2025/08/18(A/2)

AD40-23Sxx Series

AC-DC Converter | 40W | Compact size | DIP | 4200VAC | 85～305VAC

Features

- Package Type: DIP
- Universal Input: 85～305VAC / 100～430VDC
- Operating temperature range: -40℃ ～ +85℃
- Isolation voltage: 4200VAC
- High efficiency：up to 89% (Typ.)
- Overvoltage category III (OVC III)
- Output short circuit,over-current,over-voltage protection
- EMI Class B and Surge ±2KV without additional components
- Designed to meet IEC/EN/UL62368,EN60335,EN61558

Product description

Power Industrial Telecom Automotive Network Security Medical Automate

AD40-23Sxx series is a 40W miniature AC DC module-type power suppy provided by BETTPOWER. This series features the universal input voltage range of 85-305Vac, low power consumption, high efficiency, high reliability, and reinforced isolation. The entire series is compliance with BS EN/EN55032 Class B without the need of any addtional components. The EMC and safety specification design complies with IEC/EN61000-4, CISPR32/EN55032, IEC/EN/UL62368, EN60335, EN61558. These power supply modules are widely used in industries, power generation, household appliances, instrumentation, communication, and civil applications.

Selection Guide

Certification	Part No.	Input Voltage (VAC)	Out Power (W)	Out Voltage (VDC)	Out Current Max.(mA)	Full Load Efficiency %(230VAC,Typ.)	Capacitive Load Max.(μF)
EN/UL pending	AD40-23S05	85～305	35	5	7000	87	6600
	AD40-23S09	85～305	36	9	4000	88	4400
	AD40-23S12	85～305	40	12	3330	89	4400
	AD40-23S15	85～305	40	15	2666	89	3300
	AD40-23S24	85～305	40	24	1670	88	1500
	AD40-23S48	85～305	40	48	833	89	470

Note：

1. All the above data were tested within the parameter range of typical application circuits；
2. The product images are for reference only. Please refer to the actual product for details.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		85	--	305	VAC
	DC input	5/9/12/15/18/24V output	100	--	430	VDC
		48V output	120	--	430	VDC
Input Current	115VAC		--	--	1.0	A
	230VAC		--	--	0.6	A
Inrush Current	115VAC		--	30	--	A
	230VAC		--	60	--	A
Input Frequency			47	--	63	Hz
Recommended External Input Fuse			3.15A/300V, slow-blow, required			
Leakage Current	230VAC/50Hz		0.1mA RMS Max.			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			--	±2.0	--	%
Line Regulation	Full load		--	±0.5	--	%
Load Regulation	0 ～ 100% load	5V Output	--	±2.0	--	%
		12/15//24/48V Output	--	±1.0	--	%
Ripple & Noise*	20MHz bandwidth (peak-to-peak value),10% ～ 100% load		--	100	150	mV
Temperature Coefficient			--	±0.02	--	%/℃
Stand-by Power Consumption	230VAC		--	0.30	0.55	W
Min. Load			0	--	--	%
Over-current Protection			110	--	--	%Io
Short Circuit Protection			Continuous, Self-Recovery			
Hold-up Time	230VAC		--	50	--	ms

Note: Ripple & noise are measured at 20MHz of bandwidth with a 10uF electrolytic capacitor and a 1uF ceramic capacitor connected inparallel at the output.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, test time 1 minute, leakage current less than 5mA	4200	--	--	VAC
Insulation Resistance	Input-output, insulated voltage 500VDC	100	--	--	MΩ
Power Derating	-40℃ ～ -25℃(85～200VAC Input)	4.0	--	--	%/℃
	+50℃～+70℃	2.5	--	--	%/℃

	+70℃～+85℃	1.67	--	--	%/℃
	85VAC～100VAC	1.67	--	--	%/VAC
	277VAC～305VAC	0.72	--	--	%/VAC
Operating Temperature		-40	--	85	℃
Storage Temperature		-40	--	85	℃
Storage Humidity	Non-condensing	--	--	95	%RH
Soldering Profile	Wave-soldering	260 ± 5℃; time: 5 - 10s			
	Manual soldering	360 ± 10℃; time: 3 - 5s			
Safety Standard	Product design conforms to IEC/EN/BS EN62368-1,EN61558-1,EN60335-1;UL62368-1				
Safety Class		CLASS Ⅱ			
MTBF	MIL-HDBK-217F@25℃	>500,000h			

