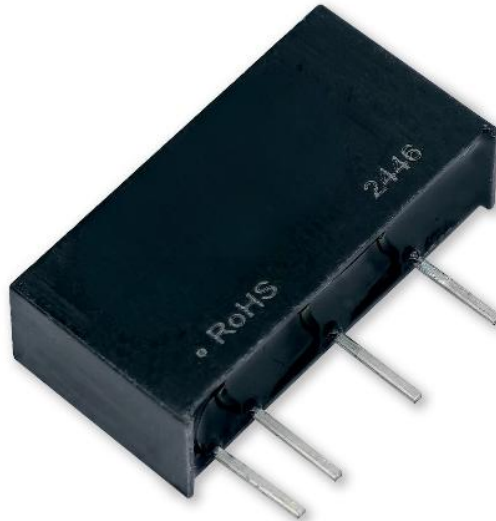


2W, DC/DC Power Converter

SDM02S

SUMMIT
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Introduction

The SDM02S series are unregulated SIP7 package DC/DC converters with single or dual outputs, 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: 2W Max
- Input voltage range $\pm 10\%$
- Unregulated output
- High efficiency, up to 90%
- Small no load input current
- Isolation voltage 1.5KVDC
- Operating temperature range: $-40 \sim +105^{\circ}\text{C}$ ambient
- RoHS compliant
- Compact SIP7 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 (μ F) Max.
SDM02S0303	3.3	3.3	400	40	77	2400
SDM02S0305	3.3	5	400	40	79	2400
SDM02S0309	3.3	9	222	22	80	1000
SDM02S0312	3.3	12	167	17	81	820
SDM02S0503	5	3.3	400	40	83	2400
SDM02S0505	5	5	400	40	85	2400
SDM02S0509	5	9	222	22	85	1000
SDM02S0512	5	12	167	17	86	820
SDM02S0515	5	15	133	13	87	680
SDM02S0524	5	24	83	8	88	560
SDM02S0503	5	± 3.3	± 303	± 30	83	1000
SDM02S0505	5	± 5	± 200	± 20	85	1000
SDM02S0509	5	± 9	± 111	± 11	85	560
SDM02S0512	5	± 12	± 83	± 8	86	560
SDM02S0515	5	± 15	± 67	± 7	87	220
SDM02S0524	5	± 24	± 42	± 4	87	100
SDM02S1203	12	3.3	400	40	84	2400
SDM02S1205	12	5	400	40	85	2400
SDM02S1209	12	9	222	22	86	1000
SDM02S1212	12	12	167	17	87	820
SDM02S1215	12	15	133	13	88	680

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SDM02S1224	12	24	83	8	89	560
SDM02S1503	15	3.3	400	40	84	2400
SDM02S1505	15	5	400	40	85	2400
SDM02S1509	15	9	222	22	86	1000
SDM02S1512	15	12	167	17	87	820
SDM02S1515	15	15	133	13	88	680
SDM02S1524	15	24	83	8	89	560
SDM02S2403	24	3.3	400	40	84	2400
SDM02S2405	24	5	400	40	86	2400
SDM02S2409	24	9	222	22	87	1000
SDM02S2412	24	12	167	17	88	820
SDM02S2415	24	15	133	13	89	680
SDM02S2424	24	24	83	8	90	560

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

* For dual output models, max capacitive load stipulated in the above list is for each output.

* See SDM02S series for 3KVDC isolation models, and SDG02S series for 6KVDC isolation models.

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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		768			
	V _{IN} =5V		506			
	V _{IN} =12V	-	208	-	mA	
	V _{IN} =15V		167			
	V _{IN} =24V		104			
Input current No load		-	4	15	mA	
Reflected Ripple Current		-	15	-	mA	
Surge voltage 1 second max	V _{IN} =3.3V	-0.7		5		
	V _{IN} =5V	-0.7		9		
	V _{IN} =12V	-0.7	-	18	VDC	
	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		14			
	V _{OUT} =5V		10			
	V _{OUT} =9V	-	9	-	%	
	V _{OUT} =12V		8			
	V _{OUT} =15V		7			
	V _{OUT} =24V		6			

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Temperature coefficient	Full load	-	-	±0.03	%/°C	
Output ripple and noise	20MHz bandwidth	-	80	200	mVp-p	
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.

* Dual output models need to operate with balanced load. The load difference between two outputs over 10% may cause unstable operating of the converter.

