深圳星维科技有限公司

SHENZHEN STARWELL TECHNOLOGY CO., LTD.

SPECIFICATION

DESIGNED NO: Multi USB Power Center

MODEL NO: TX-P370QD-Gan

REVISION: V1.0

NO.OF PAGE： 8

DATE : 2024-01-03

DESCRIBED	CHECKED	APPROVED	REV.
			1.0

SHENZHEN STARWELL TECHNOLGY CO., LTD.

ADD：Building C, Longbang Kexing Science Park, Guangming District, Matian Street, Guangming District, Shenzhen.

Website： www.starwellpower.com

1.0 INPUT REQUIREMENTS

1.1 VOLTAGE:

The range of input voltage is from ***90Vac*** to ***240Vac.***

1.2 FREQUENCY:

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

1.3 CURRENT:

The maximum input current is ***1.6A***.

1.4 INRUSH CURRENT:

The inrush current will not exceed ***40A*** at 240Vac input, cold start, 25℃；

1.5 Input Current Leakage:

when voltage is 240VAC，leak current is less than 500uA;

1.6 Power Supply Efficiency:

The efficiency (watts out / watts in) is more than **89%** typical while measuring at nominal line and rated load.

1.7 NO LOAD POWER:

The power supply loss at no load operation shall be less than **0.25W** at any input voltage.

1.8 Turn on delay ：

During turn on and turn off, no voltage shall exceed its nominal voltage by more than 10% and no output will change its polarity with respect to its return line. All output shall reach their steady state values within **30 seconds** of turn on.

2.0 OUTPUT REQUIREMENTS

2.1 USB Static load:

Load method 1: Single output static load (70W max).

Output#		Voltage	Minimum load	Maximum load
Type-C1	PD	+5Vdc	0A	3A
		+9Vdc	0A	3A
		+12Vdc	0A	3A
		+15Vdc	0A	3A
		+20.6Vdc	0A	3.4A
		PPS +3.3-11Vdc	0A	5A
		PPS +3.3-20Vdc	0A	3.5A

Output#		Voltage	Minimum load	Maximum load
Type-C2	PD	+5Vdc	0A	3A
		+9Vdc	0A	3A
		+12Vdc	0A	3A
		+15Vdc	0A	3A
		+20.6Vdc	0A	3.4A
		PPS +3.3-11V	0A	5A

Output#		Voltage	Minimum load	Maximum load
USB -A	QC3.0	+5Vdc	0A	3A
		+9Vdc	0A	2A
		+12Vdc	0A	1.5A
		SCP 3.3-11V	0A	2A

Table 2.1.1

Load method 2: Dual port output static load (70W max)

Output#		Voltage	Minimum load	Maximum load
Type-C1	PD	+5Vdc	0A	3A
		+9Vdc	0A	3A
		+12Vdc	0A	3A
		+15Vdc	0A	3A
		+20Vdc	0A	2.25A
		PPS+3.3-11Vdc	0A	5A
		PPS+3.3-20Vdc	0A	2.25A
Type-C2	PD	+5Vdc	0A	3A
		+9Vdc	0A	2.22A
		+12Vdc	0A	1.67A

Output#		Voltage	Minimum load	Maximum load
Type-C1	PD	+5Vdc	0A	3A
		+9Vdc	0A	3A
		+12Vdc	0A	3A
		+15Vdc	0A	3A
		+20Vdc	0A	2.25A
		PPS+3.3-11Vdc	0A	5A
		PPS+3.3-20Vdc	0A	2.25A
USB-A	QC3.0	+5Vdc	0A	3A
		+9Vdc	0A	2A
		+12Vdc	0A	1.5A
		SCP 3.3-11V	0A	2A

Output#		Voltage	Minimum load	Maximum load
Type-C2	PD＆QC	+5Vdc	0A	3A
USB-A				

Table 2.1.2

Load method 3: Three port output static load (70W max)

Output#		Voltage	Minimum load	Maximum load
Type-C1	PD	+5Vdc	0A	3A
		+9Vdc	0A	3A
		+12Vdc	0A	3A
		+15Vdc	0A	3A
		+20Vdc	0A	2.25A
		PPS+3.3-11Vdc	0A	5A
		PPS+3.3-20Vdc	0A	2.25A
Type-C1 +USB-A		+5Vdc	0A	3A

Table 2.1.3

2.2 Output voltage:

The output voltage shall be statically regulated for all combinations of load, line and environment including cross regulation as shown.

