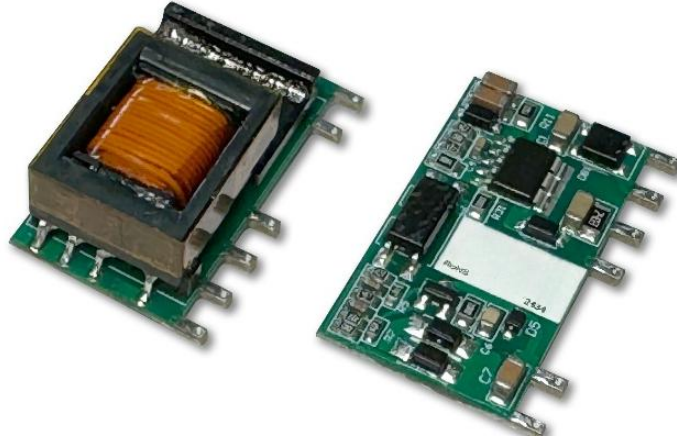


10W, AC/DC Power Converter

SAN10S

SUMMIT
ELECTRONICS



Introduction

SAN10S series are compact size and open frame AC/DC power converters, designed for energy meters, and high reliability industrial applications. They feature wide input voltage range 85~305VAC, low stand by power consumption, high efficiency, and class II reinforced insulation. They are designed to meet IEC/EN/UL62368-1, EN60335-1, EN61558-1, UKCA and EMC performance meets CISPR32, EN55032 Class B with external components, ideally suitable for industrial, and critical commercial applications.

Features

- Rated power: 10W Max.
- Universal input:
85~305VAC, 47~63Hz
- Regulated single output
- Isolation voltage 4000VAC
- Typical efficiency 75 ... 85%
- Energy saving, standby power only 0.1W
- Operating temperature range: -40~+85°C
- RoHS compliance
- Compact SIP package
- Over voltage, over current, and short circuit protection
- Meet IEC/EN/UL 62368-1, IEC/EN 61558, IEC/EN 60335
- CISPR32, EN55032 Class B
- 3 year warranty

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Part numbers

Model Number	Input Voltage (VAC)	Output Voltage (VDC)	Output Current (mA) Max	Efficiency (%) Typ.	Capacitive Load (uF) Max.
SAN10S033	85~305VAC 100~430VDC	3.3	2000	74	1500
SAN10S050		5	2000	78	1500
SAN10S090		9	1100	79	1000
SAN10S120		12	840	83	680
SAN10S150		15	670	83	470
SAN10S240		24	420	84	330

* 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	Notes
Input voltage range	AC in	85	-	305	VAC	
	DC in	100		430	VDC	
Input frequency		47	-	63	Hz	
Nominal input voltage		100	-	277	VAC	
Input current	115VAC 230VAC	-	-	0.40 0.25	A	
Inrush current Cold start	115VAC 230VAC	-	18 35	-	A	
Leakage current	277VAC/50 HZ			0.25	mA RMS	
Output voltage accuracy $I_{OUT}=10\%\sim 100\%$ of $I_{OUT, rated}$		-	± 1	± 3	%	
Line regulation Full load	$V_{OUT}=3.3V$ Others	-	± 2.5 ± 1.5	-	%	
Load regulation $I_{OUT}=10\%\sim 100\%$ of $I_{OUT, rated}$		-	± 3	-	%	
Ripple and noise 20MHz bandwidth, peak to peak		-	80	150	mV	
Standby power consumption	230VAC	-	0.1	0.25	W	

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Temperature coefficient		-	±0.15	-	%/°C	
Hold-up time	115VAC 230VDC	-	8 40	-	mS	
Minimum load		0	-	-	%	
Over current protection	Automatic recovery	110	-	-	% I _{OUT}	
Over voltage protection	V _{OUT} =3.3, 5V			9		
Hiccup or clamping by Zener diode	V _{OUT} =9V			12		
	V _{OUT} =12V	-	-	16	VDC	
	V _{OUT} =15V			20		
	V _{OUT} =24V			30		
Short circuit protection	Automatic recovery	Continuous, hiccup mode				
Recommended external fuse		1A, 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 1 minute, leakage current 5mA max	Input to Output	4000	-	-	VAC
Insulation resistance 500VDC	Input to Output	100			M Ohm
Operating temperature range	See “Derating Curve”	-40	-	85	°C
Storage temperature		-40	-	105	°C
Storage humidity		-	-	95	%RH
Switching frequency		-	65	-	KHz
Soldering temperature	Wave Manual	-	260 360	-	°C
Cooling method		Free air convection			
Safety class		Class II, no FG			
MTBF	MIL-HDBK-217F	>1,000,000 Hours, 25°C			
Design based on standards		IEC/EN/UL 62368, EN 60335, EN 61558, UKCA			
Safety certifications		IEC/EN 62368-1			
EMC (1) With External Circuit as	CE ESD RS	CISPR32, EN55032 Class B, (2) IEC/EN61000-4-2, Contact ±6kV, Air ±8kV, Criteria B IEC/EN61000-4-3, 10V/m, Criteria A			

