

3W, DC/DC Power Converter

SDC03S

SUMMIT
ELECTRONICS



Introduction

The SDC03S series are 3KV isolated 3Watt DC/DC converters with a compact SIP8 package. Designed with high efficiency, they operate in a wide temperature range from -40°C to +85°C. Other features include wide 2:1 input voltage range, remote On/Off control, under voltage, over current and short circuit protections. These converters are ideally suitable for battery operated equipment, measurement equipment, telecom, wireless network, industrial control system.

Features

- Rated power: 3W Max
- Input voltage range: 2:1
- Regulated output
- High efficiency up to 83%
- Isolation voltage 3KVDC
- Operating temperature range: -40 ~ +85°C ambient
- No external components required for operating
- RoHS compliant
- Compact SIP8 package
- Remote ON/OFF
- Continuous short circuit protection
- Meet IEC/EN/UL 62368-1
CISPR32, EN55032
- 3 year warranty

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Part numbers

Model Number	Input Voltage [VDC]			V _{OUT} [VDC]	Output Current [mA]		Efficiency [%] Typ.	Capacitive Load [uF] Max.
	Nom.	Range	Max.		Max	Min.		
SDC03S0503	5	4.5~9	11	3.3	758	38	68	1800
SDC03S0505	5	4.5~9	11	5	500	25	73	2200
SDC03S0509	5	4.5~9	11	9	278	14	74	1000
SDC03S0512	5	4.5~9	11	12	208	10	77	680
SDC03S0515	5	4.5~9	11	15	167	8	74	470
SDC03S0524	5	4.5~9	11	24	104	5	76	330
SDC03S0505D	5	4.5~9	11	±5	±250	±13	74	1000
SDC03S0509D	5	4.5~9	11	±9	±167	±10	76	680
SDC03S0512D	5	4.5~9	11	±12	±104	±5	77	470
SDC03S0515D	5	4.5~9	11	±15	±83	±4	77	330
SDC03S0524D	5	4.5~9	11	±24	±52	±3	76	220
SDC03S1203	12	9~18	20	3.3	758	38	75	2700
SDC03S1205	12	9~18	20	5	600	30	76	2200
SDC03S1209	12	9~18	20	9	333	17	79	1000
SDC03S1212	12	9~18	20	12	250	13	82	680
SDC03S1215	12	9~18	20	15	200	10	83	470
SDC03S1224	12	9~18	20	24	125	6	81	330
SDC03S1205D	12	9~18	20	±5	±300	±15	78	1000
SDC03S1209D	12	9~18	20	±9	±167	±8	78	680
SDC03S1212D	12	9~18	20	±12	±125	±6	79	470
SDC03S1215D	12	9~18	20	±15	±100	±5	80	330
SDC03S2403	24	18~36	40	3.3	758	38	74	2700

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SDC03S2405	24	18~36	40	5	600	30	81	2200
SDC03S2409	24	18~36	40	9	333	17	83	2200
SDC03S2412	24	18~36	40	12	250	13	83	1000
SDC03S2415	24	18~36	40	15	200	10	83	680
SDC03S2424	24	18~36	40	24	125	6	83	470
SDC03S2405D	24	18~36	40	±5	±300	±15	79	1000
SDC03S2409D	24	18~36	40	±9	±167	±8	81	680
SDC03S2412D	24	18~36	40	±12	±125	±6	83	470
SDC03S2415D	24	18~36	40	±15	±100	±5	83	330
SDC03S4803	48	36~75	80	3.3	758	38	75	2700
SDC03S4805	48	36~75	80	5	600	30	76	2200
SDC03S4812	48	36~75	80	12	250	13	80	680
SDC03S4815	48	36~75	80	15	200	10	84	470
SDC03S4824	48	36~75	80	24	125	6	82	330
SDC03S4805D	48	36~75	80	±5	±300	±15	79	1000
SDC03S4812D	48	36~75	80	±12	±125	±6	82	470
SDC03S4815D	48	36~75	80	±15	±100	±5	82	330

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

* Input voltage exceed the Max. value may cause permanent damage.

