

6W, DC/DC Power Converter

SDU06S

SUMMIT
ELECTRONICS



Introduction

The SDU06G series are 1.5KV isolated 6Watt DC/DC converters with compact DIP1"x1" footprint, and optional chassis for chassis mount or DIN rail installation. 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, 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: 6W
- Input voltage range: 9~36VDC or 18~75VDC
- Regulated output
- High efficiency up to 88%
- Isolation voltage 1.5KVDC
- 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

6W, DC/DC Power Converter

SDU06S



Part numbers

Model Number	Input Voltage [VDC]			V _{OUT} [VDC]	Output Current [mA]		Efficiency [%] Typ.	Capacitive Load [uF] Max.
	Nom.	Range	*Max.		Max.	Min.		
SDU06G2403	24	9-36	40	3.3	1500	0	79	1800
SDU06G2405	24	9-36	40	5	1200	0	83	1000
SDU06G2409	24	9-36	40	9	667	0	85	680
SDU06G2412	24	9-36	40	12	500	0	87	470
SDU06G2415	24	9-36	40	15	400	0	87	220
SDU06G2424	24	9-36	40	24	250	0	88	100
SDU06G2405D	24	9-36	40	±5	±600	0	83	470
SDU06G2412D	24	9-36	40	±12	±250	0	87	100
SDU06G2415D	24	9-36	40	±15	±200	0	87	100
SDU06G2424D	24	9-36	40	±24	±125	0	87	100
SDU06G4803	48	18-75	80	3.3	1500	0	79	1800
SDU06G4805	48	18-75	80	5	1200	0	83	1000
SDU06G4812	48	18-75	80	12	500	0	87	470
SDU06G4815	48	18-75	80	15	400	0	88	220
SDU06G4824	48	18-75	80	24	250	0	88	100
SDU06G4805D	48	18-75	80	±5	±600	0	83	470
SDU06G4812D	48	18~75	80	±12	±250	0	87	100
SDU06G4815D	48	18~75	80	±15	±200	0	88	100

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

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

6W, DC/DC Power Converter

SDU06S



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	$V_{OUT}=3.3\text{V}$	-	261	-	mA	
Full load, $V_{IN, Nom} = 24\text{V}$	Others		292			
Input current	$V_{OUT}=3.3\text{V}$	-	130	-	mA	
Full load, $V_{IN, Nom} = 48\text{V}$	Others		146			
Input current		-	5	12	mA	
No load						
Reflected ripple current		-	20	-	mA	
Input voltage surge	$V_{IN, Nom} = 24\text{V}$	-0.7	-	50	VDC	
1 second max	$V_{IN, Nom} = 48\text{V}$	-0.7		100		
Startup input voltage	$V_{IN, Nom} = 24\text{V}$	-	-	9	VDC	
	$V_{IN, Nom} = 48\text{V}$			18		
Input under voltage shutdown	$V_{IN, Nom} = 24\text{V}$	5.5	6.5	-	VDC	
	$V_{IN, Nom} = 48\text{V}$	12	15.5			
Output voltage accuracy	$I_{OUT}=0$ to 100%	-	± 1	± 3	%	
Line regulation	Main output	-	± 0.2	± 0.5	%	
Full load, $V_{IN} = V_{IN, Min}$ to $V_{IN, Max}$	Other output		± 0.5	± 1.0		
Load regulation	Main output	-	± 0.5	± 1.0	%	
	Other output		± 0.5	± 1.5		
Cross regulation	Dual output models	-	-	± 5	%	

6W, DC/DC Power Converter

SDU06S



+I _{OUT} =50%, -I _{OUT} =10% to 100%						
Output ripple and noise I _{OUT} =5% to 100% of I _{OUT} , rated	20MHz bandwidth	-	60	85	mVp-p	
Temperature coefficient	Full load	-	-	±0.03	%/°C	
Dynamic load response I _{OUT} =25%~50%~75% of I _{OUT} , rated	Peak deviation** Peak deviation Recovery time	-	±5 ±3 300	±8 ±5 500	% V _{OUT} % V _{OUT} uS	**V _{OUT} =3.3, 5, ±5V
Output over voltage protection		110	-	160	% V _{OUT}	
Output over current protection		110	140	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.

