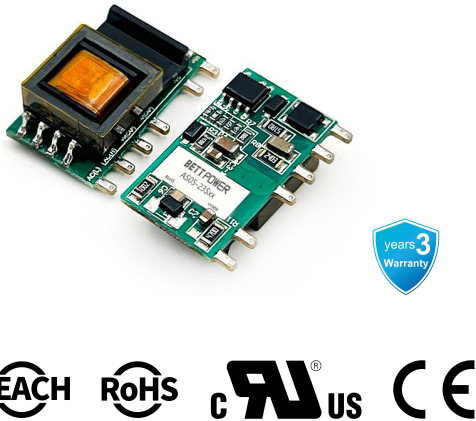


AS05-23Sxx Series

AC-DC Converter | 5W | Small open frame | SIP | 4000VAC | 85~305VAC



Features

- 1"x0.6" compact size, high power density
- Universal Input: 85~305VAC / 100~430VDC
- No-load power consumption: 0.1W
- Operating temperature range: -40°C ~ +85°C
- Isolation voltage: 4000VAC
- High efficiency: up to 81%(typ.)
- Multi application, flexible layout, green power
- Output short circuit, over current and over voltage protection
- Designed to meet UL62368, IEC/EN60335, IEC/EN61558

Product description



AS05-23Sxx series is highly efficient green power AC-DC open frame power module. It features a compact design and supports universal input voltage range of 85~305Vac, high reliability, low power consumption and reinforced insulation. These power supply modules are particularly suitable for applications with strict space constraints, such as industrial control, electric power, instrumentation and smart home applications. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

Selection Guide

Certification	Part No.	Input Voltage (VAC)	Output Power (W)	Output Voltage (VDC)	Output Current Max.(mA)	Full Load Efficiency % (230VAC,typ.)	Capacitive Load Max.(μF)
EN/UL pending	AS05-23S03	85~305	5	3.3	1000	73	1500
	AS05-23S05	85~305	5	5	1000	76	1500
	AS05-23S09	85~305	5	9	560	77	680
	AS05-23S12	85~305	5	12	420	78	470
	AS05-23S15	85~305	5	15	340	79	330
	AS05-23S18	85~305	5	18	277	80	220
	AS05-23S24	85~305	5	24	210	81	100

Note: 1. The above data were all tested within the parameter range of typical application circuits.

2. If the product is used in a high-vibration environment, it is necessary to apply glue to fix it.

3. Products with the suffix "-P" are models without conformal coating protection on the surface, such as AS05-23S05-P.

4. Products with the suffix "-F" are horizontal type with 90° bent pin products, such as AS05-23S05-F.

5. 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	100	--	430	VDC
Input Current	115VAC	--	--	0.15	A
	230VAC	--	--	0.10	A
Input Frequency		47	--	63	Hz
Recommended External Input Fuse		1A, slow-blow, required			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	typ.	Max.	Unit
Output Voltage Accuracy	10% ~- 100% load	--	±5	--	%
Line Regulation	Rated load	3.3V	±2.5	--	%
		others	±1.5	--	%
Load Regulation	10% ~- 100% load	--	±3.0	--	%
Ripple & Noise*	20MHz bandwidth (peak-to-peak value), 10% ~ 100% load	--	80	180	mV
Temperature Coefficient		--	±0.15	--	%/°C
Stand-by Power Consumption	230VAC	--	0.1	--	W
Min. Load		10	--	--	%
Over-current Protection		110	--	--	%Io
Short Circuit Protection		Continuous, Self-Recovery			

Note: Ripple & noise are measured at 20MHz of bandwidth with a 10uF electrolytic capacitor and a 1uF ceramic capacitor connected in parallel 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
Power Derating	+55°C ~ +85°C	2.50	--	--	%/°C
	85VAC - 100VAC	1.0	--	--	%/VAC
	270VAC - 305VAC	0.536	--	--	%/VAC
Operating Temperature		-40	--	85	°C
Storage Temperature		-40	--	105	°C
Soldering Profile	Wave soldering	260 ± 5°C. time: 5 - 10s			
	Manual soldering	360 ± 10°C. time: 3 - 5s			
Safety Standard	Product design conforms to IEC/EN/BS EN62368-1, IEC/EN61558-1/-2-16, EN60335-1, UL62368-1				

