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SPECIFICATION

ESD14022240

Released Date:2015/12/25-18:13:29

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SPECIFICATION

65 Watts Power Supply
MODEL: FSP065-RECN2

AUTHOR	CHECKED	APPROVED	REV.
Liml	Shuaiyh	Tony	02

Electrical Specification

History

Version	Description	Version Date	Author	Checked	Approved
01	Original release	APR.14.14	Liml	Shuaiyh	Tony
02	修改 Average Efficiency 87%為 88%，Complies with DOE Level VI	Sep.01.14	Liml	Shuaiyh	Tony

Electrical Specification

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Electrical Specification

1. SCOPE

This specification describes a 65W power supplies intended for use in ITE applications. The AC input operates over a wide range that allows worldwide operation with no manual selection required.

1.1 Cooling

Free air convection is sufficient to meet the Rating specifications

2. ELECTRICAL SPECIFICATIONS

2.1 Input

Parameter	Test Conditions	Min	Typ	Max	Units
Input Voltage Range	Wide Range.	90	115-230	264	Vac
Input Frequency Range		47	50-60	63	Hz
Efficiency	At typical voltage Full Load at least 10 minutes	85	-	-	%
No Load Power Consumption	At typical voltage	-	-	0.1	Watts
Input Power Factor	At typical voltage	-	-	-	-
Electric Strength	Hi-Pot AC input and DC output	-	-	3000	Vac
Inrush Current	Vin = 115 Vac / 230 Vac (25℃ Ambient, Cold Start).	Shall be less than the rating of adapter critical component (including rectifiers, fuse and current limiting device)			
Average Efficiency	(1) Warm Up The UUT shall be measured after operated at 100% of rated current output for at least 30 minutes. (2) Tested sequence Efficiency tests shall be conducted in sequence: ① 100% maximum load ② 75% maximum load ③ 50% maximum load ④ 25% maximum load	Average efficiency of 25%, 50%, 75% and 100% load shall be more than 88% tested at 115Vac /60Hz and 230Vac/50Hz.			

Electrical Specification

2.2 Output :

Parameter	Test Conditions	Min	Typ	Max	Units
Output Voltage Rating	±5% Initial tolerance	18.05	19	19.95	Vdc
Output Power Rating	At typical voltage; 0ºC to 40ºC	-	65	-	Watts
Average Output Current	At typical voltage; 0ºC to 40ºC	0	-	3.42	A
Output Voltage Line Regulation	Under AC Input Operating Range	-	-	1	%
Output Voltage Load Regulation	No Load to Rated Load	-	-	5	%
Ripple and Noise	47uF/35V E-Cap and 0.1uF Ceramic Cap on output, 20MHz BW	-	-	300	mV Pk to Pk
Transient Load Response	Dynamic load condition	18.05	-	19.95	Vdc

I1(A)	I2(A)	Tmax	di/dt(mA/us)
0	0.855	10msec	≥50
0.855	1.71	10msec	≥50
1.71	2.565	10msec	≥50
2.565	3.42	10msec	≥50

Turn-On Delay	115 Vac, 60Hz	-	-	3	sec

Electrical Specification

Parameter	Test Conditions	Min	Typ	Max	Units
Over Voltage Protection	Output voltage limit range Latch off	21	-	25	Vdc
Over Current Protection	Output current limit 90Vac~264Vac Auto-recovery	-	-	5.5	A
Over Temperature Protection	No damage Latch off	-	-	-	-
Short Circuit Protection	No damage Auto-recovery	-	-	-	-
Overshoot	At power-up or power-down	-	-	10	%
Holdup Time	Rated Load, 115Vac/60Hz, 19V ±10%	5	-	-	mS
Rise Time	10%~90% of output voltage	2	-	50	mS

2.3 Short Circuit Protection

The power supply has protection at short circuits conditions.

2.3.1 Short Circuit Recovery

The power supply output automatically recovers when the short circuit condition is removed.

2.4 Over Current Protection

The power supply has protection at over current conditions.

