1W, DC/DC Power Converter

SDR01S

Introduction

The SDR01S series are SIP7 package DC/DC converters with tightly regulated single output, and 1.5KVDC isolation. These converters feature high efficiency, low ripple and noise, 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 ±5%
- Regulated output
- High efficiency up to 72%
- Isolation voltage 1.5KVDC
- Operating temperature range: -40 ~ +85°C ambient
- RoHS compliant
- Industrial standard SIP7 package
- Continuous short circuit protection
- Designed to meet UL/EN/IEC 62368-1
- 3 year warranty

Part numbers

Model Number	Input Voltage (VAC)	Output Voltage (VDC)	Output Current (mA) Max	Output Current (mA) Min	Efficiency (%) Typ.	Capacitive Load (uF) Max.
SDR01S0503	5	3.3	200	20	68	2400
SDR01S0505	5	5	150	15	72	2400
SDR01S0509	5	9	83	9	72	1000
SDR01S0512	5	12	62	7	73	560
SDR01S0515	5	15	50	5	74	560
SDR01S1203	12	3.3	200	20	68	2400
SDR01S1205	12	5	150	15	72	2400
SDR01S1212	12	12	62	7	73	560
SDR01S1215	12	15	50	5	74	560
SDR01S2403	24	3.3	200	20	68	2400
SDR01S2405	24	5	150	15	72	2400
SDR01S2409	24	9	111	12	72	1000
SDR01S2412	24	12	62	7	73	560
SDR01S2415	24	15	50	5	74	560

* 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	Note
Input current Full load	V_{IN}=5V V_{IN}=12V V_{IN}=24V	-	209 89 45	-	mA	
Input current No load	V_{IN}=5V V_{IN}=12V V_{IN}=24V	-	15 8 4	-	mA	
Reflected ripple current		-	15	-	mA	
Output voltage accuracy		-	-	±3	%	
Line regulation For V_{IN} change of ±1%		-	-	±0.25	%	
Load regulation I_{OUT}=10% to 100% of $I_{OUT, rated}$	V_{OUT}=3.3V Others	-	-	±3 ±2	%	
Temperature coefficiency	Full load	-	±0.02	-	%/°C	
Output ripple and noise 20MHz bandwidth	V_{OUT}=15V Others	-	80 50	150 100	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.

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General Specifications

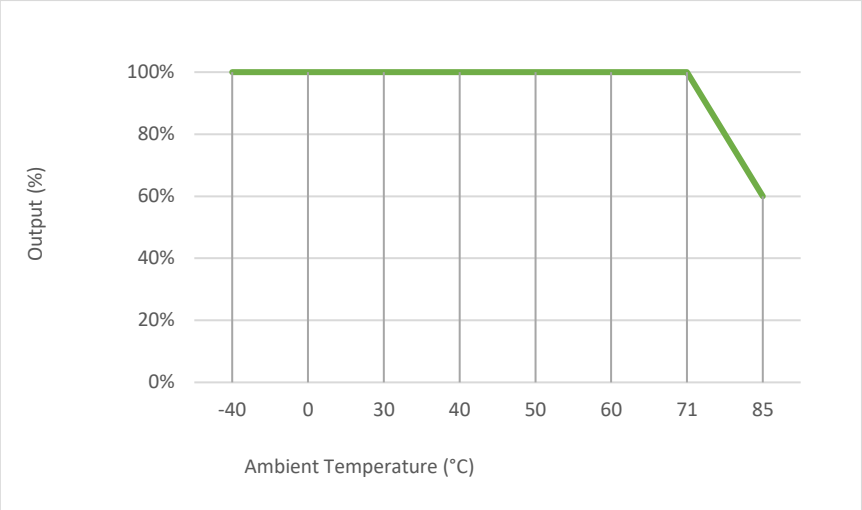
Parameters	Condition	Min.	Typ.	Max.	Unit
Isolation voltage 1 minute, leakage current 1mA max	Input to Output	1500	-	-	VDC
Isolation resistance 500VDC	Input to Output	1000	-	-	M ohm
Isolation capacitance 100KHz, 0.1V	Input to Output	-	20	-	pF
Operating temperature	See “Derating Curve”	-40	-	+85	°C
Storage temperature		-55	-	+125	°C
Temperature rise at full load		-	25	-	°C
Storage humidity		-	-	95	%RH
Switching frequency	Full load	-	250	-	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			
Case material		Black plastic UL94-V0			
Cooling method		Free air convection			
Design based on standards		UL/EN/IEC 62368-1			
Safety certifications		EN/IEC 62368-1			
EMC	Emissions Immunity	CISPR32, EN55032 Class B* IEC/EN61000-4-2 Air ±8kV, Contact ±4kV, perf. Criteria B			

