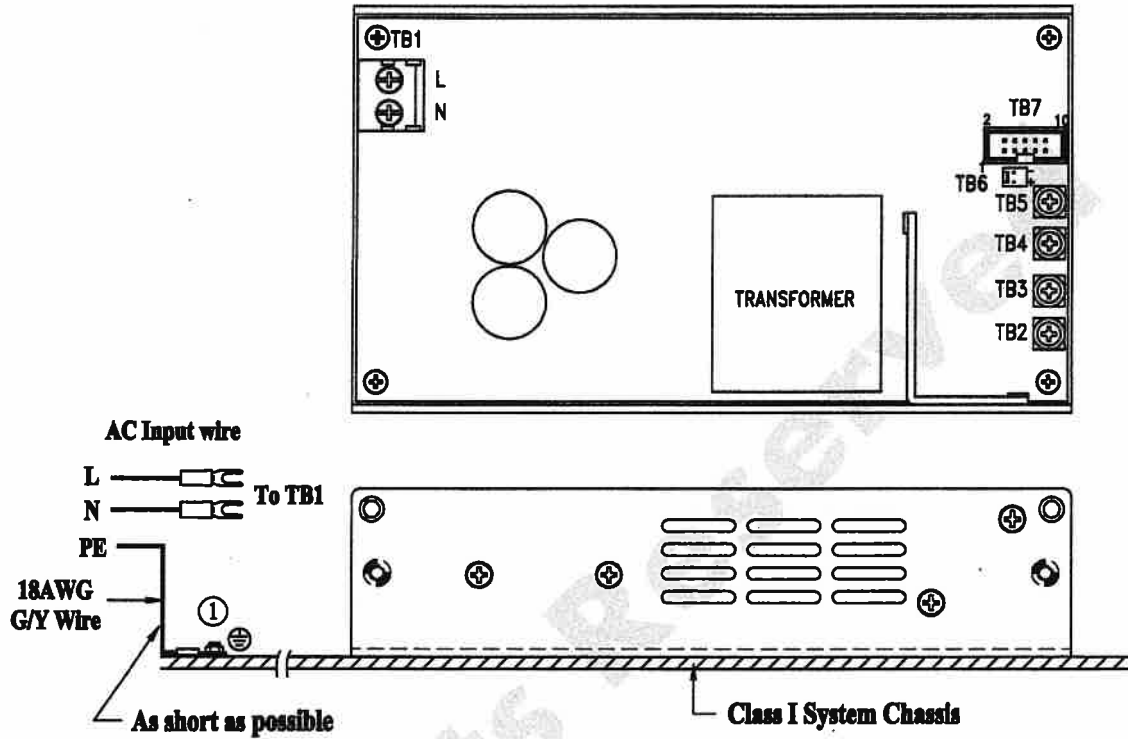
Carton size(mm) : 423 (L) x 298 (W) x 245 (H)

Quantity : 12 units / carton

Gross weight : 13.2kg approx. / carton

8.0 APPLICATION NOTE

8.1 For Class I connection

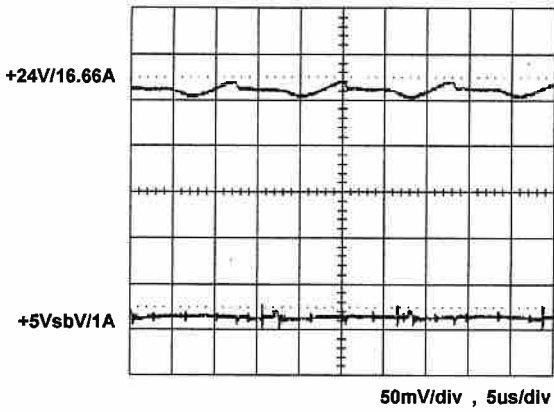


Note :

