

3W, DC/DC Power Converter

SDE03S

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Introduction

The SDE03S series are 3KV isolated 3Watt DC/DC converters with compact SIP8 footprint. Designed with high efficiency, they operate in a wide temperature range from -40°C to +85°C. Other features include wide 4:1 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: 4:1
- Regulated output
- High efficiency up to 82%
- Isolation voltage 3KVDC
- Low ripple and noise
- Operating temperature range: -40 ~ +85°C ambient
- RoHS compliant
- Compact SIP8 package
- Remote On/Off
- Under voltage, over current and 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.		
SDE03S1203	12	4.5~18	20	3.3	700	0	74	1800
SDE03S1205	12	4.5~18	20	5	600	0	78	2200
SDE03S12012	12	4.5~18	20	12	250	0	80	680
SDE03S1215	12	4.5~18	20	15	200	0	81	470
SDE03S1205D	12	4.5~18	20	±5	±300	0	80	±1000
SDE03S1212D	12	4.5~18	20	±12	±125	0	80	±330
SDE03S1215D	12	4.5~18	20	±15	±100	0	80	±220
SDE03S2403	24	9~36	40	3.3	700	0	75	1800
SDE03S2405	24	9~36	40	5	600	0	80	2200
SDE03S2409	24	9~36	40	9	333	0	81	1000
SDE03S2412	24	9~36	40	12	250	0	81	680
SDE03S2415	24	9~36	40	15	200	0	82	470
SDE03S2424	24	9~36	40	24	125	0	82	330
SDE03S2405D	24	9~36	40	±5	±300	0	79	±1100
SDE03S2412D	24	9~36	40	±12	±125	0	82	±330
SDE03S2415D	24	9~36	40	±15	±100	0	82	±220
SDE03S4803	48	18~75	80	3.3	700	0	74	1800
SDE03S4805	48	18~75	80	5	600	0	79	2200
SDE03S4812	48	18~75	80	12	250	0	81	680
SDE03S4815	48	18~75	80	15	200	0	82	470
SDE03S4824	48	18~75	80	24	125	0	82	330
SDE03S4805D	48	18~75	80	±5	±300	0	79	±1000

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SDE03S4812D	48	18~75	80	±12	±125	0	80	±330
SDE03S4815D	48	18~75	80	±15	±100	0	80	±220

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

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

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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	$V_{IN, Nom} = 12V$	-	306	-	mA	
	$V_{IN, Nom} = 24V$		140			
	$V_{IN, Nom} = 48V$		82			
Input current No load	$V_{IN, Nom} = 12V$	-	60	-	mA	
	$V_{IN, Nom} = 24V$		25			
	$V_{IN, Nom} = 48V$		15			
Reflected ripple current		-	15	-	mA	
Input voltage surge 1 second max	$V_{IN, Nom} = 12V$	-0.7	-	25	Vdc	
	$V_{IN, Nom} = 24V$	-0.7		50		
	$V_{IN, Nom} = 48V$	-0.7		100		
Startup input voltage	$V_{IN, Nom} = 12V$	-	-	4.5	Vdc	
	$V_{IN, Nom} = 24V$			9		
	$V_{IN, Nom} = 48V$			18		
Input under voltage shutdown	$V_{IN, Nom} = 12V$	-	-	4	Vdc	
	$V_{IN, Nom} = 24V$			8		
	$V_{IN, Nom} = 48V$			16		
Output voltage accuracy	$V_{OUT}=3.3V, 5V$	-	± 2	± 5	%	
	All others		± 1	± 3		
Line regulation Full load, $V_{IN} = V_{IN, Min}$ to $V_{IN, Max}$		-	± 0.3	± 0.5	%	
Load regulation $I_{OUT}=5\%$ to 100% of $I_{OUT, rated}$		-	± 0.5	± 1.0	%	
Temperature coefficient	Full load	-	0.02	0.03	%/ $^{\circ}\text{C}$	
Output ripple and noise	20MHz bandwidth	-	50	150	mVp-p	

