6W, DC/DC Power Converter

SDV06S

Introduction

The SDV06S series are 1.5KV 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 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: 6W Max
- Input voltage range: 2:1
- Regulated output
- High efficiency up to 87%
- Isolation voltage 1.5KVDC
- Standby power only 0.12W
- Operating temperature range: -40 ~ +85°C ambient
- RoHS compliant
- Compact SIP8 package
- Optional remote ON/OFF
- Under voltage, over current and short circuit protection
- Meet IEC/EN/UL 62368-1 CISPR32, EN55032
- 3 year warranty

Part numbers

Model Number	Input Voltage [VDC]			V_{OUT} [VDC]	Output Current [mA]		Efficiency [%] Typ.	Capacitive Load [uF]
	Nom.	Range	*Max.		Max.	Min.		Max.
SDV06S0505	5	4.5~9	12	5	1200	0	80	1000
SDV06S0512	5	4.5~9	12	12	500	0	84	470
SDV06S0515	5	4.5~9	12	15	400	0	84	220
SDV06S0524	5	4.5~9	12	24	250	0	84	100
SDV06S0505D	5	4.5~9	12	±5	±500	0	80	500
SDV06S0512D	5	4.5~9	12	±12	±208	0	84	220
SDV06S0515D	5	4.5~9	12	±15	±167	0	84	100
SDV06S0524D	5	4.5~9	12	±24	±104	0	84	50
SDV06S1203	12	9~18	20	3.3	1350	0	76	1800
SDV06S1205	12	9~18	20	5	1200	0	80	1000
SDV06S1209	12	9~18	20	9	667	0	82	470
SDV06S1212	12	9~18	20	12	500	0	84	470
SDV06S1215	12	9~18	20	15	400	0	84	220
SDV06S1224	12	9~18	20	24	250	0	84	100
SDV06S2403	24	18~36	40	3.3	1350	0	78	1800
SDV06S2405	24	18~36	40	5	1200	0	82	1000
SDV06S2409	24	18~36	40	9	667	0	84	470
SDV06S2412	24	18~36	40	12	500	0	86	470
SDV06S2415	24	18~36	40	15	400	0	87	220
SDV06S2424	24	18~36	40	24	250	0	85	100
SDV06S4803	48	36~75	80	3.3	1350	0	76	1800
SDV06S4805	48	36~75	80	5	1200	0	81	1000
SDV06S4809	48	36~75	80	9	667	0	83	470

SDV06S4812	48	36~75	80	12	500	0	85	470
SDV06S4815	48	36~75	80	15	400	0	86	220
SDV06S4824	48	36~75	80	24	250	0	84	100

* 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.
* Add suffix “X” to the model numbers for optional Ctrl pin removed, e.g. SDV06S2405X.

Electrical characteristics

Unless otherwise indicated, specifications are measured at T_A=25°C, nominal input voltage, full load after warm up.

Parameter	Condition	Min.	Type	Max.	Unit	Note
Input current Full load, $V_{IN, Nom}$ = 5V		-	1538	-	mA	
Input current Full load, $V_{IN, Nom}$ = 12V	V_{OUT}=3.3V Others	-	489 625	-	mA	
Input current Full load, $V_{IN, Nom}$ = 24V	V_{OUT}=3.3V Others	-	238 305	-	mA	
Input current Full load, $V_{IN, Nom}$ = 48V	V_{OUT}=3.3V Others	-	156 146	-	mA	
Input current No load	$V_{IN, Nom}$ = 5V $V_{IN, Nom}$ = 12V Others	-	28 12 5	-	mA	
Input reflected ripple current		-	50	-	mA	
Input voltage surge 1 second max	$V_{IN, Nom}$ = 5V $V_{IN, Nom}$ = 12V $V_{IN, Nom}$ = 24V $V_{IN, Nom}$ = 48V	-0.7 -0.7 -0.7 -0.7	-	12 25 50 100	VDC	
Startup input voltage	$V_{IN, Nom}$ = 5V $V_{IN, Nom}$ = 12V $V_{IN, Nom}$ = 24V $V_{IN, Nom}$ = 48V	-	-	4.5 9 18 36	VDC	
Input under voltage shutdown	$V_{IN, Nom}$ = 5V $V_{IN, Nom}$ = 12V $V_{IN, Nom}$ = 24V $V_{IN, Nom}$ = 48V	- 5.5 12 26	- 6.5 15.5 30	4.5 - - -	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 -	- - 5	12 1.2 10	VDC VDC mA	Positive Logic
Output voltage accuracy	V_{OUT}=3.3V, 5V All others	-	±2 ±1	±5 ±3	%	
Line regulation Full load, V_{IN} = $V_{IN, Min}$ to $V_{IN, Max}$		-	±0.5	±1.0	%	
Load regulation IOUT=5% to 100% of IOUT, rated		-	±0.5	±1.5	%	
Temperature coefficiency	Full load	-	0.02	0.03	%/°C	
Dynamic load response IOUT=25%~50%~75% of IOUT, rated	Peak deviation Recovery time	-	±3 0.3	±8 0.5	% V_{OUT} mS	
Output ripple and noise 20MHz bandwidth, peak to peak		-	50	150	mVp-p	
Output over current protection		110	160	230	% 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.