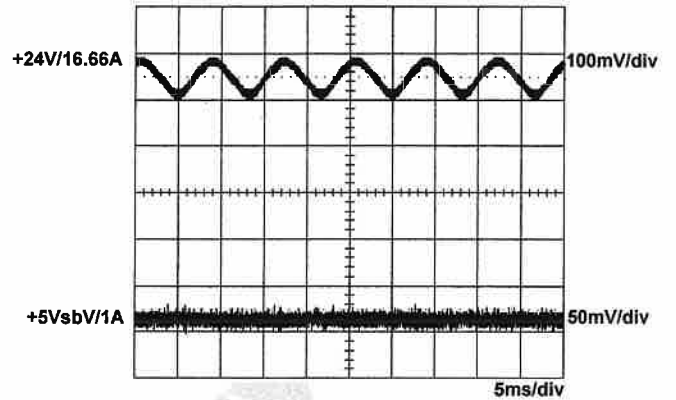
1. Must be fixed properly after the ground wire go into chassis for safety reason.

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

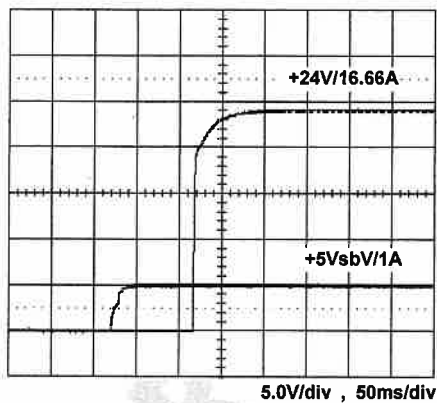
8.1 Switching frequency ripple



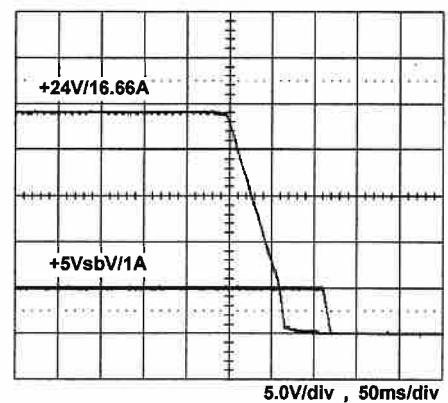
8.2 Line frequency ripple



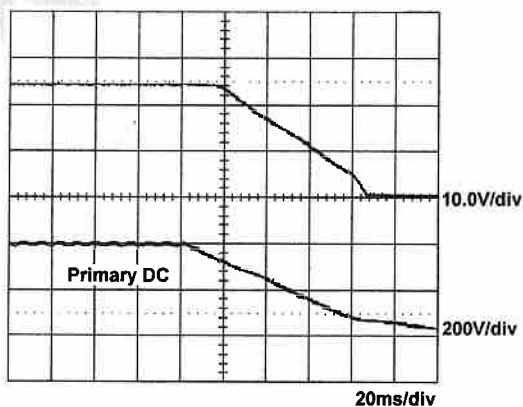
