DESCRIPTIONS 20W, AC-DC Converter



RoHS

3 Years Warranty

CB IEC 62368-1

CE Report EN 60335-1 EN 61558-1 EN 62368-1

UKCA Report BS EN62368-1 IEC 61558-1

FEATURES

- Ultra-wide 85-305VAC and 100-430VDC input voltage range
- Operating ambient temperature range: -40℃ to +90℃
- High I/O isolation voltage up to 4000VAC
- High efficiency, high reliability
- No-load power consumption ≤ 0.15W
- Regulated output, low ripple & noise
- Output short circuit, over-current, over-voltage protection
- Plastic case meets UL94V-0 flammability
- EMI performance meets CISPR32/EN55032 CLASS B
- Operating altitude up to 5000m
- OVC II

APPLICATIONS

- Industrial
- Office
- Civil applications
- Home appliances

Selection Guide

Certification	Part No.*	Output Power (W)	nominal Output Voltage and Current(vo/Io)	Efficiency at 230VAC (%) Typ.	Capacitive Load (uF) Max.
EN/IEC/BS EN	APD20-03M	14.85	3.3V/4.5A	80	8000
	APD20-05M	20	5V/4A	85	8000
	APD20-12M	21.6	12V/1.8A	88	4000
	APD20-15M	21	15V/1.4A	86	3000
	APD20-24M	21.6	24V/0.9A	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	--	63	Hz
	Input Current	115VAC	--	--	0.6	A
		230VAC	--	--	0.4	
	Inrush Current	115VAC	--	20	--	
		230VAC	--	40	--	
	Start-up Delay Time		--	--	3	s
	Contact leakage current	277VAC/50Hz	0.3mA RMS Max.			
	Built In Fuse		2A/300V, slow-blow			
	Hot Plug		Unavailable			
Output Specifications	Output Voltage Accuracy		--	--	±2	%
	Line Regulation	Full load	--	±0.5	--	
	Load Regulation	0%-100% load	--	±1	--	
	Minimum Load		0	--	--	%
	Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	100	150	mV
	Stand-by Power Consumption	230VAC	--	0.12	0.15	W
	Temperature Coefficient		--	±0.02	--	%/℃
	Hold-up Time	115VAC input	--	8	--	ms
		230VAC input	--	40	--	
	Short Circuit Protection	Recover time <3s after the short	Hiccup, continuous, self-recover			

			circuit disappear.				
	Over-current Protection			≥120%Io, self-recover			
	Over-voltage Protection		3.3V/5V output	≤7.5VDC (Output voltage hiccup , self-recover)			
			12V output	≤16VDC(Output voltage hiccup , self-recover)			
			15V output	≤20VDC (Output voltage hiccup , self-recover)			
			24V output	≤30VDC (Output voltage hiccup , self-recover)			
General Specifications	Isolation	Input-output	Electric Strength Test for 1min., leakage current <5 mA	4000	--	--	VAC
	Insulation Resistance	Input - output	Ambient temperature: 25 ± 5℃ Relative humidity: < 95%RH, no condensation Test voltage: 500VDC	100	--	--	MΩ
	Operating Temperature			-40	--	+90	℃
	Storage Temperature			-40	--	+90	
	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℃ ≤165VAC input	2	--	--	%/℃
			+50℃ to +70℃	2.25	--	--	
			+70℃ to +90℃	2.25	--	--	
			85VAC - 100VAC	1.333	--	--	%/VAC
			277VAC- 305VAC	0.714	--	--	
			2000m - 5000m	6.67	--	--	%/Km
	Safety Class			CLASS I I			
	MTBF		MIL-HDBK-217F@25℃	≥1,000,000 h			
Mechanical Specifications	Case Material		Black plastic, flame-retardant and heat-resistant (UL94V-0)				
	Dimension		DIP package	52.40 x 27.20 x 24.00 mm			
	Weight		DIP package	55g (Typ.)			
	Cooling method		Free air convection				

