

1W, DC/DC Power Converter

SDF01TL

SUMMIT
ELECTRONICS



Introduction

The SDF01TL series are unregulated DC/DC converters offered in compact SMD package with 3KVDC isolation. These converters feature high efficiency, low ripple and noise, continuous short circuit protection, and wide operating temperature range -40 ~ +105°C. They are widely used in distributed power system in industrial applications where isolation and voltage converting is needed.

Features

- Rated power: 1W max
- Input voltage range $\pm 10\%$
- Unregulated output
- High efficiency up to 85%
- Isolation voltage 3KVDC
- Small no load input current, only about 3mA
- Operating temperature range: -40 ~ +105°C ambient
- RoHS compliant
- Compact SMD package
- Continuous short circuit protection
- Meet IEC/EN/UL 62368-1
CISPR32, EN55032
- 3 year warranty

1W, DC/DC Power Converter

SDF01TL



Part numbers

Model Number	Input Voltage [VDC] $\pm 10\%$	Output Voltage (VDC)	Output Current (mA) Max	Output Current (mA) Min	Efficiency (%) Typ.	Capacitive Load (μ F) Max.
SDF01TL0503	5	3.3	303	30	74	2400
SDF01TL0505	5	5	200	20	82	2400
SDF01TL0509	5	9	111	12	83	1000
SDF01TL0512	5	12	84	9	83	560
SDF01TL0515	5	15	67	7	83	560
SDF01TL0524	5	24	42	4	85	220
SDF01TL0503D	5	± 3.3	± 151	± 15	74	1200
SDF01TL0505D	5	± 5	± 100	± 10	82	1200
SDF01TL0509D	5	± 9	± 56	± 6	83	470
SDF01TL0512D	5	± 12	± 42	± 5	83	220
SDF01TL0515D	5	± 15	± 34	± 4	83	220
SDF01TL0524D	5	± 24	± 21	± 2	85	100

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

* 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.

1W, DC/DC Power Converter

SDF01TL



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	$V_{OUT}=3.3, 5\text{V}$ Others	-	270 241	-	mA	
Input current No load	$V_{OUT}=3.3, 5\text{V}$ $V_{OUT}=9, 12\text{V}$ $V_{OUT}=15, 24\text{V}$	-	5 12 18	-	mA	
Reflected Ripple Current		-	15	-	mA	
Surge voltage 1 second max	$V_{IN}=5\text{V}$	-0.7	-	9	VDC	
Output voltage accuracy	All models	Refer to graphic in "Characteristic Curves" section				
Line regulation For V_{IN} change of $\pm 1\%$	$V_{OUT}=3.3\text{V}$ All others	-	-	± 1.5 ± 1.2	%	
Load regulation $I_{OUT}=10\%$ to 100% of $I_{OUT, rated}$	$V_{OUT}=3.3\text{V}$ $V_{OUT}=5\text{V}$ $V_{OUT}=9\text{V}$ $V_{OUT}=12\text{V}$ $V_{OUT}=15\text{V}$ $V_{OUT}=24\text{V}$	-	15 10 8 7 6 5	20 15 10 10 10 10	%	
Temperature coefficient	Full load	-	± 0.03	-	$\%/^{\circ}\text{C}$	
Output ripple and noise	$V_{OUT}=24\text{V}$ Others	-	50 30	100 75	mVp-p	
Output short circuit protection		Continuous, automatic recovery				
Input filter		Capacitor				

1W, DC/DC Power Converter

SDF01TL



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.

1W, DC/DC Power Converter

SDF01TL



General Specifications

Parameters	Condition	Min.	Typ.	Max.	Unit	Notes
Isolation voltage 1 minute, leakage current <1mA	Input to Output	3000	-	-	VDC	
Isolation resistance Tested at 500VDC	Input to Output	1000	-	-	M ohm	
Isolation capacitance 100KHz, 0.1V	Input to Output	-	20	-	pF	
Operating temperature	See "Derating Curve"	-40	-	+105	°C	
Storage temperature		-55	-	+125	°C	
Temperature rise at case	V _{OUT} =3.3V Others	-	25 15	-	°C	
Storage humidity	Non-condensing	5	-	95	%RH	
Switching frequency	Full load	-	270	-	KHz	
Reflow soldering temperature		Peak temp. 217 - 245°C, maximum duration 60s				
Vibration		Free air convection				
Cooling method		10-150Hz, 5G, 0.75mm along X, Y and Z				
Design based on standards		IPC/JEDEC J-STD-020D.1 Level 1				
Safety certifications	MIL-HDBK-217F	>3,500,000 Hours, T _A =25°C				
EMC		IEC/EN/UL 62368-1				

1W, DC/DC Power Converter

SDF01TL



MTBF		IEC/EN 62368-1
Moisture sensitivity level (MSL)	Emissions Immunity	CISPR32, EN55032 Class B* IEC/EN61000-4-2, air $\pm 8\text{kV}$, contact $\pm 4\text{kV}$
Size		15.24 x 11.4 x 7.25 mm
Weight		1.6g Typ.

