

AST40-2348D



RoHS



3-Year Warranty

- Universal 85-305VAC or 100-430VDC input voltage
- Operating ambient temperature range: -40°C to +85°C
- High I/O isolation test voltage up to 4200VAC
- Up to 90% efficiency
- Compact size, high power density
- Output short circuit, over-current, over-voltage protection
- OVC III (meet EN62477, 5000m altitude)
- 5000m altitude application

Description

AST40-23XXD series features ultra-wide AC input and at the same time accepts DC input voltage, low power consumption, low ripple & noise, high efficiency, high reliability, reinforced isolation. It offers good EMC performance compliant to IEC/EN61000-4 and CISPR32/EN55032 and meets IEC/UL/EN62368, IEC/EN60335/62477, EN61558 standards. The converters are widely used in industrial, power, home appliances, instrumentation, communication and civil applications.

Selection Guide

Certification	Part No.	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 230VAC (%) Typ.	Capacitive Load (uF) Max.
/	AST40-2305D	35	5V/7000mA	86	6600
	AST40-2312D	40	12V/3330mA	89	4400
	AST40-2315D		15V/2666mA	90	3000
	AST40-2324D		24V/1670mA	89	1500
	AST40-2348D		48V/833mA	90	470

Note: * Use suffix “A2S” for chassis mounting and suffix ”A4S” for Din-Rail mounting.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	--	305	VAC
	DC input	100	--	430	VDC
Input Frequency		47	--	63	Hz
Input Current	115VAC	--	--	1.0	A
	230VAC	--	--	0.6	
Inrush Current	115VAC	--	30	--	
	230VAC	--	60	--	
Leakage Current	277VAC/50Hz	0.1mA RMS Max.			
Recommended External input Fuse		3.15A/300V, slow-blow, required			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			--	±2	--	%
Line Regulation	Full load		--	±0.5	--	
Load Regulation	0% -100% load	5V	--	±2	--	
		12V/15V/24V/48V	--	±1	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		--	100	150	mV
Temperature Coefficient			--	±0.02	--	%/°C
Stand-by Power Consumption			--	0.3	0.55	W
Short Circuit Protection			Hiccup, continuous, self-recovery			
Over-current Protection			≥130% Io, self-recovery			
Over-voltage Protection	5 VDC output		≤6.3 VDC (Hiccup or clamp)			
	12 VDC output		≤16 VDC (Hiccup or clamp)			
	15 VDC output		≤25 VDC (Hiccup or clamp)			
	24 VDC output		≤35 VDC (Hiccup or clamp)			
	48 VDC output		≤60 VDC (Hiccup or clamp)			
Minimum Load			0	--	--	%
Hold-up Time	115VAC input		--	8	--	ms
	230VAC input		--	50	--	
Note: *The "parallel cable" method is used for ripple and noise test, output parallel 10uF electrolytic capacitor and 1uF ceramic capacitor, please refer to AC-DC Converter Application Notes for specific information;						

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Isolation	Input-output	Electric Strength Test for 1min., leakage current <5mA	4200	--	--	VAC
Insulation Resistance	Input - output	At 500VDC	100	--	--	MΩ

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Operating Temperature		-40	--	+85	M
Storage Temperature		-40	--	+85	
Storage Humidity		--	--	95	%RH
Soldering Temperature	Wave-soldering	260 ± 5°C; time: 5 - 10s			
	Manual-welding	360 ± 10°C; time: 3 - 5s			
Power Derating	-40°C to -25°C (85-200VAC Input)	4	--	--	% / °C
	+50°C to +70°C	2.5	--	--	
	+70°C to +85°C	1.67	--	--	
	85VAC - 100VAC	1.33	--	--	% / VAC
	277VAC - 305VAC	0.71	--	--	
Altitude Derating	2000m - 5000m	6.67	--	--	% / Km
Safety Standard		IEC/UL62368-1 safety approved & EN62368-1, BS EN 62368-1(Report); Design refer to IEC/EN60335-1, IEC/EN62477-1, EN61558-1			
Safety Class		CLASS II			
MTBF		MIL-HDBK-217F@25°C ≥500,000 h			