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shown in "Figure 1" (2) With External Circuit as shown in "Figure 2"	EFT	IEC/EN61000-4-4, $\pm 2\text{kV}$, Criteria B, (1)
	EFT	IEC/EN61000-4-4, $\pm 4\text{kV}$, Criteria B, (2)
	Surge	IEC/EN61000-4-5, Line to Line $\pm 1\text{kV}$, Criteria B, (1)
	Surge	IEC/EN61000-4-5, Line to Line $\pm 2\text{kV}$, Criteria B, (2)
	CS	IEC/EN61000-4-6, 10Vrms, Criteria A
Size, and Weight	Default package	32.0x14.5x17.2mm, 10g Typ.

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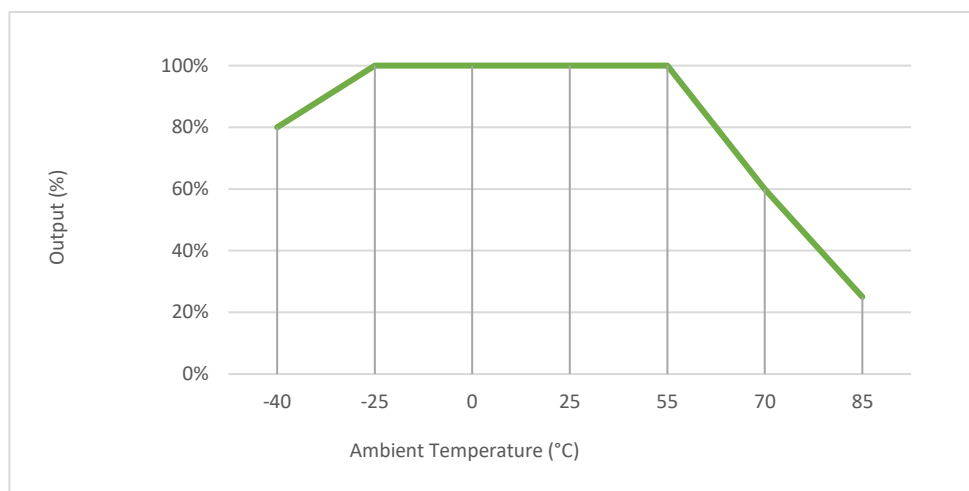
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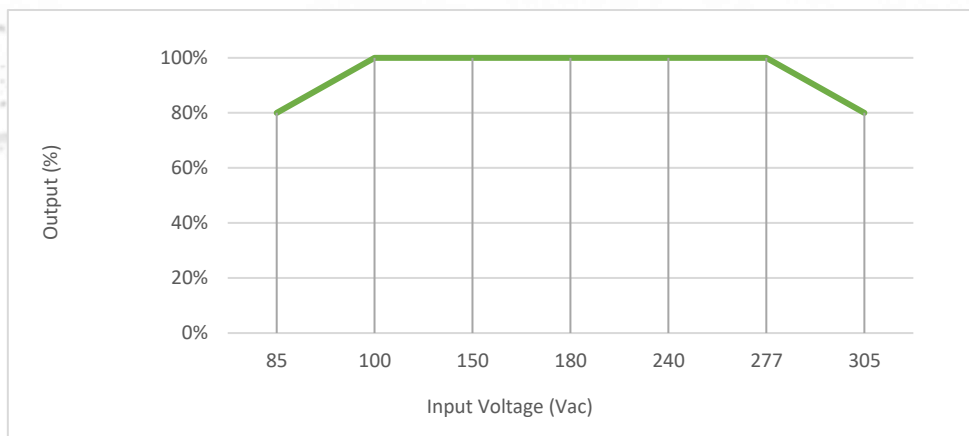
Characteristics Curves

Derating Curve

Output vs Ambient Temperature



Output vs Voltage



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Recommended External Circuit

Typical External Circuit

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, R1* is 6.8 Ohm, 3W, wire-wound resistor.