General Specifications

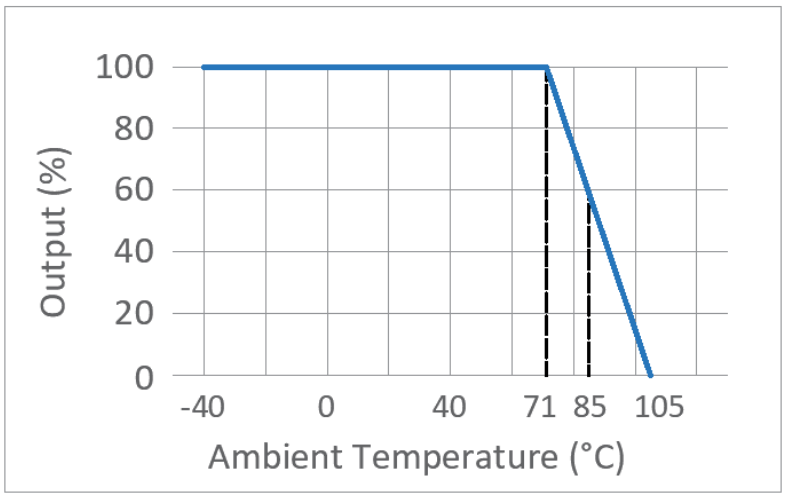
Parameters	Condition	Min.	Typ.	Max.	Unit	Notes
Isolation voltage Tested for 1 minute	Input to Output	1500	-	-	VDC	
Isolation resistance Tested at 500VDC	Input to Output	1000	-	-	M ohm	
Isolation capacitance 100KHz, 0.1V	Input to Output	-	1000	-	pF	
Operating temperature	See "Derating Curve"	-40	-	+85	°C	
Storage temperature		-55	-	+125	°C	
Storage humidity	None condensing	5	-	95	%RH	
Switching frequency	Full load	-	500	-	KHz	
Pin soldering resistance 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
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 ±4kV, Criteria B
	RS	IEC/EN61000-4-3, 10V/m, Criteria A
	EFT	IEC/EN61000-4-4, ±2kV, Criteria B [Fig 1]
	Surge	IEC/EN61000-4-5, Line to Line ±2kV, Criteria B [Fig 1]
	CS	IEC/EN61000-4-6, 3Vrms, Criteria A
Size & Weight		22 x 9.5 x 12 mm, 4.5g

Characteristics Curves

Derating Curve

Output vs Ambient Temperature



*Models with 3.3V or 5V output can NOT be used in applications where ambient temperature exceed 85°C.

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

Recommended component spec

Item	C_{IN}	C_{OUT}
Spec	**100uF, 100V**	**22uF, 50V**

EMC Enhancement for EN55032 Class B

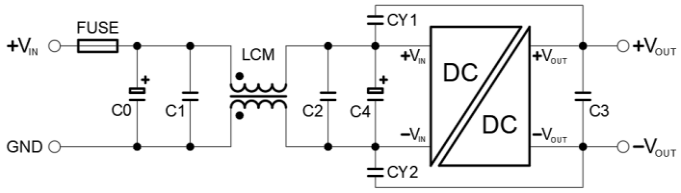


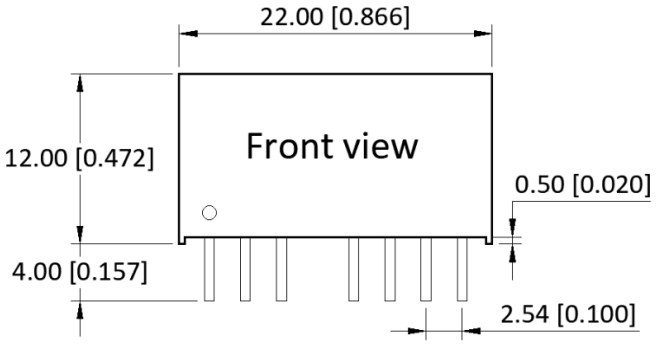
Figure 2: Circuit for EMC Enhancement

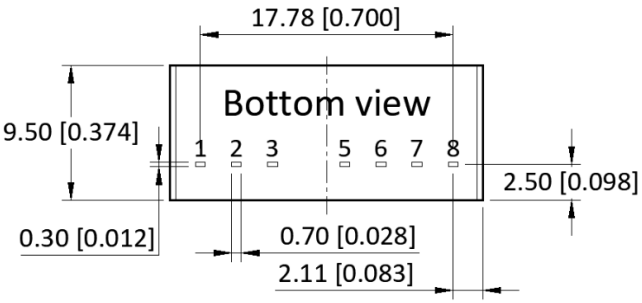
Recommended component spec

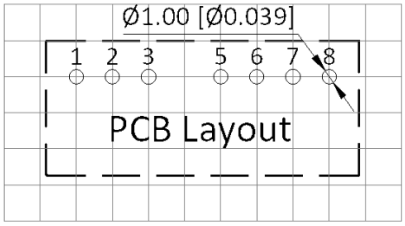
Items	LCM	C0, C4	C1, C2	CY1, CY2	C3
Spec	1.4…1.7mH	330uF, 100V	10uF, 100V	1nF, 400VAC	22uF, 50V

* Fuse to be selected according to application needs.

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**

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