

30W, DC/DC Power Converter

SDU30H

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Introduction

The SDU30H series are 1.5KV isolated 30Watt DC/DC converters with standard DIP2"x1" footprint. Designed with high efficiency, they operate in a wide temperature range from -40°C to +80°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 industrial control system, measurement equipment, telecom, wireless network.

Features

- Rated power: 30W Max
- Input voltage range 4:1
- Regulated output with 10% trimming range
- High efficiency up to 90%
- Isolation voltage 1.5KVDC
- Remote On/Off control
- Operating temperature range: -40 ~ +80°C ambient
- RoHS compliant
- Standard 2"x1" package
- Six-sided metal shielding 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.		
SDU30H2403	24	9~36	40	3.3	6000	0	85	10000
SDU30H2405	24	9~36	40	5	6000	0	86	10000
SDU30H2409	24	9~36	40	9	3333	0	88	4700
SDU30H2412	24	9~36	40	12	2500	0	90	2400
SDU30H2415	24	9~36	40	15	2000	0	90	1680
SDU30H2424	24	9~36	40	24	1250	0	90	680
SDU30H2405D	24	9~36	40	±5	±3000	0	86	2000
SDU30H2412D	24	9~36	40	±12	±1250	0	89	1250
SDU30H2415D	24	9~36	40	±15	±1000	0	89	680
SDU30H2424D	24	9~36	40	±24	±625	0	89	470
SDU30H4803	48	18~75	80	3.3	6000	0	86	10000
SDU30H4805	48	18~75	80	5	6000	0	87	10000
SDU30H4812	48	18~75	80	12	2500	0	88	2700
SDU30H4815	48	18~75	80	15	2000	0	89	1680
SDU30H4824	48	18~75	80	24	1250	0	87	680
SDU30H4805D	48	18~75	80	±5	±3000	0	86	2000
SDU30H4812D	48	18~75	80	±12	±1250	0	88	1250
SDU30H4815D	48	18~75	80	±15	±1000	0	88	680

* 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} , $Nom=24V$	$V_{OUT}=3.3V$		970		mA	
	$V_{OUT}=5V$	-	1454	-		
	Others		1388			
Input current Full load, V_{IN} , $Nom=48V$	$V_{OUT}=3.3V$		474		mA	
	$V_{OUT}=5V$		710	-		
	Others		702			
Input current No load, V_{IN} , $Nom=24V$	$V_{OUT}=3.3V$		60		mA	
	$V_{OUT}=5V$	-	60	-		
	Others		6			
Input current No load, V_{IN} , $Nom=48V$	$V_{OUT}=3.3V$		20		mA	
	$V_{OUT}=5V$		20	-		
	Others		5			
Reflected ripple current		-	40	-	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		
Startup time	Resistive load	-	10	-	mS	
Input under voltage shutdown	$V_{IN, Nom}=24V$	5.5	6.5	-	VDC	
	$V_{IN, Nom}=48V$	12	15.5			
Remote On/Off control	Logic high	3.5	-	12	VDC	Positive Logic
	Logic low	0	-	1.2	VDC	

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“Ctrl” pin open or logic high [ON] “Ctrl” pin grounded or logic low [OFF]	Ctrl pin current	-	5	8	mA	
Output voltage accuracy	$I_{OUT}=5\%$ to 100%	-	± 1	± 3	%	
Line regulation Full load, $V_{IN}=V_{IN, Min}$ to $V_{IN, Max}$	Main output Other output	-	± 0.2 ± 0.5	± 0.5 ± 1.0	%	
Load regulation $I_{OUT}=5\%$ to 100% of $I_{OUT, rated}$	Main output Other output	-	± 0.5 ± 0.5	± 1.0 ± 1.5	%	
Cross regulation $+I_{OUT}=50\%$, - $I_{OUT}=10\%$ to 100%	Dual output models	-	-	± 5	%	
Output ripple and noise 20MHz bandwidth, peak to peak	Single Dual	-	50 50	100 150	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 Recovery time	-	± 5 300	± 8 500	% V_{OUT} uS	

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Output voltage trim	Trim range	-	-	±10	% V _{OUT}	
Output over voltage protection		110	-	160	% V _{OUT}	
Output over current protection		110	-	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	-	2000	-	pF	
Switching frequency*	Full load	-	330	-	KHz	
Operating temperature	See “Derating Curve”	-40	-	+80	°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				