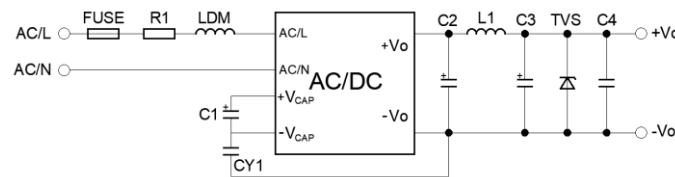


Figure 1: Typical external circuit

Recommended Component Spec

V _{OUT} [V]	C1*	C2*	C3*	C4	CY1*	L1*	TVS
3.3, 5	22uF, 450V	820uF, 16V	150uF, 25V	0.1uF, 50V	1nF, 400VAC	2.2uH, 6.5A	SMBJ7.0A
9, 12	22uF, 450V	470uF, 25V	150uF, 25V	0.1uF, 50V	1nF, 400VAC	2.2uH, 6.5A	SMBJ12A
15, 24	22uF, 450V	470uF, 35V	100uF, 35V	0.1uF, 50V	1nF, 400VAC	3.3uH, 5A	SMBJ20A

* For further questions contact one of our sales representatives.

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.

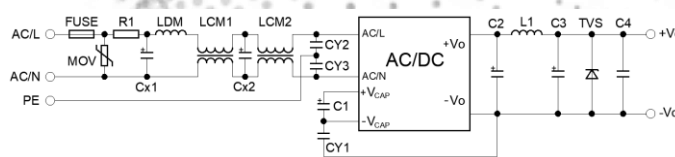


Figure 2. Circuit for EMC Enhancement

Recommended Component Spec

Item	FUSE*	MOV	Cx1, Cx2	LDM	LCM1	LCM2	CY1, CY2, CY3
Spec	2A, 300V	S14K350	0.1uF, 310VAC	2.2mH, 0.4A	200uH, 0.8A	12.6mH, 0.5A min.	1nF, 400VAC

Components above with “” are required for the converter’s operating.

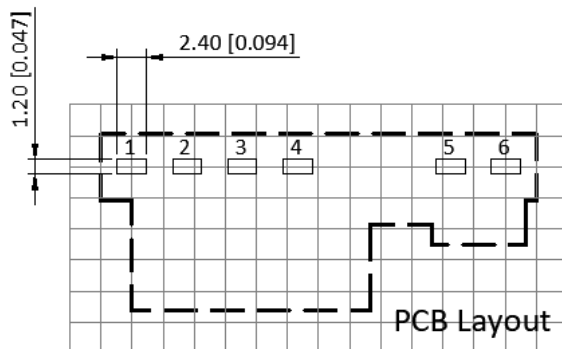
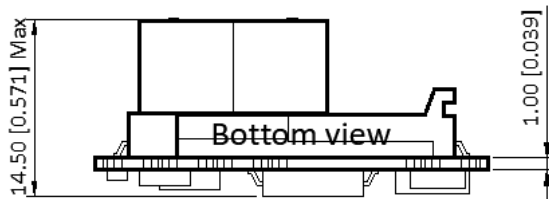
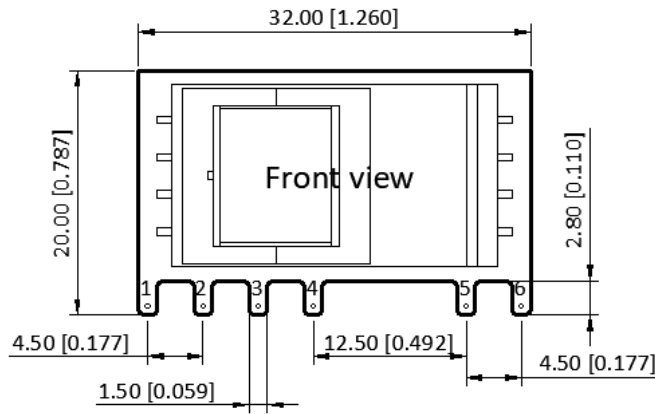
*Refer to Table 1 for other components that not shown in Table 2

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Mechanical Specifications



Pin Definition

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

* Unless otherwise specified unit:
mm [inch]

* General tolerance: ± 1.00 [± 0.040]

* Pin thickness: ± 0.10 [± 0.004]

* Footprint grid 2.54 x 2.54 mm

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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	26-08-2025	First issue of document