8.3 Output turn on wave form



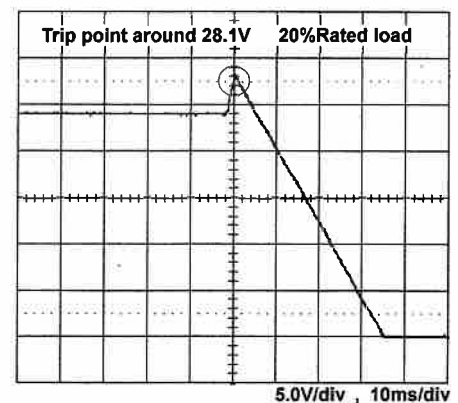
8.4 Output turn off wave form



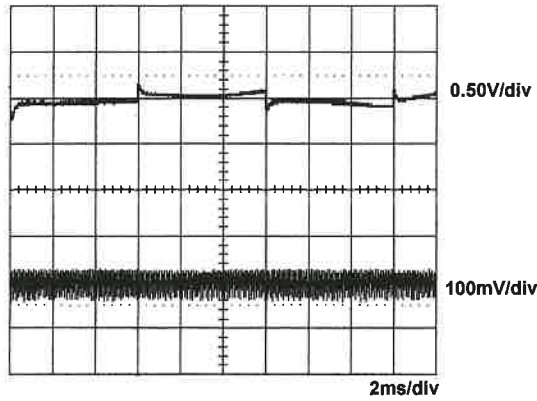
8.5 Hold-up time



8.6 +12V Over voltage protection

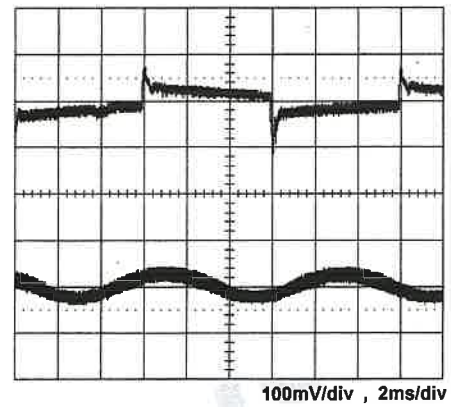


8.7 +24V Step response



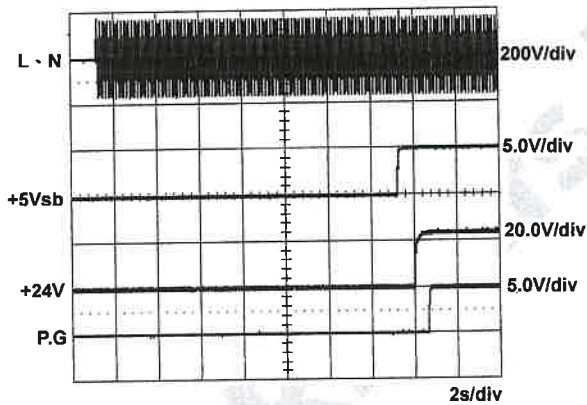
+24V step from 3.33A to 16.66A
+5Vsb / 0.6A