6W, DC/DC Power Converter

SDU06S



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	See "Derating Curve"	-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				

6W, DC/DC Power Converter

SDU06S



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		25.4 x 25.4 x 12 mm, 12g

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

6W, DC/DC Power Converter

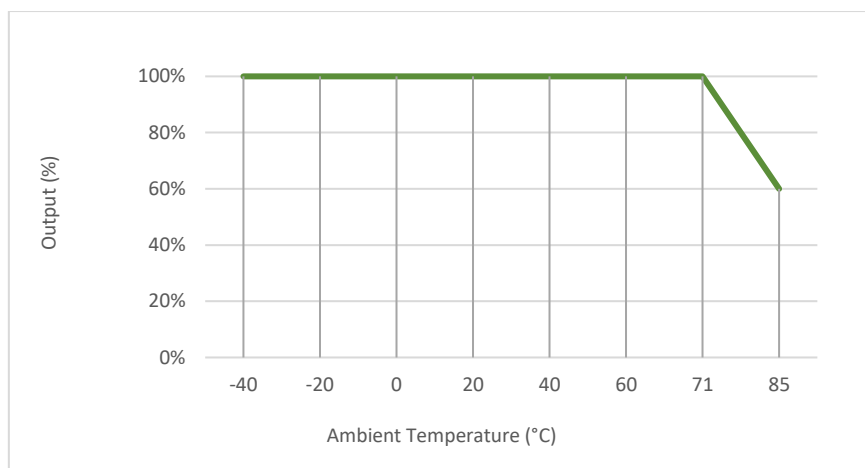
SDU06S



Characteristics Curves

Derating Curve

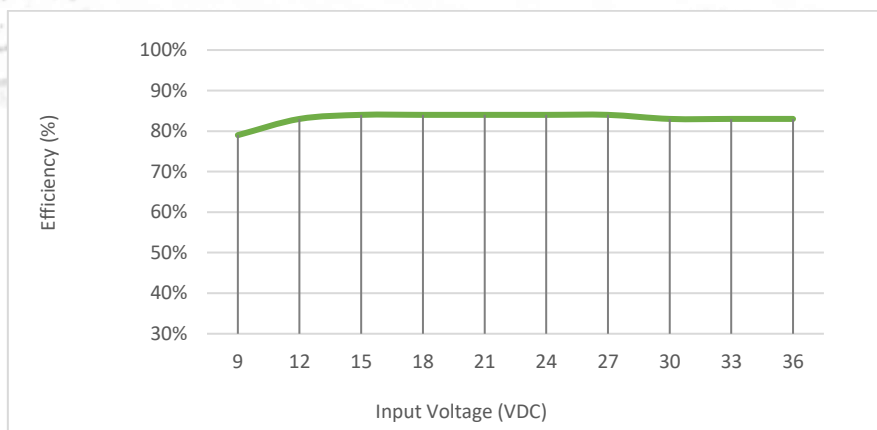
