

6W, DC/DC Power Converter

SDWK6TF



Introduction

The SDWK6TF series are 6Watt DC/DC converters with ultra-flat SMD package. The series features 6-42VDC wide input voltage range, 3KVDC isolation voltage, -40 ~ +105°C operating temperature range, and fully protected for UVP, OVP, OCP and SCP. The series also are designed to meet IEC/EN/UL 62368-1 for safe use in the information industry. These converters can be widely used in applications such as automotive electronics, industrial automation, electric power, and information technology.

Features

- Rated power: 6W Max.
- Input voltage: 6~42VDC
- Regulated output
- High efficiency up to 82%
- Isolation voltage 3KVDC
- Creepage distance: 4.5mm
- Clearance: 4.2mm
- Operating temperature range: -40 ~ +105°C ambient
- RoHS compliant
- Ultra-flat SMD 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.		V _{IN} <9V	V _{IN} =9...42V		
SDWK6TF-2405	24	6-42	45	5	960	1200	78	1000
SDWK6TF-2412	24	6-42	45	12	400	500	80	470
SDWK6TF-2415	24	6-42	45	15	320	400	80	220
SDWK6TF-2424	24	6-42	45	24	200	250	82	100

*Input voltage exceeds the maximum value may cause permanent damage to the converters.

*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	-	321	-	mA	
Input current	No load	-	8	-	mA	
Reflected ripple current		-	30	-	mA	
Input voltage surge	1 second max	-0.7	-	50	Vdc	
Startup input voltage		-	-	6	VDC	
Input under voltage shutdown		3.5	4.5	-	VDC	
Startup time			10	150	mS	
Output voltage accuracy	IOUT=5 to 100%	-	± 1	± 3	%	
Line regulation Full load, $V_{IN} = V_{IN, Min}$ to $V_{IN, Max}$		-	± 0.2	± 0.5	%	
Load regulation IOUT=5% to 100% of IOUT, rated		-	± 0.5	± 1.0	%	
Output ripple and noise	20MHz bandwidth	-	60	150	mVp-p	
Temperature coefficient	Full load	-	-	± 0.03	%/ $^{\circ}\text{C}$	
Dynamic load response	$V_{OUT} = 5V$	-	± 4	± 8	% V_{OUT}	
	Others		± 3	± 5	% V_{OUT}	
			300	500	μS	

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IOUT=25%~50% ~75% of IOUT, rated	Recovery time					
Output over voltage protection		110	-	160	% V _{OUT}	
Output over current protection		110	-	300	% I _{OUT}	
Output short circuit protection		Continuous, automatic recovery				
Input filter		Capacitor				
Hot plug		None				

* Operating with less than 10% of rated load will not cause permanent damage to the converters, but the performances data may not fall into the specifications, and reliable 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	3000	-	-	VDC	
Isolation resistance Tested at 500VDC	I/P to O/P	1000	-	-	M ohm	
Isolation capacitance 100KHz, 0.1V	I/P to O/P	-	500	-	pF	
Reinforced isolation	Clearance Creepage	4.2 4.5	-	-	mm	
Switching frequency	Full load	-	300	-	KHz	PWM mode
Operating temperature	See "Derating Curve"	-40	-	+105	°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	
Cooling method		Free air convection				

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MTBF	MIL-HDBK-217F	>1,000,000 Hours, T _A =25°C
Design based on standards		IEC/EN/UL 62368-1
Safety certifications		IEC/EN 62368-1
EMC		CISPR32, EN55032 Class A without external circuit
Size, and Weight	Default package	43.6x 23.0 x 10.0 mm, 7.9g

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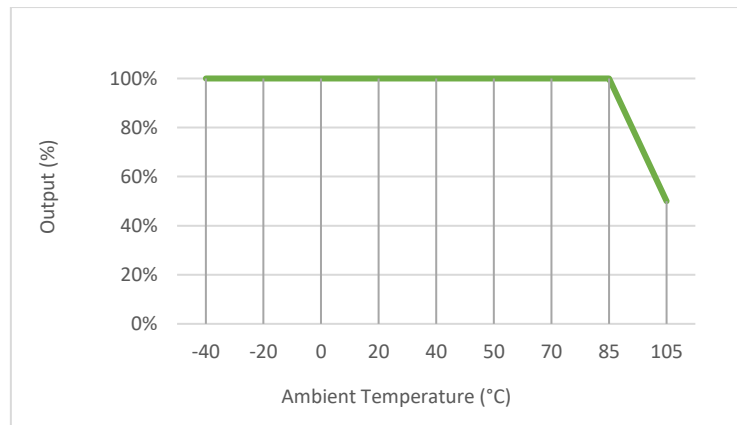
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Characteristics Curves

Derating Curve

Output vs Ambient Temperature



No heatsink

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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.