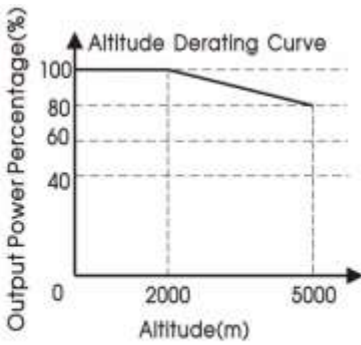
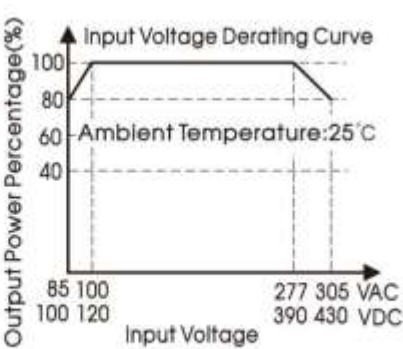
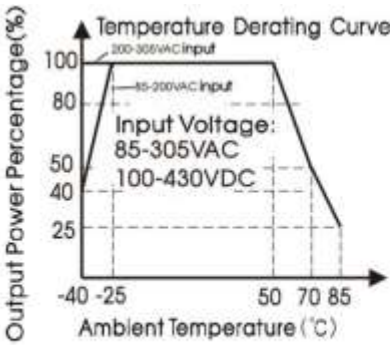
Mechanical Specifications

Case Material		Black plastic, flame-retardant and heat-resistant (UL94V-0)
Dimension	Horizontal package	69.50 x 39.00 x 24.00 mm
	A2 chassis mounting	96.10 x 54.00 x 31.00mm
	A4 Din-Rail mounting	96.10 x 54.00 x 35.60mm
Weight	Horizontal package	100g (Typ.)
	A2S chassis mounting	147g (Typ.)
	A4S Din-Rail mounting	190g (Typ.)
Cooling Method		Free air convection

Electromagnetic Compatibility (EMC)

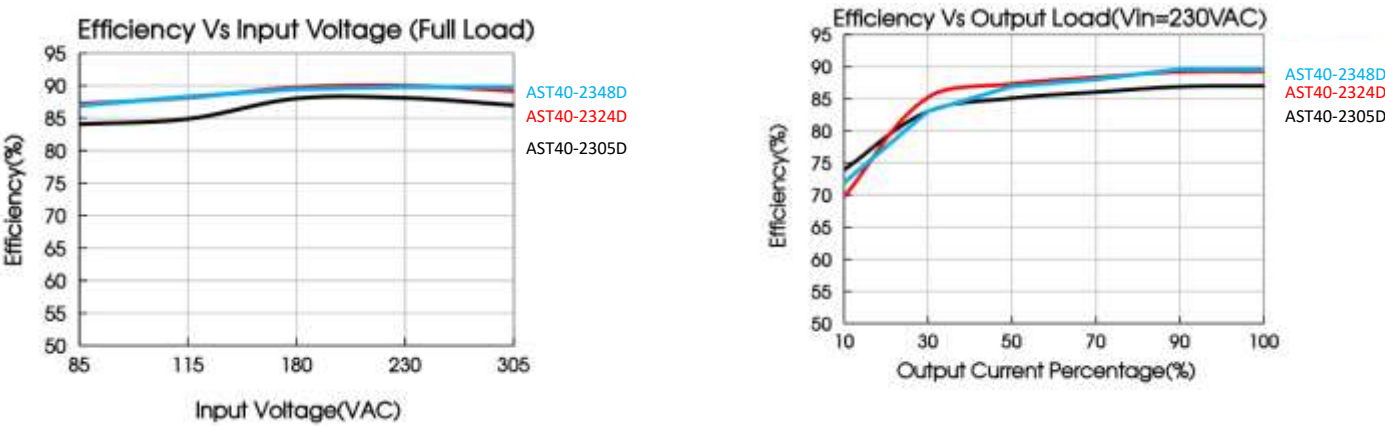
Emissions	CE	CISPR32/EN55032 CLASS B
	RE	CISPR32/EN55032 CLASS B
Immunity	ESD	IEC/EN61000-4-2 Contact ±6KV/Air ±8KV perf. Criteria A
	RS	IEC/EN61000-4-3 10V/m perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV perf. Criteria A
		IEC/EN61000-4-4 ±4KV (See Fig. 2 for recommended circuit) perf. Criteria A
	Surge	IEC/EN61000-4-5 line to line ±2KV perf. Criteria A
		IEC/EN61000-4-5 line to line ±2KV/line to PE ±4KV (See Fig. 2 for recommended circuit)
	CS	IEC/EN61000-4-6 10Vr.m.s perf. Criteria A
	Voltage dip, short interruption and voltage variation	IEC/EN61000-4-11 0%, 70% perf. Criteria B

