DESCRIPTIONS

15W, AC/DC Converter



RoHS

Report Report

UL62368-1 EN62368-1 BS EN62368-1

FEATURES

- Ultra-wide 85 - 305VAC and 100 - 430VDC input voltage range
- Operating ambient temperature range: -40℃ to +85℃
- Up to 87% efficiency
- No-load power consumption 0.1W
- 5000m altitude application
- Plastic case meets UL94V-0 flammability
- EMI performance meets CISPR32/EN55032 CLASS B, EN55014

APPLICATIONS

- Industrial control
- Power
- medical treatment
- Home appliances
- Instrumentation
- Communication
- Civil applications
- AC pile

Selection Guide

Certification	Part No.	Output Power	Peak Power	nominal Output Voltage and Current (Vo/Io)	Peak Current	Efficiency at 230VAC (%) Typ.	Capacitive Load (uF) Max.
EN/BS EN	APD15-03M	13.2W	14.85W	3.3V/4000mA	4500mA	81	8000
	APD15-05M	15W	20W	5V/3000mA	4000mA	85	8000
	APD15-09M			9V/1670mA	2200mA	85	5400
UL/EN/ BS EN	APD15-12M			12V/1250mA	1670mA	86	4000
EN/BS EN	APD15-15M			15V/1000mA	1330mA	87	3000
	APD15-24M			24V/625mA	830mA	87	1000

Note: The product picture is for reference only. For details, please refer to the actual product.

Specifications

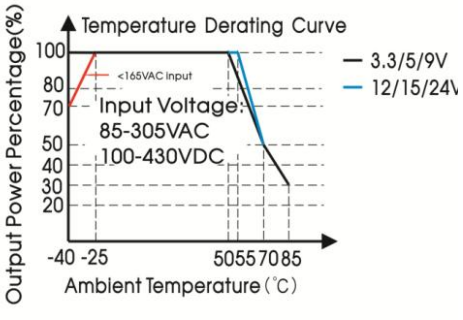
Product Specifications	Item		Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Voltage Range		AC input		85	--	305	VAC
			DC input		100	--	430	VDC
	Input Frequency				47	--	440	Hz
	Input Current		115VAC		--	--	0.5	A
			230VAC		--	--	0.3	
	Inrush Current		115VAC		--	20	--	
			230VAC		--	45	--	
	Leakage Current		277VAC/50Hz		0.1mA RMS Max.			
	Built In Fuse				3.15A/300V, slow-blow			
	Hot Plug				Unavailable			
Output Specifications	Output Voltage Accuracy				--	±1.5	--	%
	Line Regulation		Full load		--	±0.5	--	
	Load Regulation		0%-100% load		--	±1	--	
	Ripple & Noise*		20MHz bandwidth (peak-to-peak value)		--	100	150	mV
	Temperature Coefficient				--	±0.02	--	%/℃
	Minimum Load				0	--	--	%
	Stand-by Power Consumption		230VAC	3.3/5/9/12/15V	--	0.10	--	W
				24V	--	0.12	--	
	Hold-up Time		115VAC input		--	8	--	ms
			230VAC input		--	50	--	
	Short Circuit Protection				Hiccup, continuous, self-recovery			
	Over-current Protection				≥110%Io, self-recovery			
	Over-voltage Protection		3.3/5V output		≤7.5VDC (Output voltage clamp or hiccup)			
			9V output		≤15VDC (Output voltage clamp or hiccup)			
			12/15V output		≤20VDC (Output voltage clamp or hiccup)			
			24V output		≤30VDC (Output voltage clamp or hiccup)			
General Specifications	Isolation	Input-Output	Electric Strength Test for 1min., leakage current <5 mA		4000	--	--	VAC
	Insulation Resistance	Input - output	At 500VDC		100	--	--	MΩ
	Operating Temperature				-40	--	+85	℃
	Storage Temperature				-40	--	+85	
	Storage Humidity		Non-condensing		--	--	95	%RH
	Soldering Temperature		Wave-soldering		260 ± 5℃; time: 5 - 10s			
			Manual-welding		360 ± 10℃; time: 3 - 5s			
	Switching Frequency				--	65	--	kHz

