

Revision

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MODEL NO.Q1L-5060V

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1.0 Scope

This specification defines the performance characteristics of a grounded, AC input, 60 watts, 5 output level open frame power supply. This specification also defines world wide safety requirements and manufactures process test requirements.

2.0 Input requirements

2.1 Voltage (sinusoidal) : 90~264 VAC full range.

2.2 Frequency

The input frequency range will be 47hz~63hz.

2.3 Steady-state current

1.5A/1A at any low/high range input voltage.

2.4 Inrush current

35/70Amps @ 115/230 VAC. (at 25 degrees ambient cold start)

3.0 Output requirements

3.1 DC load requirements

Normal Output voltage	Load current(A)		Regulation tolerance	
	Min.	Max.	Max.	Min.
+5V	0A	7A	+5%	-5%
+12V	0.1A	5A	+5%	-5%
-12V	0A	0.3A	+10%	-10%
+3.3V	0A	6A	+5%	-5%
+5Vsb	0A	4A	+5%	-5%

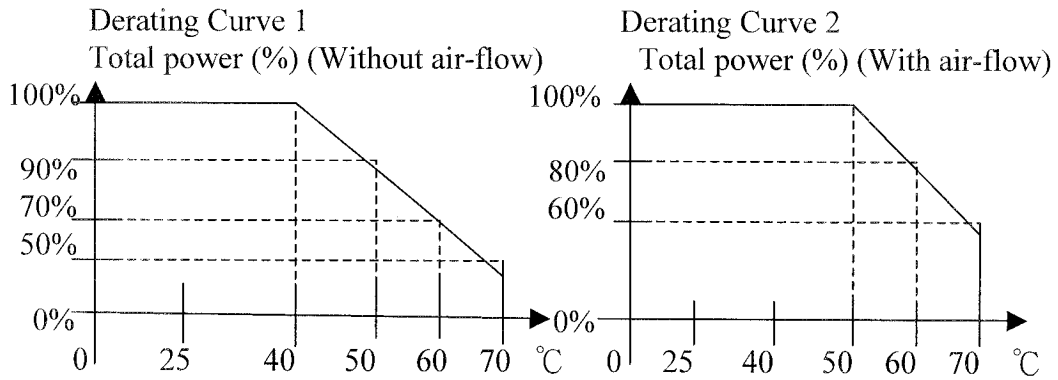
3.1.1 Without Air-flow: (See derating curve 1)

- (1) +5V and +3.3V total output max : 40W
- (2) Maximum Output Power : 60W

3.1.2 External Forced Air Cooling: (See derating curve 2)

- (1) FAN CFM : 8
- (2) FAN Distance from Unit : 2 cm~10 cm
- (3) FAN Location : AC input side
- (4) Air-flow Direction : toward inside
- (5) +3.3V and +5V Maximum Power : 40W
- (6) Maximum Output Power : 60W

3.3.3 Power Output Derating Curve



3.2 Regulation

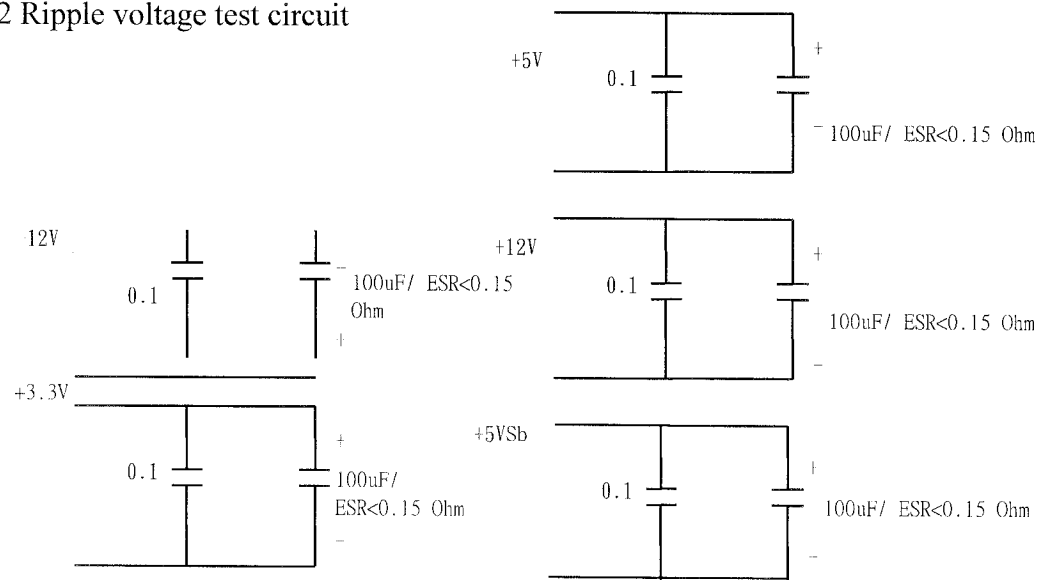
Output DC voltage	Line regulation
+5V	±50mV
+12V	±120mV
-12V	±120mV
+3.3V	±50mV
+5Vsb	±50mV

