2025/08/18(A/2)

AD15-23Sxx Series

AC-DC Converter | 15W | Compact size | DIP | 4000VAC | 85～305VAC

Features

- Universal Input: 85～305VAC / 100～430VDC
- Operating temperature range: -40℃ ～ +85℃
- Isolation voltage: 4000VAC
- High efficiency up to: 86%(Typ.)
- Overvoltage category III (OVC III)
- EMI Class B without additional components
- Designed to meet IEC/EN/UL62368,EN60335,EN61558

Product description

Power Industrial Telecom Automotive Network Security Medical Automate

AD15-23Sxx series is a 10W 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	AD15-23S03	85～305	13.2	3.3	4000	83	6600
	AD15-23S05	85～305	15	5	3000	85	5000
	AD15-23S09	85～305	15	9	1670	83	3000
	AD15-23S12	85～305	15	12	1250	84	2000
	AD15-23S15	85～305	15	15	1000	85	1500
	AD15-23S18	85～305	15	18	834	85	1000
	AD15-23S24	85～305	15	24	625	86	680

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;
3. Adding "T" to the product model suffix indicates an extension for chassis mount packaging, while adding "Din" to the suffix indicates an extension for Din-rail mount packaging.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	--	305	VAC
	DC input	100	--	430	VDC
Input Current	115VAC	--	--	0.45	A
	230VAC	--	--	0.30	A
Inrush Current	115VAC	--	30	--	A
	230VAC	--	60	--	A
Input Frequency		47	--	63	Hz
Recommended External Input Fuse		2A/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	10% ～ 100% load	--	±2	--	%
Line Regulation	Full load	--	±0.5	--	%
Load Regulation	0 ～ 100% load	--	±1.0	--	%
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)，5% ～ 100% load	--	80	150	mV
Temperature Coefficient		--	±0.02	--	%/℃
Stand-by Power Consumption	230VAC	--	--	0.12	W
Min. Load		0	--	--	%
Over-current Protection		110	--	--	%Io
Short Circuit Protection		Continuous, Self-Recovery			
Hold-up Time	230VAC	--	56	--	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		4000	--	--	VAC
Insulation Resistance	Input-output, insulated voltage 500VDC		100	--	--	MΩ
Power Derating	+50℃ ～ +85℃	3.3/5V output	2.28	--	--	%℃
	+55℃ ～ +85℃	9/12/15/18/24V output	2.0	--	--	%℃
	85VAC ～ 100VAC		1.66	--	--	%/VAC

	277VAC ～ 305VAC	1.4	--	--	%/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, EN/BS EN61558-1/-2-16，EN60335-1, UL62368-1				
Safety Class		CLASS Ⅱ			
MTBF	MIL-HDBK-217F@25℃	>3,200,000h			