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

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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	$V_{IN, Nom} = 5V$	-	805	-	mA	
	$V_{IN, Nom} = 12V$		314			
	$V_{IN, Nom} = 24V$		154			
	$V_{IN, Nom} = 48V$		78			
Input current No load	$V_{IN, Nom} = 5V$	-	60	-	mA	
	$V_{IN, Nom} = 12V$		25			
	$V_{IN, Nom} = 24V$		8			
	$V_{IN, Nom} = 48V$		3			
Input reflected ripple current	$V_{IN, Nom} = 5V, 12V$	-	20	-	mA	
	$V_{IN, Nom} = 24V, 48V$		55			
Input voltage surge 1 second max	$V_{IN, Nom} = 5V$	-0.7	-	12	Vdc	
	$V_{IN, Nom} = 12V$	-0.7		25		
	$V_{IN, Nom} = 24V$	-0.7		50		
	$V_{IN, Nom} = 48V$	-0.7		100		
Startup input voltage	$V_{IN, Nom} = 5V$	-	-	4.5	Vdc	
	$V_{IN, Nom} = 12V$			9		
	$V_{IN, Nom} = 24V$			18		
	$V_{IN, Nom} = 48V$			36		
Output voltage accuracy	$V_{OUT}=3.3V, 5V$	-	± 2	± 5	%	
	All others		± 1	± 3		
Line regulation Full load, $V_{IN} = V_{IN, Min}$ to $V_{IN, Max}$		-	± 0.2	± 0.5	%	
Load regulation		-	± 0.5	± 1.0	%	
Temperature coefficient	Full load	-	0.02	0.03	%/ $^{\circ}\text{C}$	

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Dynamic load response $I_{OUT}=25\%\sim 50\%\sim 75\%$ of $I_{OUT, rated}$	Peak deviation	-	± 2.5	± 5	$\% V_{OUT}$	
	Recovery time		0.5	3	mS	
Output ripple and noise	20MHz bandwidth	-	80	150	mVp-p	
Remote On/Off control “Ctrl” pin open or logic high [ON] “Ctrl” pin grounded or logic low [OFF]	Logic high	3.5	-	12	VDC	Positive Logic
	Logic low	0	-	0.7	VDC	
	Ctrl pin current	-	5	10	mA	
Output short circuit protection	Continuous, automatic recovery					

* Operating with less than 5% of rated load will not cause damage to the converters, but the performances data may not fall into the specifications, and stable operating is not assured.

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General Specifications

Parameters	Condition	Min.	Typ.	Max.	Unit	Notes
Isolation voltage Tested for 1 minute	Input to Output	3000	-	-	VDC	
Isolation resistance Tested at 500VDC	Input to Output	1000	-	-	M ohm	
Isolation capacitance 100KHz, 0.1V	Input to Output	-	120	-	pF	
Switching frequency*	Full load	-	200	-	KHz	
Operating temperature	No derating	-40	-	+85	°C	
Storage temperature		-55	-	+125	°C	
Storage humidity	None condensing	5	-	95	%RH	
Pin soldering temperature 1.5mm away from case for 10 sec		-	-	300	°C	
Case material		Black plastic UL94-V0				
Cooling method		Free air convection				
Vibration		10-150Hz, 5G, 0.75mm along X, Y and Z				
MTBF	MIL-HDBK-217F	>1,000,000 Hours, T _A =25°C				
Design based on standards		IEC/EN/UL 62368-1				
Safety certifications		IEC/EN 62368-1				

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EMC [Fig x] means connected with external circuit as shown in the Recommended External Circuit section	CE & RE	CISPR32, EN55032 Class B with [Fig 2]
	ESD	IEC/EN61000-4-2, Contact $\pm 6\text{kV}$, Criteria B
	RS	IEC/EN61000-4-3, 10V/m , Criteria A
	EFT	IEC/EN61000-4-4, $\pm 2\text{kV}$, Criteria B [Fig 1]
	Surge	IEC/EN61000-4-5, Line to Line $\pm 2\text{kV}$, Criteria B [Fig 1]
	CS	IEC/EN61000-4-6, 3Vrms , Criteria A
Size, and Weight		22x9.5x12mm, 4.5g

* Switching frequency is measured at full load. The converter reduces the switching frequency at low load (less than 50% load) for better efficiency.

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Recommended External Circuit

Typical External Circuit

*Models in this series are 100% tested in production using this circuit.

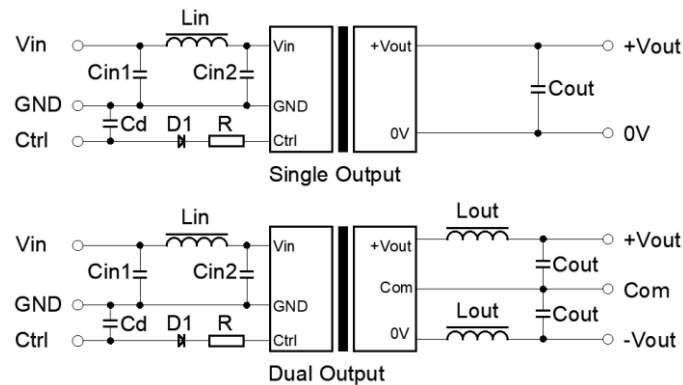


Figure 1: Typical Application circuit

Recommend component spec

Item	$V_{IN}=5V, 12V$	$V_{IN}=24V, 48V$
Cin1	100uF	10uF
Cin2	47uF	1uF
Cout	100uF	100uF
Cd	47nF, 100V	47nF, 100V
Lin	4.7uH~12uH	4.7uH~12uH
Lout	2.2uH~10uH	2.2uH~10uH

