

# **SPECIFICATION**

120 Watts

Full Range Auto Switching

Flex ATX Type

With Active PFC

**Model: P5120W FNL**

Specification subject to change without prior notice



3261 Keller St.  
Santa Clara, CA 95054  
Tel: 408-980-9813  
Fax: 408-980-8626  
E-mail: [info@topmicro.com](mailto:info@topmicro.com)

DESCRIPTION : 120W Flex Switching Power Supply	ISSUE 10-08-03	REV : B
--	----------------	---------

## CONTENTS

1. SCOPE.....	2
2. INPUT REQUIREMENTS.....	2
2.1 INPUT VOLTAGE .....	2
2.2 FREQUENCY .....	2
2.3 INPUT CURRENT.....	2
2.4 INRUSH CURRENT.....	2
2.5 POWER SUPPLY EFFICIENCY.....	2
3. OUTPUT REQUIREMENTS.....	3
3.1 STATIC DC LOAD .....	3
3.2 REMOTE ON/OFF CONTROL.....	3
3.3 RIPPLE AND NOISE.....	3
3.4 HOLD UP TIME .....	4
4. OVERSHOOT .....	4
5. TEMPERATURE COEFFICIENT .....	4
6. PROTECTION .....	4
6.1 OVER VOLTAGE PROTECTION .....	4
6.2 SHORT CIRCUIT PROTECTION.....	4
6.3 OVER LOAD PROTECTION .....	5
7. RISETIME.....	5
8. POWER GOOD SIGNAL (DIAGRAM) .....	5
9. SAFETY REQUIREMENTS .....	6
9.1 DIELECTRIC WITHSTAND .....	6
9.2 INSULATION RESISTANCE .....	6
10. ENVIRONMENT.....	6
10.1 OPERATING .....	6
10.2 SHIPPING AND STORAGE .....	6
11. MTBF .....	6
12. DIMENSION.....	6
13. PIN ASSIGNMENT .....	7

DESCRIPTION : 120W Flex Switching Power Supply	ISSUE 10-08-03	REV : B
--	----------------	---------

## 1. SCOPE

This specification describes the performance characteristics of a grounded, with active PFC function, single phase, 120 watts, 5 output level power supply with ATX form factor. In addition, it defines a worldwide safety requirement and electromagnetic compatibility requirement for FLEX ATX Power Supply.

## 2. INPUT REQUIREMENTS

### 2.1 INPUT VOLTAGE: FULL RANGE

Minimum---Maximum	(Nominal)
95 VAC ---264 VAC	(115/230VAC)

### 2.2 FREQUENCY

	Minimum---Maximum	(Nominal)
SINGLE PHASE	47HZ --- 63HZ	50/60HZ

### 2.3 INPUT CURRENT

2 Amps maximum (excluding output current) at 115 VAC input voltage

1 Amps maximum (excluding output current) at 230 VAC input voltage

### 2.4 INRUSH CURRENT

30 Amps peak max. for one half cycle of AC 115V (cold start)

60 Amps peak max. for one half cycle of AC 230V (cold start)

### 2.5 POWER SUPPLY EFFICIENCY

The power supply efficiency should not be less than 65% at the Maximum load of paragraph 3.1 with the AC input at any nominal low range of high range voltage specific in paragraph 2.1

Power Factor Correction >0.95 at Full Load

DESCRIPTION : 120W Flex Switching Power Supply

ISSUE

10-08-03

REV : B

### 3. OUTPUT REQUIREMENTS

#### 3.1 STATIC DC LOAD

NOMINAL VOLTAGE (DC)	LOAD CURRENT		REGULATION (%)
	MIN.	MAX.	
+3.3 Volt	0.5 A	7 A	+/- 5
+5 Volt	1 A	12 A	+/- 5
+12 Volt	0.5 A	5 A	+/- 5
-12 Volt	0 A	0.3 A	+/- 10
+5 Vsb	0 A	1.5 A	+/- 5

NOTE : Regulation shows the percentage of absolute value of nominal output voltage.

The total output should be 120W max.

+3.3V & +5V combined output should not exceed 70W.

#### 3.2 REMOTE ON/OFF CONTROL

As logic level is LOW : Output voltage is enabled.

As logic level is HIGH or floating : Output voltage is disabled.

Note: Logic high level: 3.5-5.25 V, Logic low level: 0-0.5 V

#### 3.3 RIPPLE AND NOISE

The ripple and noise of the outputs should be measured at the full load

Output Voltage	Ripple & Noise(p-p)
+3.3 Volts	50 mV
+5 Volts	60 mV
+12 Volts	120 mV
-12 Volts	120 mV
+5sb Volts	100 mV

NOTE : 20MHz bandwidth ripple & noise is measured by using 0.1uF C.C  
& 10uF/50V E.C bypassed at the output connector.