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General Specifications

Parameters	Condition	Min.	Typ.	Max.	Unit
Isolation voltage Tested for 1 minute, leakage current less than 1mA	Input to Output	1500	-	-	VDC
Isolation resistance Tested at 500VDC		1000	-	-	M ohm
Isolation capacitance Tested between input and output, test condition 100KHz, 0.1V		-	20	-	pF
Operating temperature	See "Derating Curve"	-40	-	+105	°C
Storage temperature		-55	-	+125	°C
Temperature rise at case	Full load	-	25	-	°C
Storage humidity	Non-condensing	-	-	95	%RH
Switching frequency	Full load	-	220	-	KHz
Pin soldering resistance 1.5mm away from case for 10 sec		-			
Case material		Black plastic UL94-V0			
Cooling method		Free air convection			
Vibration		10-150Hz, 5G, 0.75mm along X, Y and Z			
Design based on standards		UL/EN/IEC 62368-1			
Safety certifications		EN/IEC 62368-1			
EMC	Emissions	CISPR32, EN55032 Class B*			

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	Immunity	IEC/EN61000-4-2, Air $\pm 8\text{KV}$, Contact $\pm 6\text{KV}$, Criteria B
MTBF	MIL-HDBK-217F	>3,500,000 Hours, $T_A=25^\circ\text{C}$
Size		19.65 x 7.05 x 10.16 mm
Weight		2.4g Typ.

*External circuit is required in order to meet Class B, refer to Figure 2 in Recommended External Circuit.

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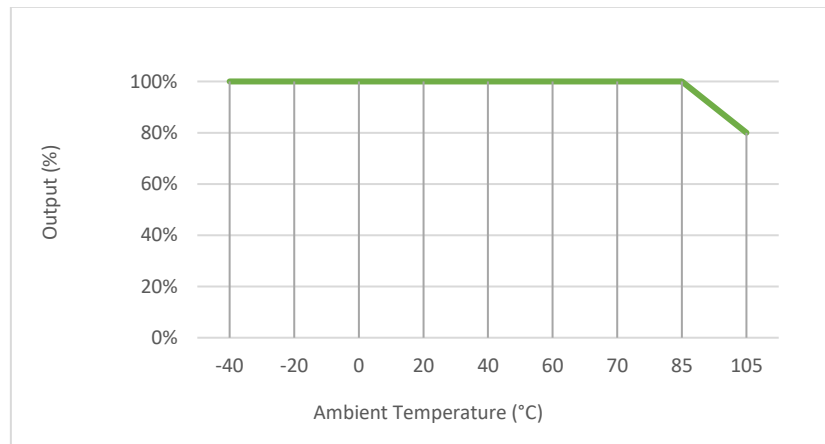
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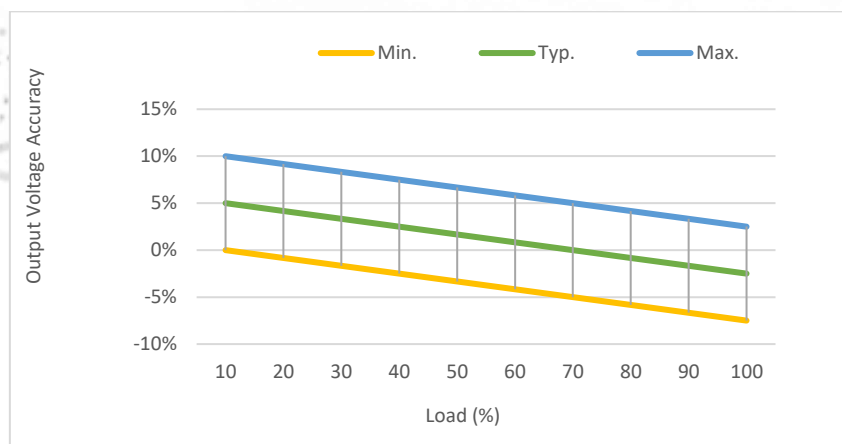
Characteristics Curves

Derating Curve

Output vs Ambient Temperature



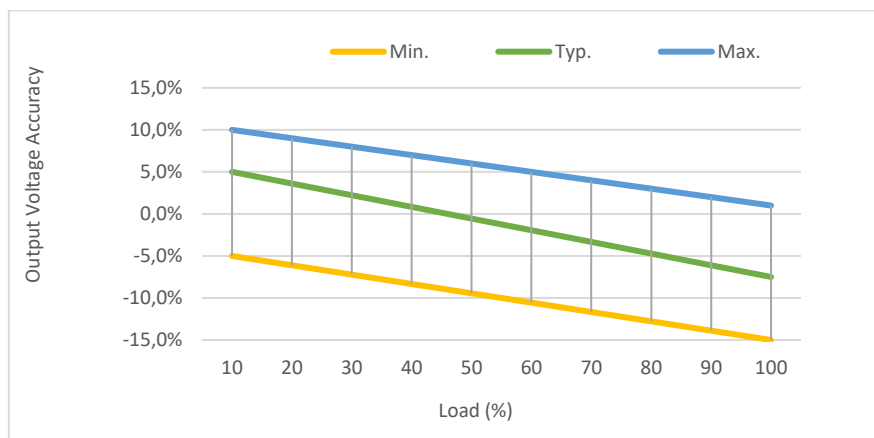
Output Voltage Accuracy vs Load



None 3.3V output models

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3.3V output models

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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.