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MTBF	MIL-HDBK-217F	>1,000,000 Hours, T _A =25°C
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		50.8 x 25.4 x 12 mm, 30g

* 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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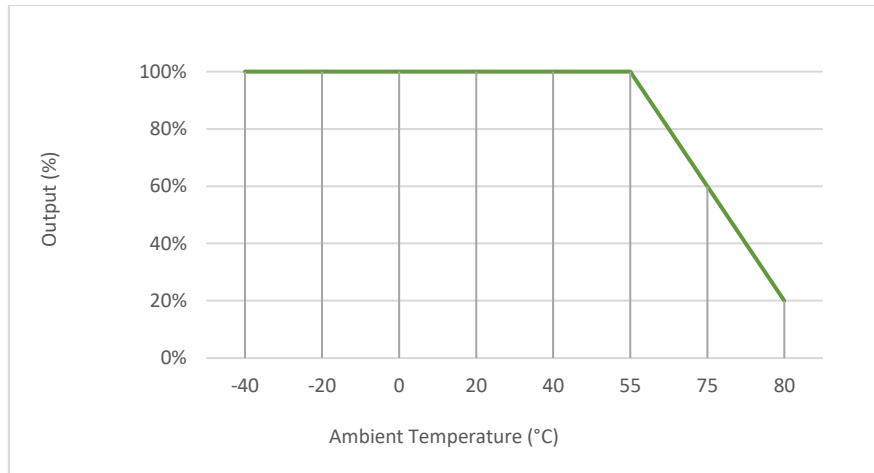
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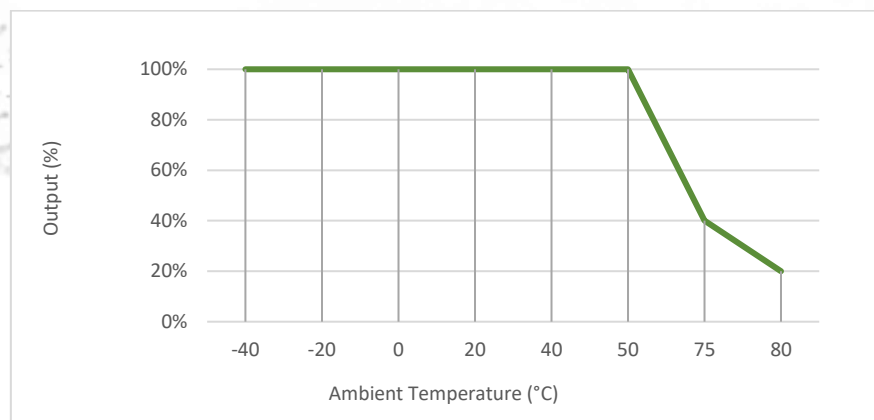
Characteristics Curves

Derating Curve

Output vs Ambient Temperature



Single output



Dual output

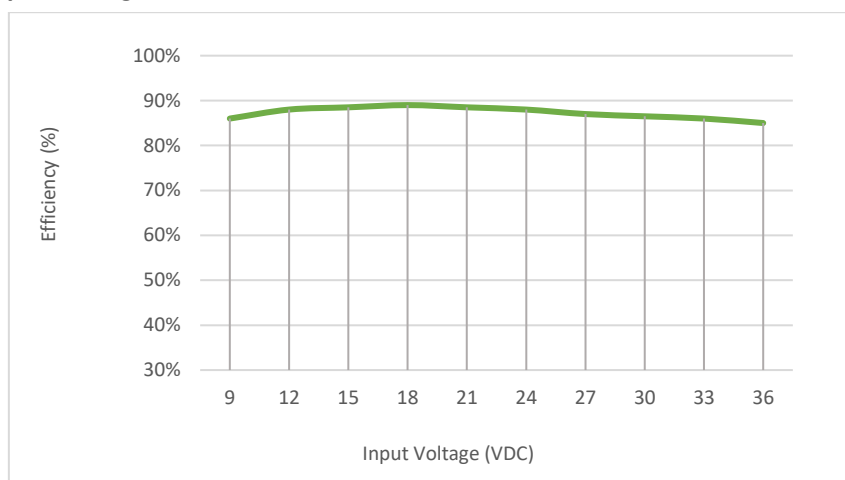
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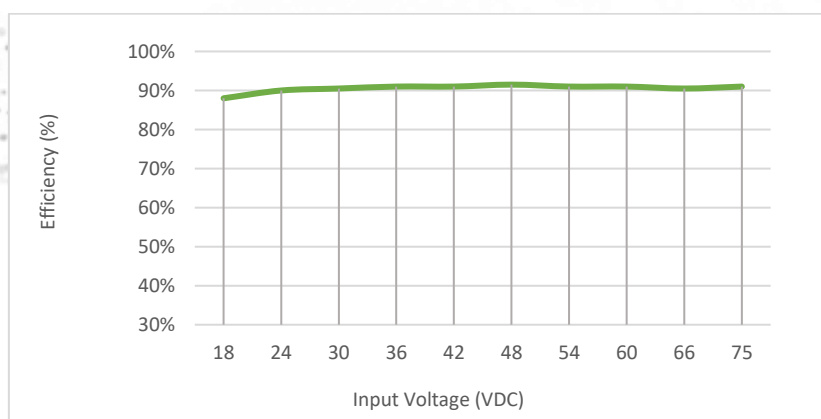


