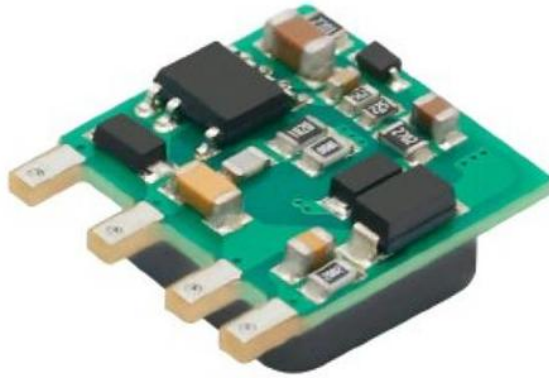


1-5W, AC/DC Power Converter

SAZ

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Introduction

SAZ series are non-isolated AC/DC power converters, featuring universal input voltage range 85~305VAC, low standby power consumption, high efficiency. They are certified to IEC/EN 62368-1, and EMC performance meets CISPR32, EN55032, ideally suitable for industrial, and critical commercial applications.

Features

- Rated power: 1-5W Max
- Universal input: 85~305VAC, 47~63Hz
- Non-isolated, regulated output
- Typical efficiency up to 77%
- Energy saving, standby power only 0.1W typ.
- Operating temperature range: -40~+85°C
- RoHS compliance
- Compact SIP package
- Over current and short circuit protection
- Comply to IEC/EN 62368-1, CISPR32, EN55032
- 3 year warranty

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Part numbers

Model Number	Output Power [W]	Output Voltage [VDC]	Output Current [mA] Max.	Efficiency [%] Typ.	Capacitive Load [uF] Max.
SAZ01S050	1	5	200	56	500
SAZ03S120	3	12	250	73	330
SAZ04S120	4	12	330	75	160
SAZ05S150	5	15	330	76	160
SAZ05S180	5	18	280	77	160

* Only typical models are listed, other models may be available, upon request.

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Electrical characteristics

Unless otherwise indicated, specifications are measured at TA=25°C, humidity <75%, nominal input voltage and rated output load.

Parameter	Condition	Min.	Type	Max.	Unit	Note
Input voltage range	AC in	85	-	305	VAC	
	DC in	70		430	VDC	
Input frequency		47	-	63	Hz	
Nominal input voltage		100	-	277	VAC	
Input current	115VAC	-	-	0.20	A	
	230VAC			0.14		
	277VAC			0.10		
Inrush current	115VAC	-	25	-	A	
Cold start	277VAC		40			
Output voltage accuracy $I_{OUT}=10\%\sim 100\%$ of $I_{OUT, rated}$		-	± 5	± 8	%	
Line regulation Full load		-	± 1.5	-	%	
Load regulation $I_{OUT}=10\%\sim 100\%$ of $I_{OUT, rated}$		-	± 4	-	%	
Ripple and noise 20MHz bandwidth, peak to peak		-	50	150	mV	
Standby power consumption	230VAC	-	0.10	0.40	W	
Temperature coefficient		-	± 0.15	-	%/°C	

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Minimum load		10	-	-	%	
Over current protection	Automatic recovery	110	-	-	% I _{OUT}	
Short circuit protection	Automatic recovery	Continuous, hiccup mode				
Recommended external fuse		1A, 300V slow blow *required*				

* Ripple and noise measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 1uF ceramic capacitor and a 10uF electrolytic capacitor in parallel.

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General Specifications

Parameters	Condition	Min.	Typ.	Max.	Unit
Isolation voltage	Input to Output	-	0	-	VAC
Operating temperature range	See “Derating Curve”	-40	-	85	°C
Storage temperature		-40	-	105	°C
Storage humidity		-	-	95	%RH
Soldering temperature	Wave	-	260	-	°C
	Manual		360		
Cooling method		Free air convection			
MTBF	MIL-HDBK-217F	>300,000 Hours, 25°C			
Design based on standards		IEC/EN/UL 62368-1			
Safety certifications		IEC/EN 62368-1			
EMC		CISPR32, EN55032 Class B with external circuit			
Size, and Weight					
Design based on standards		RoHS & REACH directives, IEC/EN/UL 62368, FCC, UKCA, IEC EN 60335, IEC EN 61558			
Safety certifications		IEC/EN 62368-1			
EMC	CE	CISPR32, EN55032 Class B with “External Circuit”, (2)			
(1) With External Circuit as shown in “Figure 1”	ESD	IEC/EN61000-4-2, Contact ±6kV, Criteria B, (1)			
	RS	IEC/EN61000-4-3, 10V/m, Criteria A, (2)			
	EFT	IEC/EN61000-4-4, ±2kV, Criteria B, (1)			
	EFT	IEC/EN61000-4-4, ±4kV, Criteria B, (2)			
	(2) With External Circuit as shown in “Figure 2”	Surge	IEC/EN61000-4-5, Line to Line ±1kV, Criteria B, (1)		
	CS	IEC/EN61000-4-6, 10Vrms, Criteria A, (2)			
	DIP	IEC/EN61000-4-11, 0%, 70%, Criteria B, (2)			
Size, and Weight		16.1 x 15.1 x 9.5 mm, 4.2g			