Output vs Ambient Temperature



No heatsink

Efficiency Curve

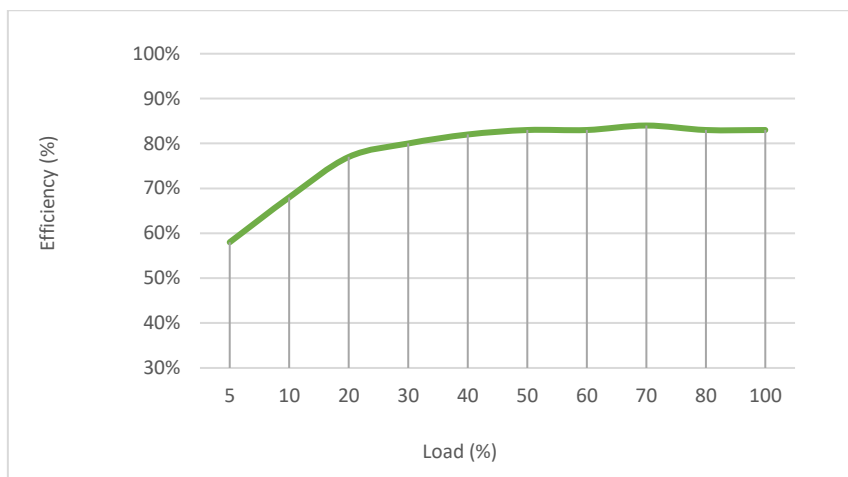
Efficiency vs Input Voltage



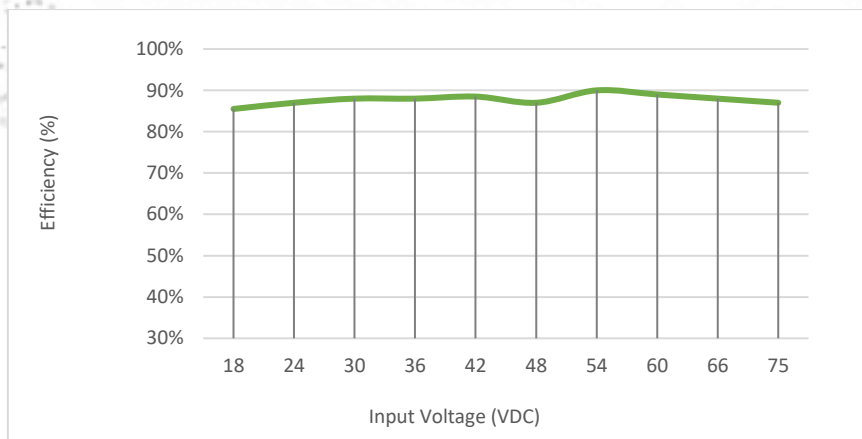
SDU06G2405, with full Load

6W, DC/DC Power Converter

SDU06S



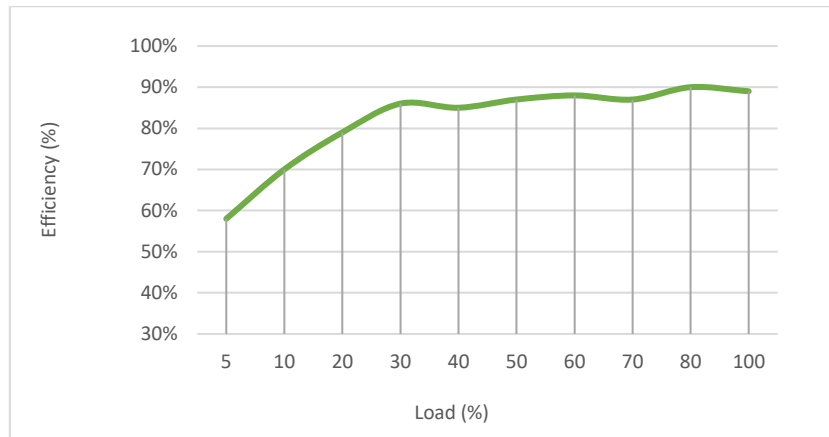
SDU06G2405, with nominal input voltage



SDU06G4815D, with full Load

6W, DC/DC Power Converter

SDU06S



SDU06G4815D, with nominal input voltage

6W, DC/DC Power Converter

SDU06S



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.