Output#		Voltage/Current	Tolerance
TYPE-C1	PD	+5V/0A	+0.25V/-0.25V
		+5V/3A	+0.25V/-0.25V
		+9V/0A	+0.45V/-0.45V
		+9V/3A	+0.45V/-0.45V
		+12V/0A	+0.6V/-0.6V
		+12V/3A	+0.6V/-0.6V
		+15V/0A	+0.75V/-0.75V
		+15V/3A	+0.75V/-0.75V
		+20.6V/0A	+1.0V/-1.0V
		+20.6V/3.4A	+1.0V/-1.0V
TYPE-C2	PD	+5V/0A	+0.25V/-0.25V
		+5V/3A	+0.25V/-0.25V
		+9V/0A	+0.45V/-0.45V
		+9V/3A	+0.45V/-0.45V
		+12V/0A	+0.6V/-0.6V
		+12V/3A	+0.6V/-0.6V
		+15V/0A	+0.75V/-0.75V
		+15V/3A	+0.75V/-0.75V
		+20.6V/0A	+1.0V/-1.0V
		+20.6V/3.4A	+1.0V/-1.0V

USB -A	QC3.0	+3.6V—+6V/0A	+0.25V/-0.25V
		+3.6V—+6V/3A	+0.25V/-0.25V
		+6V—+9V/0A	+0.45V/-0.45V
		+6V—+9V/2A	+0.45V/-0.45V
		+9V—+12V/0A	+0.6V/-0.6V
		+9V—+12V/1.5A	+0.6V/-0.6V

Table 2.2.1

2.3 Output Ripple and Noise:

Output#		Voltage	Maximum ripple & Noise
Type-C1	PD	+5V/3Amax	80mVp-p (Ripple)
			50mVp-p (Noise)
		+9V/3A max	120mVp-p (Ripple)
			30mVp-p (Noise)
		+12V/3Amax	150mVp-p (Ripple)
			30mVp-p (Noise)
		+15V/3Amax	150mVp-p (Ripple)
			50mVp-p (Noise)
		+20.6V/3.4A max	230mVp-p (Ripple)
			50mVp-p (Noise)
Type-C2	PD	+5V/3Amax	80mVp-p (Ripple)
			50mVp-p (Noise)
		+9V/3A max	120mVp-p (Ripple)
			30mVp-p (Noise)
		+12V/3Amax	150mVp-p (Ripple)
			30mVp-p (Noise)
		+15V/3Amax	150mVp-p (Ripple)
			50mVp-p (Noise)
		+20.6V/3.4A max	230mVp-p (Ripple)
			50mVp-p (Noise)
USB -A	QC3.0	+3.6V—+6V/3Amax	60mVp-p (Ripple)
			30mVp-p (Noise)
		+6V—+9V/2Amax	70mVp-p (Ripple)
			20mVp-p (Noise)
		+9V—+12V/1.5Amax	60mVp-p (Ripple)
			30mVp-p (Noise)

Table 2.3.1

Measurement is done by 20MHz bandwidth oscilloscope and terminated each output with a 10uF capacitor and a 0.1uF capacitor.

2.4 Temperature coefficient:

±0.05%/℃ typical on all output.

3.0 PROTECTION REQUIREMENT:

3.1 Short circuit protection:

No damage to the power supply shall be sustained when operating into a short circuit condition for an indefinite period of time. The power supply shall be self – recovering when fault condition removed.

