DESCRIPTIONS 5W, AC/DC Converter

RoHS 3 Years Warranty

CE Report EN62368-1

UKCA Report BS EN62368-1

FEATURES

- Ultra-wide 85 - 305VAC and 100 - 430VDC input voltage range
- Operating ambient temperature range: -40℃ to +85℃
- Up to 81.5% efficiency
- No-load power consumption 0.1W
- 5000m altitude application
- EMI performance meets CISPR32/EN55032 CLASS B, EN55014

APPLICATIONS

- Industrial
- Power
- Home appliances
- Instrumentation
- Communication
- Civil
- AC pile

Selection Guide

Certification	Part No*	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 230VAC (%) Typ.	Capacitive Load (uF) Max.
EN/BS EN	APD05-03M	4.95	3.3V/1500mA	71.5	4000
	APD05-05M	5.00	5V/1000mA	77.5	3000
	APD05-09M	5.04	9V/560mA	80.5	1200
	APD05-12M	5.04	12V/420mA	80.5	1200
	APD05-15M	4.95	15V/330mA	81.5	680
	APD05-24M	5.52	24V/230mA	81.5	220

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	--	63	Hz
	Input Current		115VAC	--	--	0.13	A
			230VAC	--	--	0.07	
	Inrush Current		115VAC	--	15	--	
			230VAC	--	30	--	
	Leakage Current		277VAC/50Hz	0.25mA RMS Max.			
	Built In Fuse			1A/300V, slow-blow			
	Hot Plug			Unavailable			
Output Specifications	Output Voltage Accuracy			--	±2	--	%
	Line Regulation		Full load	--	±0.3	±0.5	
	Load Regulation		0%-100% load	--	±0.5	±1.0	
	Ripple & Noise*		20MHz bandwidth (peak-to-peak value)	--	50	100	mV
	Temperature Coefficient			--	±0.02	--	%/℃
	Minimum Load			0	--	--	%
	Stand-by Power Consumption		230VAC	--	0.1	0.15	W
	Hold-up Time		115VAC input	--	18	--	ms
			230VAC input	--	100	--	
	Short Circuit Protection			Hiccup, continuous, self-recovery			
	Over-current Protection			≥120%Io, self-recovery			
	Over-voltage Protection		3.3/5VDC output	≤7.5VDC			
			9VDC output	≤15VDC			
			12VDC output	≤16VDC			
			15VDC output	≤20VDC			
			24VDC output	≤30VDC			
General Specifications	Isolation	Input-output	Electric Strength Test for 1min., leakage current <5mA	4000	--	--	VAC
	Insulation Resistance	Input -output	At 500VDC	100	--	--	MΩ
	Operating Temperature			-40	--	+85	℃
	Storage Temperature			-40	--	+105	
	Storage Humidity			--	--	95	%RH
	Soldering Temperature		Wave-soldering	260 ± 5℃; time: 5 - 10s			

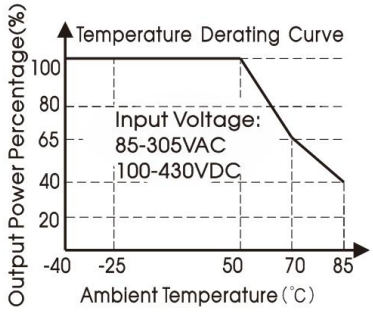
		Manual-welding		360 ± 10℃; time: 3 - 5s			
	Switching Frequency			--	65	--	kHz
General Specifications	Power Derating	+50℃ to +70℃		1.75	--	--	%/℃
		+70℃ to +85℃		1.67	--	--	
		2000m - 5000m		0.67	--	--	%/Km
	Safety Class			CLASS II			
	MTBF	MIL-HDBK-217F@25℃		≥1,080,000 h			
	Vibration			10 ~ 500Hz, 5G 10min./1cycle, period for 60min. Each along X, Y, Z axes			
	Designed Life	230VAC	Ta: 25℃ 100% load	>130x10^3 h			
			Ta: 50℃ 100% load	>41x10^3 h			
Mechanical Specifications	Case Material	Black plastic, flame-retardant and heat-resistant (UL94V-0)					
	Dimension	45.70 x 25.40 x 21.50 mm					
	Weight	36g (Typ.)					
	Cooling method	Free air convection					

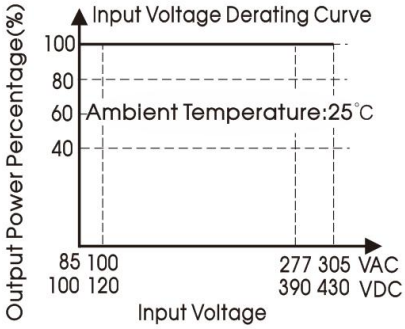
Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 10uF electrolytic capacitor and 1uF ceramic capacitor.