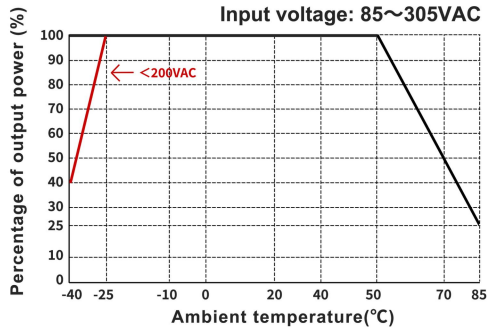
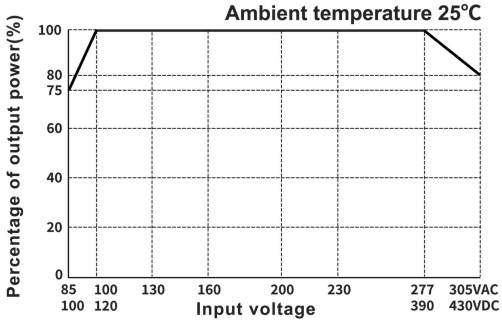
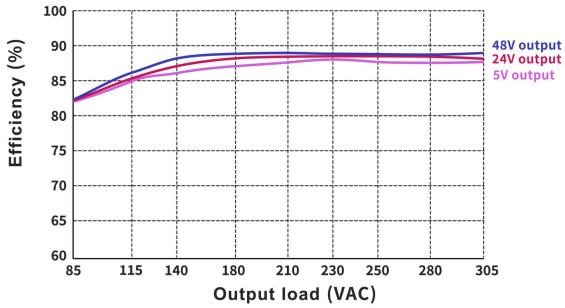
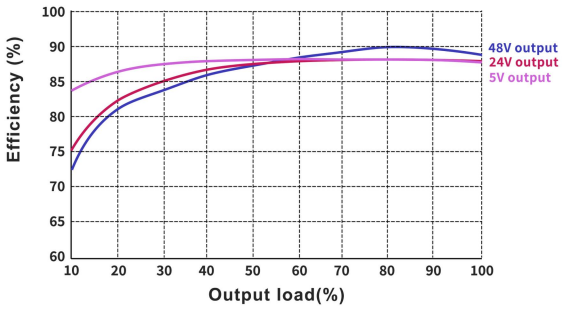
Mechanical Specifications

Case Material	Black plastic, flame-retardant and heat-resistant (UL94V-0)
Package Dimensions	69.50 * 39.00 * 24.00mm
Weight	102g(Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

EMI	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
EMS	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV	perf. Criteria B
		IEC/EN61000-4-4 ±4KV (EMC Solutions - Recommended Circuit(2))	perf. Criteria A
	Surge	IEC/EN61000-4-5 line to line ±2KV	perf. Criteria B
		IEC/EN61000-4-5 line to line ±2KV/line to PE ±4KV/(EMC Solutions - Recommended Circuit(2))	perf. Criteria A
	CS	IEC/EN61000-4-6 10Vr.m.s	perf. Criteria A
	ESD	IEC/EN61000-4-2 Contact ±6KV / Air ±8KV	perf. Criteria A

Product Characteristic Curve

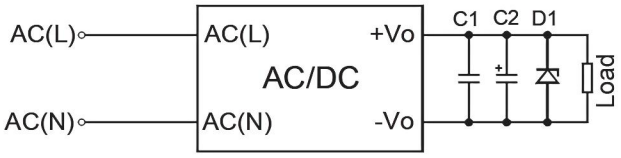
Temperature Derating Curve	Input voltage Derating Curve
	
Efficiency VS Input Voltage (Full load)	Efficiency VS Out Load (Vin=230VAC)
	

Note:

1. For input voltages of 85-100VAC/277-305VAC, voltage derating should be carried out on the basis of temperature derating.
2. This product is suitable for use in a natural wind-cooled environment.

