

1W, DC/DC Power Converter

SDM01A



Introduction

The SDM01A series are SIP4 package DC/DC converters with unregulated single output, and 1.5KVDC isolation. These converters feature high efficiency, low ripple and noise, continuous short circuit protection, and wide operating temperature range. They are widely used in distributed power system in industrial applications where isolation and voltage converting is needed.

Features

- Rated power: 1W max
- Input voltage range $\pm 10\%$
- Unregulated single output
- High efficiency up to 88%
- Isolation voltage 1.5KVDC
- Small no load input current
- Operating temperature range: $-40 \sim +105^{\circ}\text{C}$ ambient
- RoHS compliant
- Compact SMD package
- Continuous short circuit protection
- Designed to meet UL/EN/IEC 62368-1
- 3 year warranty

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Part numbers

Model Number	Input Voltage [VDC] $\pm 10\%$	Output Voltage (VDC)	Output Current (mA) Max	Output Current (mA) Min	Efficiency (%) Typ.	Capacitive Load (uF) Max.
SDM01A0303	3.3	3.3	303	30	82	4000
SDM01A0305	3.3	5	200	20	83	4000
SDM01A0309	3.3	9	111	11	84	2000
SDM01A0312	3.3	12	84	8	85	1000
SDM01A0503	5	3.3	303	30	82	4000
SDM01A0505	5	5	200	20	87	4000
SDM01A0509	5	9	111	12	86	2000
SDM01A0512	5	12	84	9	88	1000
SDM01A0515	5	15	67	7	88	680
SDM01A0524	5	24	42	4	89	560
SDM01A1203	12	3.3	303	30	84	4000
SDM01A1205	12	5	200	20	88	4000
SDM01A1209	12	9	111	12	87	2000
SDM01A1212	12	12	84	9	90	1000
SDM01A1215	12	15	67	7	88	680
SDM01A1224	12	24	42	5	89	560
SDM01A1503	15	3.3	200	20	85	4000
SDM01A1505	15	5	200	20	85	4000
SDM01A1509	15	9	111	12	91	2000
SDM01A1512	15	12	84	9	89	1000
SDM01A1515	15	15	67	7	89	680
SDM01A2403	24	3.3	303	30	84	4000
SDM01A2405	24	5	200	20	87	4000

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SDM01A2409	24	9	111	12	92	2000
SDM01A2412	24	12	84	9	88	1000
SDM01A2415	24	15	67	7	88	680
SDM01A2424	24	24	42	5	89	560

* 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 current Full load	V _{IN} =3.3V	-	370	390	mA	
	V _{IN} =5V		230	260		
	V _{IN} =12V		99	105		
	V _{IN} =15V		78	85		
	V _{IN} =24V		50	55		
Input current No load		-	3	15	mA	
Reflected Ripple Current		-	15	-	mA	
Surge voltage 1 second max	V _{IN} =3.3V	-0.7	-	5	VDC	
	V _{IN} =5V	-0.7		9		
	V _{IN} =12V	-0.7		18		
	V _{IN} =15V	-0.7		21		
	V _{IN} =24V	-0.7		30		
Output voltage accuracy	All models	Refer to graphic in "Characteristic Curves" section				
Line regulation For V _{IN} change of ±1%	V _{OUT} =3.3V	-	-	±1.5	%	
	All others			±1.2		
Load regulation I _{OUT} =10% to 100% of I _{OUT} , rated	V _{OUT} =3.3V	-	10	20	%	
	Others		8	15		
Temperature coefficient	Full load	-	±0.03	-	%/°C	
Output ripple and noise 20MHz bandwidth, peak to peak		-	45	100	mVp-p	

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Output short circuit protection		Continuous, automatic recovery	
Input filter		Capacitor	
Hot plug		None	

*Operating with less than 10% of rated load will not cause permanent damage to the converters, but the performances data may not fall into the specifications, and reliable operating is not assured.