3.2 Over Current protection:

The power supply shall provide over current protection on output. Maximum current inception point of output shall be Hiccup mode.

3.3 Over voltage protection:

The power supply shall provide over voltage protection on output. Maximum voltage inception point of output shall be Hiccup mode.

4.0 ENVIRONMENTAL CONDITIIONS

4.1 Operating

The power supply shall be capable of operating continuously in any mode without performance deterioration in the following environmental conditions.

4.1.1 Ambient Temperature: 0-40℃

4.1.2 Relative Humidity: 20% ～ 90%

4.1.3 Vibration: 1.0mm, 10 –25Hz, 15 minutes per cycle for each axis (X, Y, Z)

4.2 Non - operating:

The power supply shall be capable of standing the following environmental conditions extended periods of time, without sustaining electrical or mechanical damage and subsequent operational deficiencies:

4.2.1 Ambient Temperature:-20℃ ~ 70℃

4.2.2 Relative Humidity: 20% ~ 90%

4.2.3 Vibration: 1.0mm, 10 –25Hz, 15 minutes per cycle for each axis (X, Y, Z)

5.0 RELIABILITY AND QUALITY CONTROL

5.1 MTBF

When the power supply is under normal operation within the limits of this specification the MTBF shall be at least ***20,000*** hours at 25℃.

5.2 Burn-In

The power supply will be burn–in for a minimum **4** hours at room temperature under full load.

5.3 Temperature Raising

Input voltage is **AC 100V +/-10%, AC 240V +/-10%**; output power is **70W (max)**
Test the power surface temperature raising. Need pass the following requirement:

5.4 Loading Consecutive Operation

When the unit is left with input voltage is **AC 100V +/-10%; AC240V +/-10%**. And Output power loading**70w(max)**. No special temperature raising and need pass item 2.0 specification.

6.0 SAFETY STANDARD

6.1 EMC standards

The power supply meets the radiated and conducted emission requirements for **EN55022 Class A[Load 70W(max)] & FCC Part 15 CLASS A[Load 70W(max)].**

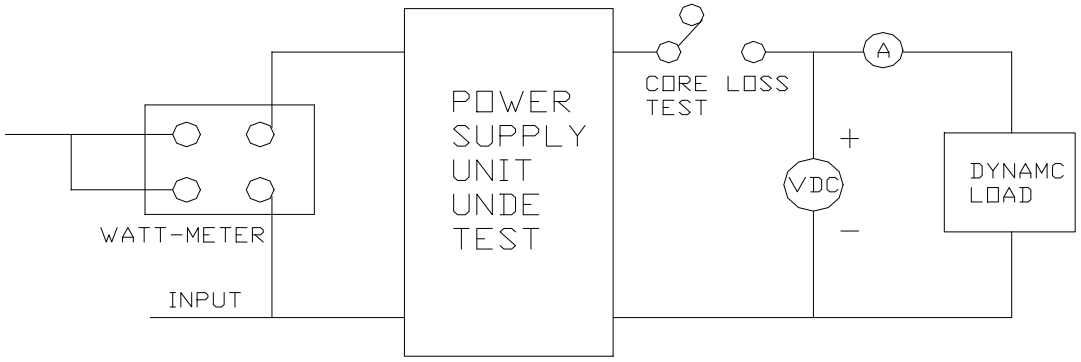
6.2 Insulation resistance

Input to output: minimum **100MΩ** at **500 VDC**.

6.3 Dielectric Strength (Hi-Pot)

Primary to Secondary: **AC 3000V, ≦10 mA, 1 minute** for type test, **3 seconds** for production test.

7.0 Test Circuit



8.0 MECHANICAL

8.1 Plastic enclosure: Fire retardant plastic.

8.2 Physical Size:

US:60*60*29mm(L*W*H)

EU:60*60*29mm(L*W*H)

UK:60*60*29mm(L*W*H)

8.3 The weight of the power supply: Approx 120 g.

9.0 HOUSING ASSEMBLY DRAWING