Figure 1: Typical External Circuit

Recommend component spec

Recommended component spec

V _{OUT} [VDC]	C _{IN}	C _{OUT}
5	100uF, 63V	220uF, 16V
12, 15	100uF, 63V	220uF, 35V
24	100uF, 63V	100uF, 35V

EMC Enhancement for EN55032 Class B

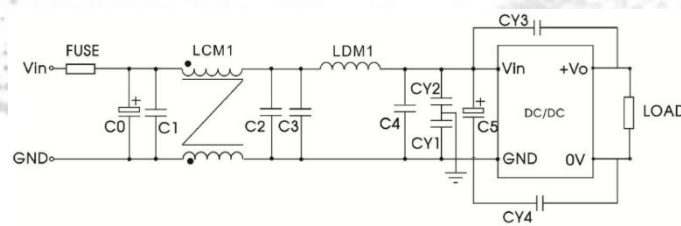


Figure 2. Circuit for EMC enhancement

Recommended component spec

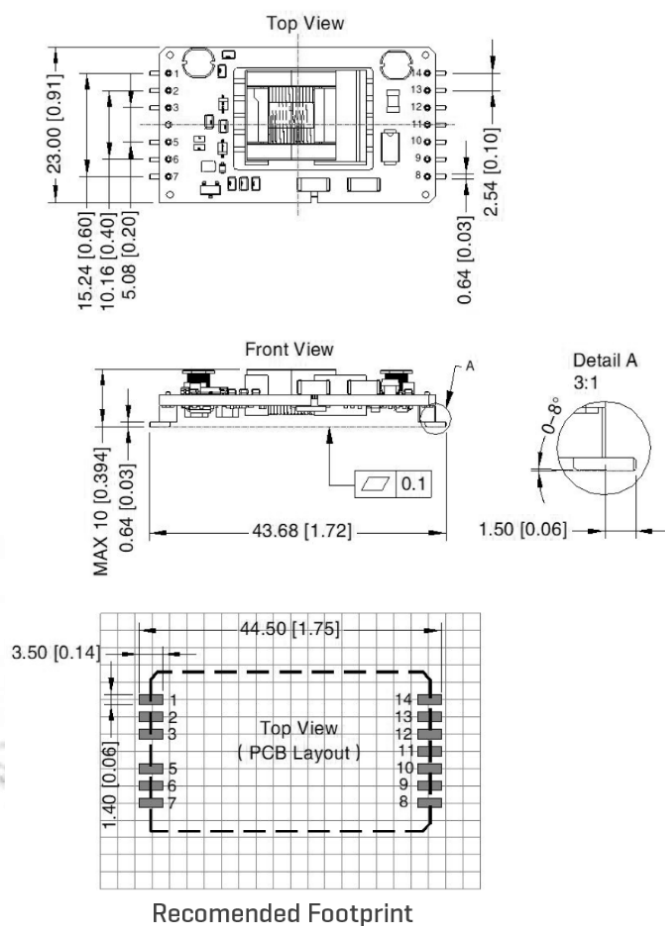
Component	LCM1	LDM1	C0	C1 ... C4	C5	CY1, CY2	CY3, CY4
Spec	1mH	4.7uH	680uF, 63V	10uF, 100V	82uF, 100V	100pF, 400VAC	2200pF, 400VAC

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Mechanical Specifications



Pin Definition

Pin #	Single Out	
1, 2, 3	V_{IN}	
4	No pin	
5, 6, 7	GND	
8, 9, 12	No connection	
10, 11	$-V_{OUT}$	
13, 14	$+V_{OUT}$	

* 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