Excellent Power

SPECIFICATION FOR
60 WATTS SWITCHING CAR ADAPTER
MODEL NO. : ***BSD-60-119***

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1.0 SCOPE

This document defines the electrical, mechanical and environmental specifications of a ***12VDC~32VDC*** input, ***single*** output, ***60Watts*** switching power supply, Model No. ***BSD-60-119***, or so call "***60W car adapter***" for ***industry*** computer equipment application.

2.0 INPUT REQUIREMENTS

2.1 Input Voltage

The range of input voltage is from ***12.0V-16DC*** and ***19V-32VDC***.

2.2 Input Frequency

The input frequency is ***DC***.

2.3 Input Current

The maximum input current is is ***6.5 A max.*** at ***12.0Vdc*** for ***BSD-60-119***.

2.4 Inrush Currrent

The inrush current ***shall not damage*** of any relative components.

3.0 OUTPUT REQUIREMENTS

3.1 Static Load:

Min. Load : ***0A***
Max. Load : ***3.16A***

3.2 Output Voltage :

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

Output Voltage : ***+19Vdc***

Output Voltage Range : ***18.05Vdc ~ 19.95Vdc***

Tolerance : ***+-5%***

3.3 Ripple and Noise

The ripple and noise for all +19Vdc output model is ***200mVp-p*** max. Measuring is done by 20MHz bandwidth oscilloscope and terminated each output with a 10uF capacitor and a 0.1uF capacitor.

3.4 Temperature Coefficient:

±0.05%/℃ typical.

3.5 Turn on / off 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 ***50mS*** of turn on.

3.6 Efficiency:

The efficiency (watts out/ watts in) is higher than ***80%*** at nominal ***12-32Vdc*** line and rated load condition.

3.7 Transient Response and Deviation:

The power supply will meet all specifications and maintain output voltage regulation within ***5.0%*** of steady state within ***50mS*** with up to a current change of ***100%*** of maximum current to ***0%*** load.

3.8 LED Indicator:

The power supply is designed with ***green LED*** indicator to indicate the power output in its normal condition.

4.0 PROTECTION REQUIREMENT:

4.1 Output Over Voltage protection:

The power supply shall shutdown and no damage when output voltage reaches to its over voltage protection trigger point of ***22.0-26.0V***. It requires dis-connect the input cable and plug again after ***3 seconds*** when fault condition dis-appeared.

4.2 Output Over Current protection:

The power supply shall shut down and no damage when sustained to any load current when operating at any line condition, for an indefinite period of

time. The over current trigger point is between ***3.6-5.0A.*** It requires dis-connect the input cable and plug again after ***3 seconds*** when the fault condition dis-appeared.

4.3 Output Short Circuit Protection:

The power supply shall shut down and no damage when operating any output under any line condition, into a ***short circuit*** condition for an indefinite period of time. It requires dis-connect of input cable and plug again after ***3 seconds*** when fault condition dis-appeared.

4.4 Input Over Voltage Protection:

The power supply shall be shut down and no damage when input voltage exceed its operating range and trigger the protection circuit at ***33.0-36.0Vdc***. It requires dis-connect the input cable and plug again after ***3 seconds*** when the fault condtion dis-appeared.

4.5 Input Under Voltage Protection:

The power supply shall be shut down and no damage when input voltage below its operating range and trigger the protection circuit at ***10.0-11.0Vdc***. It will ***auto-recovery*** to normal operation when the fault condition dis-appeared.

5.0 ENVIRONMENTAL CONDITIIONS

5.1 Operating

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

5.1.1 Ambient Temperature: ***0℃ 45℃***

5.1.2 Relative Humidity: ***20% 80%***

5.1.3 Altitude : ***Sea level to 10,000 feet***.

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

5.2 Non - operating:

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

5.2.1 Ambient Temperature: ***-20℃ ~ 70℃***

5.2.2 Relative Humidity: **5% ~ 95%**

5.2.3 Altitude : ***Sea level to 10,000 feet***

5.2.4 Vibration and Shock:

*The power supply shall be designed to with stand normal transportation vibration per **MIL–STD-810D**, method 514 and procedures X, as it is mounted in the chassis assembly and packed for shipping.*

6.0 INTERNATIONAL STANDARDS

6.1 EMI standards

The power supply meets the ***radiated*** and ***conducted*** emission requirements for ***FCC part 15 CLASS B***, ***EN55022 CLASS B.***

6.2 EMS standards

6.2.1 EN61000-4-2 Electrostatic Discharge (ESD)
*Static – discharge test by contract or air should be conducted with Static – discharge teeter, energy storage capacitance of 150pF, and discharge resistance of 330Ω. **+-15KV** air discharge, **+-8KV** contact discharge, Performance Criterion B.*

6.2.2 EN61000-4-3 RADIATED ELECTROMAGNETIC FIELDS(RS)
*Radio- frequency Electromagnetic Field Susceptibility Test, RS, **80-1000MHz, 3Vm, 80%AM(1KHz)**, Performance Criterion A.*

7.0 RELIABILITY AND QUALITY CONTROL

7.1 MTBF

When the supply is operation within any of the limits of this specification the MTBF shall be at least ***100,000*** hours at 25℃ (MIL-STD-217F).

7.2 Production Test

The power supply will be performed ***100%*** electrical performance and component and assembly visual test and inspection to gurantee all unit shipped out are meet with this specification.

7.3 Component derating

Semiconductor junction temperatures shall not exceed the manufactures maximum thermal rating ***with enough margins*** to meet the MTBF requirements.

8.0 MECHANICAL

8.1 Case Dimension :

***120X62X35mm*.**

8.2 Input Cable :

Cigratte plug UL1571, 16AWG, black color 1M length and 6.5/1.0 DC plug to car adapter.

8.3 Output Cable :

1.2M FT1/UL1185 16AWG 80℃ black RoHS cable with 5.5/2.5 11mm DC plug length.

Inner plug : +19V

Outer plug : GND