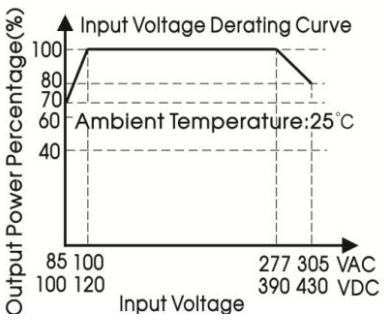
	Power Derating	-40℃ to -25℃	85VAC-165VAC	2.0	--	--	%/℃
		+50℃ to +70℃	3.3/5/9V	2.5	--	--	
		+55℃ to +70℃	12/15/24V	3.33	--	--	
		+70℃ to +85℃		1.33	--	--	
		85VAC - 100VAC		2.0	--	--	%/VAC
		277VAC - 305VAC		0.71	--	--	
		2000m - 5000m		0.67	--	--	%/Km
	Safety Class			CLASS I I			
	MTBF	MIL-HDBK-217F@25℃		≥1500,000 h			
	Designed life	230VAC	Ta: 25℃ 100% load	> 130x10^3 h			
			Ta: 55℃ 100% load	> 16x10^3 h			
			Ta: 55℃ 80% load	> 27x10^3 h			
Mechanical Specifications	Case Material	Black plastic, flame-retardant and heat-resistant (UL94V-0)					
	Dimension	52.40 x 27.20 x 24.00 mm					
	Weight	55g (Typ.)					
	Cooling method	Free air convection					
Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 10uF electrolytic capacitor and 1uF ceramic capacitor.							

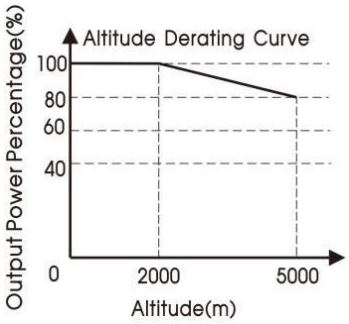
Electromagnetic Compatibility (EMC)

Electromagnetic Compatibility (EMC)	Emissions (EMI)	CE	CISPR32/EN55032 CLASS B	
			CISPR11/EN55011 CLASS B	
			EN55014-1	
		RE	CISPR32/EN55032 CLASS B	
			CISPR11/EN55011 CLASS B	
			EN55014-1	
	Immunity (EMS)	ESD	IEC/EN 61000-4-2 Contact ±6KV / Air ±8KV	Perf. Criteria B
			IEC/EN55014-2	Perf. Criteria B
		RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
			IEC/EN55014-2	perf. Criteria A
		EFT	IEC/EN61000-4-4 ±2KV	perf. Criteria B
			IEC/EN61000-4-4 ±4KV (See Fig.2 for recommended circuit)	perf. Criteria B
			IEC/EN55014-2	perf. Criteria B
		Surge	IEC/EN61000-4-5 line to line ±1KV	perf. Criteria B
			IEC/EN61000-4-5 line to line ±2KV (See Fig.2 for recommended circuit)	perf. Criteria B
			IEC/EN55014-2	perf. Criteria B
		CS	IEC/EN61000-4-6 10Vr.m.s	perf. Criteria A
			IEC/EN55014-2	perf. Criteria A
		Voltage dip, short interruption and voltage variation	IEC/EN61000-4-11 0%, 70%	perf. Criteria B
			IEC/EN55014-2	perf. Criteria B

Characteristic Curve



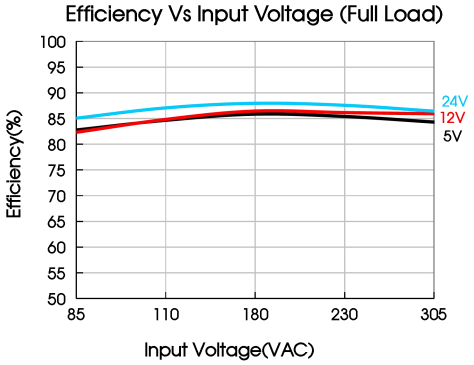


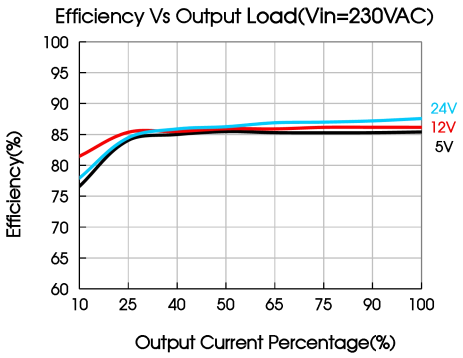


Note: ① The product takes peak power (20W) as the starting point for derating.

