

1W, DC/DC Power Converter

SDG01S

SUMMIT
ELECTRONICS



Introduction

The SDG01S series are unregulated SIP7 package DC/DC converters with single or dual outputs, and 6KVDC isolation. These converters feature reinforced insulation, low leakage current, high efficiency, low ripple and noise, continuous short circuit protection, and wide operating temperature range. They are widely used in industrial and medical applications where high isolation is needed.

Features

- Rated power: 1W Max
- Input voltage range $\pm 10\%$
- Unregulated output
- Creepage & clearance >5mm
- Isolation capacitance 4pF typ
- High efficiency, up to 81%
- Isolation 4.2KVAC or 6KVDC
- Operating temperature range: $-40 \sim +105^{\circ}\text{C}$ ambient
- RoHS compliant
- Compact SIP7 package
- Patient leakage current 2uA max
- Continuous short circuit protection
- Meet EN 60601-1
- EN/IEC 62368-1
- 3 year warranty

1W, DC/DC Power Converter

SDG01S



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.
SDG01S0505	5	5	200	4	79	220
SDG01S0509	5	9	111	4	79	220
SDG01S0512	5	12	84	2	80	220
SDG01S0515	5	15	67	2	81	220
SDG01S1205	12	5	200	4	79	220
SDG01S1212	12	12	84	2	81	220
SDG01S1215	12	15	67	2	79	220
SDG01S1505	15	5	200	20	79	220
SDG01S2405	24	5	200	4	76	220
SDG01S2412	24	12	84	2	79	220
SDG01S2415	24	15	67	2	79	220
SDG01S2424	24	24	42	4	76	220
SDG01S0505D	5	± 5	± 100	± 2	79	100
SDG01S0509D	5	± 9	± 55	± 1	79	100
SDG01S0512D	5	± 12	± 40	± 1	81	100
SDG01S0515D	5	± 15	± 35	± 1	81	100
SDG01S1205D	12	± 5	± 100	± 2	79	100
SDG01S1212D	12	± 12	± 40	± 1	81	100
SDG01S1215D	12	± 15	± 35	± 1	81	100
SDG01S1505D	15	± 5	± 100	± 10	77	100
SDG01S1515D	15	± 15	± 33	± 4	79	100
SDG01S2405D	24	± 5	± 100	± 2	75	100
SDG01S2412D	24	± 12	± 40	± 1	76	100

1W, DC/DC Power Converter

SDG01S



SDG01S2415D	24	±15	±35	±1	76	100
-------------	----	-----	-----	----	----	-----

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

1W, DC/DC Power Converter

SDG01S



Electrical characteristics

Unless otherwise indicated, specifications are measured at $T_A=25^{\circ}\text{C}$, nominal input voltage, full load after warm up.

Parameter	Condition	Min.	Type	Max.	Unit	Note
Input current Full load	V _{IN} =5V	-	274	-	mA	
	V _{IN} =12V		114			
	V _{IN} =15V		93			
	V _{IN} =24V		56			
Input current No load	V _{IN} =5V	-	35	-	mA	
	V _{IN} =12V		15			
	V _{IN} =15V		18			
	V _{IN} =24V		10			
Reflected Ripple Current		-	15	-	mA	
Surge voltage 1 second max	V _{IN} =5V	-0.7	-	9	VDC	
	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%		-	-	±1.5	%	
Load regulation I _{OUT} =10% to 100% of I _{OUT, rated}	V _{OUT} =3.3, 5V	-	-	20	%	
	Others	-	-	15		
Temperature coefficient	Full load	-	±0.02	-	%/°C	
Output ripple and noise	20MHz bandwidth	-	100	150	mVp-p	
Output short circuit protection		Continuous, automatic recovery				

1W, DC/DC Power Converter

SDG01S



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.