8.8 +5Vsb Step response

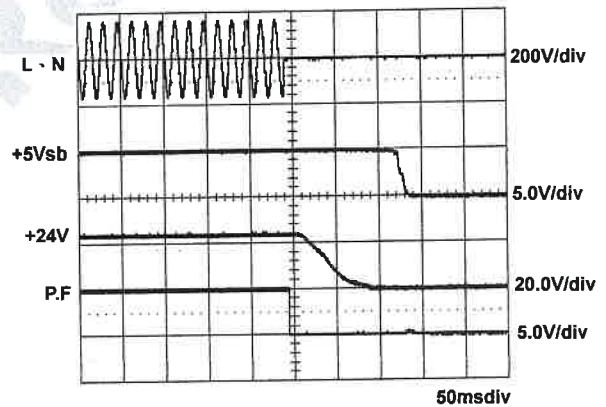


+5Vsb step from 0.2A to 1A
+24V/9.99 A

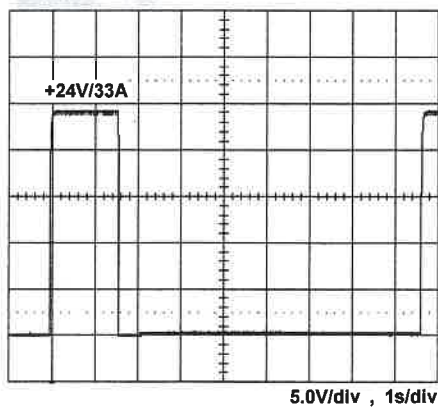
8.9 Power good signal



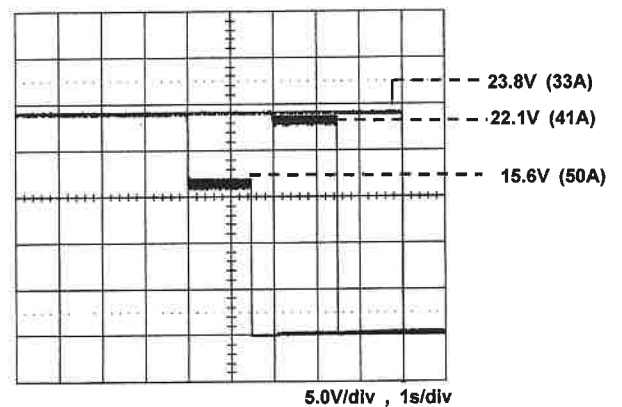
8.10 Power fail signal



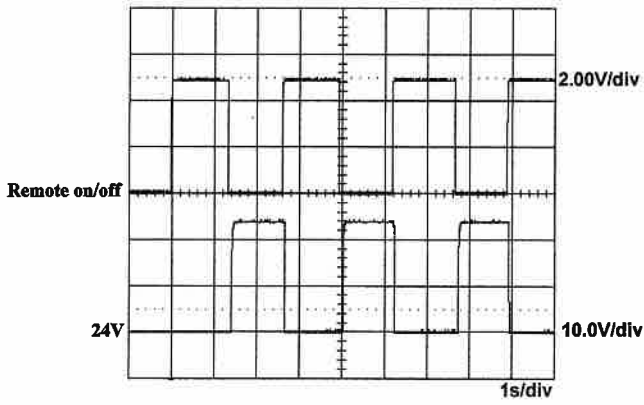
8.11 Peak Load



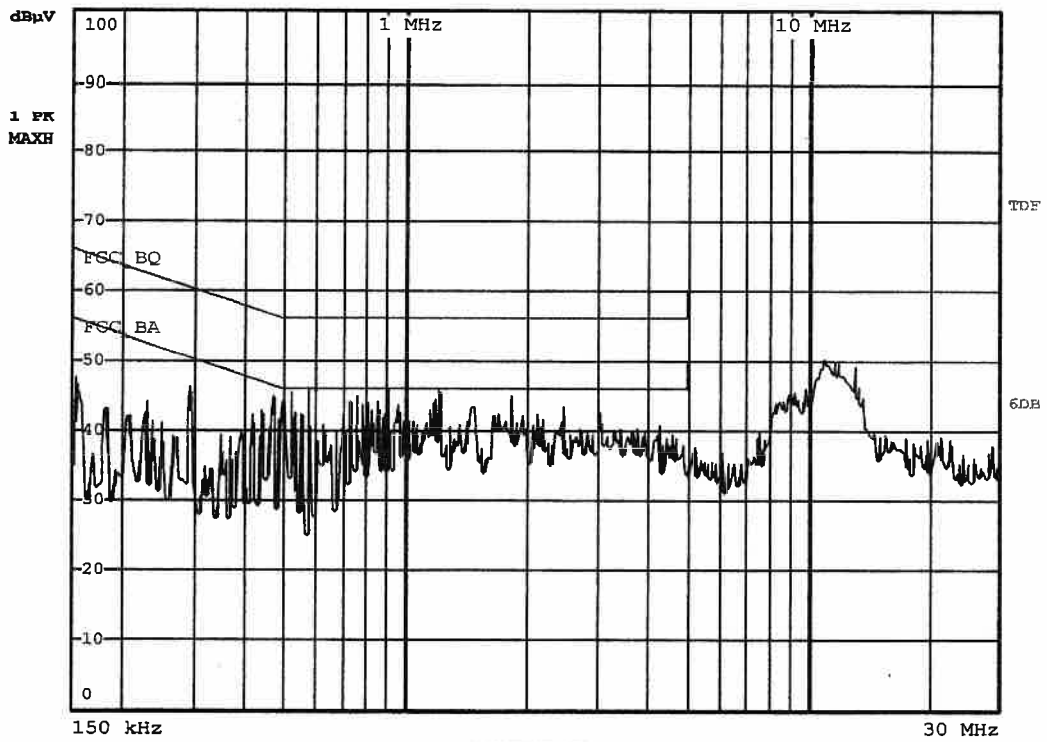
8.12 Surge load capability



8.13 Remote on/off



8.14 FCC "B"



8.15 CISPR "B"