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EMC Enhancement for EN55032 Class B

*External circuits within block “Part 1” is to improve EMS, “Part 2” to improve EMI test performance, “Part 3” to use the remote on/off control function.

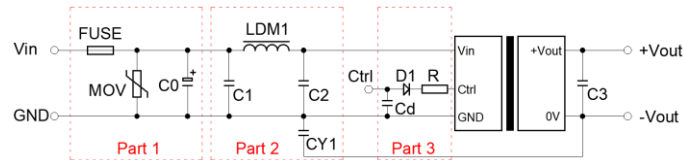


Figure 2: Circuit for EMC Enhancement

Recommended component spec

Items	C0	C1, C2	Cd	CY1	D1	LDM1	MOV
V_{IN}=5V	1K uF, 25V	4.7uF, 50V	47nF, 100V	1nF, 4KV	60V, 1A	12uH	-
V_{IN}=12V	1K uF, 25V	4.7uF, 50V	47nF, 100V	1nF, 4KV	60V, 1A	12uH	14D390K
V_{IN}=24V	330uF, 50V	4.7uF, 50V	47nF, 100V	1nF, 4KV	60V, 1A	12uH	14D560K
V_{IN}=48V	330uF, 100V	4.7uF, 100V	47nF, 100V	1nF, 4KV	60V, 1A	12uH	14D101K

*C3 refer to C_{OUT} in above Figure 1, FUSE to be selected according to application needs.

*Resistor R may be calculated using following formula: $R = \frac{V_c - V_D - 1.0}{I_c} - 300$

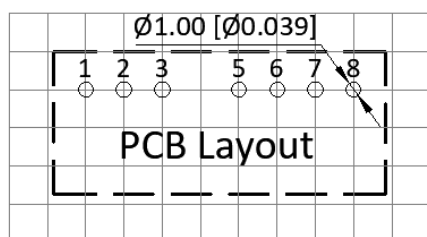
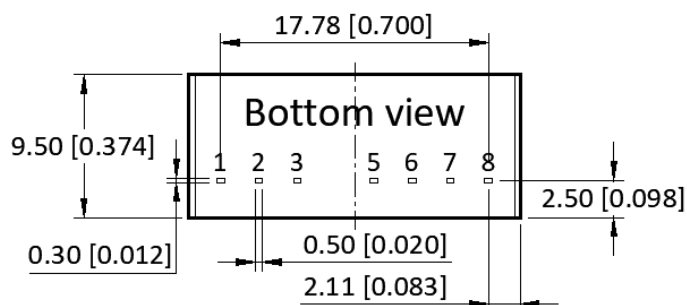
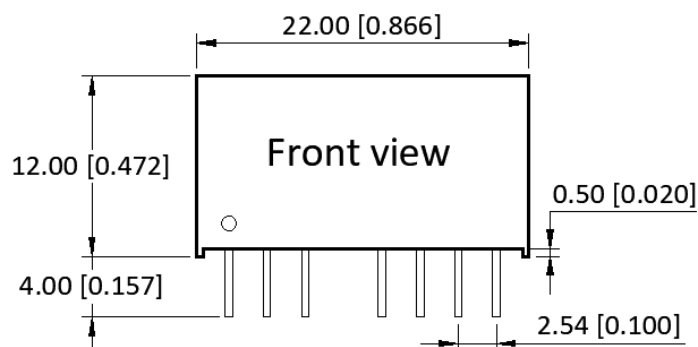
*V_c is the Ctrl to GND voltage, V_D is voltage drop on D1, I_c is current flow into Ctrl.

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Mechanical Specifications



Pin Definition

Pin #	Single Out	Dual Out
1	GND	GND
2	V _{IN}	V _{IN}
3	Ctrl	Ctrl
5	No connection	No connection
6	+V _{OUT}	+V _{OUT}
7	-V _{OUT} [0V]	COM
8	NC	-V _{OUT}

* Unless otherwise specified unit:
mm [inch]

* General tolerance: ± 0.25 [± 0.010]

* 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