1W, DC/DC Power Converter

SDG01S



General Specifications

Parameters	Condition	Min.	Typ.	Max.	Unit	Notes
Isolation voltage 1 minute, leakage current 1mA max	I/P to O/P	4200	-	-	VAC	
	I/P to O/P	6000	-	-	VDC	
Patient leakage current	250VAC, 50/60Hz	-	-	2	uA	
Isolation resistance 500VDC	I/P to O/P	1000	-	-	M ohm	
Isolation capacitance 100KHz, 0.1V	I/P to O/P	-	4	-	pF	
Creepage & Clearance distance		5	-	-	mm	
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	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				
Case material		Black plastic UL94-V0				

1W, DC/DC Power Converter

SDG01S



Cooling method		Free air convection
Design based on standards		EN/IEC 62368-1, EN/ES 60601-1
EMC		CISPR32, EN55032 Class B with External Circuit EN 60601-1-2, CISPR 11 Class B with External Circuit
MTBF	MIL-HDBK-217F	>19,360,000 Hours, T _A =25°C
Size & Weight		19.50 x 9.80 x 12.50 mm, 4.2g Typ.
Size		19.65 x 7.05 x 10.16 mm, 2.4g Typ.
Weight		2.4g Typ.

1W, DC/DC Power Converter

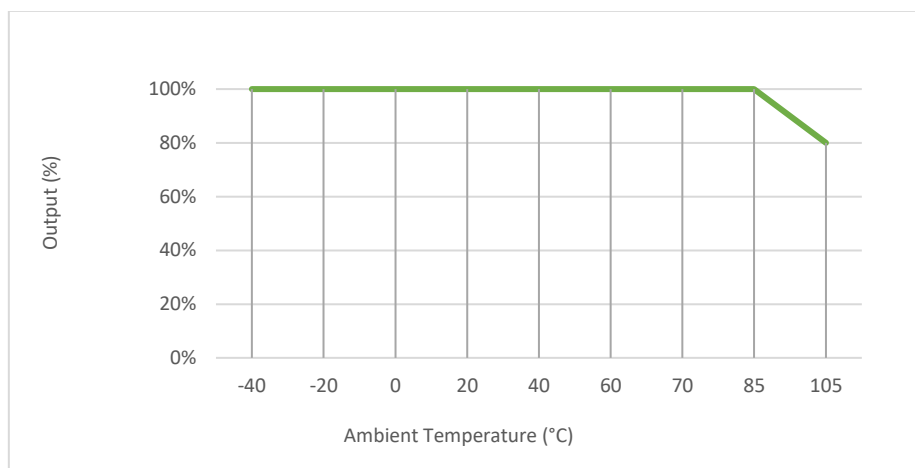
SDG01S



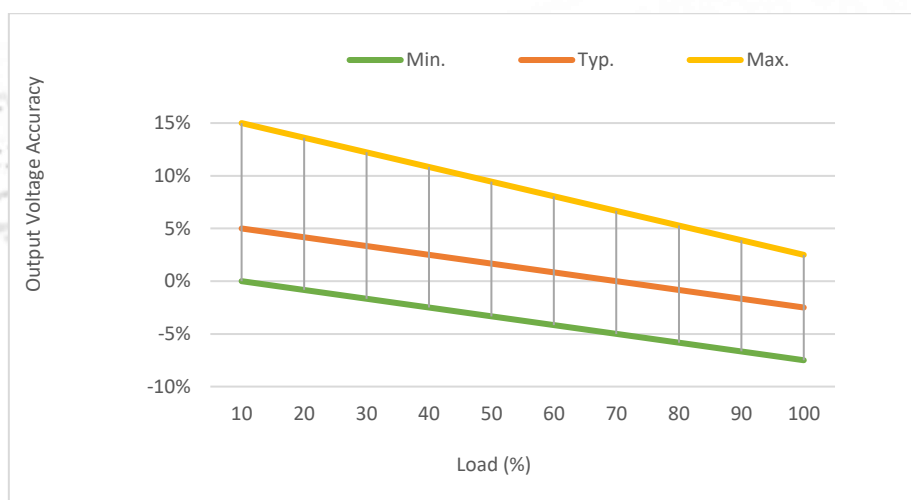
Characteristics Curves

Derating Curve

Output vs Ambient Temperature



Output Voltage Accuracy vs Load



1W, DC/DC Power Converter

SDG01S



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.

