

3W, AC/DC Power Converter

SAP03D

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Introduction

SAP03D series are compact size AC/DC power converters offered in 1"x1" package and extremely low profile. The series also feature universal input voltage range, low stand by power consumption, high efficiency. Designed for high reliability industrial applications, these converters are encapsulated to protect from dust and moisture. They are certified to IEC/EN/UL62368, EN60335, EN61558, UKCA, and EMC performance meets CISPR32, EN55032 Class B without support from any external components, ideally suitable for industrial, and critical commercial applications.

Features

- Rated power: 3W Max
- Universal input: 85~305VAC 47~63Hz
- Regulated single output
- Isolation voltage 4000VAC
- Typical efficiency 70 ... 79%
- Energy saving, standby power only less than 0.1W
- Operating temperature range: -40~+85°C
- RoHS compliance
- Compact 1"x1" package
- Low profile 15mm height
- Over voltage, over current and short circuit protection
- Certified to UL/IEC/EN62368-1, EN60335-1, EN61558-1, UKCA
- Meet CISPR32, EN55032 Class B with NO External Circuit
- 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.
SAP03D033	85~305VAC 100~430VDC	3.3	900	70	3000
SAP03D050		5	600	74	3000
SAP03D090		9	333	78	1200
SAP03D120		12	250	79	1200
SAP03D150		15	200	79	680
SAP03D240		24	125	79	220

* 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	-	-	0.12	A	
	230VAC	-		0.07		
Inrush current Cold start	115VAC	-	15	-	A	
	230VAC	-	25			
Leakage current	277VAC, 50Hz	-	-	0.25	mA RMS	
Output voltage accuracy		-	±3	-	%	
Line regulation	Full load	-	±0.5	-	%	
Load regulation IOUT=0%~100% of IOUT, rated		-	±1.0	-	%	
Ripple and noise 20MHz band- width, peak to peak		-	50	100	mV	
Temperature coefficient		-	±0.02	-	%/°C	
Standby power consumption	230VAC	-	0.1	-	W	
Hold up time Full load	115VAC	-	5	-	mS	
	230VAC	-	50			

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Over current protection	Automatic recovery	110	-	-	% I _{OUT}	
Over voltage protection	V _{OUT} =3.3, 5V			7.5		
Hiccup or clamping by Zener diode	V _{OUT} =9, 12V	-	-	17	VDC	
	V _{OUT} =15V			20		
	V _{OUT} =24V			30		
Short circuit protection		Continuous, hiccup mode, automatic recovery				
Recommended external fuse		1A, 300V, slow blow, *required*				
Minimum load		No minimum load is 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	I/P to O/P	4000	-	-	VAC
Isolation resistance 500VDC, 25°C, 70%RH	I/P to O/P	100	-	-	M Ohm
Switching frequency		-	65	-	KHz
Operating temperature range	See "Derating Curve"	-40	-	85	°C
Storage temperature		-40	-	105	°C
Storage humidity		10	-	95	%RH
Operating altitude		-	-	5000	m
Soldering temperature	Wave Manual	-	260 360	-	°C
Case material		Black plastic UL94-V0			
Cooling method		Free air convection			
Vibration		10Hz to 55Hz, 10G, 30 minutes along X, Y and Z axis			
Class II power		Yes, no FG			
MTBF	MIL-HDBK- 217F	> 1,000,000 Hours, 25°C			
Safety certifications		UL/EN/IEC 62368, EN60335, EN61558			

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EMC	CE	CISPR32, EN55032 Class B
(1) With External Circuit as shown in "Figure 1"	ESD	IEC/EN61000-4-2, Contact $\pm 6\text{kV}$, Air $\pm 8\text{kV}$, Criteria B
	RS	IEC/EN61000-4-3, 10V/m , Criteria A
	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)
1) With External Circuit as shown in "Figure 2"	CS	IEC/EN61000-4-6, 10Vrms , Criteria A
	DIP	IEC/EN61000-4-11, 0%, 70%, Criteria A
Size, and Weight		25.4 x 25.4 x 15 mm, 16g
Packing		720pcs/Carton, size: 405x365x245mm, 11.6Kg G.W.

