15W, AC/DC Power Converter

SAN15S

Introduction

SAN15S 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: 15W 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.
SAN15S033	85~305VAC 100~430VDC	3.3	3,000	75	5000
SAN15S050		5	2,800	78	5000
SAN15S090		9	1,670	80	4000
SAN15S120		12	1,250	84	2000
SAN15S150		15	1,000	84	1000
SAN15S240		24	625	85	680

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

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 DC in	85 100	-	305 430	VAC VDC	
Input frequency		47	-	63	Hz	
Nominal input voltage		0	-	-	%	
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%~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%~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	

Temperature coefficiency		-	±0.15	-	%/°C	
Hold-up time	115VAC 230VDC	-	8 40	-	mS	
Minimum load		0	-	-	%	
Over voltage protection Hiccup or clamping by Zener diode	V_{OUT}=3.3, 5V V_{OUT}=9V V_{OUT}=12V V_{OUT}=15V V_{OUT}=24V	-	-	9 12 16 20 30	VDC	
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.

General Specifications

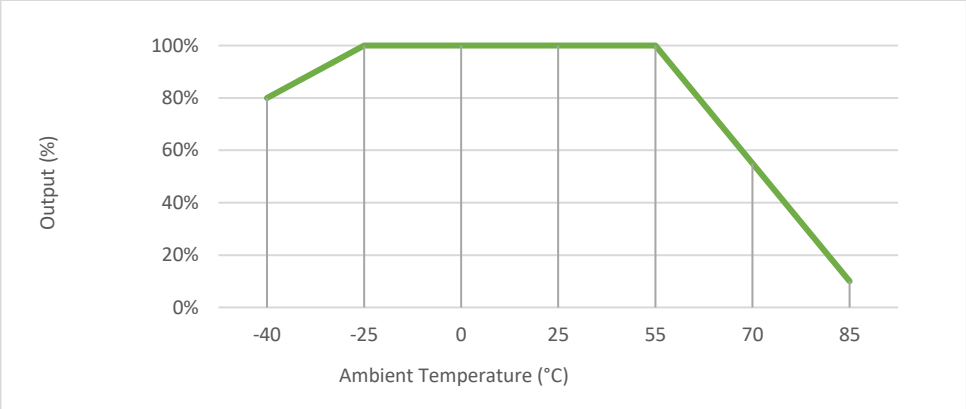
Parameters	Condition	Min.	Typ.	Max.	Unit
Isolation voltage 1 minute, leakage current 5mA max	Input to Output	4000	-	-	VAC
Insulation resistance 500VDC	Input to Output	100			M Ohm
Operating temperature range		-40	-	105	°C
Storage temperature		-	-	95	%RH
Storage humidity	Wave Manual	-	260 360	-	°C
Switching frequency		Free air convection			
Soldering temperature		Class II, no FG			
Cooling method	MIL-HDBK-217F	>1,000,000 Hours, 25°C			
Safety class		UL/EN/IEC 62368-1, EN/IEC 60335-1, EN/IEC 61558-1			
MTBF		EN/IEC 62368-1			
Design based on standards		CISPR32, EN55032 Class B with external circuit			
Safety certifications		26.4x11.0x14.8mm, 5.9g			
EMC (1) With External	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			

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

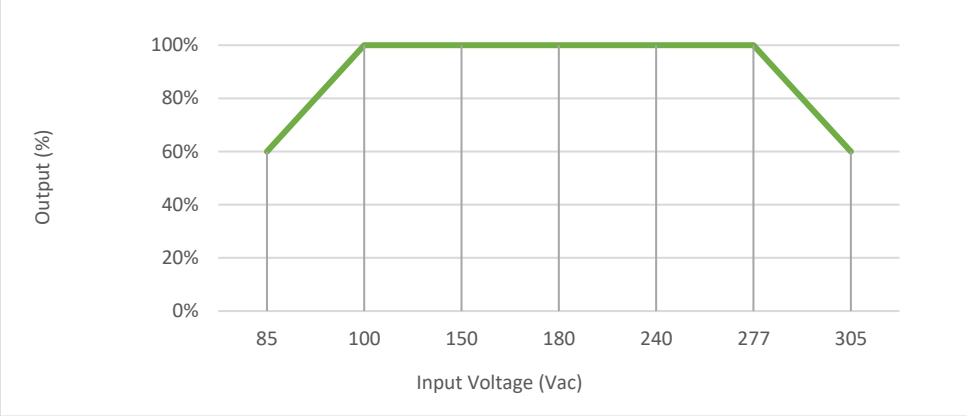
Characteristics Curves

Derating Curve

Output vs Ambient Temperature



Output vs Voltage



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.