DESCRIPTION : 120W Flex Switching Power Supply	ISSUE 10-08-03	REV : B														
<p><b>3.4 HOLD UP TIME</b></p> <p>The power supply unit should maintain its proper output voltage within voltage specifications for at least 20 milliseconds after losing input power under the condition of 95 VAC input with full loading.</p> <p><b>4. OVERSHOOT AT TURN-ON/TURN-OFF</b></p> <p>Any overshoots during turn-on/turn-off should be less than +/-5% of the nominal output voltage values. No voltage of opposite polarity shall be present on any output during turn-on or turn-off.</p> <p><b>5. TEMPERATURE COEFFICIENT</b></p> <p>The temperature coefficient of all outputs is +/-0.05% per degree C maximum.</p> <p><b>6. PROTECTION</b></p> <p><b>6.1 OVER VOLTAGE PROTECTION</b></p> <p>If any over voltage fault occur, the power supply should latch off before any output exceeds its limit below.</p> <table border="1" data-bbox="240 1199 1032 1465"> <thead> <tr> <th rowspan="2">NOMINAL VOLTAGE ( V )</th> <th colspan="2">OVERVOLTAGE RANGE ( V )</th> </tr> <tr> <th>FROM</th> <th>TO</th> </tr> </thead> <tbody> <tr> <td>+3.3</td> <td>3.7</td> <td>4.1</td> </tr> <tr> <td>+5</td> <td>5.6</td> <td>6.5</td> </tr> <tr> <td>+12</td> <td>13.3</td> <td>14.3</td> </tr> </tbody> </table> <p>The power supply will not be automatically recovered after the over voltage fault being removed. A manual power reset is necessary.</p> <p><b>6.2 SHORT CIRCUIT PROTECTION</b></p> <p>Any short circuit occurred on any DC output should not cause any damage to the power supply, but will shut down the power supply. The power supply will not be automatically recovered after the short circuit being removed. A manual power reset is necessary.</p>			NOMINAL VOLTAGE ( V )	OVERVOLTAGE RANGE ( V )		FROM	TO	+3.3	3.7	4.1	+5	5.6	6.5	+12	13.3	14.3
NOMINAL VOLTAGE ( V )	OVERVOLTAGE RANGE ( V )															
	FROM	TO														
+3.3	3.7	4.1														
+5	5.6	6.5														
+12	13.3	14.3														

DESCRIPTION : 120W Flex Switching Power Supply	ISSUE DATE : 10-08-03	REV : B
--	-----------------------	---------

6.3 OVERLOAD PROTECTION

An over load protection will be effected when either of the loadings : +5V, +3.3V & +12V exceeds +110% to 160%. The power supply won't be automatically recovered after the overload being removed. It needs to do the input power reset.

7. RISE TIME

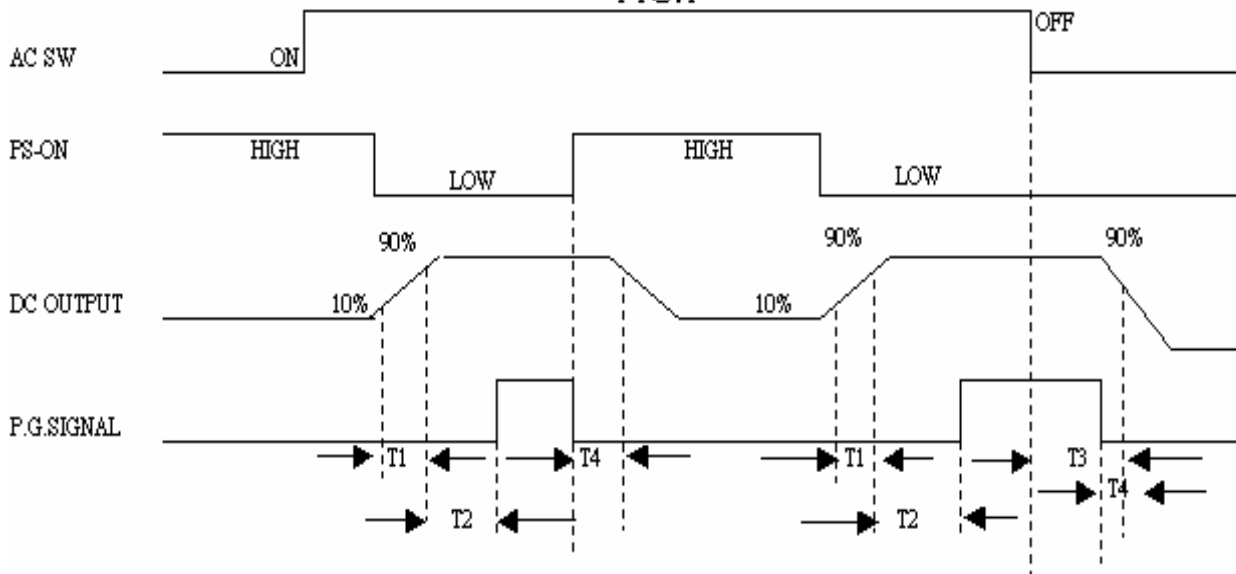
After turning on, less than 20 mS will be needed for the rise of +5V output voltage (measured from 10% point to 95% point on the waveform) to reach its peak.

