

10W, DC/DC Power Converter

SDU10G

SUMMIT
ELECTRONICS



Introduction

The SDU10G series are 1.5KV isolated 10Watt DC/DC converters with standard DIP1"x1" 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 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 4:1
- Regulated single or dual out
- High efficiency up to 88%
- Isolation voltage 1.5KVDC
- Remote On/Off control
- Operating temperature range: -40 ~ +85°C ambient
- RoHS compliant
- Compact 1"x1" package
- Under voltage, over voltage, over current, and short circuit protection
- Designed to meet UL/EN/IEC 62368-1
- 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.		
SDU10G2403	24	9-36	40	3.3	2400	0	77	2200
SDU10G2405	24	9-36	40	5	2000	0	82	2200
SDU10G2409	24	9-36	40	9	1111	0	85	680
SDU10G2412	24	9-36	40	12	833	0	86	470
SDU10G2415	24	9-36	40	15	667	0	86	330
SDU10G2424	24	9-36	40	24	416	0	88	100
SDU10G2405D	24	9-36	40	±5	±1000	0	83	1000
SDU10G2409D	24	9-36	40	±9	±555	0	86	680
SDU10G2412D	24	9-36	40	±12	±416	0	87	470
SDU10G2415D	24	9-36	40	±15	±333	0	87	330
SDU10G2424D	24	9-36	40	±24	±208	0	87	100
SDU10G4803	48	18-75	80	3.3	2400	0	79	2200
SDU10G4805	48	18-75	80	5	2000	0	83	2200
SDU10G4812	48	18-75	80	12	833	0	87	470
SDU10G4815	48	18-75	80	15	667	0	87	330
SDU10G4824	48	18-75	80	24	416	0	88	100
SDU10G4805D	48	18-75	80	±5	±1000	0	83	1000
SDU10G4812D	48	18~75	80	±12	±416	0	87	470
SDU10G4815D	48	18~75	80	±15	±333	0	87	330
SDU10G4824D	48	18~75	80	±24	±208	0	87	100

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

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

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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	$V_{IN, Nom} = 24V$	-	500	-	mA	
	$V_{IN, Nom} = 48V$	-	250	-	mA	
Input current No load		-	5	-	mA	
Reflected ripple current		-	30	-	mA	
Input voltage surge 1 second max	$V_{IN, Nom}=24V$	-0.7	-	50	VDC	
	$V_{IN, Nom}=48V$	-0.7	-	100	VDC	
Startup input voltage	$V_{IN, Nom}=24V$	-	-	9	VDC	
	$V_{IN, Nom}=48V$	-	-	18	VDC	
Input under voltage shutdown	$V_{IN, Nom}=24V$	5.5	6.5	-	VDC	
	$V_{IN, Nom}=48V$	12	15.5	-	VDC	
Startup time			10		mS	
Remote On/Off control "Ctrl" pin open or logic high [ON] "Ctrl" pin grounded or logic low [OFF]	Logic high	2.7	-	9	VDC	Positive Logic
	Logic low	0	-	1.2	VDC	
	Ctrl pin current	-	6	10	mA	
Output voltage accuracy	$I_{OUT}=0$ to 100%	-	± 1	± 3	%	
Line regulation Full load, $V_{IN}=V_{IN, Min}$ to $V_{IN, Max}$	Main OUT	-	± 0.2	± 0.5	%	
	Others	-	± 0.5	± 1.0	%	
Load regulation $I_{OUT}=5\%$ to 100% of $I_{OUT, rated}$	Main OUT	-	± 0.5	± 1.0	%	
	Others	-	± 0.5	± 1.5	%	
Cross regulation $+I_{OUT}=50\%$, $-I_{OUT}=10\%$ to 100%	Dual output models	-	-	± 5	%	

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Output ripple and noise 20MHz bandwidth, peak to peak		-	40	80	mVp-p	
Temperature coefficient	Full load	-	-	±0.03	%/°C	
Dynamic response load I_{OUT}=25%~50%~75% of I_{OUT, rated}	Peak deviation**		±3	±7	% V _{OUT}	** V_{OUT}=3.3, 5V
			±3	±5	% V _{OUT}	
	Peak deviation	-	300	500	uS	
	Recovery time					
Output over voltage protection		110		160	% V _{OUT}	
Output over current protection		110	150	190	% 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	1500	-	-	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		-40	-	+85	°C	
Storage temperature		-55	-	+125	°C	
Storage humidity	None condensing	5	-	95	%RH	
Pin soldering resistance 1.5mm away from case for 10 sec		-	-	+300	°C	
Vibration		IEC/EN61373 – Category 1, Grade B				
Cooling method		Free air convection				
Case material		Aluminum alloy				
MTBF	MIL-HDBK- 217F	>1,000,000 Hours, T _A =25°C				