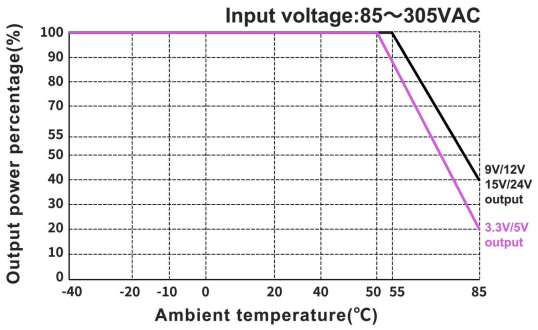
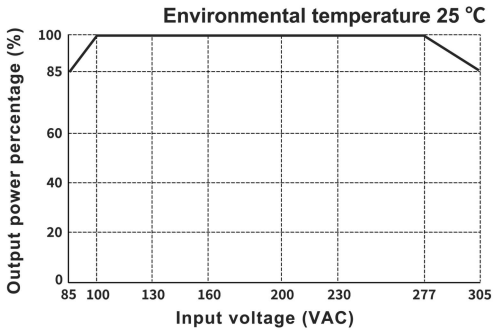
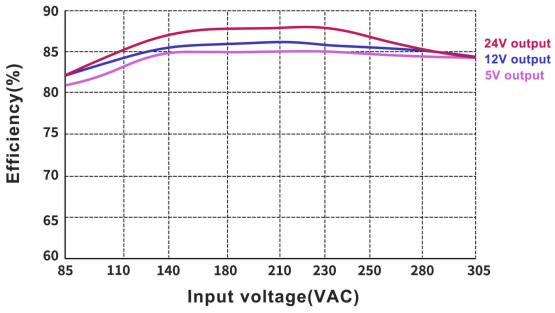
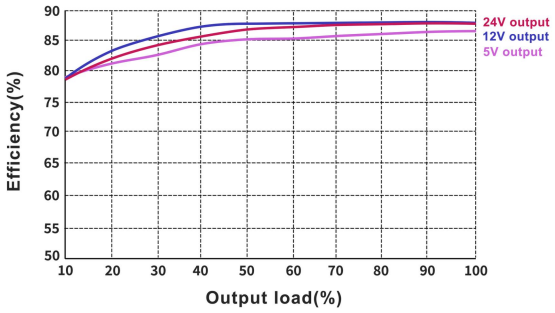
Mechanical Specifications

Case Material	Black plastic, flame-retardant and heat-resistant (UL94V-0)
Package Dimensions	45.7 * 25.40 * 21.50mm
Weight	39.6g(Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

EMI	CE	CISPR32/EN55032 CLASS B CISPR11/EN55011 CLASS B EN55014-1	
	RE	CISPR32/EN55032 CLASS B CISPR11/EN55011 CLASS B EN55014-1	
EMS	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
		EN55014-2	perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV(EMC Solutions - Recommended Circuit(2-1))	perf. Criteria B
		IEC/EN61000-4-4 ±4KV(EMC Solutions - Recommended Circuit(2-2))	perf. Criteria A
		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(EMC Solutions - Recommended Circuit(2-2))	perf. Criteria B
		IEC/EN61000-4-5 line to line ±2KV/line to PE ±4KV(EMC Solutions - Recommended Circuit(2-2))	perf. Criteria A
		EN55014-2	perf. Criteria B
	CS	IEC/EN61000-4-6 10Vr.m.s	perf. Criteria A
		EN55014-2	perf. Criteria A
	ESD	IEC/EN61000-4-2 Contact ±8KV / Air ±15KV	perf. Criteria B

Product Characteristic Curve

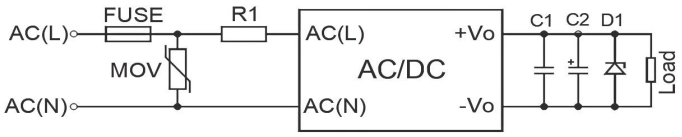
Temperature Derating Curve	Input voltage Derating Curve
	
Efficiency VS Input Voltage (Full load)	Efficiency VS Out Load (Vin=230VAC)
	

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

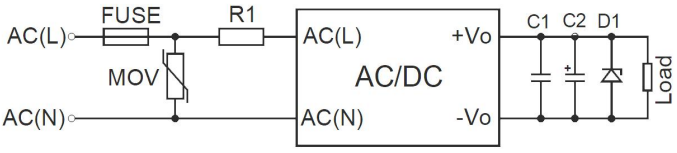
Part No.	FUSE	MOV	R1	C1	C2	D1
AD15-23S03	3.15A/300VAC Slow-blow Required	14D561K	6.8Ω/3W Wire-wound resistor Required	1uF/16V	220uF/16V	See Note 2
AD15-23S05				1uF/16V	220uF/16V	
AD15-23S09				1uF/25V	100uF/25V	
AD15-23S12				1uF/25V	100uF/25V	
AD15-23S15				1uF/35V	100uF/35V	
AD15-23S18				1uF/35V	100uF/35V	
AD15-23S24				1uF/35V	100uF/35V	

Note:

1. FUSE and MOV can be selected based on actual needs.
2. 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.

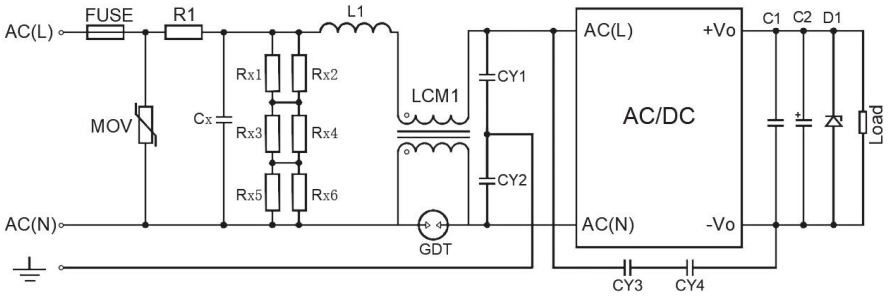
Design Reference - EMC Solutions - Recommended Circuits

EMC Solutions - Recommended Circuits(Figure 2-1)



EMC Solutions - Recommended Circuits(Figure 2-2)

(When the output of the product needs to be connected to PE or connected to PE through Y capacitor,Recommended)

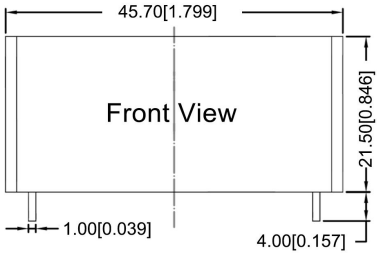


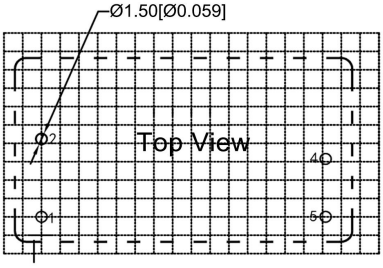
	Model	Recommended value
Recommended parameter values for EMC solution circuits	FUSE	3.15A/300VAC,Slow-blow, Required
	MOV	14D561K
	R1	12Ω/5W (Wire-wound resistor,Required)
	Cx	0.33uF/305VAC
	L1	1.2mH/0.5A
	CY1,CY2	2.2nF/400VAC
	CY3,CY4	1.0nF/400VAC
	GDT	300V/1KA
	LCM	20mH,Common mode inductance
	Rx1,Rx2,Rx3,Rx4	1.5MΩ/1206
	C1,C2,D1	Refer to typical circuit design and application

Dimensions and Recommended Layout

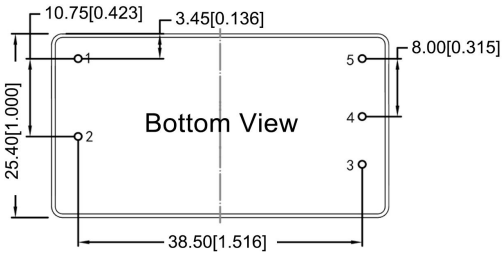
AD15-23Sxx Dimensions and Recommended Layout

Third Angle Projection





The grid distance size is 2.54mm*2.54mm

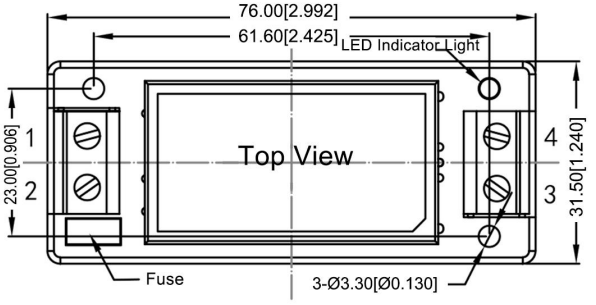


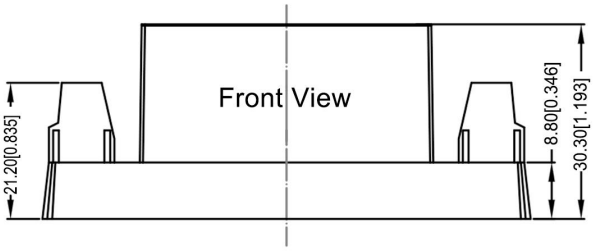
Pin	Function
1	AC(N)
2	AC(L)
3	No Pin
4	+Vo
5	-Vo

