10W, DC/DC Power Converter

SDV10S

Introduction

The SDV10S series are 1.5KV isolated 10Watt 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: 10W Max
- Input voltage range: 2:1
- Regulated output
- High efficiency up to 88%
- Isolation voltage 1.5KVDC
- Low ripple and noise
- 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.
SDV10S1203	12	9~18	20	3.3	2400	0	82	2200
SDV10S1205	12	9~18	20	5	2000	0	85	2200
SDV10S1209	12	9~18	20	9	1111	0	86	680
SDV10S1212	12	9~18	20	12	833	0	86	470
SDV10S1215	12	9~18	20	15	667	0	86	330
SDV10S1224	12	9~18	20	24	417	0	86	220
SDV10S2403	24	18~36	40	3.3	2400	0	84	2200
SDV10S2405	24	18~36	40	5	2000	0	87	2200
SDV10S2409	24	18~36	40	9	1111	0	88	680
SDV10S2412	24	18~36	40	12	833	0	88	470
SDV10S2415	24	18~36	40	15	667	0	88	330
SDV10S2424	24	18~36	40	24	417	0	88	220

* Only typical models are listed. Other models may be available upon request.
* Input voltage exceed the Max. value may cause permanent damage.
* Add suffix “X” to the model numbers for optional Ctrl pin removed, e.g. SDV10S2405X.

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, $V_{IN, Nom}$ = 12V	V_{OUT}=3.3V Others	-	777 969	-	mA	
Input current Full load, $V_{IN, Nom}$ = 24V	V_{OUT}=3.3V Others	-	389 474	-	mA	
Input current No load	V_{OUT}=3.3V, 5V Others	-	30 10	-	mA	
Reflected ripple current		-	50	-	mA	
Input voltage surge 1 second max	$V_{IN, Nom}$ = 12V $V_{IN, Nom}$ = 24V	-0.7 -0.7	-	25 50	VDC	
Startup input voltage	$V_{IN, Nom}$ = 12V $V_{IN, Nom}$ = 24V	-	-	9 18	VDC	
Input under voltage shutdown	$V_{IN, Nom}$ = 12V $V_{IN, Nom}$ = 24V	5.5 12	6.5 15.5	- -	VDC	
Remote On/Off control Ctrl pin logic high or open [ON] Ctrl pin logic low or grounded [OFF]	Logic high Logic low Ctrl pin current	3.5 0 -	- - 6	12 1.2 10	VDC VDC mA	Positive Logic
Output voltage accuracy		-	±1.0	±2.0	%	
Line regulation Full load, V_{IN} = $V_{IN, Min}$ to $V_{IN, Max}$		-	±0.25	±0.5	%	
Load regulation		-	±0.5	±1.0	%	
Output ripple and noise	Full load	-	0.02	0.03	%/°C	

I_{OUT}=5% to 100% of $I_{OUT, rated}$						
Temperature coefficiency	Peak deviation Recovery time	-	±5 0.3	±8 0.5	% V_{OUT} mS	
Dynamic load response I_{OUT}=25%~50%~75% of $I_{OUT, rated}$		-	75	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 1 minute, leakage current 1mA max.	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	
Switching frequency*	Full load	-	500	-	KHz	
Operating temperature	No derating	-40	-	+85	°C	
Storage temperature		-55	-	+125	°C	
Storage humidity	None condensing	5	-	95	%RH	
Pin soldering temperature		-	-	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				

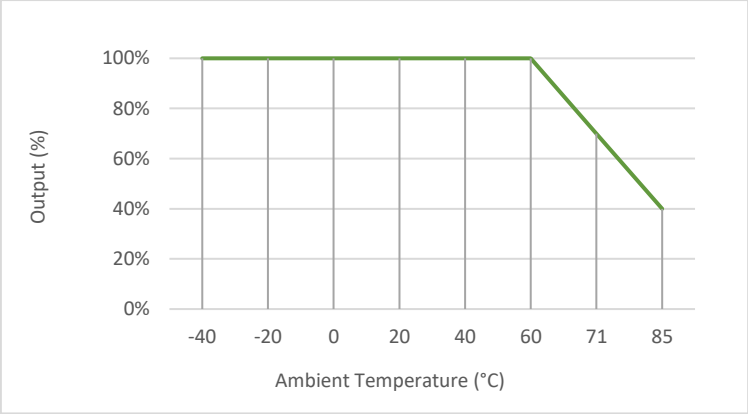
Design based on standards		IEC/EN/UL 62368-1
Safety certifications		IEC/EN 62368-1
EMC	Emission Immunity	CISPR32, EN55032 Class B with external circuit IEC/EN61000-4-2, 3, 4, 5, 6, 29
Size, and Weight		22 x 10 x 14 mm, 5g

