

# **SPECIFICATION**

**Model: R6300P-48 2U**

**REDUNDANT POWER SUPPLY**

**HOT-SWAPPABLE**

**300W ATX 1+1**

**DC -48V Input**



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

Specification subject to change without prior notice  
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## 1.0 General

This specification describes the physical, functional and electrical characteristics of a redundant 300+300 watts 6-output, fan-cooled switching power supplies.

### 1.1 Parameter Specification

Unless specification otherwise, all parameters must be met over the limits of temperature, load and input voltage.

## 2.0 Input Characteristics

Normal	Minimum	Maximum
-48V DC	-38V DC	-72V DC

### 2.1 Input Voltage:

-38VDC ~ -72VDC

### 2.2 Input Waveform

The unit is capable of operating with 10% distorted sine-wave input. It is measured by a distortion analyzer. Its flat-topping clipped 10% from the peak value of standard sine-wave.

### 2.3 Input current

11.0A/Max (One Power Supply)

### 2.4 In-Rush Current

CONDITION

No damage shall occur

LIMITS

### 2.5 Line Regulation

CONDTION

Full Load At +24V

LIMITS

1%

## 2.6 Dielectric Withstand Voltage

Primary to Secondary : 1800V ac / 50Hz for 1 Minute.

Primary to Safety Ground: 1800V ac / 50Hz for 1 Minute.

## 2.7 Insulation Resistance

Primary to Safety Ground : 500Vdc, 50Mohms Minimum.

## 3.0 Output Characteristics

### 3.1 DC Output Characteristics

To be met under all combinations of loading.

Output voltage	V1 +5V	V2 +3.3V	V3 +12V	V4 -5V	V5 -12V	Vsb +5V
Max Load	30A	22A	11A	1A	1A	1.5A
Min Load	2A	0.3A	0.5A	0A	0A	0A
Load Reg. %	+/-5%	+/-5%	+/-5%	+/-10%	+/-10%	+/-5%
Cross Reg. 60%	+/-5%	+/-5%	+/-5%	+/-10%	+/-10%	+/-5%
Line Reg. %	+/-1%	+/-1%	+/-1%	+/-1%	+/-1%	+/-1%
Ripple Reg. mV	50mV	50 mV	120 mV	100 mV	200 mV	100 mV
Noise Reg. mV	100mV	70mV	150mV	200mV	200mV	100mV

Note1: Noise bandwidth is from DC to 20MHz. Add 0.1uF/10uF Capacitor at output connector terminals for Ripple and Noise measurement.

Note2: Regulation tolerance shall include temperature change, warm up drift and dynamic load.

Note3: Combined total power from +3.3V and +5V rails shall not exceed 160W.

Note4: The total output power shall not exceed 300W.

### **3.2 Overshoot**

Any output overshoots at TURN-ON shall not exceed 10% (+5V/+12V output) and 10% (-5V/-12V output) of nominal voltage value.

### **3.3 Efficiency**

58% min. at full load test.

## **4.0 Time Sequence**

### **4.1 Hold-Up Time**

Unit shall continue to supply regulated DC outputs and power good signal for at least 16 Milliseconds at full load after a loss of DC input voltage which shall be represented by a short circuit at the DC input. See Figure2.

### **4.2 Power Good Signal**

When the power supply is turned off a minimum of 1.0 second and turned on, the power-good signal as described below will be generated.

The power supply shall provide a power-good signal to indicate proper operation of the power supply. This signal shall be a TTL compatible high level for normal operation; low level for fault conditions.

Power-good shall go to low level at least 1 ms before the +5V output voltage falls below the regulation limits described in 3.1 DC output Characteristics.

The operation point used as a reference for measuring the 1ms shall be minimum line voltage and maximum load.

All waveform transitions shall be smooth and monotony, i.e. no oscillations.

The power-good signal shall stay low (during POWER-ON) until all output voltages are delay greater than 100ms but less than 500ms. See Figure 2.

#### 4.2.1 Fan out

Power Good output circuit shall consist of an active pull down component and a passive pull up resistor.

Power-Good output voltage to be met under recommended loading conditions.

##### CONDITION

$I_{OH} = -140\mu\text{A}$  Min.

$I_{OL} = 2.8\text{mA}$  Min.

##### LIMITS

$V_{OH} = 2.7\text{V}$  Min.

$V_{OL} = 0.4\text{V}$  Min.