Design Reference - Application circuit

Application circuit(Figure 1)

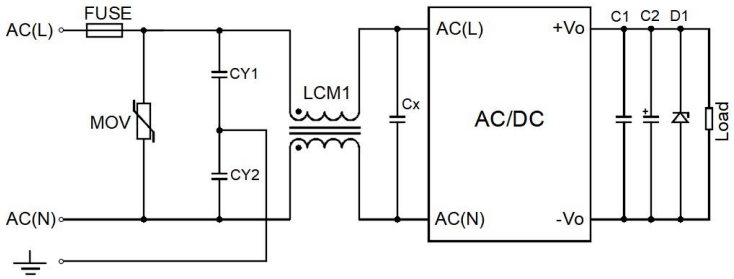


Reference Table for Selection of Peripheral Devices

Part No.	C1	C2	D1
AD40-23S05	1uF/16V	330uF/16V	D1 is a TVS transistor that can protect the downstream circuit in case of module abnormalities. It is recommended to choose a model that is 1.2 times the output voltage.
AD40-23S09	1uF/16V	330uF/25V	
AD40-23S12	1uF/16V	330uF/25V	
AD40-23S15	1uF/35V	100uF/35V	
AD40-23S24	1uF/35V	100uF/35V	
AD40-23S48	1uF/100V	47uF/63V	

Design Reference - EMC Solutions - Recommended Circuits

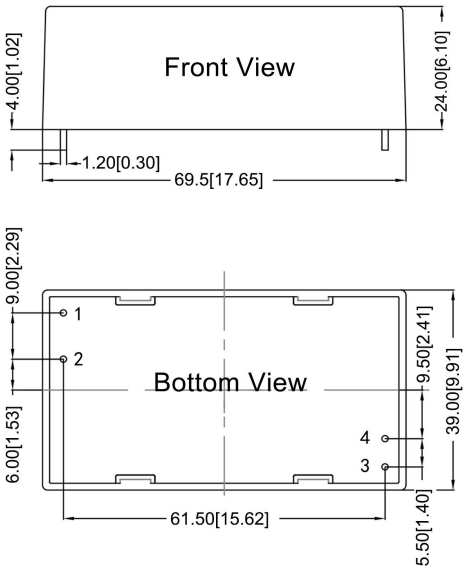
EMC Solutions - Recommended Circuits(Figure 2)

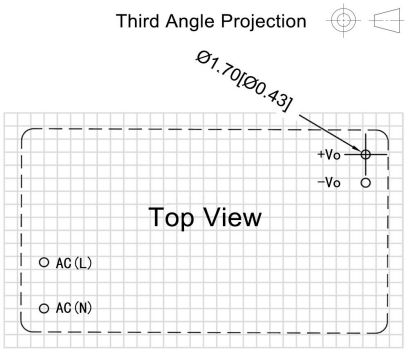


	Model	Recommended value
Recommended parameter values for EMC solution circuits	FUSE	3.15A/300VAC,Slow-blow, Required
	MOV	14D561K
	Cx	0.68uF/310VAC
	CY1,CY2	1.0nF/400VAC
	LCM1	10mH,Common mode inductance

Dimensions and Recommended Layout

AD40-23Sxx Dimensions and Recommended Layout





The grid distance size is 2.54mm*2.54mm

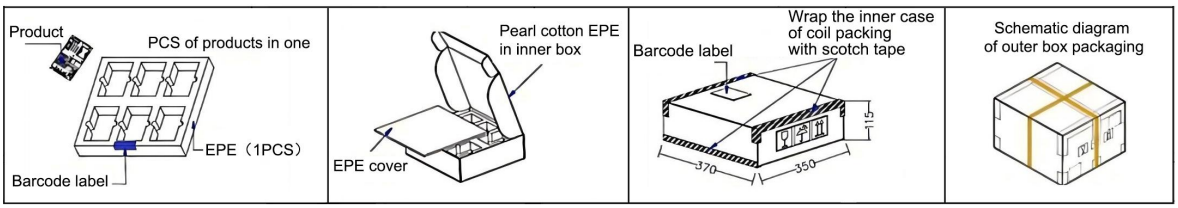
Pin	Function
1	AC(N)
2	AC(L)
3	+Vo
4	-Vo

Note:
Size unit: mm [inch]
Terminal diameter tolerance size: ±0.10[±0.004]
Unmarked dimensional tolerance: ±0.80[±0.031]

Packaging Information

Model series	Product quantity(pcs/tray)	Inner carton quantity(pcs/carton)	Outer carton quantity(pcs/carton)
AD40-23Sxx	24	72	144

The schematic diagram of pearl cotton packaging is shown below：



Product precautions

1. The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
2. It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product;
3. The maximum capacitive load is tested within the input voltage range and under full load conditions;
4. Unless otherwise specified, all indicators in this manual are measured at Ta=25 ℃, humidity<75% RH, nominal input voltage, and output rated load;
5. All indicator testing methods in this manual are based on our company's corporate standards;
6. Our company can provide product customization, and specific requirements can be directly contacted by our technical personnel;

Product specifications are subject to change without prior notice.

Manufacturer contact information

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