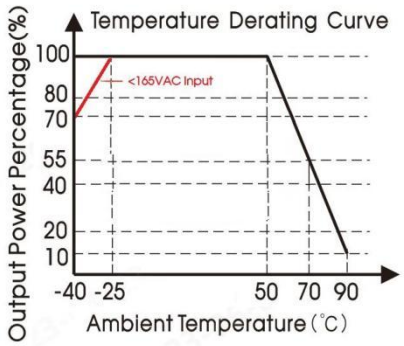
Note: * The "parallel cable" method is used for ripple and noise test, output parallel 47uF electrolytic capacitor and 0.1uF ceramic capacitor,

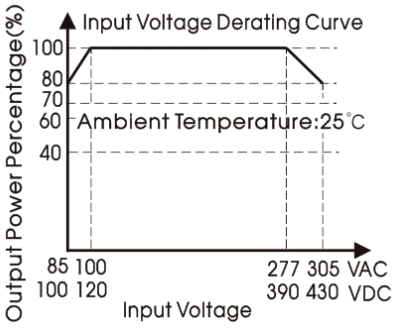
Electromagnetic Compatibility (EMC)

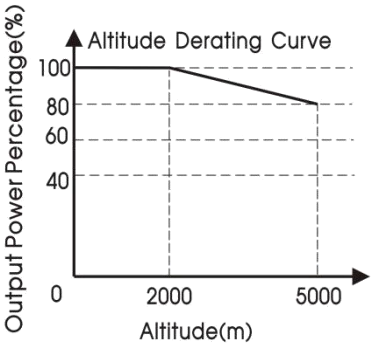
Electromagnetic Compatibility (EMC)	Emissions (EMI)	CE	CISPR32/EN55032 CLASS B		
		RE	CISPR32/EN55032 CLASS B		
		Harmonic current	IEC/EN6100-3-2 CLASS A		
	Immunity (EMS)	ESD	IEC/EN61000-4-2 Contact ±6KV/Air ±8KV		perf. Criteria A
		RS	IEC/EN61000-4-3 10V/m		perf. Criteria A
		EFT	IEC/EN61000-4-4 ±2KV		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)		perf. Criteria A
		CS	IEC/EN61000-4-6 10Vr.m.s		perf. Criteria A
		MS	IEC/EN6100-4-8 30A/m		perf. Criteria A
		Voltage variations *	IEC61000-6-2/IEC61000-4-11	70% Un, 25/30 cycle(50/60Hz) 40% Un, 10/12 cycle(50/60Hz) 0% Un, 1 cycle	perf. Criteria B
		Voltage interruptions *	IEC61000-6-2/IEC61000-4-11	0% Un, 250/300 cycle(50/60Hz)	perf. Criteria C

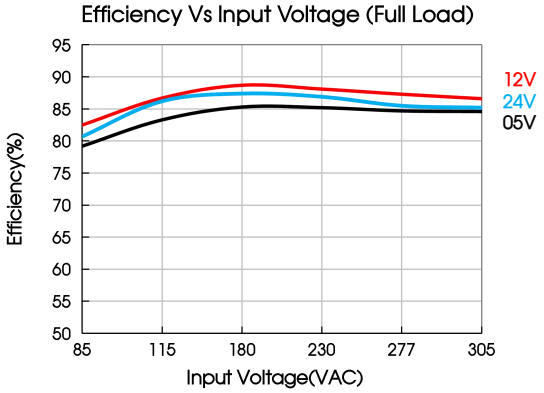
Note: ①*Un is the maximum input nominal voltage.
②Unless otherwise specified, EMC performance indicators are tested according to typical application circuits (Fig. 1).