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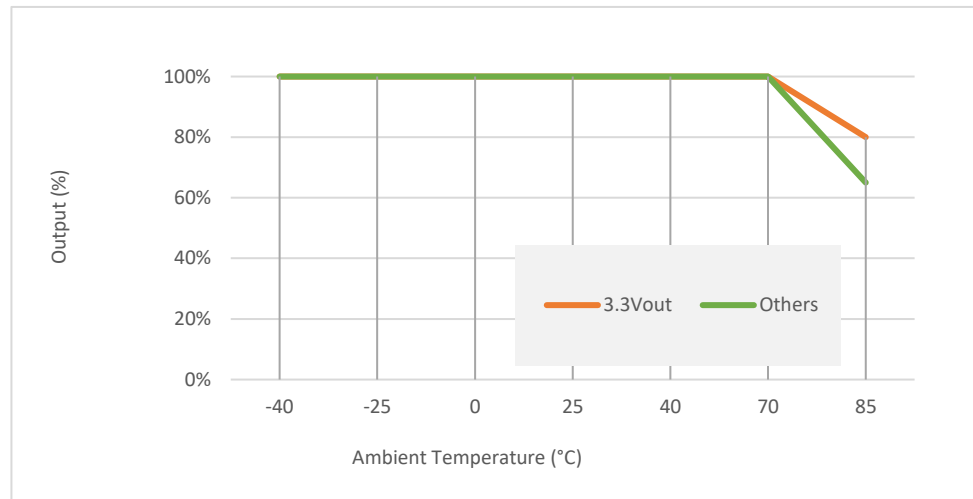
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Characteristics Curves

Derating Curve

Output vs Ambient Temperature



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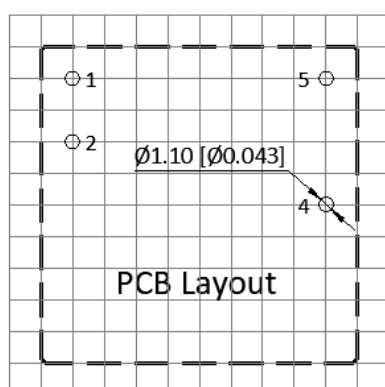
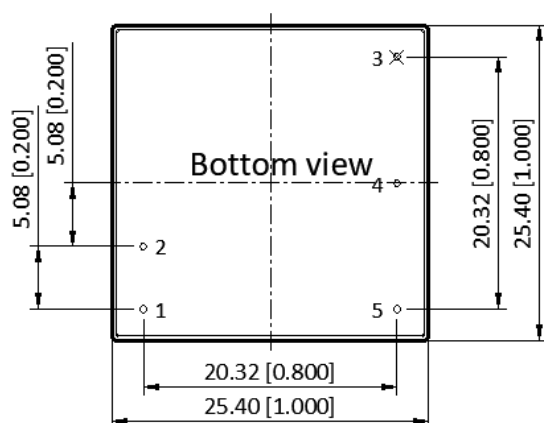
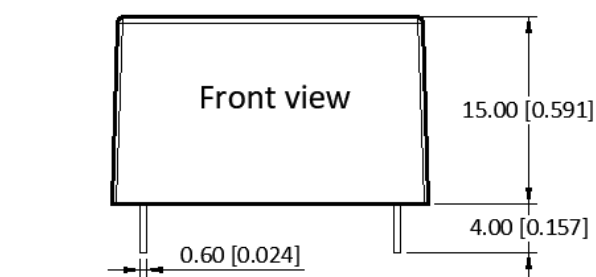
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Mechanical Specifications



Pin Definition

Pin #	Single Out	
1	AC (N)	
2	AC (L)	
3	No Pin	
4	-V _{OUT}	
5	+V _{OUT}	

* Unless otherwise specified unit:
mm [inch]

* General tolerance: ± 0.50 [± 0.020]

* Pin thickness: ± 0.15 [± 0.006]

* Pin distance: ± 0.50 [± 0.020]

* 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