

15W, DC/DC Power Converter

SDU15G

SUMMIT
ELECTRONICS



Introduction

The SDU15G series are 1.5KV isolated 15Watt 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: 15W Max
- Input voltage range 4:1
- Regulated single or dual out
- High efficiency up to 91%
- 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

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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.		
SDU15G2403	24	9-36	40	3.3	4000	0	88	4700
SDU15G2405	24	9-36	40	5	3000	0	90	4700
SDU15G2412	24	9-36	40	12	1250	0	90	1000
SDU15G2415	24	9-36	40	15	1000	0	91	820
SDU15G2418	24	9-36	40	18	833	0	90	470
SDU15G2424	24	9-36	40	24	625	0	91	270
SDU15G2405D	24	9-36	40	±5	±1500	0	87	1500
SDU15G2412D	24	9-36	40	±12	±625	0	90	470
SDU15G2415D	24	9-36	40	±15	±500	0	90	330
SDU15G2424D	24	9-36	40	±24	±312	0	89	200
SDU15G4803	48	18-75	80	3.3	4000	0	88	4700
SDU15G4805	48	18-75	80	5	3000	0	90	4700
SDU15G4812	48	18-75	80	12	1250	0	91	1000
SDU15G4815	48	18-75	80	15	1000	0	91	820
SDU15G4824	48	18-75	80	24	625	0	91	270
SDU15G4805D	48	18-75	80	±5	±1500	0	86	1500
SDU15G4812D	48	18-75	80	±12	±625	0	89	470
SDU15G4815D	48	18-75	80	±15	±500	0	89	330
SDU15G4824D	48	18-75	80	±24	±312	0	90	200

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

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

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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	$V_{IN, Nom} = 24V$ $V_{IN, Nom} = 48V$	-	694 348	-	mA	
Input current No load	$V_{IN, Nom} = 24V$ $V_{IN, Nom} = 48V$	-	30 15	-	mA	
Reflected ripple current		-	30	-	mA	
Input voltage surge 1 second max	$V_{IN, Nom}=24V$ $V_{IN, Nom}=48V$	-0.7 -0.7	-	50 100	VDC	
Startup input voltage	$V_{IN, Nom}=24V$ $V_{IN, Nom}=48V$	-	-	9 18	VDC	
Input under voltage shutdown	$V_{IN, Nom}=24V$ $V_{IN, Nom}=48V$	5.5 12	6.5 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 Logic low Ctrl pin current	3.5 0 -	- - 2	12 1.2 7	VDC VDC mA	Positive Logic
Output voltage accuracy	$I_{OUT}=0$ to 100%	-	± 1	± 3	%	
Line regulation Full load, $V_{IN}=V_{IN, Min}$ to $V_{IN, Max}$		-	± 0.2	± 0.5	%	
Cross regulation $+I_{OUT}=50\%$, $-I_{OUT}=10\%$ to 100%	Dual output models	-	-	± 5	%	
Output ripple and noise		-	50	100	mVp-p	

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20MHz bandwidth, peak to peak						
Temperature coefficient	Full load	-	-	±0.02	%/°C	
Dynamic load response $I_{OUT}=25\%\sim 50\%\sim 75\%$ of $I_{OUT, rated}$	Peak deviation**		±3	±7	% V_{OUT}	** $V_{OUT}=3.3,$ 5V
	Peak deviation	-	±3	±5	% V_{OUT}	
	Recovery time	-	300	500	μS	
Output voltage trim	Trim range	-	-	±10	% V_{OUT}	
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	-	2000	-	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				
Design based on standards		UL/EN/IEC 62368-1				

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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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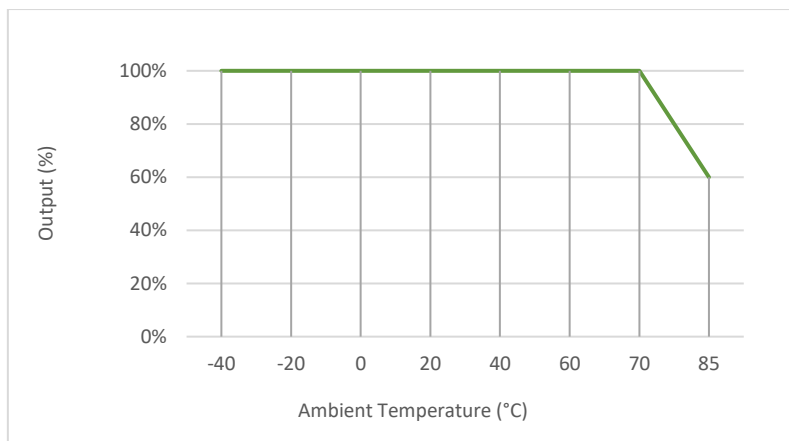
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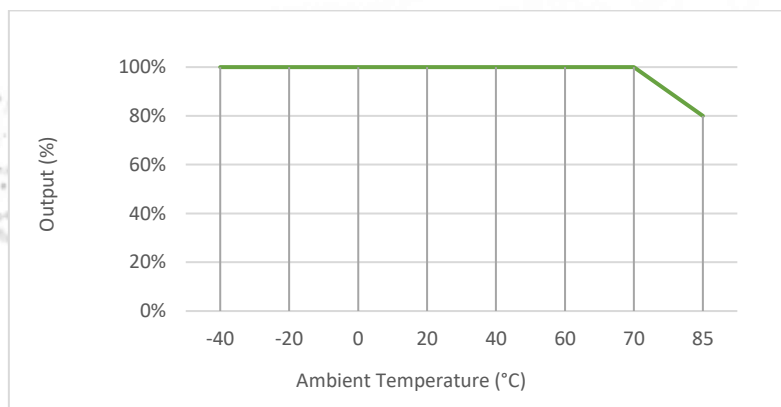
Characteristics Curves