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General Specifications

Parameters	Condition	Min.	Typ.	Max.	Unit
Isolation voltage 1 minute, leakage current 1mA max	Input to Output	1500	-	-	VDC
Isolation resistance Tested at 500VDC	Input to Output	1000	-	-	M ohm
Isolation capacitance 100KHz, 0.1V	Input to Output	-	20	-	pF
Operating temperature	See "Derating Curve"	-40	-	+105	°C
Storage temperature		-55	-	+125	°C
Temperature rise at case	Full load	-	15	-	°C
Storage humidity	Non-condensing	5	-	95	%RH
Switching frequency Full load		-	220	-	KHz
Pin soldering resistance 1.5mm away from case for 10 sec		-	-	300	°C
Vibration		10-150Hz, 5G, 0.75mm along X, Y and Z			
Cooling method		Free air convection			
Case material		Black plastic UL94-V0			
Design based on standards		UL/EN/IEC 62368-1			
Safety certifications		EN/IEC 62368-1			
EMC	Emissions	CISPR32, EN55032 Class B with External Circuit			

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	Immunity	IEC/EN61000-4-2, air $\pm 8\text{kV}$, contact $\pm 6\text{kV}$
MTBF	MIL-HDBK-217F	>3,500,000 Hours, $T_A=25^\circ\text{C}$
Size		11.6 x 6.0 x 10.2mm
Weight		1.6 Typ.

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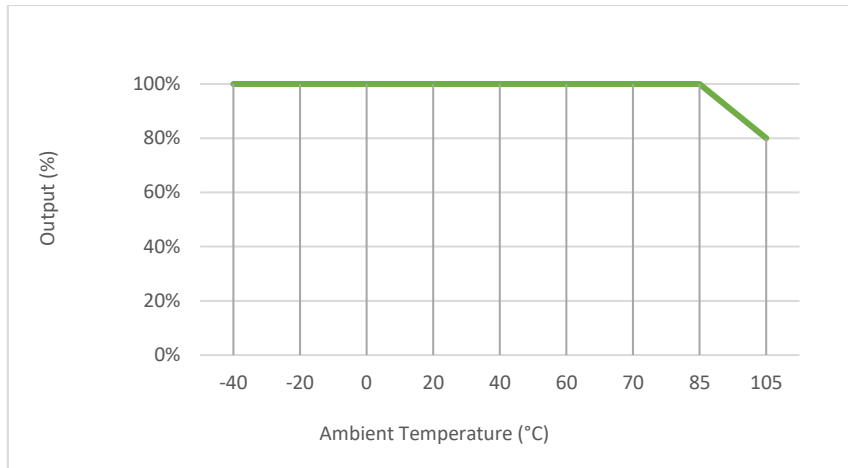
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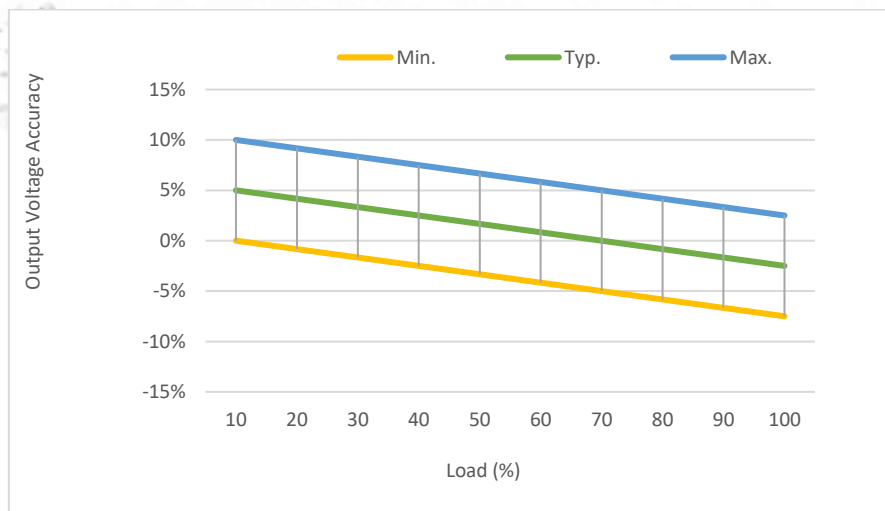
Characteristics Curves