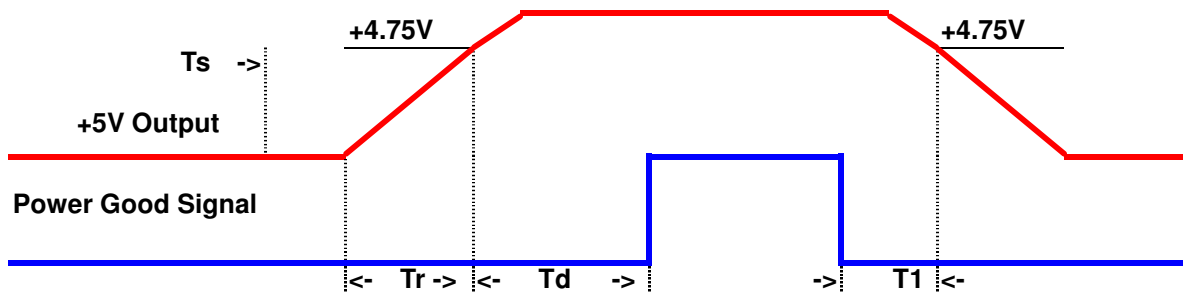
### 4.3 +5V Volt and Power Good Output Rise Time

#### 4.3.1 + 5 Volt Output Rise Time

The +5V output shall have a turn-on rise time of less than 100ms under all load conditions. Rise time is measured between 0.0 and 4.75V.

The +5V output shall not vary from a smooth curve by more than  $0.5V_{p-p}$  during turn-on and turn-off.

#### 4.3.2. Power Good Output Rise



Note:  $T_r \leq 100$  ms,  $T_1 \geq 1$  ms,  $T_d = 100 - 500$  ms.

### 4.4 Start-Up timing

All output shall be stable and in regulation in less than 2.0 second under all load and line condition. Start-up time is measured between the AC turn-on and 4.75V on +5V See Figure 2.

#### 4.5 Dynamic Load Response Time

Transient response is measured by switching the output load from 80 to 100 to 80 percent of its full value at a frequency of 100Hz and 50% duty cycle, step load change is 0.5A/us, The magnitude Vr is less than +/-5% of +5V and +12V output, the recovery time Tr is less than 1mS. See Figure3.

#### 5.0 Protection

##### 5.1 Over Power Protection

This power supply shut down all DC output when outputs are overloaded to the limit. The power supply logic shall latch into the off state requiring a power on cycle to be performed by the operator. The power supply will turn-off within 20ms of the occurrence of the overload.

##### CONDITION

Nominal input

##### LIMITS

When output power is over to 110% ~ 150%

##### 5.2 Over Voltage Protection

The power supply shall latch off if the +5VDC or +12VDC or +3.3VDC maximum voltage exceeds the limits shown. The AC must be recycled to restart.

##### 5.2.1 + 5VDC

##### CONDITION

All operating

##### LIMITS

Max.6.8Vdc

##### 5.2.2 +3.3VDC

##### CONDITION

All operating

##### LIMITS

Max.4.50Vdc

##### 5.2.3 +12VDC

##### CONDITION

All operating

##### LIMITS

Max.15Vdc



### **5.3 Short Circuit Protection**

A short circuit placed on any output shall cause no damage to this unit.  
The power supply shall be shut down.

### **5.4 No Load Operation**

When primary power is applied, with no load on any output voltage, no damage or hazardous condition shall occur. In such a case, the power supply shall power up and stabilize.

## **6.0 System Interface Signal**

## **7.0 Regulatory Agency Certification**

### **7.1 RFI/EMI Standards**

The power supply, When installed in system, shall comply with the following Radiated and conducted emissions standards:

- (1) FCC part 15, Subpart B, Class A computing device.
- (2) CISPR22 (EN55022) Class A.

These limits shall be met with a margin of at less 6dB at all applicable frequencies. The units shall comply with the above limits when tested under all normal working conditions and with all interface cables connected.

### **7.2 Safety Standard**

The power supply shall be certified with the following safety standards,

- (1) UL 1950 (Information Processing / Business equipment).
- (2) cUL
- (3) TUV Certification to IEC950 1 edition with Amendment#1, #2, and EN60950
- (4) CE & Test Report.

## **8.0 Reliability**

### **8.1 Mean Time Between Failure(MTBF)**

Using MIL 217E the calculated MTBF=100,000 hours at 25°C 75% loading.

Note: DC input terminals are located on the back plane