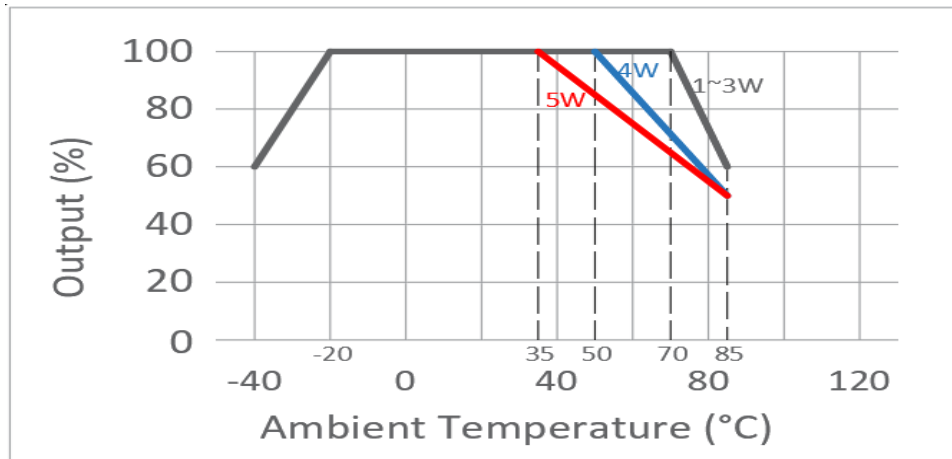
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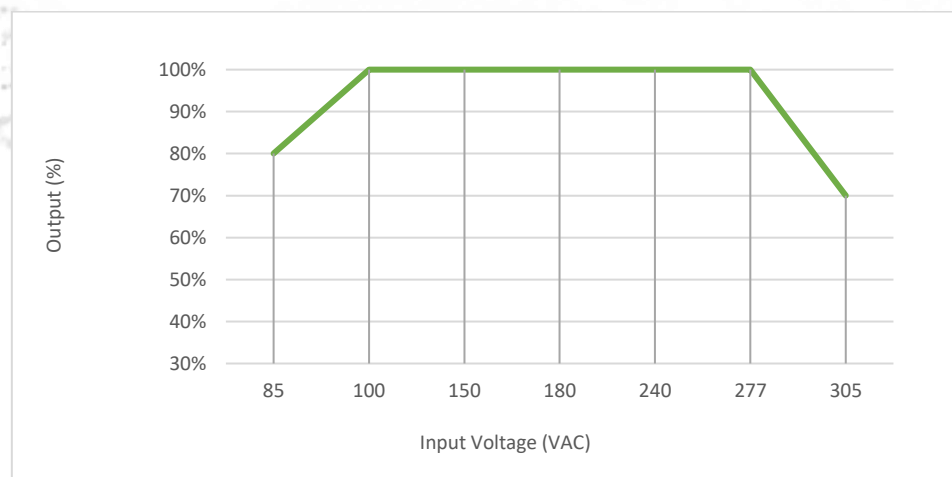
Characteristics Curves

Derating Curve

Output vs Ambient Temperature



Output vs Input Voltage



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Recommended External Circuits

Typical External Circuits

This circuit is the basic design reference, components with “” are required for the converter’s operating.

FUSE to be 1A, 300V slow blow and is also required for safety.

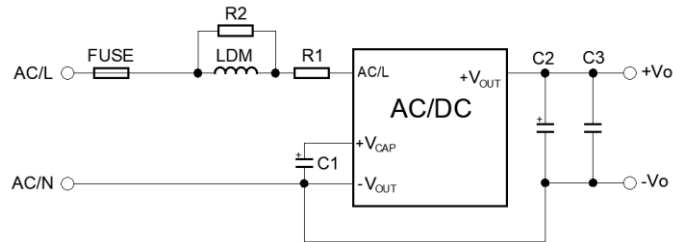


Figure 1. Typical external circuit

Recommended Component Spec

Model Number	LDM*	R1*	R2	C1*	C2*	C3
PNZR01S-050	1.2mH, 0.2A	-	-	22uF, 450V	220uF, 16V	-
PNRZ03S-120	1.2mH, 0.2A	-	-	22uF, 450V	220uF, 16V	-
PNZR04S-120	2.2mH, 0.24A	2 Ohm, 2W	8.2KOhm, 0.25W	22uF, 450V	470uF, 16V	0.1uF, 50V
PNZR05S-150	2.2mH, 0.24A	2 Ohm, 2W	8.2KOhm, 0.25W	22uF, 450V	470uF, 35V	0.1uF, 50V
PNZR05S-180	2.2mH, 0.24A	2 Ohm, 2W	8.2KOhm, 0.25W	22uF, 450V	470uF, 35V	0.1uF, 50V

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EMC Enhancement for EN55032 Class B

*This application circuit is recommended for EMC enhancement. It is not mandatory if this is not critical in the application.