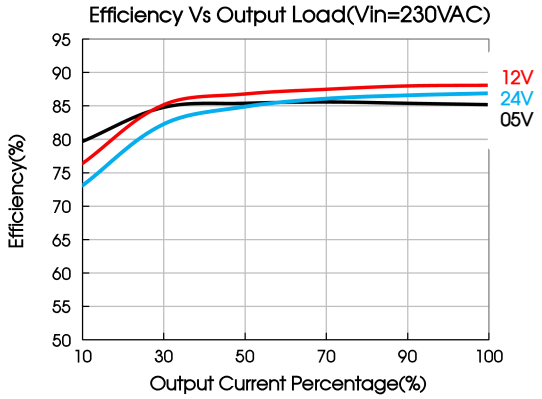
Characteristic Curve











Note: ① 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;

② This product is suitable for applications using natural air cooling.

Design Reference

1. Typical application

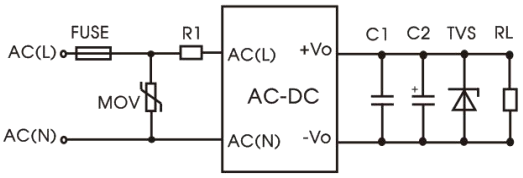


Fig. 1: Typical circuit diagram

Part No.	C1	C2	TVS
APD20-03M	1uF/50V	820uF/16V	SMBJ7.0A
APD20-05M		820uF/16V	SMBJ7.0A
APD20-12M		47uF/25V	SMBJ20A
APD20-15M		47uF/25V	SMBJ20A
APD20-24M		47uF/35V	SMBJ35A

Output Filter Components:

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

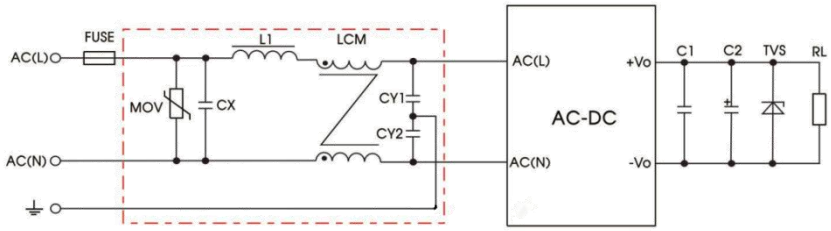
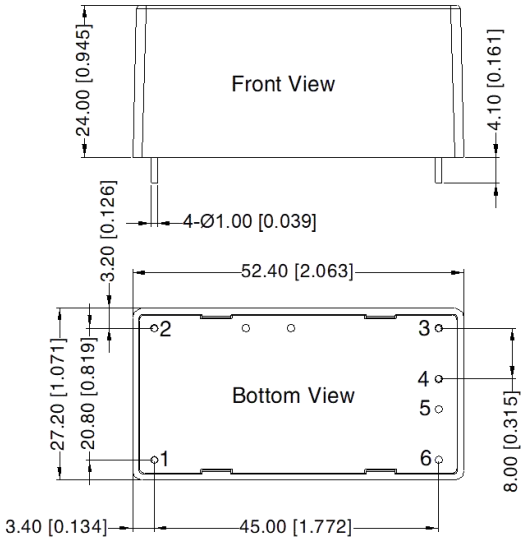


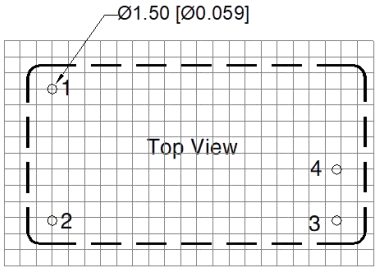
Fig. 2: EMC application circuit with higher requirements

Component	Recommended value
FUSE	3.15A/300V, slow-blow, required
MOV	S14K350
CX	0.1uF/310VAC
L1	4.7uH/2A
LCM	10mH
CY1/CY2	1000pF/400VAC
FP2D1X5	2KV/4KV, EMC filter

Dimensions and Recommended

THIRD ANGLE PROJECTION





Note: Grid 2.54*2.54mm

Pin–Out	
Pin	Mark
1	AC(L)
2	AC(N)
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.
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.