Derating Curve

Output vs Ambient Temperature



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



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

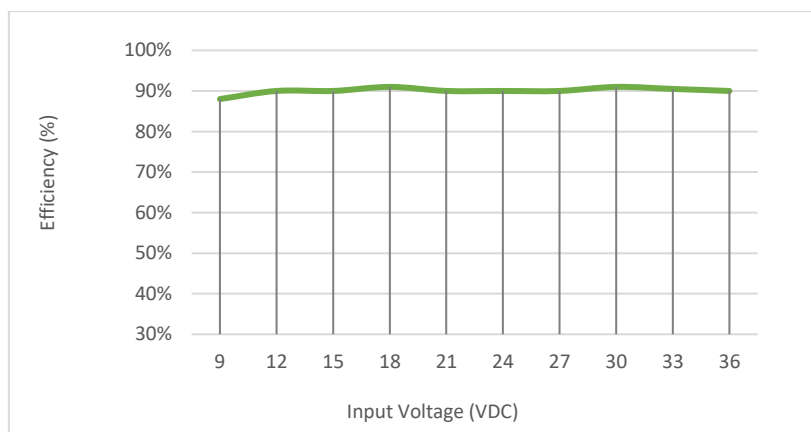
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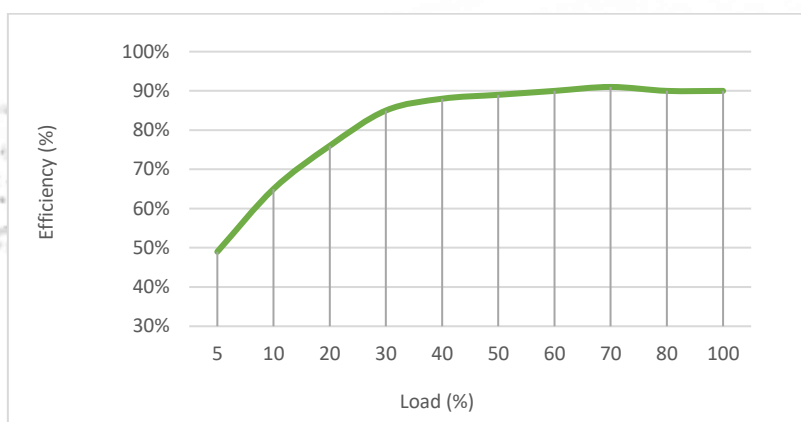


Efficiency Curve

Efficiency vs Input Voltage



SDU15G2405, with full Load



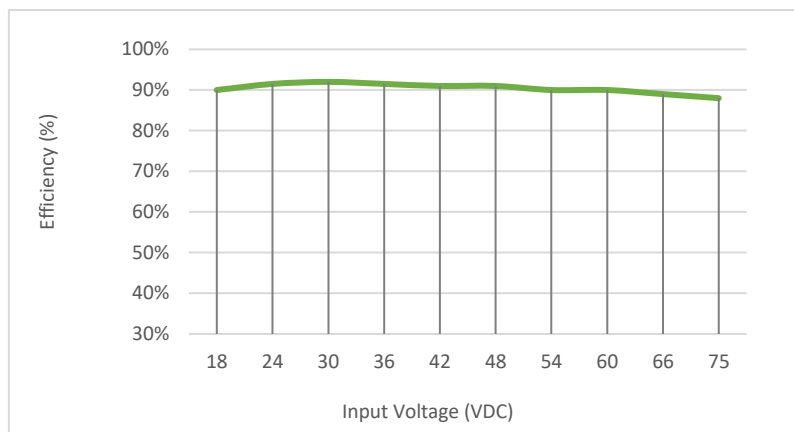
SDU15G4805, with full Load

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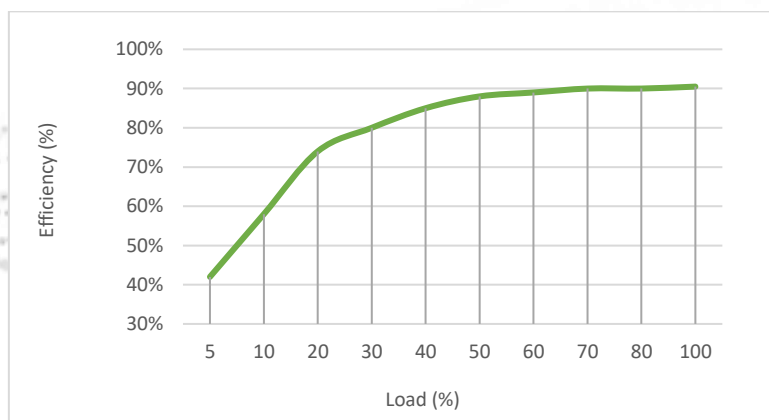
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Efficiency vs Load



SDU15G2405, with nominal input voltage



SDU15G4805, 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.