8. POWER GOOD SIGNAL

After power-on with nominal AC input, there might be a turn-on delay ( between 100 mS to 500mS ) before the Power Good Signal is issued, which occurs before +5V output reaches its minimum sense level of +4.75V.

When turn-off, the Power Good Signal shall go to a lower level for at least 1 mS before +5V falls under the regulation limit described in paragraph 3.1

FIG.1



T1: RISE TIME < 20mS

T2: POWER GOOD DELAY TIME 100mS-500mS

T3: HOLD-UP TIME

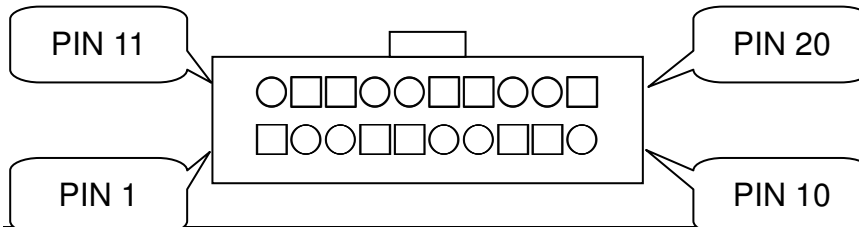
T4: POWER FAIL DELAY TIME > 1mS

DESCRIPTION : 120W Flex Switching Power Supply	ISSUE	10-08-03	REV : B
<p>9. SAFETY PROVIDED</p>			
<p>UL - UL1950, Third Edition</p>			
<p>CSA - CSA22.2</p>			
<p>TUV - EN60950</p>			
<p>CB - IEC950</p>			
<p>FCC - PART 15 Class “ B “</p>			
<p>CE - EN55022 class “ B “ EN61000-3-2 class “D”</p>			
<p>9.1 DIELECTRIC WITHSTAND</p>			
<p>--- Primary to Secondary : 3000 VAC for 60 Sec.</p>			
<p>--- Primary to Frame Ground : 1500 VAC for 60 Sec.</p>			
<p>9.2 INSULATION RESISTANCE</p>			
<p>--- Primary to Secondary : 20 Meg. Ohms Min. 500 VDC.</p>			
<p>--- Primary to Frame Ground : 20 Meg. Ohms Min. 500 VDC.</p>			
<p>--- Secondary to Frame Ground : 10 Meg. Ohms Min. 500 VDC.</p>			
<p>10. ENVIRONMENT</p>			
<p>10.1 OPERATING</p>			
<p>Temperature</p>	<p>0 to 40 degree centigrade</p>		
<p>Relative Humidity</p>	<p>10 to 90 percent, non-condensing</p>		
<p>10.2 SHIPPING AND STORAGE</p>			
<p>Temperature</p>	<p>-40 to +70 degree centigrade</p>		
<p>Relative Humidity</p>	<p>5 to 95 percent, non-condensing</p>		
<p>11. MTBF</p>			
<p>80,000 Hrs,</p>			
<p>12. DIMENSION</p>			
<p>Case dimension : 150(L) X 83(W) X 41.5(H)mm</p>			

DESCRIPTION : 120W Flex Switching Power Supply	ISSUE 10-08-03	REV : B
--	----------------	---------

13. PIN ASSIGNMENT

**Flex ATX Main Power Supply Connector**



Pin	Signal	Wire	
1	+3.3 VDC	Orange	20AWG
2	+3.3 VDC	Orange	20AWG
3	COM	Black	20AWG
4	+5 VDC	Red	20AWG
5	COM	Black	20AWG
6	+5 VDC	Red	20AWG
7	COM	Black	20AWG
8	POK	Gray	22AWG
9	+5 V <sub>SB</sub>	Purple	22AWG
10	+12 VDC	Yellow	20AWG
Pin	Signal	Wire	
11	+3.3V VDC	Orange	20AWG
12	-12 VDC	Blue	22AWG
13	COM	Black	20AWG
14	PS-ON	Green	22AWG
15	COM	Black	20AWG
16	COM	Black	20AWG
17	COM	Black	20AWG
18	NC	-	-
19	+5 VDC	Red	20AWG
20	+5 VDC	Red	20AWG