Note:
Size unit: mm [inch]
Terminal diameter tolerance size: ± 0.10 [± 0.004]
Unmarked dimensional tolerance: ± 0.50 [± 0.020]

AD15-23Sxx-T wired packaging Dimensions

Third Angle Projection

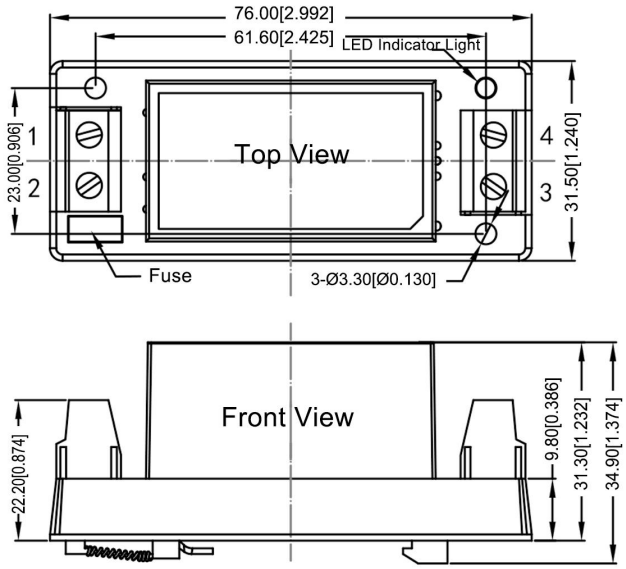




Pin	Function
1	AC(L)
2	AC(N)
3	-Vo
4	+Vo

Note:
Size unit: mm [inch]
Wire diameter: 24-12AWG
Tightening force distance: Max0.4N · m
Unmarked tolerance: ± 1.00 [± 0.039]

AD15-23Sxx-DIN rail-mounted packaging Dimensions



Third Angle Projection

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

Note:

Size unit: mm [inch]

Wire diameter: 24-12AWG

Tightening force distance: Max0.4N · m

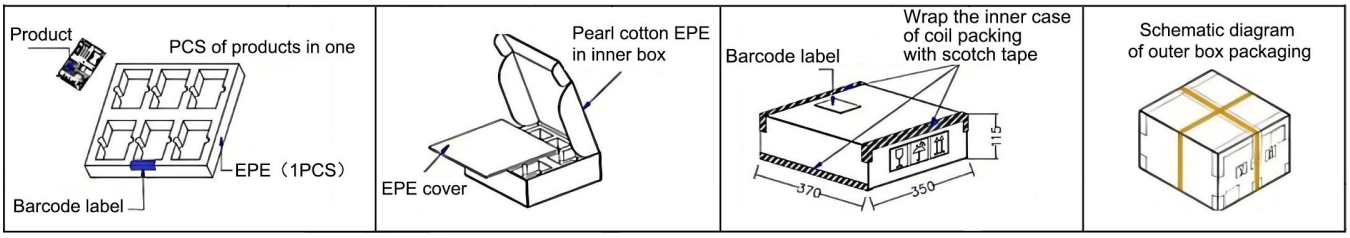
Rail type: TS35, rail needs to be grounded

Unmarked tolerance: ± 1.00 [± 0.039]

Packaging Information

Model series	Product quantity(pcs/tray)	Inner carton quantity(pcs/carton)	Outer carton quantity(pcs/carton)
AD15-23Sxx	35	105	210
AD15-23Sxx-T	28	56	112
AD15-23Sxx-DIN	28	56	112

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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