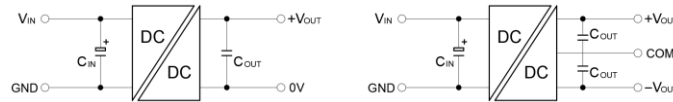


Figure 1: Typical Application circuit

Recommended component spec

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

Output voltage	5V	9, 12V	15, 24V	$\pm 5, \pm 9V$	$\pm 12, \pm 15V$
C_{OUT}	10uF, 16V	2.2uF, 25V	1uF, 50V	4.7uF, 16V	1uF, 25V

Circuit for EMC Enhancement

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

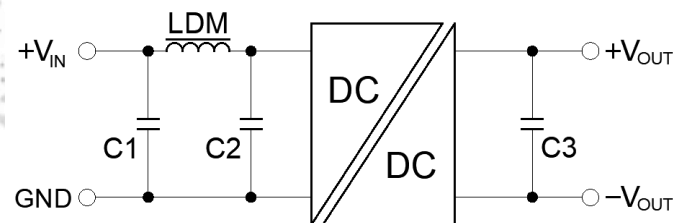


Figure 2: Circuit for EMC Enhancement

Recommended component spec

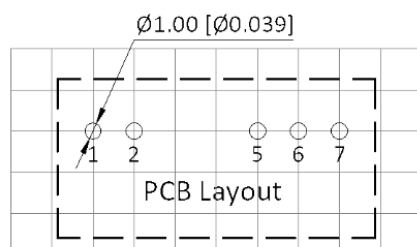
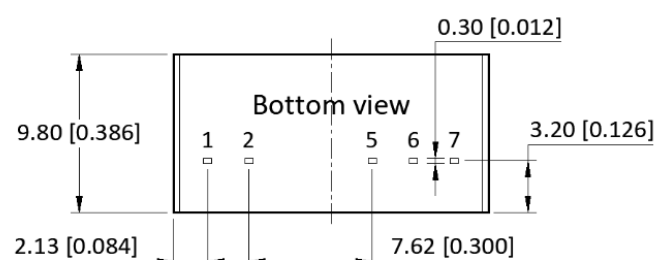
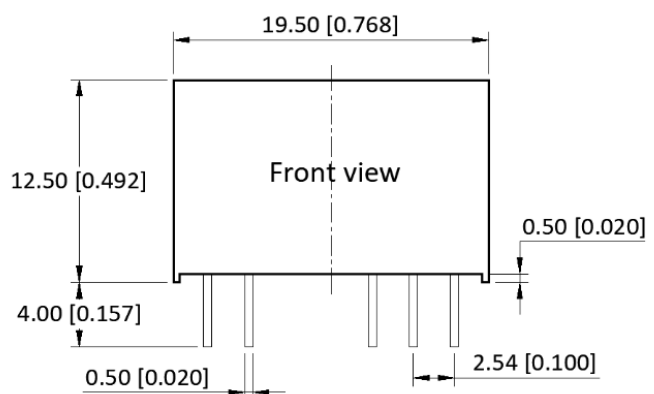
Output voltage	$C1, C2$	LDM	$C3$
Spec	4.7uF, 50V	6.8uH	refer to C_{OUT} in [Table 1]

1W, DC/DC Power Converter

SDG01S



Mechanical Specifications



Pin Definition

Pin #	Single Out	Dual Out
1	V _{IN}	V _{IN}
2	GND	GND
5	0V	-V _{OUT}
6	No Pin	0V
7	+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

1W, DC/DC Power Converter

SDG01S



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