*External circuit is required in order to meet Class B, refer to Figure 2 in Recommended External Circuit.

1W, DC/DC Power Converter

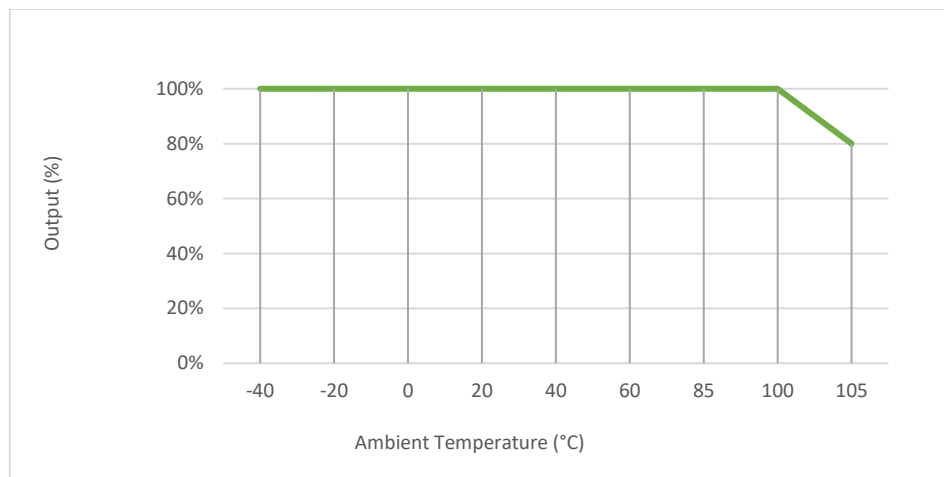
SDF01TL



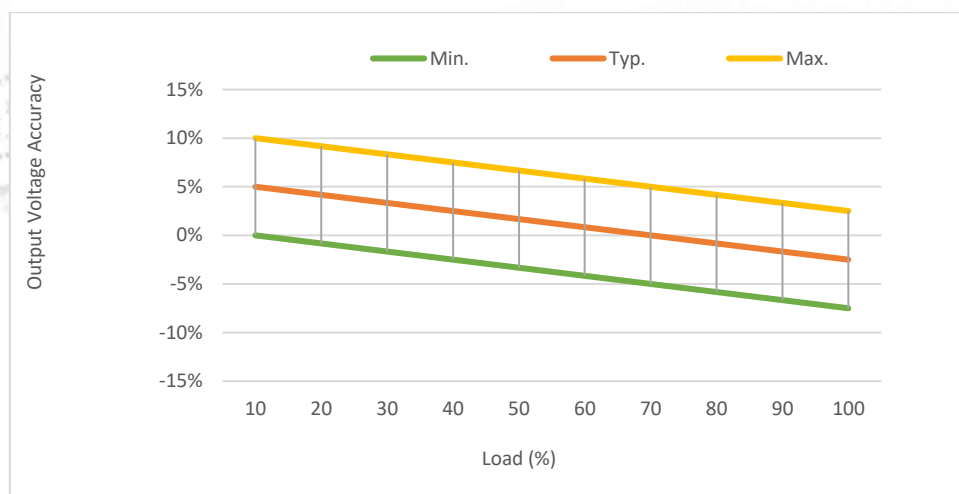
Characteristics Curves

Derating Curve

Output vs Ambient Temperature



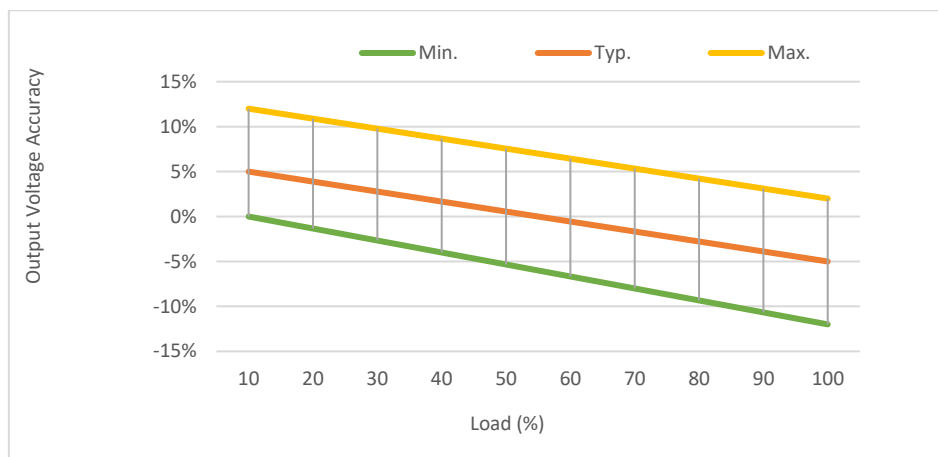
Output Voltage Accuracy vs Load



None 3.3V output models

1W, DC/DC Power Converter

SDF01TL



3.3V output models

1W, DC/DC Power Converter

SDF01TL



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.