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Design based on standards		UL/EN/IEC 62368-1
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		25.4 x 25.4 x 12mm, 15g

* 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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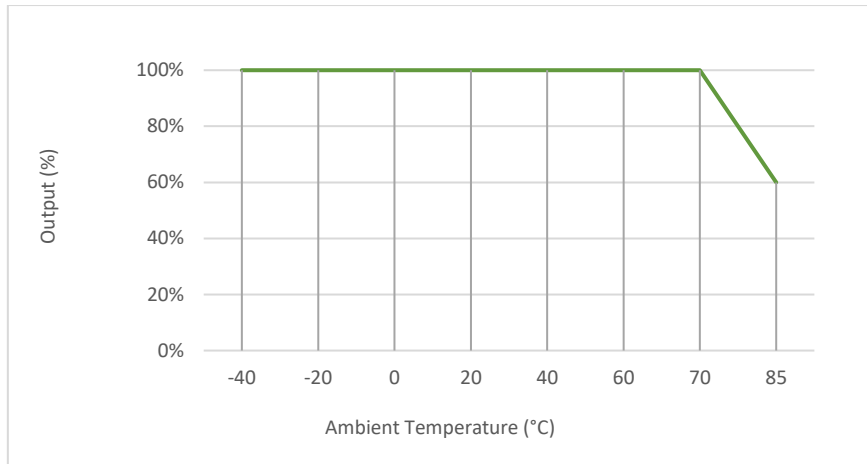
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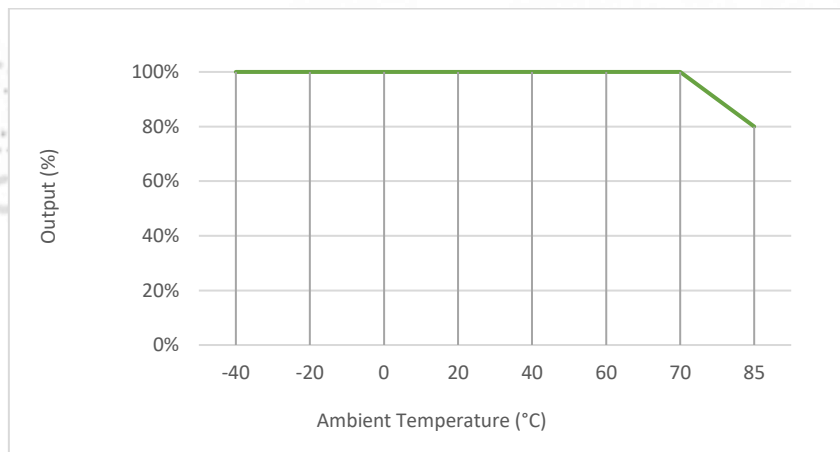
Characteristics Curves