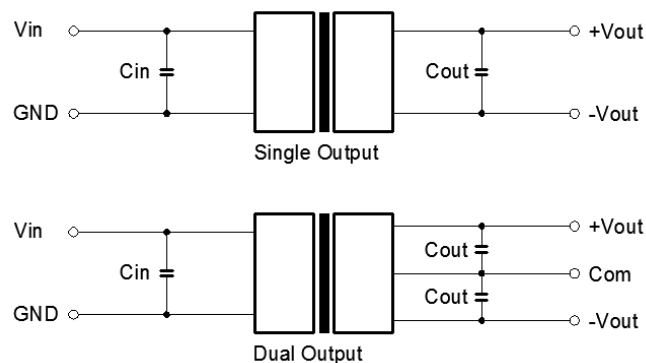


Figure 1: Typical External circuit

Recommended component spec

Input voltage	5, 12, 24V	48V
C_{IN}	100uF, 50V	10...47uF, 100V
C_{OUT}	10uF, 50V	

*Connect a ceramic capacitor (1~10uF) in parallel with C3 and C4 can reduce ripple and noise.

Circuit for EMC Enhancement

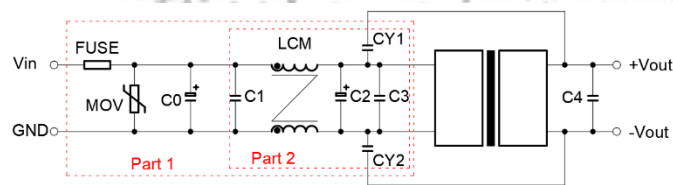


Figure 2: Circuit for EMC Enhancement

6W, DC/DC Power Converter

SDU06S



Recommended components

Component	MOV	LCM	C0	C1	C2	C3	CY1, CY2
V_{IN}=24V	20D470K	4.7mH	680uF, 50V	1uF, 50V	330uF, 50V	4.7uF, 50V	1nF, 2KV
V_{IN}=48V	14D101K	4.7mH	680uF, 100V	1uF, 100V	330uF, 100V	4.7uF, 100V	1nF, 2KV

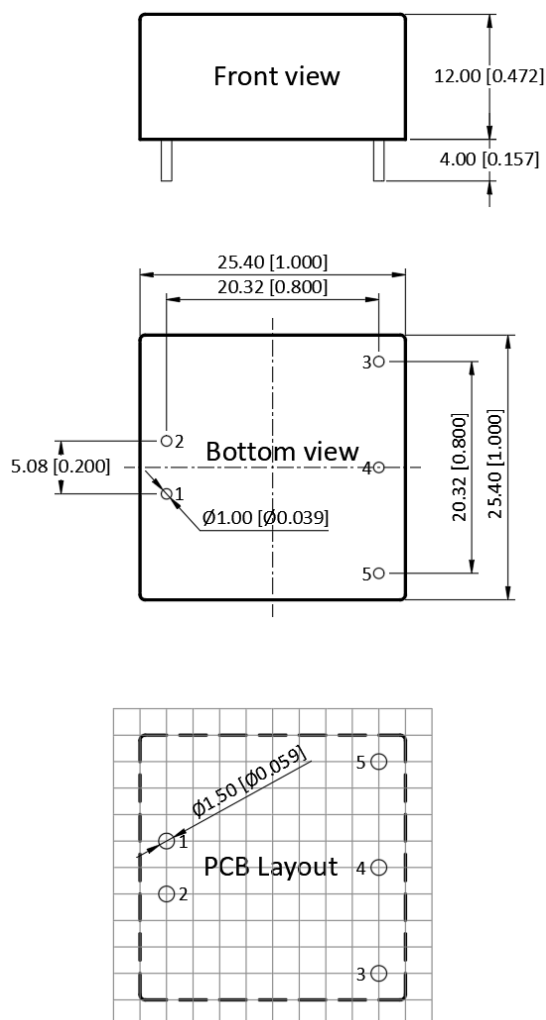
* "Fuse" to be selected according to application needs. "C4" refer to relative C_{OUT} values in Table 1.

6W, DC/DC Power Converter

SDU06S



Mechanical Specifications



Pin Definition

Pin #	Single Out	Dual Out
1	GND	GND
2	V _{IN}	V _{IN}
3	+V _{OUT}	+V _{OUT}
4	No pin	COM
5	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

6W, DC/DC Power Converter

SDU06S



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