Product Characteristic Curves



Note: ① With an AC input between 85-100VAC/277-305VAC and a DC input between 100-120VDC/390-430VDC, the output power must be derated as per temperature derating curves;

Product Characteristic Curves



Design Reference

1. Typical application

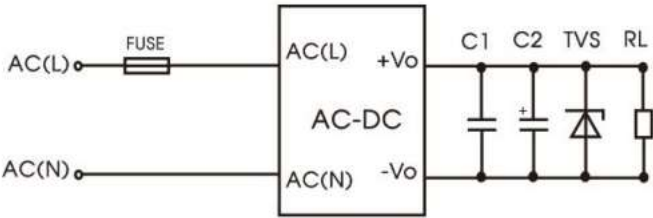


Fig. 1: Typical circuit diagram

Part No.	FUSE	C1	C2	TVS
AST40-2305D	3.15A/300V, slow-blow, required	1uF/50V	330uF/16V	SMBJ7.0A
AST40-2312D			330uF/16V	SMBJ20A
AST40-2315D			220uF/25V	SMBJ20A
AST40-2324D			100uF/35V	SMBJ30A
AST40-2348D			47uF/63V	SMBJ64A

Output Filter Components:
We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture’s datasheet). Choose a Capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

Design Reference

2. EMC compliance recommended circuit

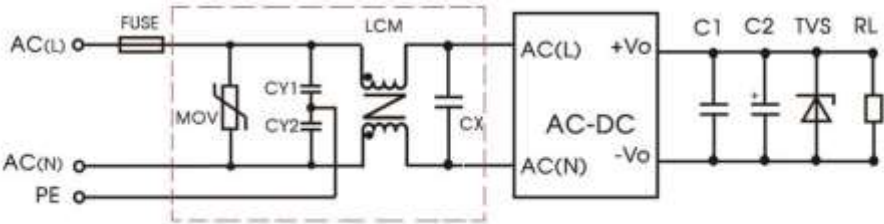


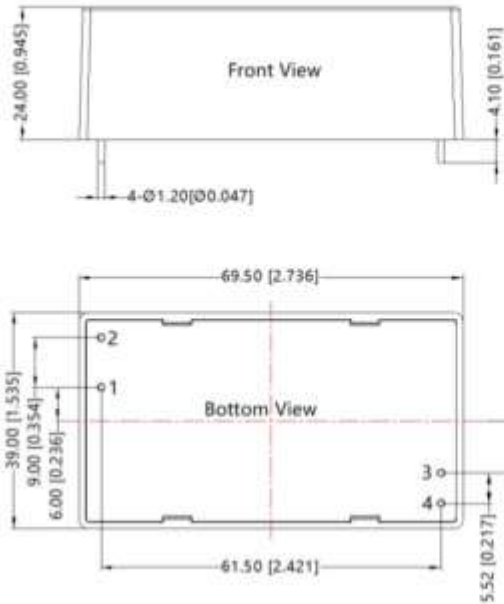
Fig. 2: EMC application circuit with higher requirements

Component	Recommended value
FUSE	3.15A/300V, slow-blow, required
MOV	S14K350
CY1/CY2	1nF/400VAC
CX	684K/310V
LCM	10mH

Dimensions and Recommended Layout

units: mm [inch]
pin diameter tolerance: ± 0.10 [± 0.004]
tolerance: ± 0.50 [± 0.020]

PIN CONNECTIONS	
PIN	Function
1	AC(L)
2	AC(N)
3	-Vo
4	+Vo



Note: Grid 2.54*2.54mm

- Note:
- 1. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
 - 2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75% with nominal input voltage and rated output load;
 - 3. All index testing methods in this datasheet are based on our company corporate standards;
 - 4. We can provide product customization service, please contact our technicians directly for specific information;
 - 5. Products are related to laws and regulations: see "Features" and "EMC";