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

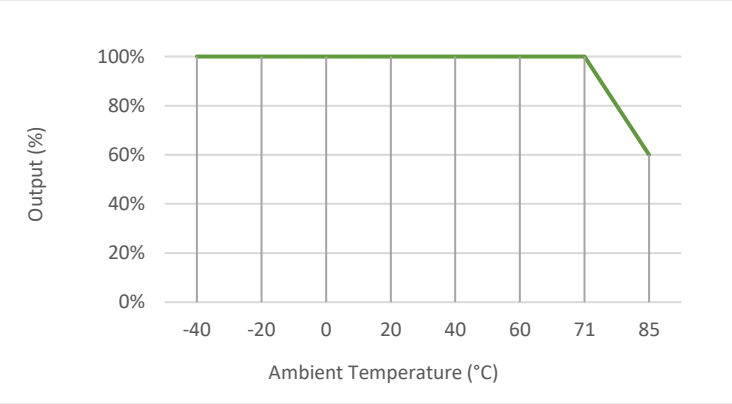
Characteristics Curves

Derating Curve

Output vs Ambient Temperature



Free air convection



100 LFM

Recommended External Circuit

Typical Application Circuit

Note:

*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.

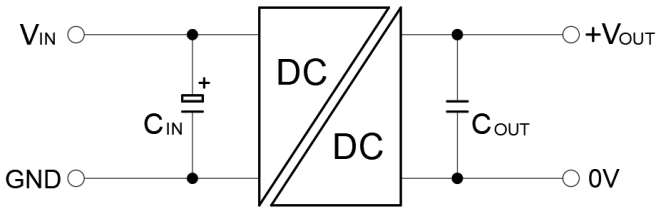


Figure 1: Typical Application Circuit

Recommend component spec

Item	C_{IN}	C_{OUT}
Spec	100uF	22uF

EMC Enhancement for EN55032 Class B

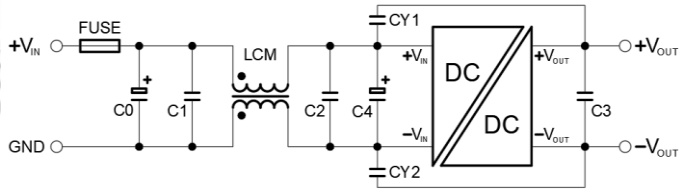


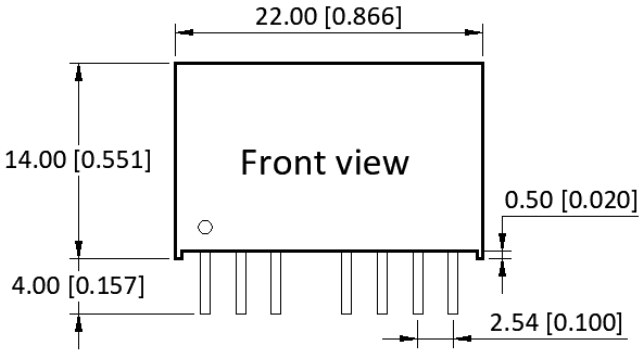
Figure 2. Circuit for EMC enhancement

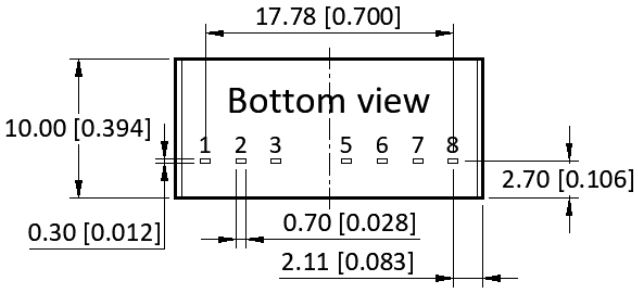
Recommended component spec

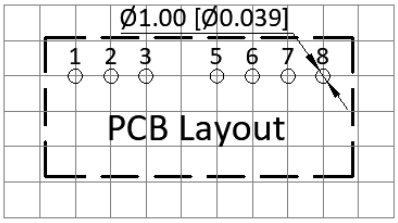
Item	C0, C4	C1, C2	LCM	CY1, CY2	C3
Spec	330uF, 50V	10uF, 50V	470uH	1nF, 2KVDC	22uF, 50V

* Fuse to be selected according to application needs.

Mechanical Specifications







Pin Definition

Pin #	Single Out	
1	GND	
2	V_{IN}	
3	Ctrl*	
5	NC	
6	$+V_{OUT}$	
7	0V	
8	NC	

*** 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