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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
Dynamic load response I _{OUT} =25%~50%~75% of I _{OUT} , rated	Peak deviation	-	±3	±5	% V _{OUT}	
	Recovery time		0.3	0.5	mS	
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 over current protection		110	140	-	% I _{OUT}	
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	-	1000	-	pF	
Switching frequency	Full load	-	300	-	KHz	
Operating temperature	No derating	-40	-	+85	°C	
Storage temperature		-55	-	+125	°C	
Storage humidity	None condensing	5	-	95	%RH	
Pin soldering resistance	1.5mm, 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				
EMC [Fig x] means connected with external circuit as shown in the	CE & RE ESD RS EFT Surge	CISPR32, EN55032 Class B with [Fig 2] IEC/EN61000-4-2, Contact ±6kV, Criteria B IEC/EN61000-4-3, 10V/m, Criteria A IEC/EN61000-4-4, ±2kV, Criteria B [Fig 1] IEC/EN61000-4-5, Line to Line ±2kV, Criteria B [Fig 1]				

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Recommended External Circuit section	CS	IEC/EN61000-4-6, 3Vrms, Criteria A
Size & Weight		22x9.5x12mm, 4.5g

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Recommended External Circuit

Typical External Circuit

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

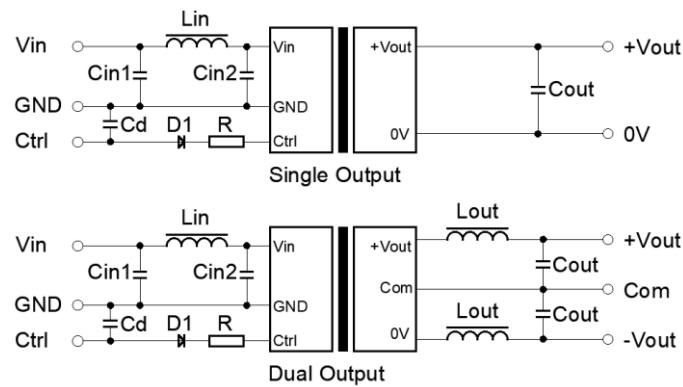


Figure 1: Typical Application circuit

Recommended Component Spec

Item	$V_{IN}=12V$	$V_{IN}=24V, 48V$
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.

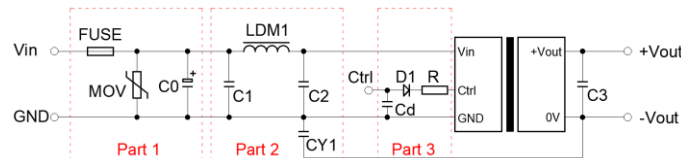


Figure 2: Circuit for EMC Enhancement

Recommended component spec

Items	C0	C1, C2	Cd	CY1	D1	LDM1	MOV
V_{IN}=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: $R = \frac{V_C - V_D - 1.0}{I_C} - 300$

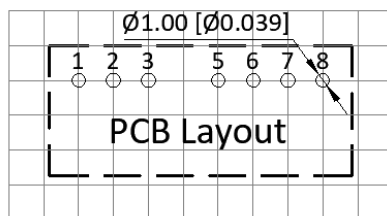
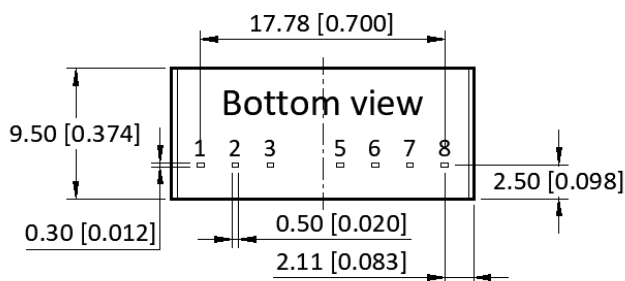
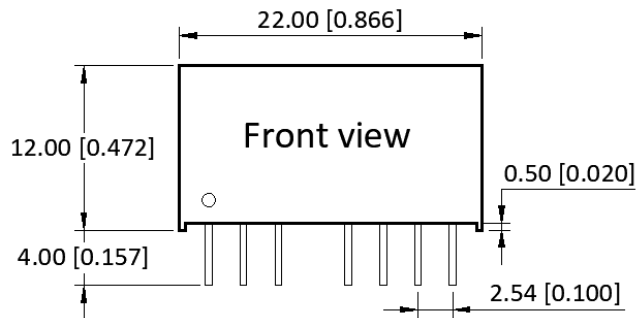
*V_C is the Ctrl to GND voltage, V_D is voltage drop on D1, I_C is current flow into Ctrl.

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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