Derating Curve

Output vs Ambient Temperature



V_{OUT}=3.3, 5V, no heatsink



V_{OUT}=12, 15, 24V, no heatsink

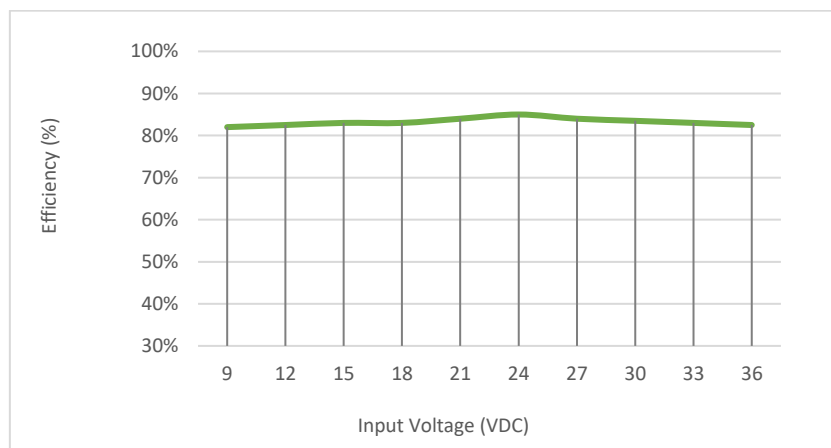
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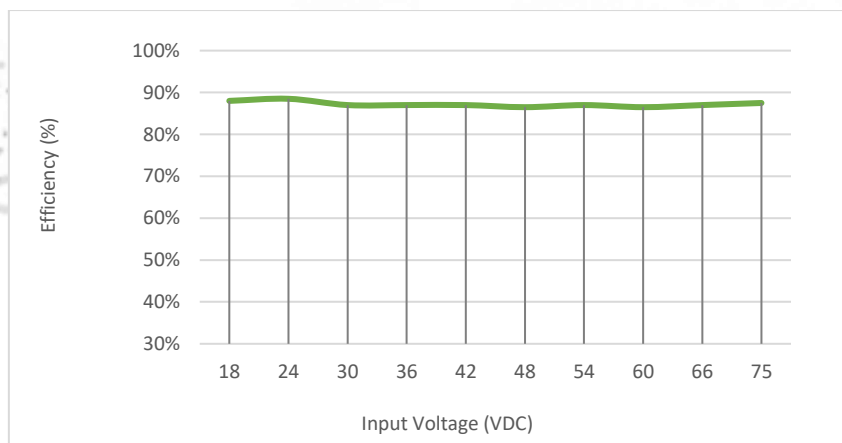


Efficiency Curve

Efficiency vs Input Voltage



SDU10G2405, with full Load



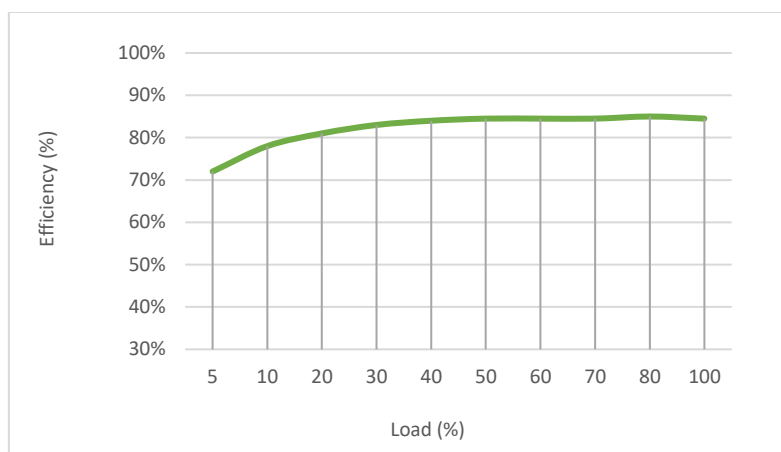
SDU10G4815D, with full Load

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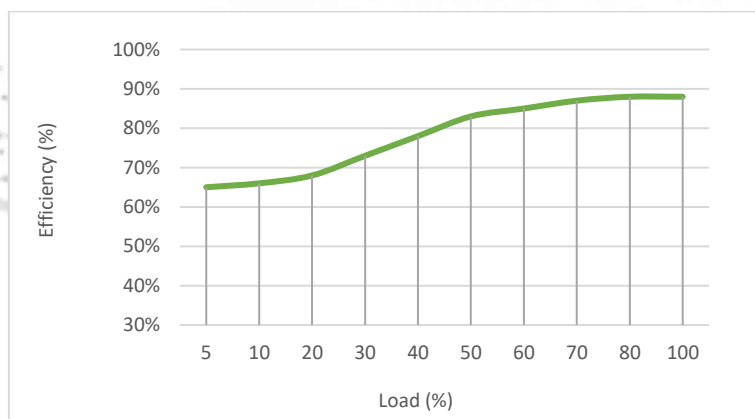
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Efficiency vs Load



SDU10G2405, with nominal input voltage



SDU10G4815D, with nominal input voltage

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Recommended External Circuit

Typical Application Circuit

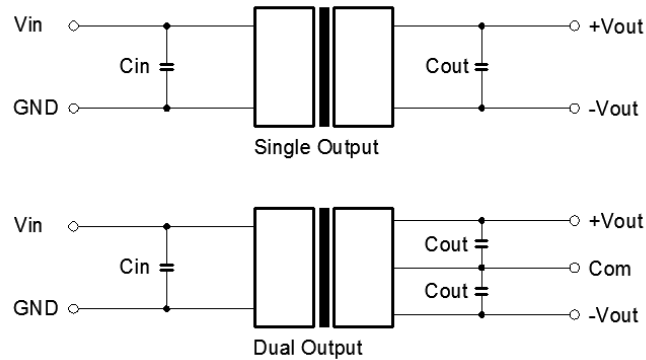


Figure 1: Typical External Circuit

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.

