

SPECIFICATION

High Quality Switching Desktop Adapter

Universal AC Input 60W 24VDC Output



P/N: A240025CHI2

****Specification Approval****

This specification (total 7 pages including cover page) is approved in it's entirety by:

Company Name

Print Name

Signature

Date



Tel: 1-408-980-9813
Fax: 1-408-980-8626
Email: infor@topmicro.com
Web: www.topmicro.com
111909V.A

1. SCOPE

This document describes basic electrical characteristics and mechanical characteristic of a 60W class II switching power adapter.

2. ELECTRICAL

2.1 INPUT

2.1.1 INPUT VOLTAGE RANGE

Power adapter shall operate within input specification from 90Vac to 264Vac or provide automatic switching between high line and low line input ranges. The table below shows common input voltage range.

Input Range	Minimum	Nominal	Maximum	Unit
	90	100-240	264	Vac, rms

Table 1 - Input Voltage Range

2.1.2 INPUT FREQUENCY RANGE

The power adapter shall operate within specification from 47 to 63 Hz.

2.1.3 AC INRUSH CURRENT

Peak inrush current should not exceed 220A at 230Vac, 50Hz, 25 degrees C, cold start. It should not interrupt line fuse or cause damage to the power adapter either at cold or warm start.

2.1.4 INPUT CURRENT

Maximum steady state input current shall not exceed 1.5A for any line voltage specified in 2.1.1.

2.1.5 LEAKAGE CURRENT

250uA max. at 240Vac 60Hz.

2.1.6 INSULATION RESISTANCE

Insulation resistance shall be more than 100M ohm/500Vac 10mA for 1 minute. between primary and secondary.

2.1.7 LOW POWER CONSUMPTION

Vin	Load	Power consumption
240Vac/50Hz 100Vac/60Hz	0A	≤ 0.5 W

2.1.8 HI-POT TEST

Primary to secondary 4.242KV 10mA for 1 sec.

2.2 INPUT PROTECTION

2.2.1 INPUT CURRENT PROTECTION

A fuse with rating of 3.15A / 250V (time lag type) shall be installed on the input line side near the input connector and no any electrical components before.

2.3 OUTPUT

2.3.1 OUTPUT POWER

Unit total output power, under steady state conditions, shall not exceed 60W.

2.3.2 OUTPUT VOLTAGE AND CURRENT

Under any combination of line and load variation and environmental conditions, all outputs shall remain within tolerance as defined in Table 2. Output voltage(s) shall be measured at the load side of output connector.

Output Voltage	Voltage Range		Current Range	
	Lower Limit	Upper Limit	Minimum Load	Full rated load
+24V	22.8V	25.2V	0A	2.5A

Table 2 - Output Voltage and Current

2.3.3 RIPPLE AND NOISE

Measurements shall be made with an oscilloscope with minimum of 20MHz bandwidth. Output shall be bypassed at the connector with a 0.1 μ F ceramic disk capacitor and a 47 μ F electrolytic capacitor for general testing purpose.

Output Voltage	Maximum Ripple & Noise (Vp-p)
+24V	240mV

Table 3 – Ripple and Noise

2.3.4 OVER VOLTAGE PROTECTION

The power adapter shall provide with over voltage protection such that under any single component failure by latch.

Output Voltage	Maximum OVP Trip Voltage
+24V	+33.6V

Table 4 – Over Voltage Protection

Note: In the event of over-voltage condition on output voltage, the power adapter shall be shutdown by latch.

2.3.5 OVER CURRENT PROTECTION

After the supply at rated output reaches temperature equilibrium, over current protection shall be operated within specify 4A, after one hour burn-in and reached temperature equilibrium, defined in section 2.3.1 at 100~240Vac line input conditions.

2.3.6 OVER TEMPERATURE PROTECTION

The power adapter shall provide over temperature protection by latch in any condition

2.3.7 OVERSHOOT AND UNDERS HOOT

During turn on or turn off, the output overshoot shall not exceed nominal output voltage by more than 8%, and output shall not change its polarity with respect to its return line.

2.3.8 SHORT CIRCUIT POTECTION

Power adapter shall have self-limiting protection to protect against short circuit or overload conditions. No damage to the power adapter shall result from a continuous or intermittent short circuit condition. It will be auto-recovered when the failure is removed.

2.3.9 AUDIBLE NOISE

There shall be no audible noise when adapter is operating within specified parameters.

2.3.10 LIMITED POWER SOURCE

The power supply shall comply with the limited power source requirement as defined in IEC 60950⁻¹ Edition for output independently.

2.4 PERFORMANCE REQUIREMENT

2.4.1 EFFICIENCY

Efficiency (watt out / watt in) shall be a minimum of 87% at active average mode, which follow CEC 400-2006-002 sec. 1605.3(u) Table U-2 requirement.

2.4.2 TURN ON DELAY TIME

Output shall reach steady state within 5 seconds of turn on at 90Vac or greater.

2.4.3 HOLD-UP TIME

Hold-up time shall be a minimum of 12mS at 115Vac / 60Hz input.

2.4.4 DYNAMIC LOAD

Power adapter shall operate within regulation defined in section 2.3.2 at following conditions:

Step load change: from 0.5 A to 2.0A Load on the output.

Dwell Time: 100Hz & 1 KHz 50% duty.

Slew rate: 0.5A/usec

the output overshoot or undershoots: $V_{pp} \leq 1.8V$

3. ENVIRONMENTAL

3.1 TEMPERATURE

Operation within specification: 0 to 40 degreesC.

Storage: -20 to 85 degreesC

3.2 HUMIDITY

Operation: 10% to 90% relative humidity, non-condensation.

Storage: 5% to 95% relative humidity, including condensation.

3.3 VIBRATION AND SHOCK

The power adapter shall withstand forces of 2G at variable recurrent frequencies of 10 to 55Hz and a simulated transportation test. Transportation test will consist of a 1/2G vibration force at the resonant frequencies of the board or components.

The test will last for 15 min. The power adapter will be tested in a configuration representative of the intended application with shipping cartons. The power adapter must survive a 50G force for duration of 20mS in all 3 orthogonal planes from normal mounting points.

4. APPLICATION STANDARD

4.1 SAFETY CERTIFICATION

4.1.1 SAFETY STANDARD

SAFETY	
Country	Certification
Canada	cUL
Europe	CE
Germany	GS
USA	UL

4.1.2 EMI

FCC 15(Class-B, 115Vac operation)
 CISPR 22(Class-B, 230Vac operation)
 EN55022(Class-B)

4.1.3 EMS

JEITA
 EN61000-3-2
 EN61000-4-2
 EN61000-4-5

4.1.4 LPS

Meet IEC60950-1

4.1.5 ENVIRONMENT STANDARDS

RoHS regulation

4.1.6 ENERGY SAVING

California standards Level 5 (2009 standards)

5. MECHANICAL

5.1 INPUT CONNECTOR AND OUTPUT CABLE

5.1.1 INPUT CONNECTOR

AC Input connector shall be an IEC 60320 C8 power connector.

6. LABEL

