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SDS012-1010

Portable Battery Charger

Important: This document contains information provided by Operating Technical Electronics, Inc.

Scope: This specification defines the performance characteristics of a 12 volt 1.25A portable battery charger with float mode charging. The specification also defines world wide safety and operating requirements.

- Input Requirements
- Output Requirements
- M.T.B.F.
- Protection
- Electromagnetic Requirements
- Safety Requirements
- Environment
- Dimensions



INPUT REQUIREMENTS

Line Voltage (VAC)

- 100 VAC-240VAC \pm 10% /47Hz to 63 Hz input

Inrush Current

- (a) 30A max. @ 115VAC under the worst case load and cold start
- (b) 60A max. @ 230VAC under the worst case load and cold start

Input Current

- 0.5 RMS Max. at full load and 115 VAC input
- 0.25 RMS Max. at full load and 230 VAC input

Input Power Factor

- 0.5 min. at full load and 115 VAC input

PROTECTION

Over Current Protection

- 110-160% of rated power. Auto recovery.

Short Circuit Protection

- For any output shorted to ground, grounded output will not damage this power supply. A short to the ground will be defined as a maximum of 0.1 OHM as seen by the output connection of the power supply.

ELECTROMAGNETIC REQUIREMENTS

The radiated and conducted emissions of this adapter comply with the requirements of United States Federal Communication Commission (FCC) part 15, class B and with CISPR 22.and CISPR 22.

SAFETY REQUIREMENTS

Efficiency

- 70% min. at specified line voltages, outputs at full load

Input Transient Protection

The output shall be isolated from the input and the supply shall be able to withstand without permanent damage. Power line transients as defined in IEC 801-4 or IEC 801-5, line to neutral 1 kV line to neutral with floating ground, 2kV.

OUTPUT REQUIREMENTS

Voltage	Load Current		Tolerance
	Min.	Max.	Total Reg.
+13.5vdc	0.0A	1.25A	±6%

Line Regulation

- 1% measure at 115VAC or 230VAC±15%

Load Regulation

- ±5% measure at all output from min. load to max. load at 115VAC ,60Hz.

Turn On Over Shoot

- ±5% max. at power turn on and turn off measured at 115 VAC or 230 VAC at full load.

Output Rise Time

- 200 ms max at $V_{in} = 115$ VAC and full load.

Power On Time

- 3 sec max at full load.

M.T.B.F.

M.T.B.F. shall be a min. of 100,000 hours when operated at 25 °C ambient, running at 100% duty cycle with the following line and load conditions:

- The power supply is approved for the following:
 - UL 1950 3rd Edition
 - CUL
 - TUV EN60950
 - CE

HI POT TEST

- HI POT A: Primary - Secondary (FG) - 1500VAC for 60 seconds or DC equivalent 2121VDC for 60 seconds. If DC voltage used for test, the voltage should ramp up and down with 1 sec. rise time.
- HI POT B: Transformer Primary - Secondary - 3750VAC for 1 minute (component level).

Ground Continuity Test

- 0.1 OHM max. at 25A/10 sec.

ENVIRONMENT

Temperature and Humidity

- (1) Operating temp. is 0 °C to 40°C.
- (2) Storage temp. is -20°C to 85° C.
- (3) Operating humidity is 15% to 85% RH
- (4) Storage humidity is 5% to 90% RH

Mechanical Shock Test

Operating: 10G, 11 ms, half sine, one shock input in each of three mutually perpendicular axis, for a total of six shock inputs.

Storage: 100G, trapezoid, 180 IN/S velocity change one shock input per direction in each of three mutually perpendicular axis, for a total of six shock inputs.

Mechanical Vibration Test

Operating: 0.75G zero to peak, 5 to 500Hz, 0.5 octaves/minute, one cycle, 5 to 500 to 5 Hz per axis in each of three mutually perpendicular axis.

Storage: 1.5G zero to peak, 5 to 500Hz, 0.5 octaves/minute, one cycle, 5 to 500 to 5 Hz per axis in each of three mutually perpendicular axis for a total duration of three hours.

DIMENSIONS & WEIGHT

- LxWxH: 104mm x 58mm x 31.8mm

Outputs loaded at 80% of maximum load as defined in the specifications above.

- Weight: 240 g Typical

The input line Voltage will be set at any level specified in the input Voltage range.

Test Method

Test verification will be confirmed using either a one-sided (zero failure) 90% confidence level test, or by observed test results as defined below.

Unit failure shall be defined as any unit failing to provide output Voltage or short circuit protection, or exceeding the ripple specification limits during the test.

The test environment shall be $30 \pm 2^\circ \text{C}$ with input line Voltage at 230VAC. The output loads will be set at 80% of max. load levels defined in the specifications.

The test sample shall consist of 200 units for the initial test cycle. Units will be test verified daily, and any failure during the test will be replaced with a new sample unit. The M.T.B.F. for the observed test results is defined by equation(1):

$$(1) \text{ Observed M.T.B.F.} = (nt)/\#\text{Failure}$$

When no failures occur in a test, the 90% confidence M.T.B.F. is defined by equation (2):

$$(2) \text{ M.T.B.F.} > nt/\ln a$$

t= time in test
n= sample size
Confidence Level=1-a

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