Circuit for EMC Enhancement

*Use this application circuit to meet Class B EMC performance.

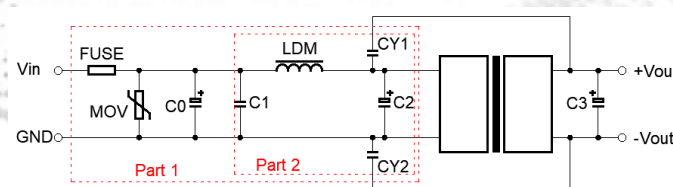


Figure 2. Circuit for EMC enhancement

Recommended component spec

Component	LDM1	MOV	C0, C2	C1	CY1, CY2
$V_{IN}=24V$	4.7uH	20D470K	330uF, 50V	1uF, 50V	1nF, 2KV
$V_{IN}=48V$	4.7uH	14D101K	330uF, 100V	1uF, 100V	1nF, 2KV

* Fuse to be selected according to application needs.

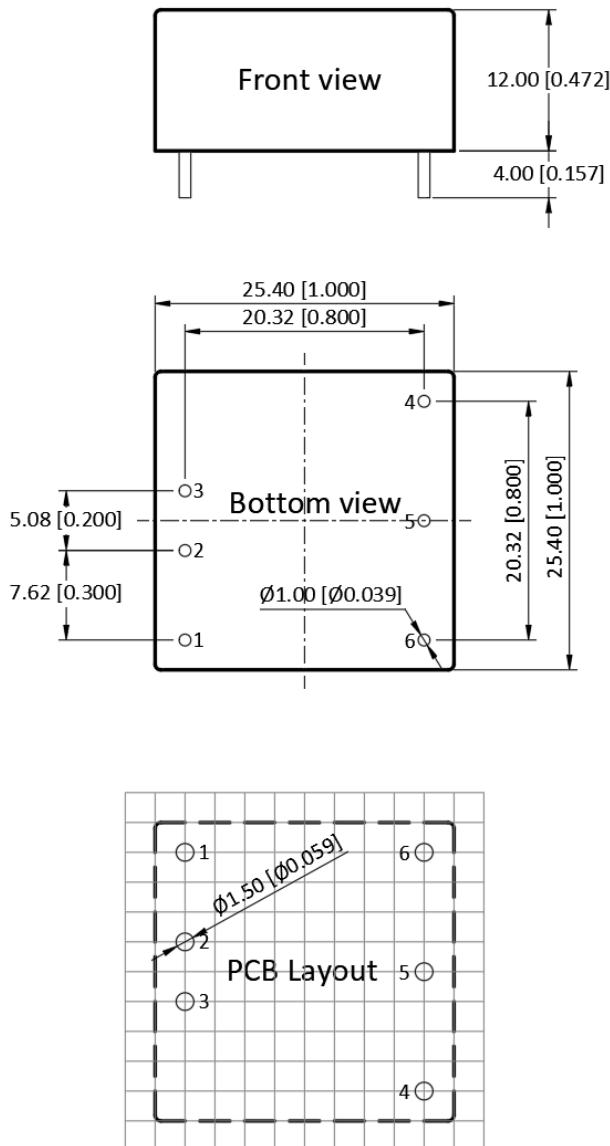
* C3 refer to relative C_{OUT} values in Table 1.

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Mechanical Specifications



Pin Definition

Pin #	Single Out	Dual Out
1	Ctrl	Ctrl
2	GND	GND
3	V _{IN}	V _{IN}
4	+V _{OUT}	+V _{OUT}
5	No Pin	0V
6	0V	-V _{OUT}

* Unless otherwise specified unit:

mm [inch]

* General tolerance: ± 0.50 [± 0.020]

* 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	25-08-2025	First issue of document