

30W, DC/DC Power Converter

SDU30G

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Introduction

The SDU30G series are 1.5KV isolated 30Watt 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, output trimming, 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: 30W Max
- Input voltage range 4:1
- Regulated output
- High efficiency up to 90%
- Isolation voltage 1.5KVDC
- Remote On/Off control
- Output trimming $\pm 10\%$
- 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

30W, DC/DC Power Converter

SDU30G



Part numbers

Model Number	Input Voltage [VDC]			V _{OUT} [VDC]	Output Current [mA]		Efficiency [%] Typ.	Capacitive Load [uF] Max.
	Nom.	Range	*Max.		Max.	Min.		
SDU30G2403	24	9-36	40	3.3	6000	0	84	8000
SDU30G2405	24	9-36	40	5	6000	0	88	6000
SDU30G2412	24	9-36	40	12	2500	0	89	5000
SDU30G2415	24	9-36	40	15	2000	0	89	3000
SDU30G2424	24	9-36	40	24	1250	0	90	1000
SDU30G4803	48	18-75	80	3.3	6000	0	83	8000
SDU30G4805	48	18-75	80	5	6000	0	87	6000
SDU30G4812	48	18-75	80	12	2500	0	88	5000
SDU30G4815	48	18-75	80	15	2000	0	88	3000
SDU30G4824	48	18-75	80	24	1250	0	89	1000
SDU30G4812D	48	18-75	80	±12	±1250	0	88	2000
SDU30G4815D	48	18-75	80	±15	±1000	0	88	1500
SDU30G4824D	48	18-75	80	±24	±625	0	88	470

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

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

30W, DC/DC Power Converter

SDU30G



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	$V_{IN, Nom} = 24V$	-	1388	-	mA	
	$V_{IN, Nom} = 48V$		710			
Input current No load	$V_{IN, Nom} = 24V$	-	6	-	mA	
	$V_{IN, Nom} = 48V$		8			
Reflected ripple current		-	60	-	mA	
Input voltage surge 1 second max	$V_{IN, Nom}=24V$	-0.7	-	50	VDC	
	$V_{IN, Nom}=48V$	-0.7		100		
Startup input voltage	$V_{IN, Nom}=24V$	-	-	9	VDC	
	$V_{IN, Nom}=48V$			18		
Input under voltage shutdown	$V_{IN, Nom}=24V$	5.5	7.5	-	VDC	
	$V_{IN, Nom}=48V$	12	15.5			
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	-	1.2	VDC	
	Ctrl pin current	-	5	8	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 output	-	± 0.2	± 0.5	%	
	Other output		± 0.2	± 1.0		
Load regulation $I_{OUT}=5\%$ to 100% of $I_{OUT, rated}$		-	± 0.5	± 1.0	%	
Output ripple and noise 20MHz bandwidth, peak to peak		-	100	200	mVp-p	

30W, DC/DC Power Converter

SDU30G



Temperature coefficient	Full load	-	-	±0.02	%/°C	
Dynamic load response I _{OUT} =25%~50%~75% of I _{OUT} , rated	Peak deviation	-	±3	±8	% V _{OUT}	
	Recovery time		250	500	µS	
Output voltage trim	Trim range	-	-	±10	% V _{OUT}	
Output over voltage protection		110	140	-	% V _{OUT}	
Output over current protection		110	150	-	% 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.

30W, DC/DC Power Converter

SDU30G



General Specifications

Parameters	Condition	Min.	Typ.	Max.	Unit	Notes
Isolation voltage 1 minute, leakage current 1mA max.	I/P to O/P	1500	-	-	VDC	
	I/P & O/P to Case	1000				
Isolation resistance Tested at 500VDC	I/P to O/P	1000	-	-	M ohm	
Isolation capacitance 100KHz, 0.1V	Single Out	-	2000	-	pF	
	Dual Out		1000			
Switching frequency	Full load	-	330	-	KHz	PWM mode
Operating temperature	Derating	-40	-	+85	°C	
Storage temperature		-55	-	+125	°C	
Storage humidity	None condensin g	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				
Design based on standards		UL/EN/IEC 62368-1				