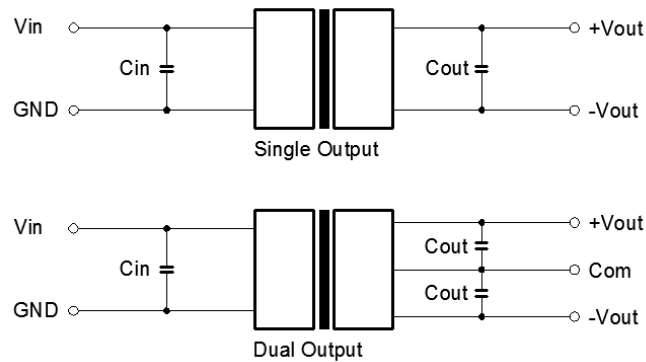


Figure 1: Typical External Circuit

Recommend component spec

Output voltage	3.3, 5, 12, 15V	24V
C_{IN}	100uF	100uF
C_{OUT}	100uF, 50V	47uF, 50V

Circuit for EMC Enhancement, single output

*Use this application circuit to meet Class B EMC performance

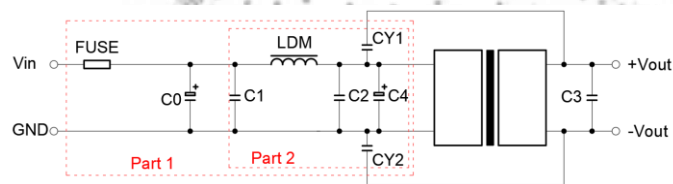


Figure 2. Circuit for EMC enhancement

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Recommended component spec

Items	LDM1	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.

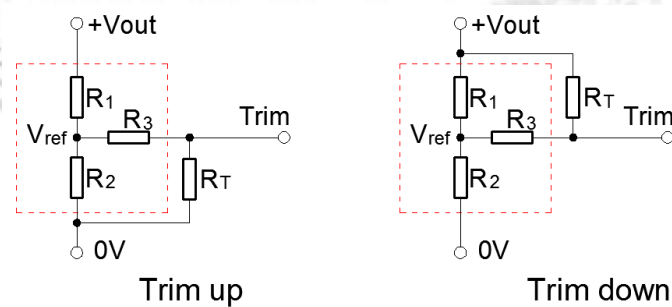
* C3 refer to relative C_{OUT} values in Table 1

Circuits for Output Trim

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

[Table 3] 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



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

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

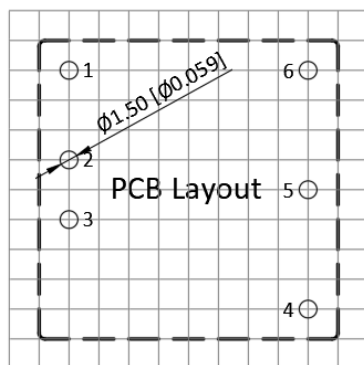
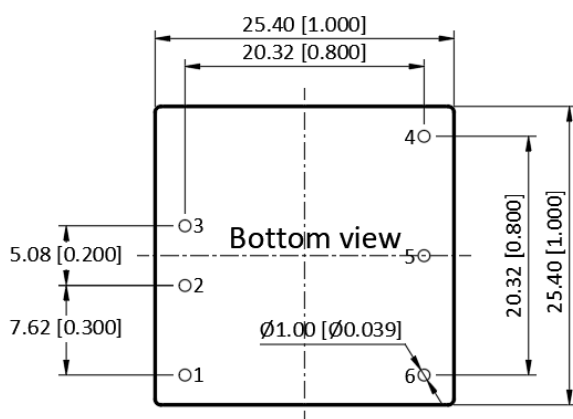
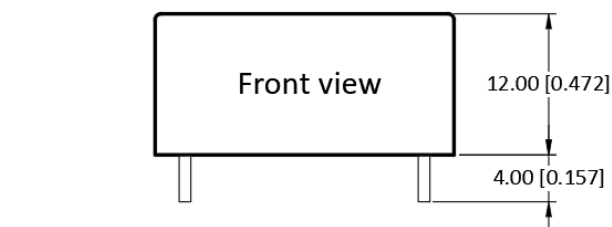
$$\text{Trim down: } R_T = \frac{a R_1}{R_1 - a} - R_3 \quad a = \frac{V_{OUT} - V_{ref}}{V_{ref}} R_2$$

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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	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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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