Derating Curve

Output vs Ambient Temperature



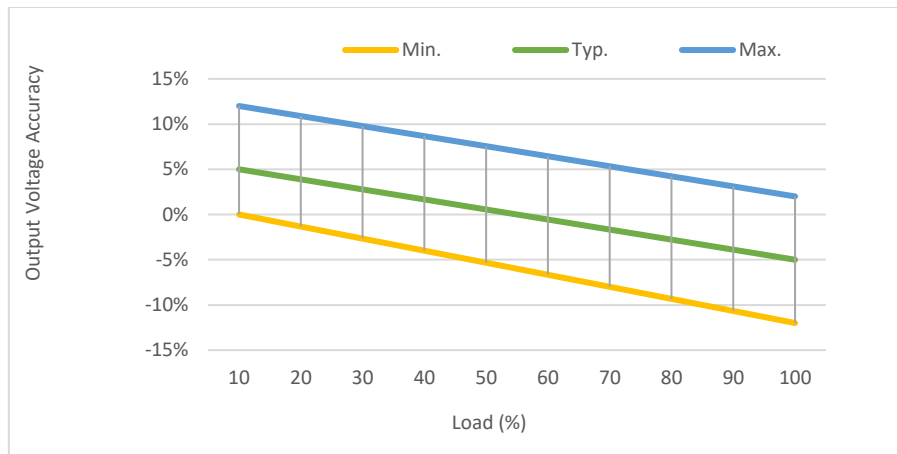
Output Voltage Accuracy vs Load



None 3.3V output models

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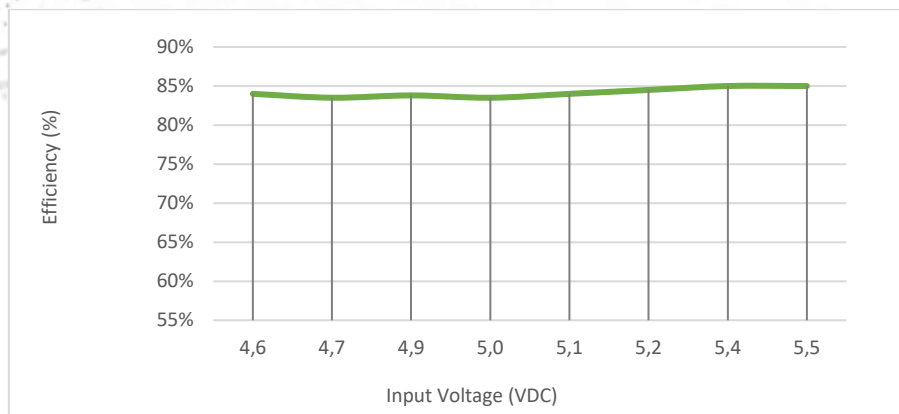
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3.3V output models

Efficiency Curves

Efficiency vs Input Voltage



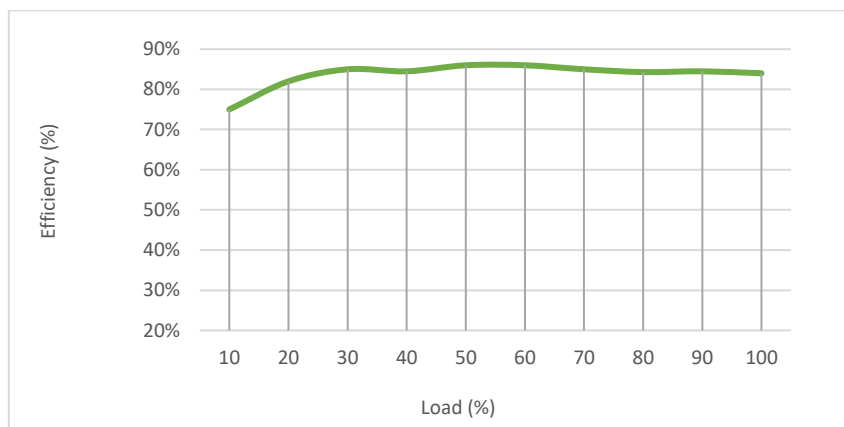
SDM01A, with full Load

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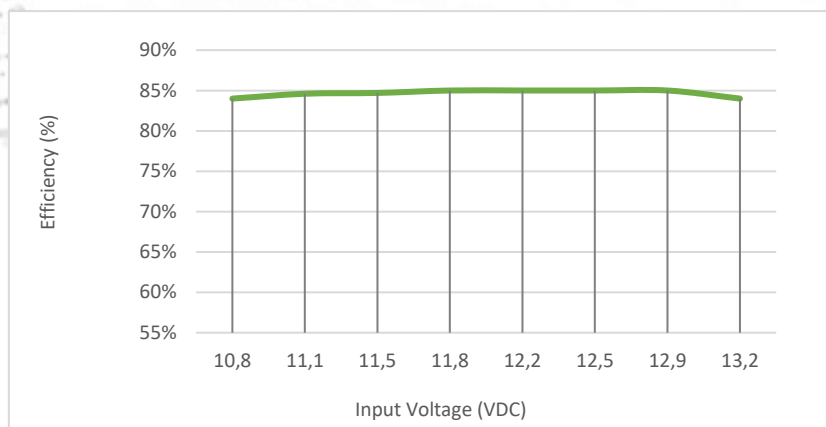