30W, DC/DC Power Converter

SDU30G



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, 21g

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

30W, DC/DC Power Converter

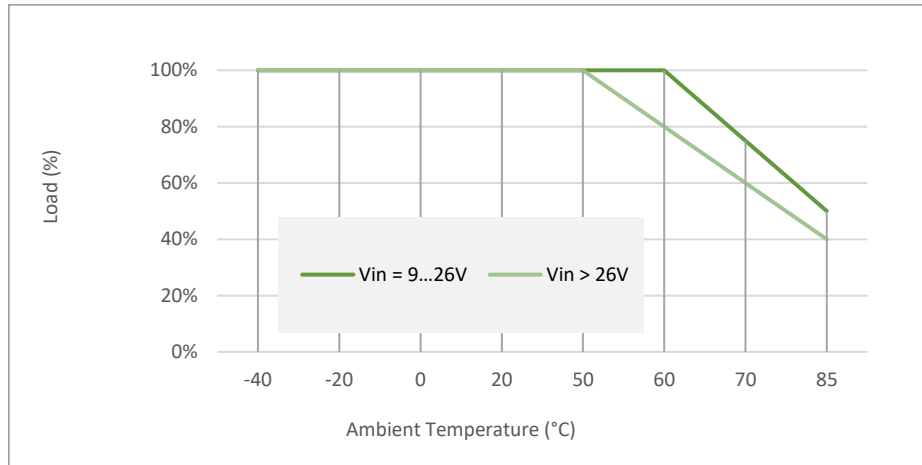
SDU30G



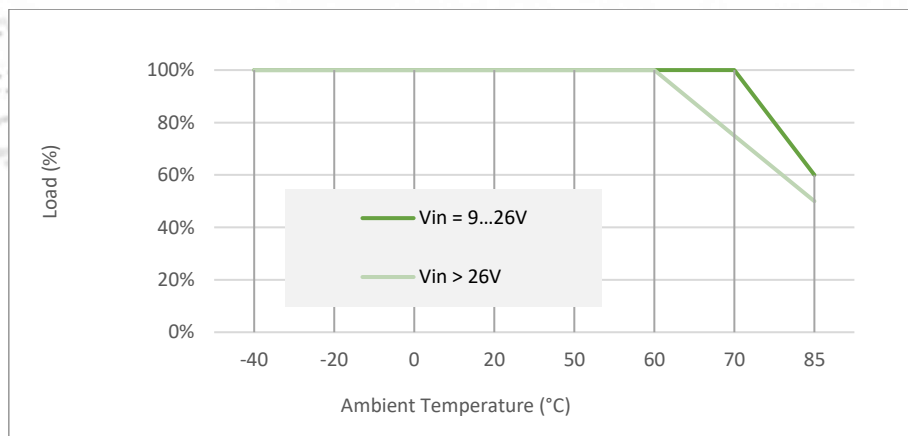
Characteristics Curves

Derating Curve

Load vs Ambient Temperature



SDU30G24xx, and $V_{OUT}=3.3V, 5V$

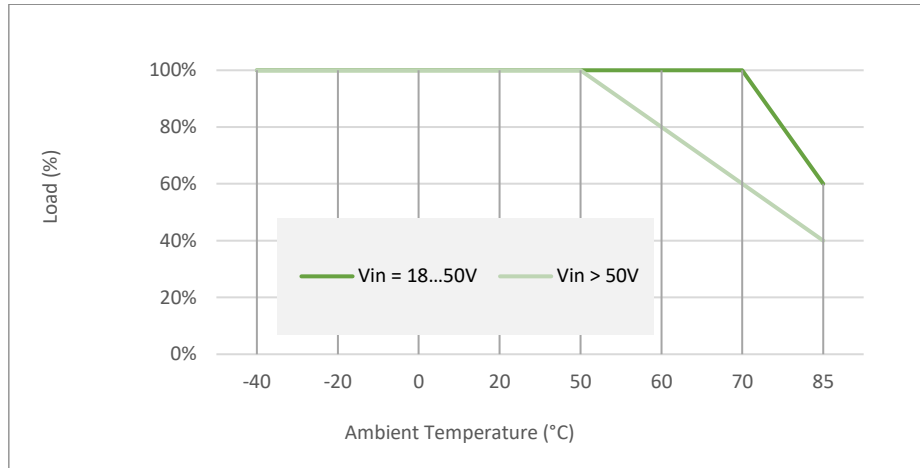


SDU30G24xx, and $V_{OUT}=12 \dots 24V$

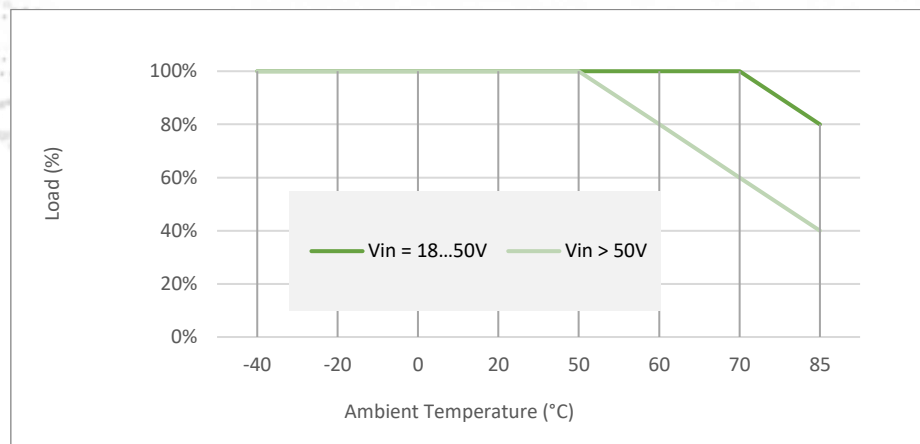