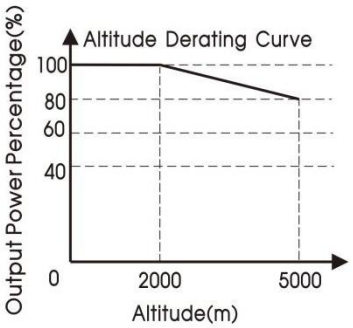
Electromagnetic Compatibility (EMC)

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

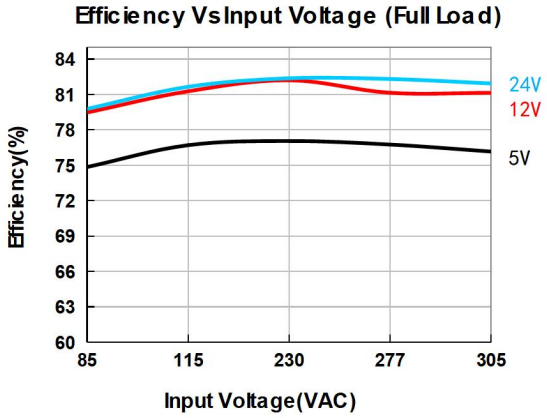
Characteristic Curve

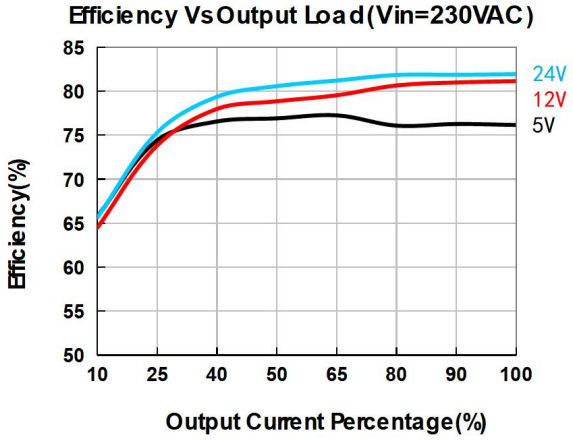






Note: This product is suitable for applications using natural air cooling.





Design Reference

1. Typical application

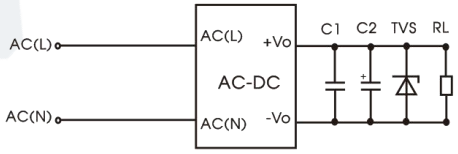


Fig. 1: Typical circuit diagram

Part No.	C1	C2	TVS
APD05-03M	1uF/50V	220uF/16V	SMBJ7.0A
APD05-05M		220uF/16V	SMBJ7.0A
APD05-09M		100uF/25V	SMBJ12A
APD05-12M		100uF/25V	SMBJ20A
APD05-15M		100uF/25V	SMBJ20A
APD05-24M		100uF/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

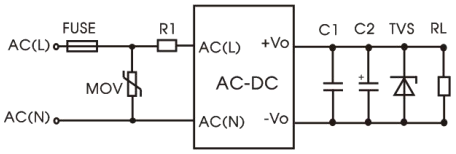
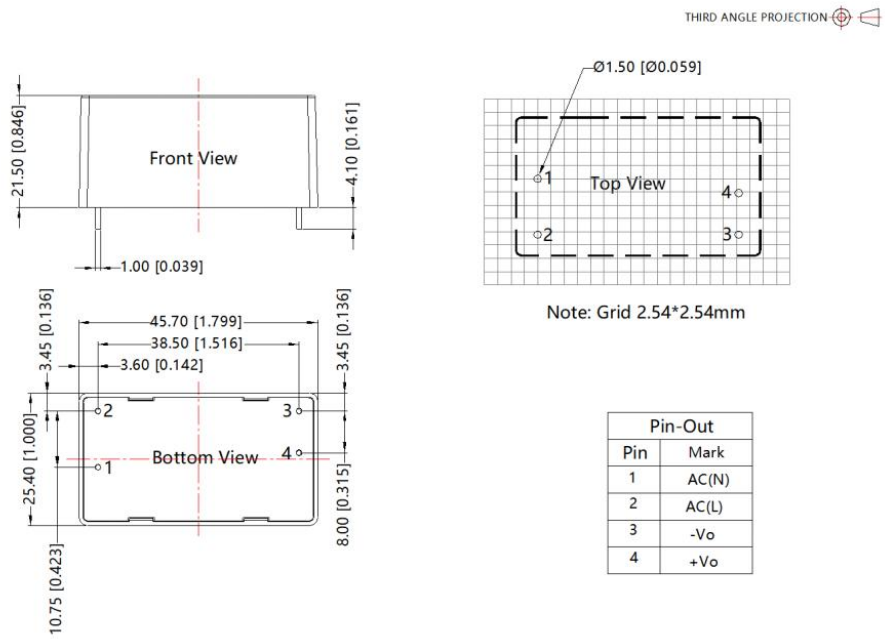


Fig 2: EMC application circuit with higher requirements

Component	Recommended value
FUSE	2A/300V, slow-blow, required
MOV	S14K350
R1	12Ω/3W (wire-wound resistor, required)

Dimensions and Recommended



Pin-Out	
Pin	Mark
1	AC(N)
2	AC(L)
3	-Vo
4	+Vo

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.