② With an AC input between 85-100V/277-305VAC and a DC input between 100-120V/390-430VDC, the output power must be derated as per temperature derating curves;

③This product is suitable for applications using natural air cooling.





Design Reference

1. Typical application

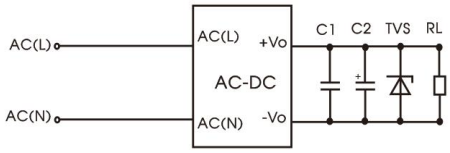


Fig. 1: Typical circuit diagram

Part No.	C1	C2	TVS
APD15-03M	1uF/50V	10μF/16V	SMBJ7.0A
APD15-05M		10μF/16V	SMBJ7.0A
APD15-09M		10μF/25V	SMBJ12A
APD15-12M		10μF/25V	SMBJ20A
APD15-15M		10μF/25V	SMBJ20A
APD15-24M		10μF/35V	SMBJ30A

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.

2.EMC compliance recommended circuit

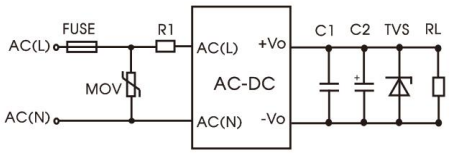
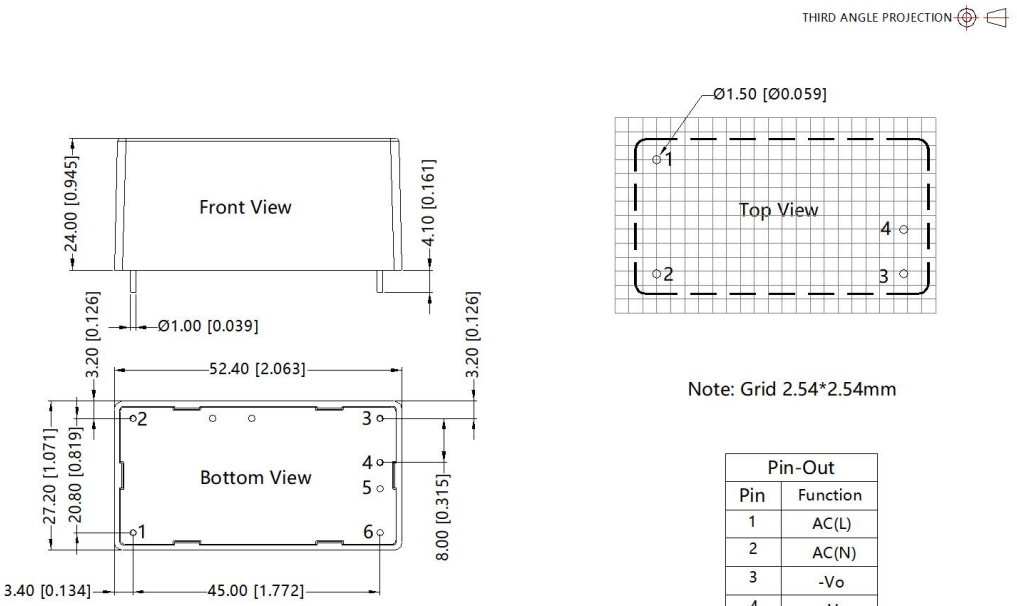


Fig 2: EMC application circuit with higher requirements

Component	Recommended value
FUSE	3.15A/300V, slow-blow, required
MOV	S14K350
R1	3Ω/3W

Dimensions and Recommended



Pin-Out	
Pin	Function
1	AC(L)
2	AC(N)
3	-Vo
4	+Vo
5	No Pin
6	No Pin

Note:
Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.50[±0.020]

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℃, 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";
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.
7. The image certification marks are for reference only; please refer to the selection table for actual specifications. Certification is based on the physical mark or packaging label.