30W, DC/DC Power Converter

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SDU30G48xx, and $V_{OUT}=3.3V, 5V$, or Dual Out



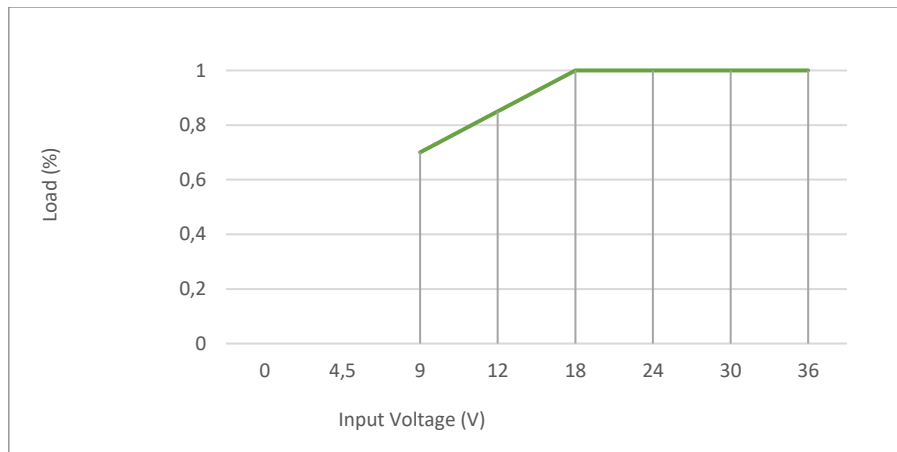
SDU30G48xx, and $V_{OUT}=12 \dots 24V$

30W, DC/DC Power Converter

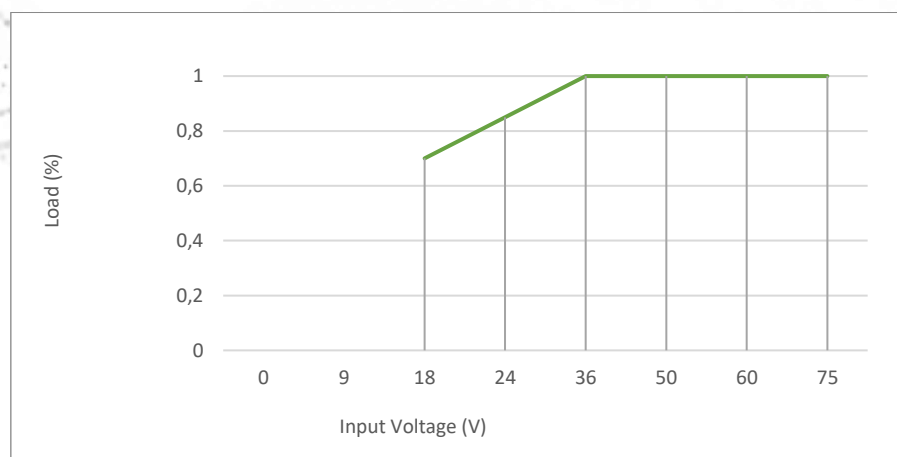
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Load vs Input Voltage



SDU30G24xx



SDU30G48xx

30W, DC/DC Power Converter

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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.