3.3 Ripple and noise

3.3.1 Specification

+5V	50mV (P-P)
+12V	120mV (P-P)
-12V	120mV (P-P)
+3.3V	50mV (P-P)
+5Vsb	50mV (P-P)

3.3.2 Ripple voltage test circuit



3.4 Overshoot

Any overshoot at turn on or turn off shall be less 10% of the nominal voltage value , all output shall be within the regulation limit of section 3.2 before issuing the power good signal of section 6.0.

3.5 Efficiency

Power supply efficiency typical 80%(+/-2%) at 115Vin .

4.0 Protection

4.1 Input (primary)

The input power line must have an over power protection device in accordance with safety requirement of section 8.0

4.2 Output (secondary)

4.2.1 Over power protection

The power supply shall provide over power protection on the power supply latches all DC output into a shutdown state. Over power of this type shall cause no damage to power supply , after over load is removed and a power on/off cycle is initiated , the power supply will restart.

Trip point total power min. 110% , max. 160%.

4.2.2 Over voltage protection

If an over voltage fault occurs , the power supply will latch all DC output into a shutdown state.

	Min	Typical	Max
+3.3V	3.6V	4.1V	4.3V
+5V	5.6V	6.1V	6.5V
+12V	13.2V	14.3V	15.0V

4.2.3 Short circuit

A: A short circuit placed on any DC output to DC return shall cause no damage.

B: The power supply shall be latched in case any short circuit is taken place at +5V,+3.3V,+12V ,-12Voutput.

C: The power supply shall be auto-recovered in case any short circuit is taken place at +5VSB.

5.0 Power supply sequencing

5.1 Power on (see fig.1)

5.2 Hold up time

When AC source shutdown DC output must be maintain 16msec(typical) in regulation limit at normal input voltage AC115V@80% of full load.

5.3 Power off sequence (see fig. 1)

6.0 Signal requirements

6.1 Power good signal (see fig. 1)

The power supply shall provide a "power good" signal to reset system logic , indicate proper operation of the power supply.

At power on , the power good signal shall have a turn on delay of at least 100ms but not greater than 550ms after the output voltages have reached their respective minimum sense levels.

7.0 Environment

7.1 Temperature

Operating temperature:	0 to 70 degrees centigrade(90~264 VAC) Please refer to PAGE 6 Power output derating curve.
Non-Operating temperature:	-20 to 80 degrees centigrade

7.2 Humidity

Operating humidity 20% to 80%

Non-operating humidity 10% to 90%

7.3 Insulation resistance

Primary to secondary : 100 meg. Ohm min. 500 VDC

Primary to FG : 100 meg. Ohm min. 500VDC

7.4 Dielectric withstanding voltage

Primary to secondary : 3K VAC for 60 Second.

Primary to FG : 1500 VAC for 60 Second.

7.5 Leakage current

3.5 mA max. at nominal voltage 264VAC

8.0 Safety

8.1 Underwriters laboratory (UL).

The power supply designed to meet UL 60950.

8.2 Canadian standards association (CUL)

The power supply designed to meet CSA C22.2 No. 60950.

