

6W, DC/DC Power Converter

SDE06S



Introduction

The SDE06S series are 3KV isolated 6Watt 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: 6W Max
- Input voltage range: 4:1
- Regulated output
- High efficiency up to 87%
- Isolation voltage 3KVDC
- Standby power 0.12W
- Operating temperature range: -40 ~ +85°C ambient
- RoHS compliant
- Compact SIP package
- Remote On/Off control
- Under voltage, over current, and short circuit protection
- Meet UL/EN/IEC 62368-1
- 3 year warranty

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Part numbers

Model Number	Input Voltage [VDC]			V _{OUT}	Output Current		Efficiency	Capacitive
	Nom.	Range	Max.	[VDC]	[mA]	[%] Typ.	Load [uF]	
				Max	Min.			Max.
SDE06S2403	24	9-36	40	3.3	1350	0	78	1800
SDE06S2405	24	9-36	40	5	1200	0	82	1000
SDE06S2406	24	9-36	40	6	1000	0	82	680
SDE06S2409	24	9-36	40	9	667	0	84	470
SDE06S2412	24	9-36	40	12	500	0	86	470
SDE06S2415	24	9-36	40	15	400	0	87	220
SDE06S2424	24	9-36	40	24	250	0	85	100
SDE06S2405D	24	9~36	40	±5	600	0	80	470
SDE06S2409D	24	9~36	40	±9	333	0	83	220
SDE06S2412D	24	9~36	40	±12	250	0	83	120
SDE06S2415D	24	9~36	40	±15	200	0	83	100
SDE06S2424D	24	9~36	40	±24	125	0	82	68
SDE06S4803	48	18-75	80	3.3	1600	0	79	1200
SDE06S4805	48	18-75	80	5	1200	0	83	680
SDE06S4809	48	18-75	80	9	667	0	84	330
SDE06S4812	48	18-75	80	12	500	0	86	330
SDE06S4815	48	18-75	80	15	400	0	87	150
SDE06S4824	48	18-75	80	24	250	0	87	68

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

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

* Add suffix "X" to the model numbers for optional Ctrl pin removed, e.g. SDE06S2405X.

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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	$V_{OUT}=3.3\text{V}$ Others	-	238 305	-	mA	
Input current No load	$V_{OUT}=3.3, 5\text{V}$ Others	-	158 143	-	mA	
Reflected ripple current		-	5	-	mA	
Input voltage surge 1 second max		-	50	-	mA	
Startup input voltage	$V_{IN, Nom} = 24\text{V}$ $V_{IN, Nom} = 48\text{V}$	-0.7 -0.7	-	50 100	VDC	
Startup time	$V_{IN, Nom} = 24\text{V}$ $V_{IN, Nom} = 48\text{V}$	-	-	9 18	VDC	
Input under voltage shutdown	$V_{IN, Nom} = 24\text{V}$ $V_{IN, Nom} = 48\text{V}$	5.5 12	6.5 14.5	-	VDC	
Remote On/Off control "Ctrl" pin open or logic high [ON] "Ctrl" pin grounded or logic low [OFF]	Logic high Logic low Ctrl pin current	3.5 0 -	- - 6	12 1.2 10	VDC VDC mA	Positive Logic
Output voltage accuracy	$I_{OUT}=0$ to 100%	-	± 1	± 3	%	
Line regulation Full load, $V_{IN}=V_{IN, Min}$ to $V_{IN, Max}$		-	± 0.5	± 1.0	%	
Load regulation		-	± 0.5	± 1.5	%	

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$I_{OUT}=5\%$ to 100% of $I_{OUT, rated}$						
Output ripple and noise 20MHz bandwidth, peak to peak	20MHz bandwidth	-	50	100	mVp-p	
Temperature coefficient	Full load	-	-	± 0.03	%/°C	
Dynamic load response $I_{OUT}=25\%\sim 50\%\sim 75\%$ of $I_{OUT, rated}$	Peak deviation * $V_{OUT}=3.3V, 5V$ Peak deviation *Others Recovery time	-	± 5 ± 3 300	± 8 ± 5 500	% V_{OUT} % V_{OUT} μS	* $V_{OUT}=3.3, 5V$
Output voltage trim		110	160	230	% I_{OUT}	
Output over voltage protection		110	-	-	% V_{OUT}	
Output over current protection		120	-	-	% I_{OUT}	
Output short circuit protection		Continuous, automatic recovery				
Input filter		PI filter				
Hot plug		None				

* 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 1 minute, leakage current 1mA max.	I/P to O/P	3000	-	-	VDC	
Isolation resistance Tested at 500VDC	I/P to O/P	1000	-	-	M ohm	
Isolation capacitance 100KHz, 0.1V	I/P to O/P	-	1000	-	pF	
Switching frequency*	Full load	-	300	-	KHz	PWM mode
Operating temperature	See "Derating Curve"	-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		UL/EN/IEC 62368-1				