AS05-23Sxx Series

AC-DC Converter | 5W | Small open frame | SIP | 4000VAC | 85~305VAC



Safety Class		CLASS II
MTBF	MIL-HDBK-217F@25°C	>1000Kh

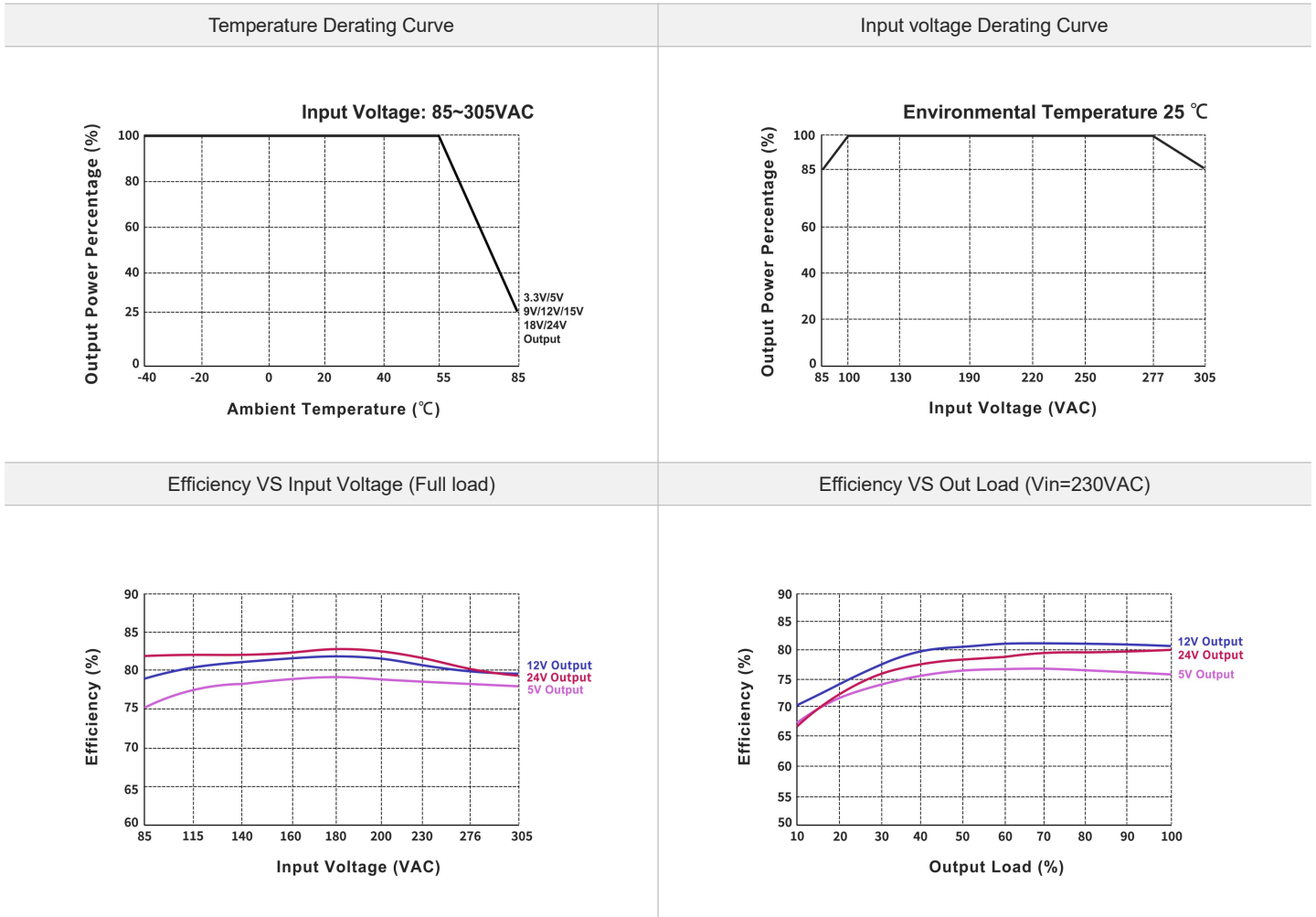
Mechanical Specifications

Package Dimensions	26.40 * 11.00 * 17.60mm	
Weight	AS05-23Sxx(-P)	5.01g(typ.)
	AS05-23Sxx-F	5.56g(typ.)
Cooling Method	Free air convection	

Electromagnetic Compatibility (EMC)

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

Product Characteristic Curve

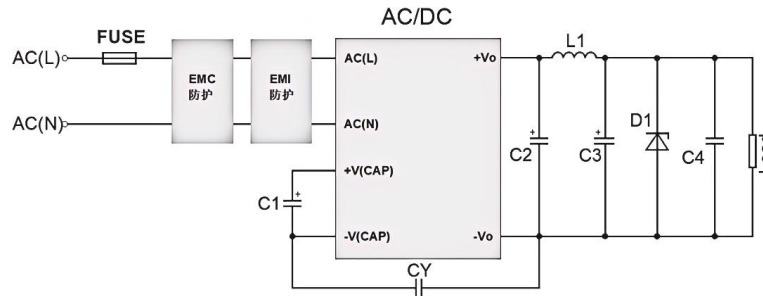


Note:

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

Typical Application circuit 1



Recommended parameter values

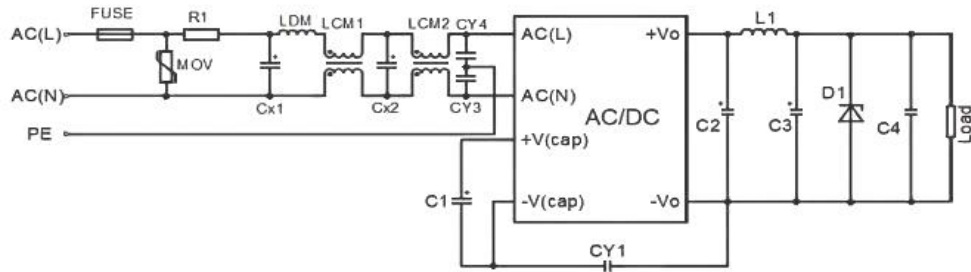
Part No.	C1(required)	C2(required)	L1(required)	C3(required)	C4	CY(required)	D1
AS03-23S03	22uF/450V	560uF/10V (solid-state capacitor)	2.2uH 3A 40mΩMAX	100uF/16V	0.1uF/50V	1nF/400VAC	See Note
AS03-23S05				100uF/16V	0.1uF/50V	1nF/400VAC	
AS03-23S09				47uF/35V	0.1uF/50V	1nF/400VAC	
AS03-23S12							
AS03-23S15		330uF/35V (solid-state capacitor)	3.3uH 3A 25mΩMAX	47uF/35V	0.1uF/50V	1nF/400VAC	
AS03-23S24				47uF/35V	0.1uF/50V	1nF/400VAC	

Note:

- FUSE, EMC protection, and EMI protection are selected according to actual application requirements.
- C1 is used as filter capacitor with AC input (must be connected externally) and as EMC filtering electrolytic capacitor with DC input (must be connected), and it is recommended to use the capacitor with ripple current $>400\text{mA}@100\text{KHz}$.
- C2, C4, and L1 form a Pi type filtering circuit, and it is recommended to use high-frequency and low resistance electrolytic capacitors or solid-state capacitors. When selecting L1, ripple requirements can be considered, while paying attention to current and internal resistance values.
- 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