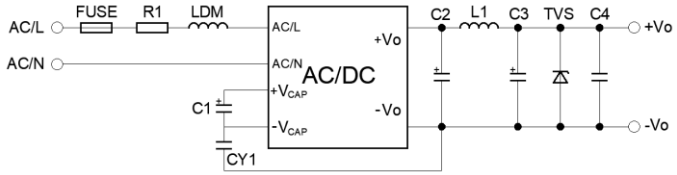


Figure 1: Typical external circuit

Recommended Component Spec

V_{OUT} [V]	C1*	C2*	C3*	C4	CY1*	L1*	TVS
3.3, 5	33uF, 450V	1000uF, 16V	470uF, 25V	0.1uF, 50V	2.2nF, 400VAC	2.2uH, 6.5A	SMBJ7.0A
9, 12	33uF, 450V	470uF, 25V	220uF, 25V	0.1uF, 50V	1nF, 400VAC	2.2uH, 6.5A	SMBJ12A
15, 24	33uF, 450V	470uF, 35V	150uF, 35V	0.1uF, 50V	1nF, 400VAC	3.3uH, 5A	SMBJ20A

* For further questions contact one of our sales representatives.

Circuit for EMC Enhancement

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

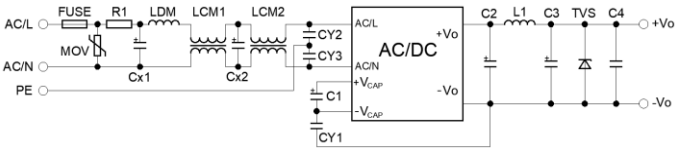


Figure 2. External circuit design for EMC enhancement

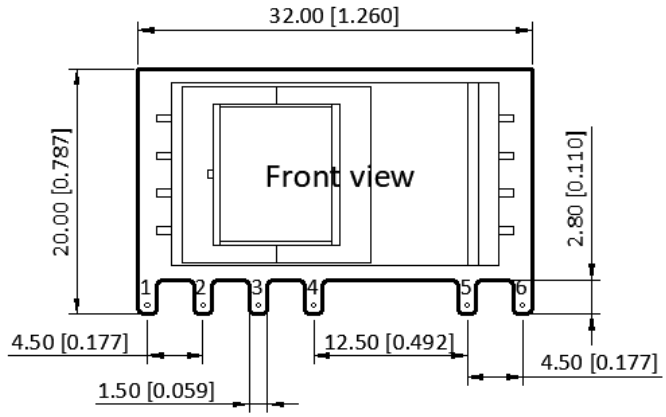
Recommended Component Spec

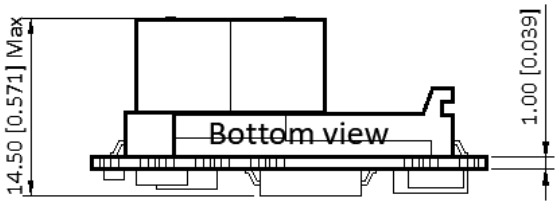
Item	FUSE*	MOV	Cx1, Cx2	LDM	LCM1	LCM2	CY1, CY2, CY3
Spec	2A, 300V	S14K350	0.1uF, 310VAC	2.2mH, 0.4A	200uH, 0.8A	12.6mH, 0.5A min.	1nF, 400VAC

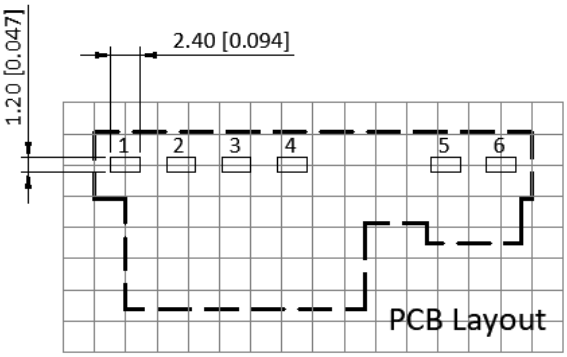
Components above with "" are required for the converter's operating.

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

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**

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