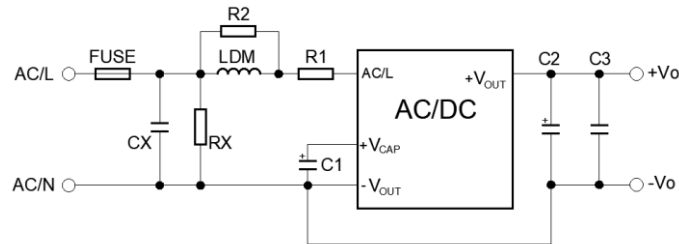


Figure 2. External circuit for EMC enhancement

Recommended Component Spec

Item	CX	RX*
Spec	0.1uF, 310VAC	5M ... 8M Ohm

Components above with "" are required for the converter's operating.

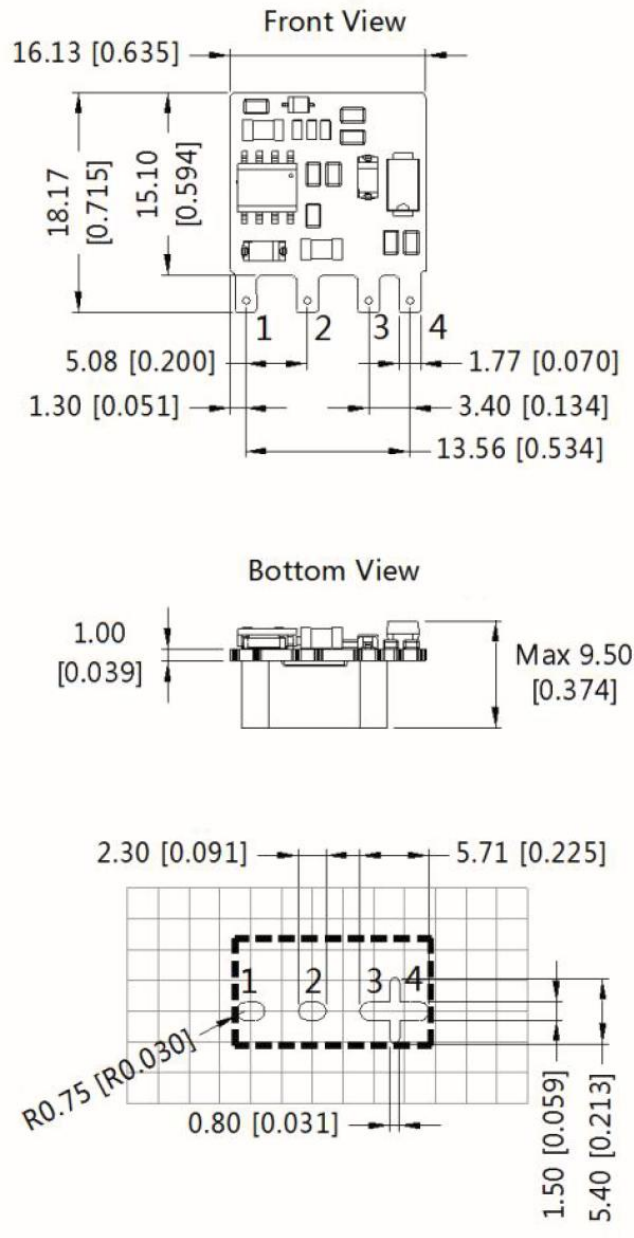
*Refer to Table 1 for other components

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Mechanical Specifications



Pin Definition

Pin #	Single Out	
1	AC (L)	
2	+V (CAP)	
3	AC (N) / - V _{OUT}	
4	+V _{OUT}	

* Unless otherwise specified unit:
mm [inch]

* General tolerance: ± 0.50 [± 0.020]

* PIN thickness: ± 0.10 [± 0.004]

* Footprint grid 2.54 x 2.54 mm

* Component positions are for
reference only

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Ordering information

Ordering can be done via www.summit-electronics.com or via info@summit-electronics.com. Please contact us for more information. Customisation of the product is available on request.

Technical support

For all product questions please contact us via info@summit-electronics.com

Document revision

Rev	Date	Changes
2025v0.1	19-08-2025	First issue of document