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Safety certifications		EN/IEC 62368-1
EMC		CISPR32, EN55032 Class B with external circuit IEC/EN61000-4-2, 3, 4, 5, 6
Size, and Weight		22.0x9.5x12.0mm, 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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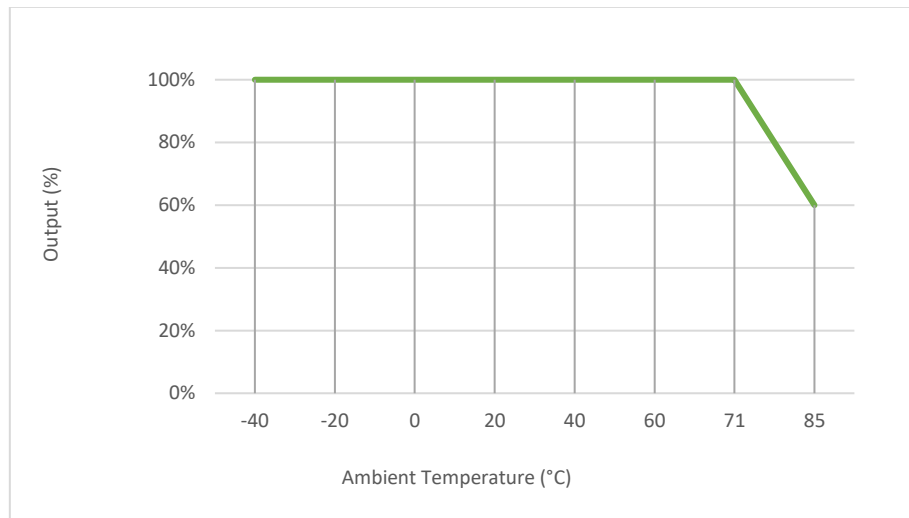
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Characteristics Curves

Derating Curve

Output vs Ambient Temperature



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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 Application circuit

Recommend component spec

Item	C _{IN}	C _{OUT}
Spec	100uF, 100V	22uF, 50V

EMC Enhancement for EN55032 Class B

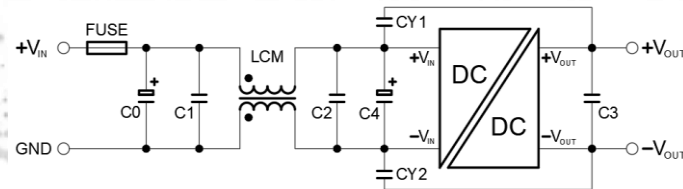


Figure 2: Circuit for EMC Enhancement

Recommended component spec

Items	LCM	C0, C4	C1, C2	CY1, CY2	C3
Spec	1.4...1.7mH	330uF, 100V	10uF, 100V	1nF, 400VAC	22uF, 50V

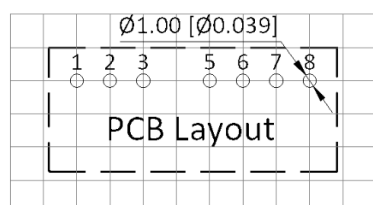
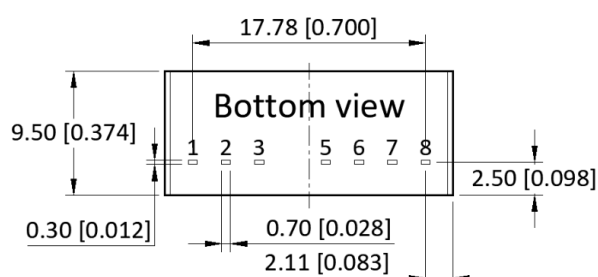
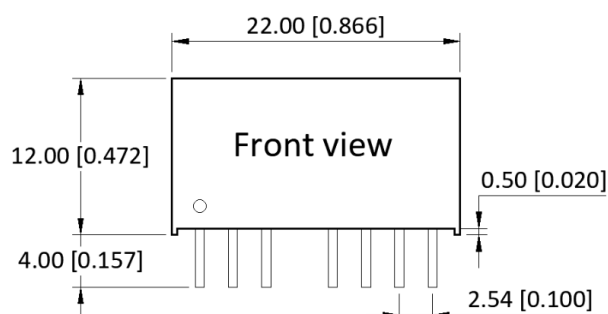
* Fuse to be selected according to application needs.

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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	NC	NC
6	+V _{OUT}	+V _{OUT}
7	0V	COM
8	NC	-V _{OUT}

* Add suffix "X" to the model numbers for optional Ctrl pin removed

* 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