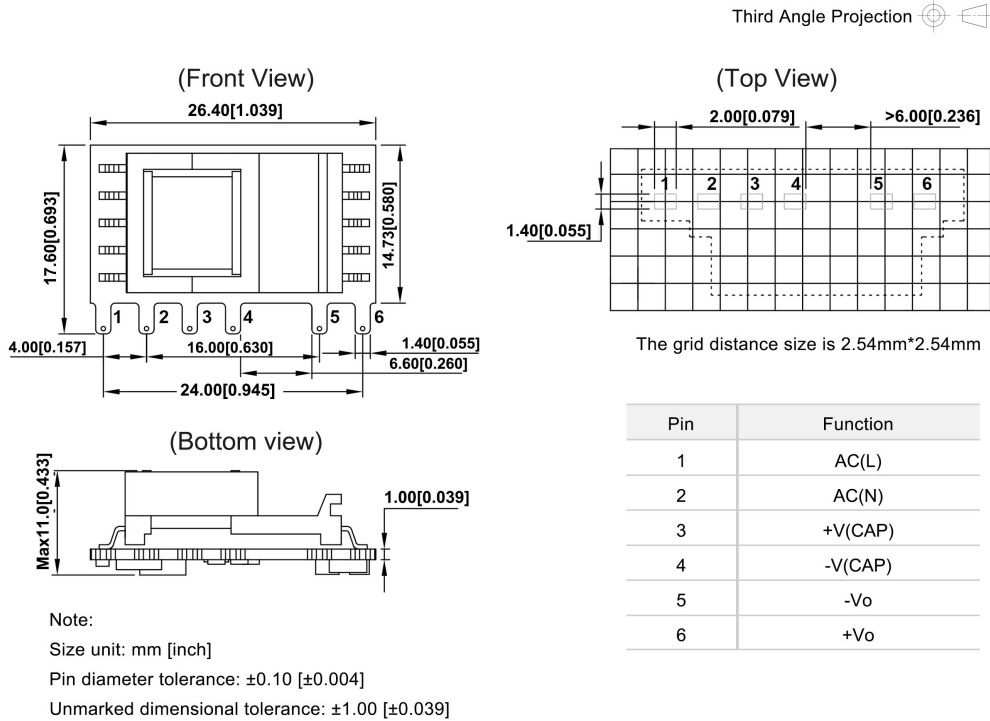
EMC Solutions Recommended Circuits 2



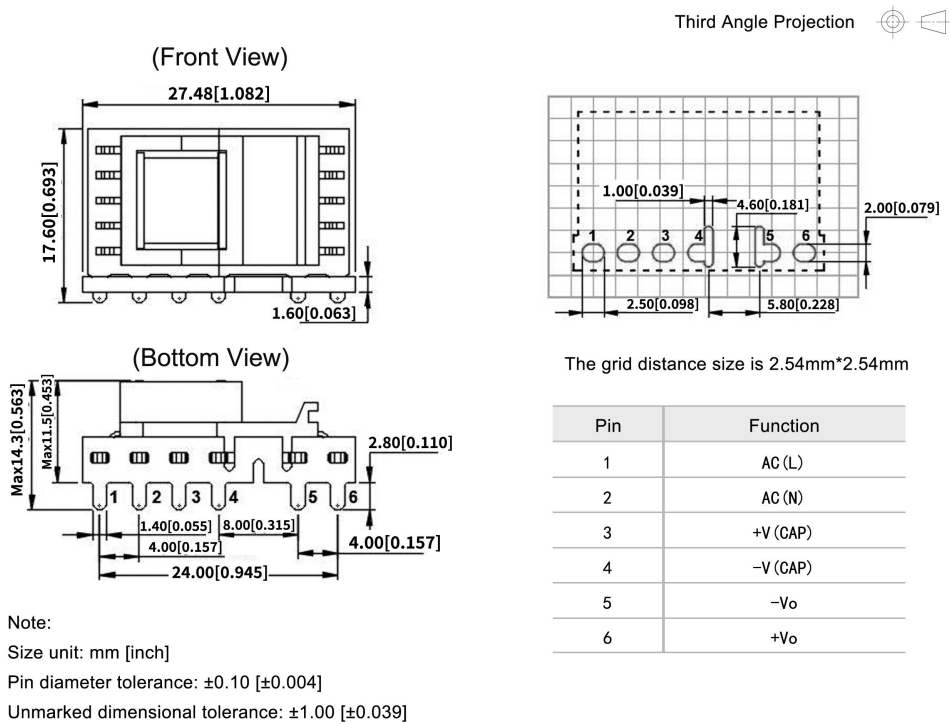
Model	Recommended parameter values
FUSE	2A/300V, Slow-blow, Required
R1	12Ω/3W (Wire-wound resistor, Required)
MOV	14D561
LDM	4.7uH/Max: 15Ω/0.2A
LCM1	200uH 0.8A
LCM2	12.6mH/MIN 0.5A
CX1,CX2	0.1uF/310VAC
CY1,CY3,CY4	1nF/400VAC
Other	Refer to typical circuit design and application

Dimensions and Recommended Layout

AS05-23Sxx(P) Dimensions and Recommended Layout



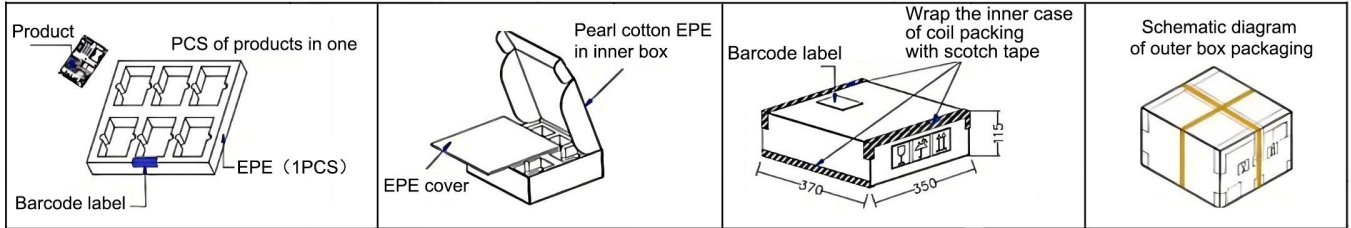
AS05-23Sxx-F Dimensions and Recommended Layout



Packaging Information

Model series	Product quantity(pcs/tray)	Inner carton quantity(pcs/carton)	Outer carton quantity(pcs/carton)
AS05-23Sxx(-P)	140	420	840
AS05-23Sxx-F	140	420	840

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 $T_a=25\text{ }^\circ\text{C}$, 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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