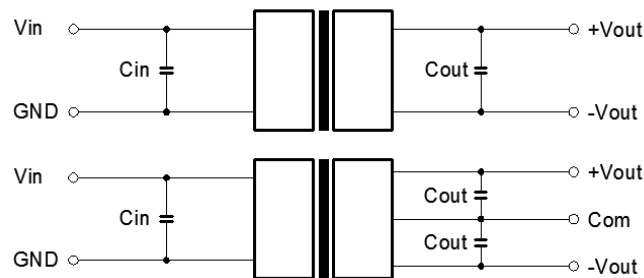


Figure 1: Typical External circuit

Recommended component spec

Input voltage

5V

C _{IN}	4.7uF, 16V
-----------------	------------

Recommended component spec

Output voltage	3.3, 5V	9V	12V	15V	24V
C _{OUT}	10uF, 16V	4.7uF, 16V	2.2uF, 25V	1uF, 25V	0.47uF, 50V

Circuit for EMC Enhancement

*Use this application circuit to meet Class B EMC performance.

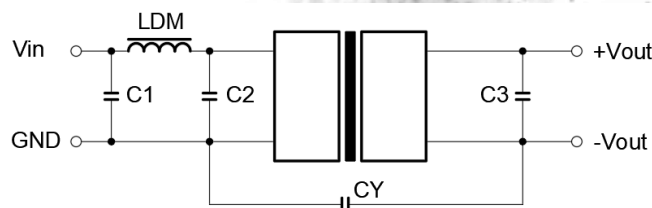


Figure 2: Circuit for EMC Enhancement

1W, DC/DC Power Converter

SDF01TL



Recommended component spec

Component	LDM	C1, C2	CY [V _{OUT} =3.3, 5, 9]	CY [V _{OUT} =12, 15, 24]
C _{OUT}	6.8uH	4.7uF, 50V	-	1nF, 4KV

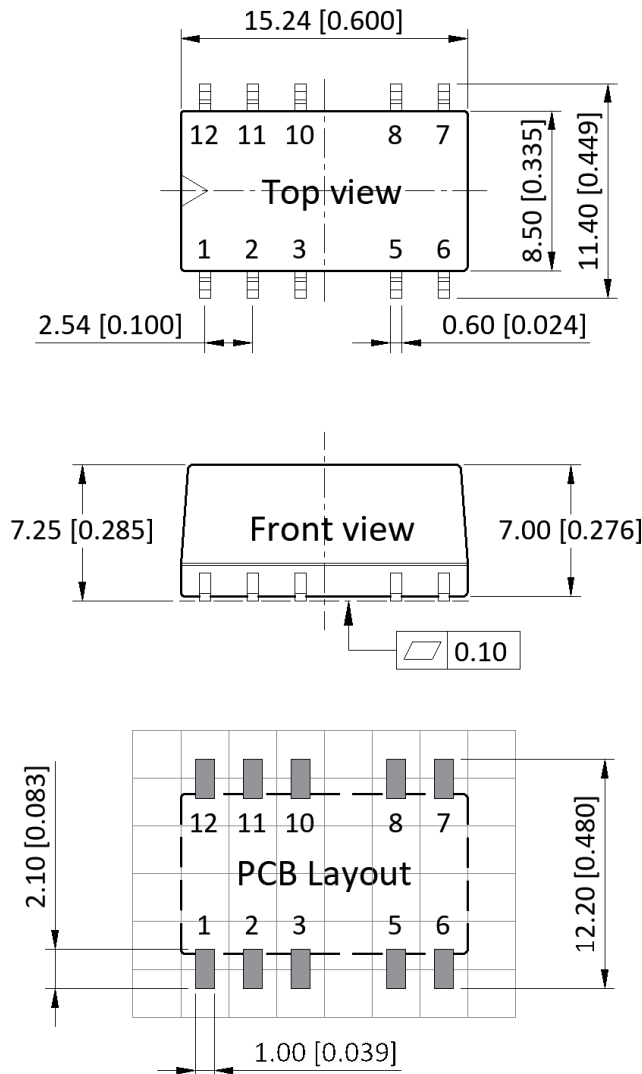
* C3 refer to C_{OUT} in Table 2

1W, DC/DC Power Converter

SDF01TL



Mechanical Specifications



Pin Definition

Pin #	Single Out	Dual Out
1	GND	GND
2	V _{IN}	V _{IN}
3	NC	NC
5	0V	COM
6	NC	-V _{OUT}
7	NC	NC
8	+V _{OUT}	+V _{OUT}
10, 11, 12	NC	NC

* 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

1W, DC/DC Power Converter

SDF01TL



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