MTBF	MIL-HDBK-217F	>3,500,000 Hours, T_A=25°C
Size & Weight		19.65 x 6.0 x 10.16 mm, 2.1g Typ.

Characteristics Curves

Derating Curve

Output vs Ambient Temperature



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.

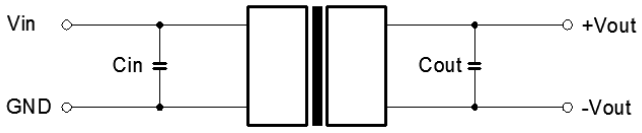


Figure 1: Typical External circuit

Recommended component spec

Input voltage	5V	12V	24V
C_{IN}	4.7uF, 16V	2.2uF, 25V	1uF, 50V

Recommended component spec

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

EMC Enhancement for EN55032 Class B

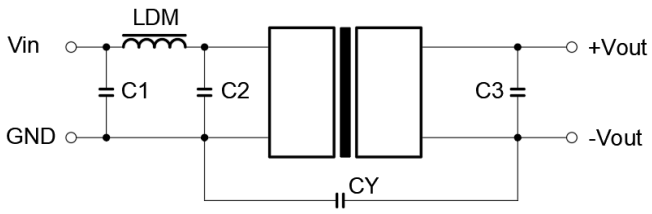


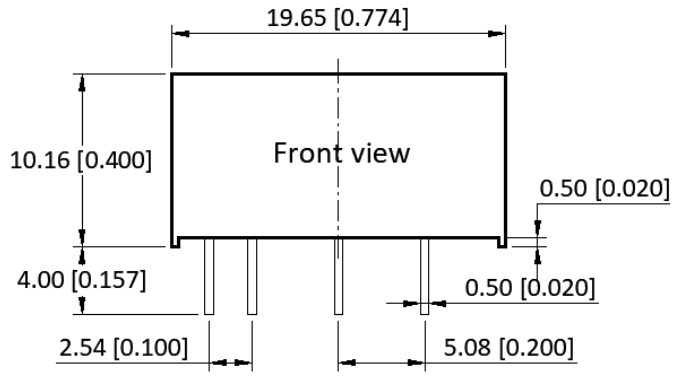
Figure 2: Circuit for EMC Enhancement

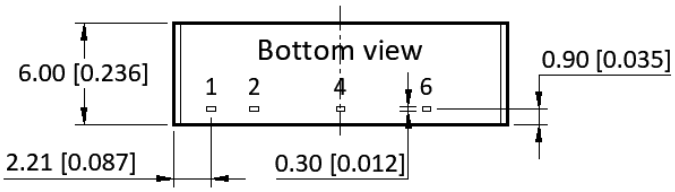
Recommended components

Component	LDM	C1, C2	CY
V_{IN}=5V	6.8uH	4.7uF, 25V	1nF, 2KV
V_{IN}=12, 24V	6.8uH	4.7uF, 50V	270pF, 2KV

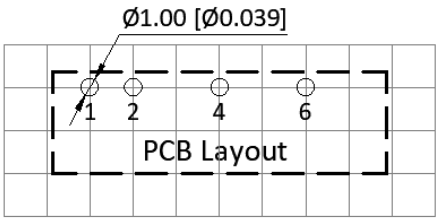
*__C3__ refer to C_{OUT} in

Mechanical Specifications





Single



Pin Definition

Pin #	Single Out	
1	V_{IN}	
2	GND	
4	0V	
6	$+V_{OUT}$	

*** 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**

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