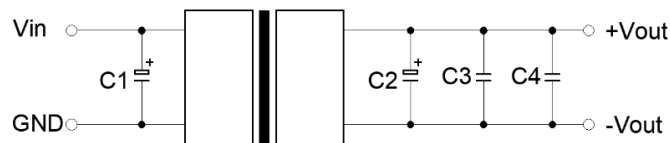


Figure 1: Typical External Circuit

Recommend component specifications

Items	C1	C2	C3	C4
$V_{IN}=24V$	100uF	470uF	10uF	0.1uF
$V_{IN}=48V$	100uF	470uF	22uF	10uF

Circuits for Output Trim

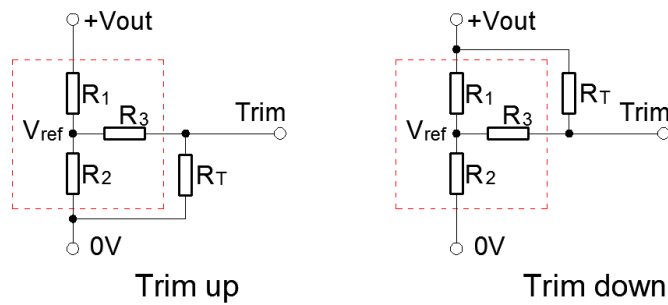
* Items in the red blocks are internal components of the converter.

Internal component spec

V_{OUT} [V]	R1 [K Ohm]	R2 [K Ohm]	R3 [K Ohm]	V_{ref} [V]
3.3	10	6.064	13.622	1.24
5	2.4	2.344	17.346	2.5
12	8.2	2.153	21.016	2.5
15	12	2.388	21.016	2.5
24	10	1.158	10.714	2.5

30W, DC/DC Power Converter

SDU30G



* The formulas to calculate the desired resistance of Trim resistor “ R_T ”.

$$\text{Trim up: } R_T = \frac{a R_2}{R_2 - a} - R_3 \quad a = \frac{V_{ref}}{V_{OUT} - V_{ref}} R_1$$

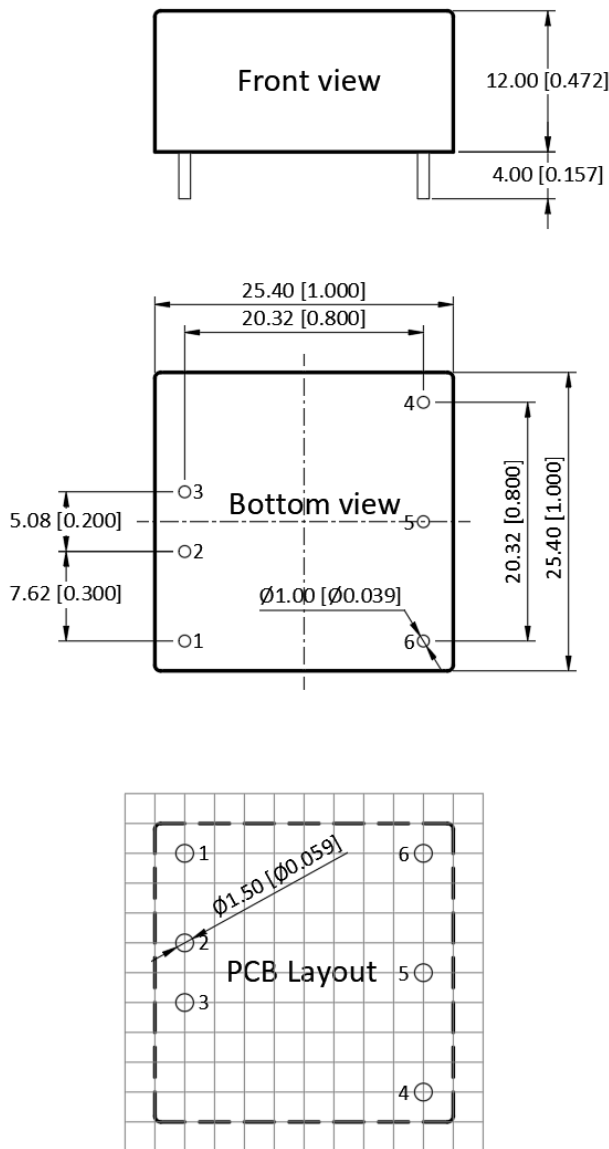
$$\text{Trim down: } R_T = \frac{a R_1}{R_1 - a} - R_3 \quad a = \frac{V_{OUT} - V_{ref}}{V_{ref}} R_2$$

30W, DC/DC Power Converter

SDU30G



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	Trim	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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SDU30G



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