2.4.1 Over Current Recovery

The OCP shall limit the output current to 5.5 amperes by monotonically shutting down all voltage rails in the event of an over current condition. Auto recovery is required. The power supply shall be able to survive an OCP condition for an indefinite period of time without damage.

2.5 Output Voltage Protection Limit

When the output is outside the voltage output limit range, the power supply latches off and remains shutdown. The AC input must be cycled to restart. The power supply shall be able to survive an OVP condition for an indefinite period of time without damage.

2.6 Over Temperature Protection

A temperature sensor and associated protection circuitry are installed inside the AC adapter to detect the case internal temperature and provide protection against damage to the AC adapter. If the power supply shuts down due to over temperature, the power supply latches off and remains shutdown. The AC input must be cycled to restart.

2.7 System Capacitive Load

The system load capacitance is 2200uF. And shall be capable of start up with a 2200uF load.

3. ENVIRONMENTAL

3.1 Temperatures and Humidity

Parameter	Test Conditions	Min	Typ	Max	Units
Temperature	Operating Range:	0	-	+40	ºC
	Storage Range:	-20	-	+75	ºC
Cooling	Free Air Convection	N/A	N/A	N/A	-
Humidity	Operating Range:	10	-	90	%
	Storage Range:	5	-	95	%

3.2 Altitude

The Power Supply operates up to an altitude of 5000m above sea level.

3.3 Impact

The Power Supply withstands a drop from a height of 36 inches onto a concrete floor across the operating ranges of temperature and humidity. The Power Supply remains functional and the case will not crack or break. The number of units per drop = 1.

3.4 Shock and Vibration

Operation vibration shall be 0.5G`S peak, 10-60Hz, 3Axes, after test no abnormally to be noted. Non operation vibration with shipping container shall be 2G`S peak, 7-50Hz,4G`S peak 50-500Hz,after test no abnormally to be found.

3.5 Drop-Test

Test height 100cm/6 faces, after drop test no function abnormally to be noted.

4. EMC

4.1 Electrostatic Discharge (ESD)

The Power Supply meets EN61000–4-2, Level 4 requirements.

4.2 Electrical Fast Transient Test (EFT)

The Power Supply meets IEC 61000–4-4/1995, Level 2 requirements.

4.3 Surge Immunity Requirement

The Power Supply meets IEC 61000–4-5, Level 3 requirements.

4.4 Dielectric Withstand Voltage (Hi-Pot)

Between AC input and DC output applied 3000Vac/ test time 1 minute.

4.5. ELECTROMAGNETIC COMPATIBILITY

The Power Supply meets EN55022/CISPR 22 (Class B),
FCC Part 15 (Class-B) with 6dB margin.

5. REGULATORY AGENCY APPROVALS

5.1 Certifications

Certification is to IEC60950 (Latest version).

5.2 L.P.S

The power adapter must be a “Limited Power Source”, with respect to IEC 60950 for movable equipment.

5.3 Energy Efficiency Rating

Complies with DOE Level VI

5.4 Leakage Current:

The AC leakage current is less than 100uA when adapter is connected to 264Vac/60Hz.

5.5 Insulation Resistance

The insulation resistance shall be not less than 20 M Ohm after application of 500VDC for 1minute.

6. RELIABILITY

6.1 Mean Time Between Failure (MTBF)

The MTBF is calculated to be not less than 100,000 hours with 90% confidence at 25 ºC.

6.2 Burn-In

The power supply is burned in at 40ºC ambient temperature under nominal input and full rated load.

7. MECHANICAL

7.1 Case Dimensions

L : 108.3mm
W: 46.3mm
H: 30.0mm

7.2 AC Socket

Class II,C8 inlet.

7.3 DC Cable

Cable Length:1500mm,18AWG, DC PLUG:5.5(OD)*2.5(ID)*11.0(Length),90°

7.4 RoHS & WEEE Directive Compliant

The Power Supply is compliant with the RoHS and WEEE directives.