8.3 TUV

The power supply shall be designed to meet TUV EN-60950.

8.4 CCC Standards

The power supply shall be designed to meet GB9254-2008, GB4943-2001, GB17625.1-2003.

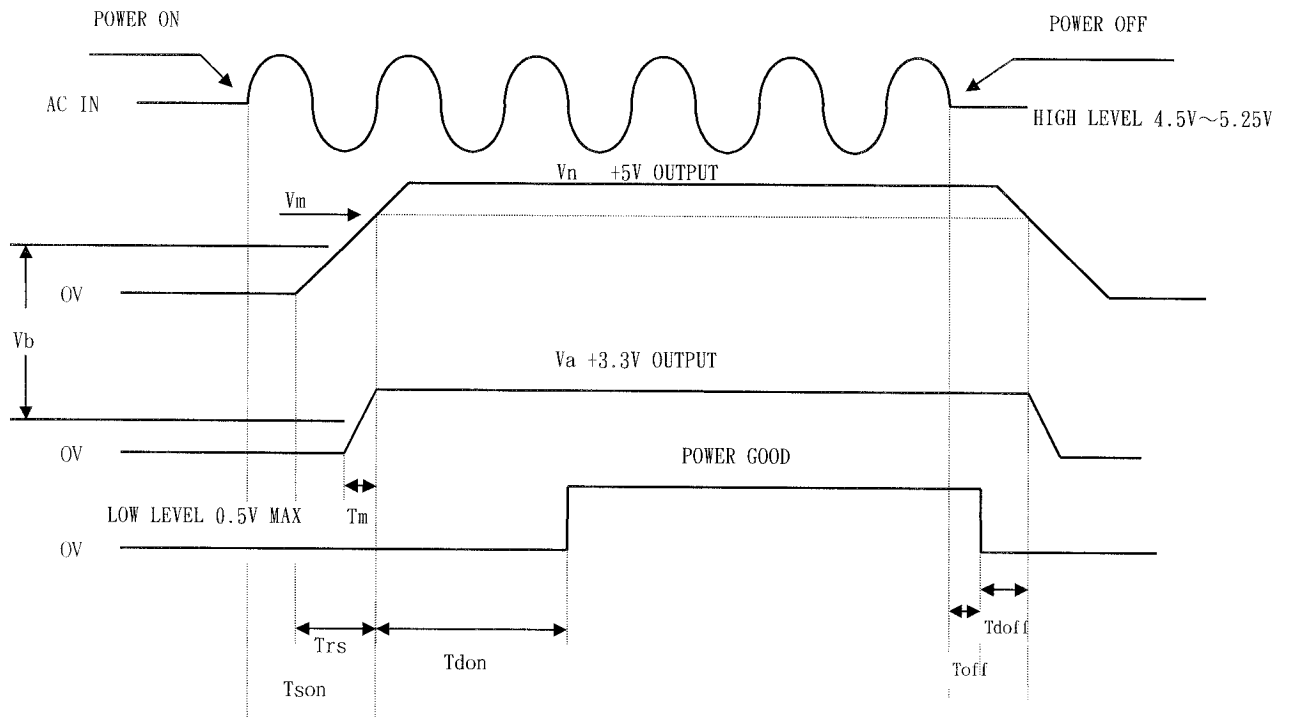
9.0 Reliability

9.1 Burn in

All products shipped to customer must be processed by burn-in. The burn-in shall be performed for 1 hour at full load.

10.0 Mechanical requirements

10.1 Physical dimension : 176mm(D) × 39mm(W) × 39mm(H)



Vn	Nominal voltages +5V
Vm	Minimum voltages +4.5V
Va	Nominal voltages +3.3V
Vb	+2.0V max
Tson	Switch on time (1000 ms. max.)
Trs	+5V rise time (50ms. max.)
Tdon	Delay turn-on (100ms. < Tdon < 550ms.)
Tdoff	Delay turn-off (1 ms. min.) at 115V
Toff	Hold up time (16ms Min) at 115V@80% of full load

《Figure 1》