Efficiency Curve

Efficiency vs Input Voltage



SDU30H2405, with full Load



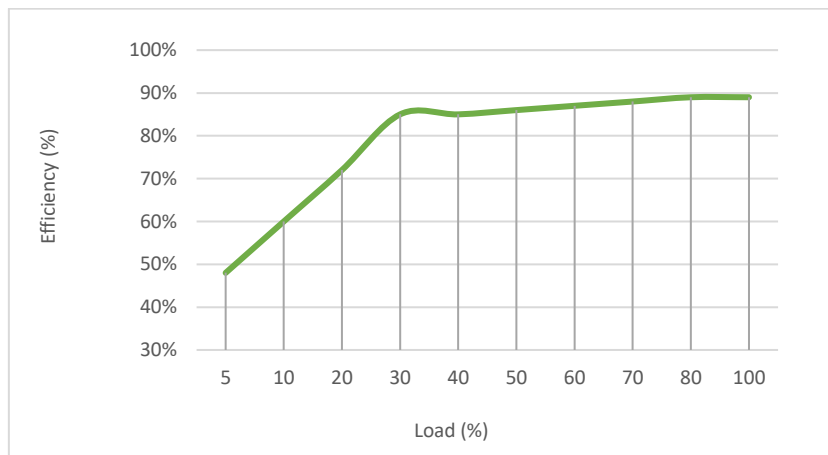
SDU30H4815D, with full Load

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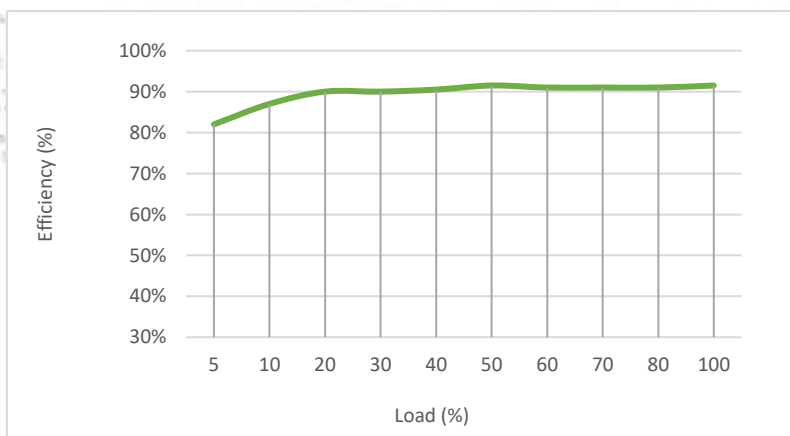
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Efficiency vs Load



SDU30H2405, with nominal input voltage



SDU30H4815D, with nominal input voltage

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Recommended 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.

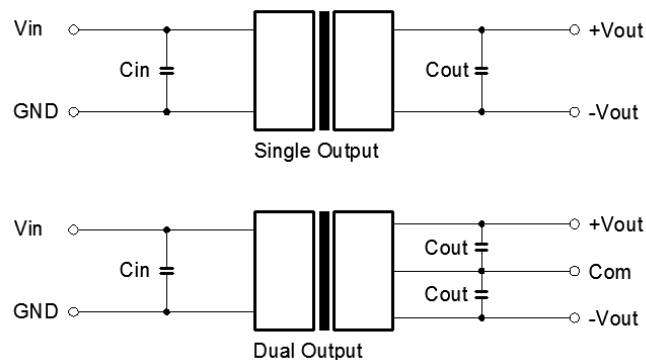


Figure 1: Typical External Circuit

Recommend component spec

Input voltage	24V	48V
C _{IN}	100uF, 50V	100uF, 100V

Recommended component spec

Output voltage	3.3 ... 9V	12 ... 24V	±5 ... ±15V	±24V
C _{OUT}	220uF, 24V	100uF, 50V	220uF, 24V	100uF, 50V