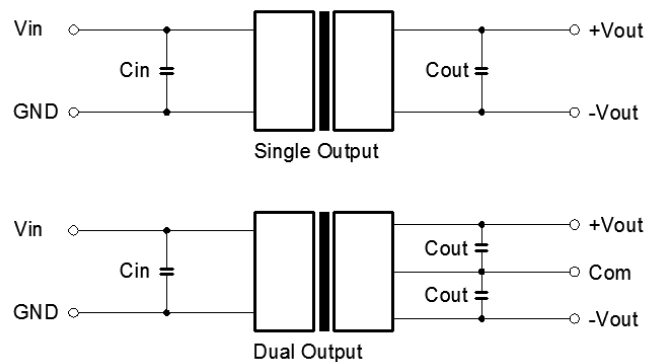


Figure 1: Typical External circuit

Recommended component spec

V_{IN}	3.3, 5V	12, 15V	24V
C_{IN}	4.7uF, 16V	2.2uF, 25V	1uF, 50V

Recommended component spec

Single Out	3.3, 5V	9, 12V	15, 24V
C_{OUT}	10uF, 16V	2.2uF, 25V	1uF, 50V
Dual Out	$\pm 3.3, \pm 5V$	$\pm 9, \pm 12V$	$\pm 15, \pm 24V$
C_{OUT}	4.7uF, 16V	1uF, 25V	0.47uF, 50V

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Circuit for EMC Enhancement

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

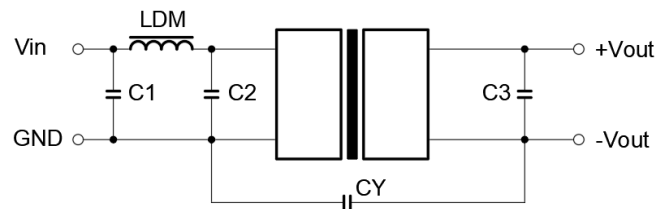


Figure 2: Circuit for EMC Enhancement

Recommended component spec

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

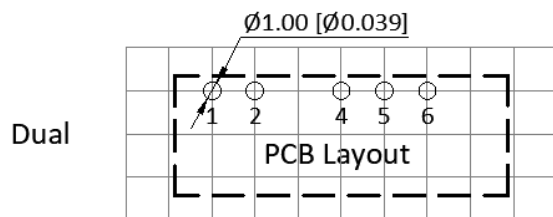
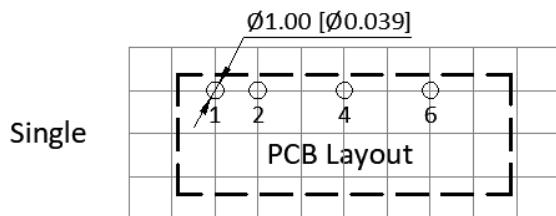
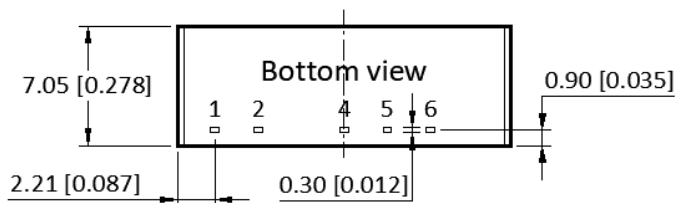
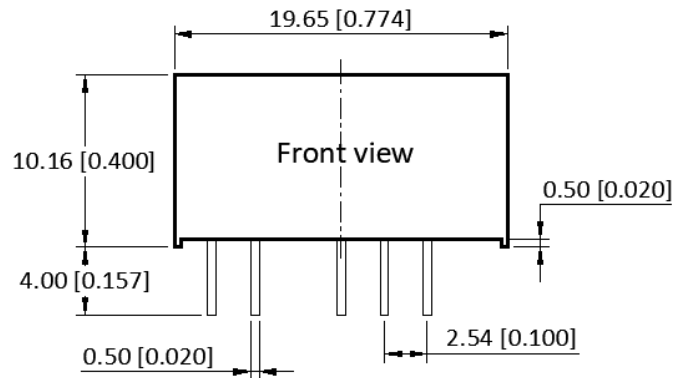
*C3 refer to C_{OUT} in

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Mechanical Specifications



Pin Definition

Pin #	Single Out	Dual Out
1	V _{IN}	V _{IN}
2	GND	GND
4	0V	-V _{OUT}
5	No Pin	0V
6	+V _{OUT}	+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