Efficiency vs Load



SDM01A, with nominal input voltage

Efficiency vs Input Voltage



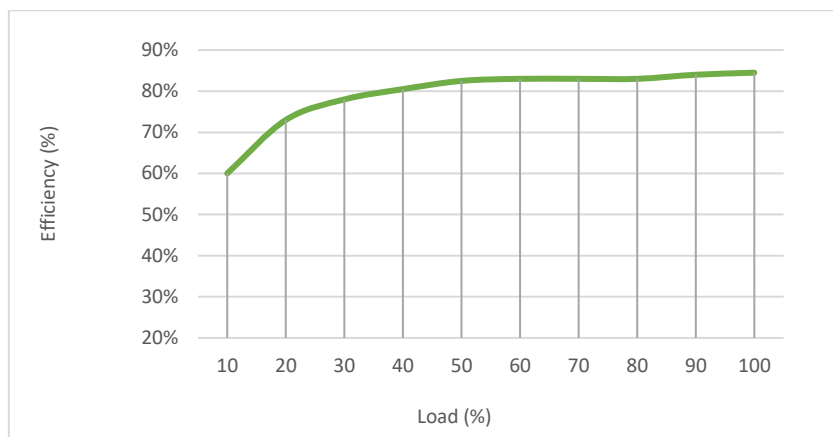
SDM01A, with full Load

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Efficiency vs Load



SDM01A, with nominal input voltage

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Recommended External Circuit

Typical Application Circuit

*Typical application circuit is to further lower the input and output ripple. It is not required for general use.

*Recommended component specifications are typical values. Excessive external capacitive load may cause startup problem.



Figure 1: Typical External circuit

Recommended component spec

Input voltage	3.3, 5V	12V	15V	24V
C _{IN}	4.7uF, 16V	2.2uF, 25V	2.2uF, 25V	1uF, 50V

Recommended component spec

Output voltage	3.3, 5V	9V	12V	15V	24V
C _{OUT}	10uF, 16V	4.7uF, 16V	2.2uF, 25V	1uF, 25V	0.47uF, 50V

EMC Enhancement for EN55032 Class B

*Use this application circuit to meet Class B EMC performance.

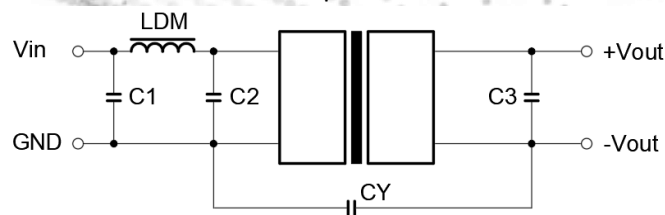


Figure 2: Circuit for EMC Enhancement

Recommended component spec

Item	LDM	C1, C2	CY
Spec	6.8uH	4.7uF, 50V	1nF, 2KV

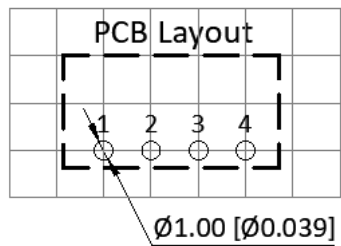
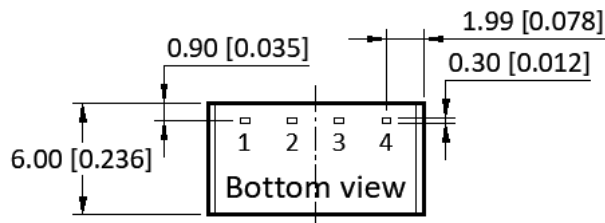
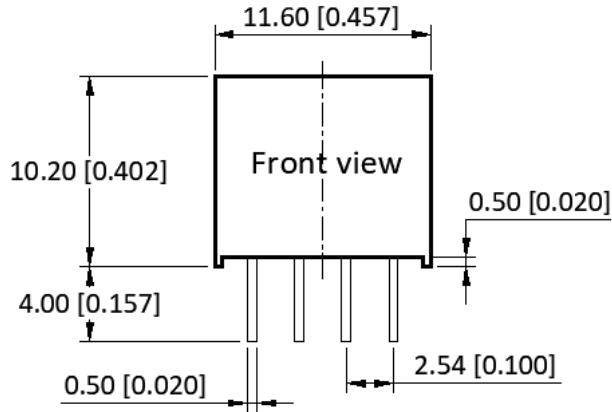
*C3 refer to C_{OUT} in

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Mechanical Specifications



Pin Definition

Pin #	Single Out	
1	GND	
2	V _{IN}	
3	0V	
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

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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	27-08-2025	First issue of document