Circuit for EMC Enhancement, single output

*Use this application circuit to meet Class B EMC performance

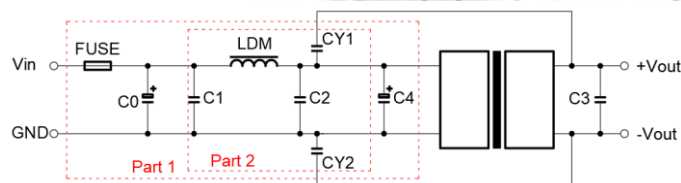


Figure 2. Circuit for EMC enhancement

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Recommended component spec

Component	LDM	C0, C4	C1, C2	CY1, CY2
V_{IN}=24V	2.2uH, 4A	330uF, 50V	4.7uF, 50V	1nF, 2KV
V_{IN}=48V	2.2uH, 2A	330uF, 100V	4.7uF, 100V	1nF, 2KV

* Fuse to be selected according to application needs.

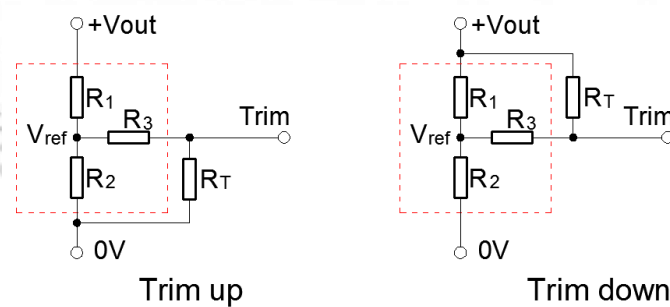
* C3 refer to relative C_{OUT} values in Table 2.

Circuits for Output Trim

* Components within the red block 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	13.622	2.5
12	8.2	2.153	17.346	2.5
15	12	2.388	21.016	2.5
24	10	1.158	10.714	2.5



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

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

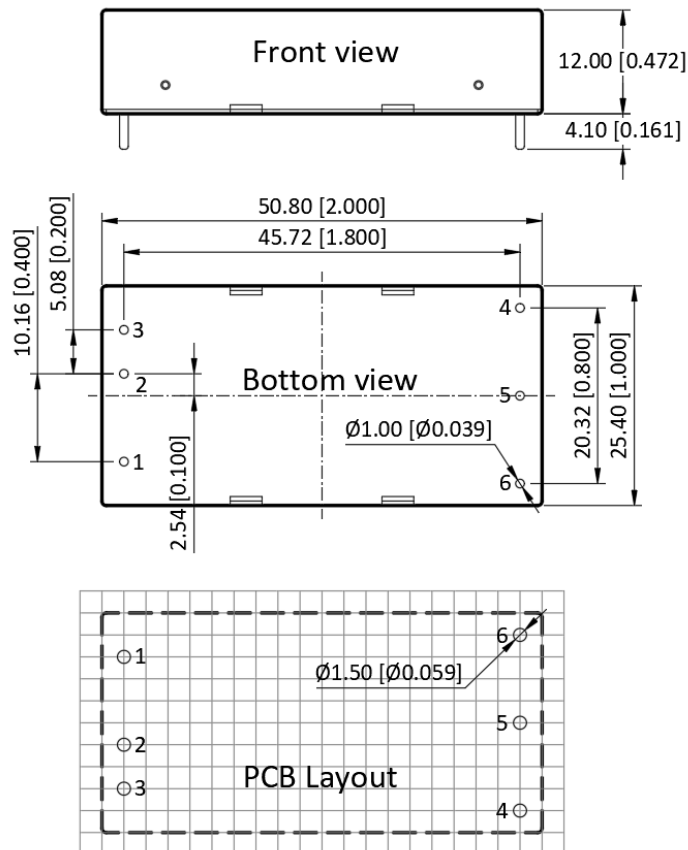
$$\text{Trim down: } R_T = \frac{a R_1}{R_1 - a} - R_3 \quad a = \frac{V_{OUT} - V_{ref}}{V_{ref}} R_2$$

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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	0V	0V
6	Trim	-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	27-08-2025	First issue of document