

Features

- ◆ Operating ambient temperature range:
-40℃ to +71℃
- ◆ Compact SIP package
- ◆ I/O isolation test voltage 3kV_{DC}
- ◆ High power density
- ◆ No extra components required
- ◆ Industry standard pin-out
- ◆ Three year warranty

3W isolated DC-DC converter

Fixed input voltage, unregulated single output



Selection Guide

Part No.	Input Voltage(V _{DC})	Output		Full Load Efficiency(%) Min./Typ.	Capacitive Load(μF) Max.
	Nominal (Range)	Voltage (V _{DC})	Current(mA) Max./Min.		
F0505S-3WR2	5 (4.5-5.5)	5	600/60	80/84	220
F0509S-3WR2		9	333/33	80/84	
F1205S-3WR2	12 (10.8-13.2)	5	600/60	77/81	
F1212S-3WR2		12	250/25	84/88	
F1515S-3WR2	15 (13.5-16.5)	15	200/20	81/85	

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load/no-load)	5Vdc input	--	714/40	--/80	mA
	12Vdc input	--	308/20	--/40	
	15Vdc input	--	230/20	--/40	
Reflected Ripple Current *		--	15	--	
Surge Voltage(1sec.max.)	5V _{DC} input	-0.7	--	9	Vdc
	12Vdc input	-0.7	--	18	
	15Vdc input	-0.7	--	21	
Input Filter		Capacitance filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy			See output regulation curve(Fig.1)			
Linear Regulation	Input voltage change:±1%		--	--	±1.2	--
Load Regulation	10%-100% load		--	8	--	%
Ripple/Noise *	20MHz bandwidth	5/9V _{DC} output	--	150	300	mVp-p
		12V _{DC} output	--	150	250	
		15V _{DC} output	--	150	300	
Temperature Coefficient	Full load		--	--	±0.03	%/°C
Short-circuit Protection**			--	--	1	s

Notes: * The "parallel cable" method is used for Ripple and noise test;

** At the end of the short circuit duration, the supply voltage must be disconnected from the modules.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output Electric strength test for 1 minute with a leakage current of 1mA max.	3000	--	--	V _{DC}
Insulation Resistance	Input-output resistance at 500V _{DC}	1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	20	--	pF
Operating Temperature	Derating when operating temperature up to 71°C (see Fig.2)	-40	--	+71	°C
Storage Temperature		-55	--	+125	
Case Temperature Rise	T _a =25°C, nominal input, full load output	--	25	--	
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	
Storage Humidity	Non-condensing	--	--	95	%RH
Switching Frequency	Full load, nominal input voltage	--	100	--	KHz
MTBF	MIL-HDBK-217F@25°C	3500	--	--	K hours

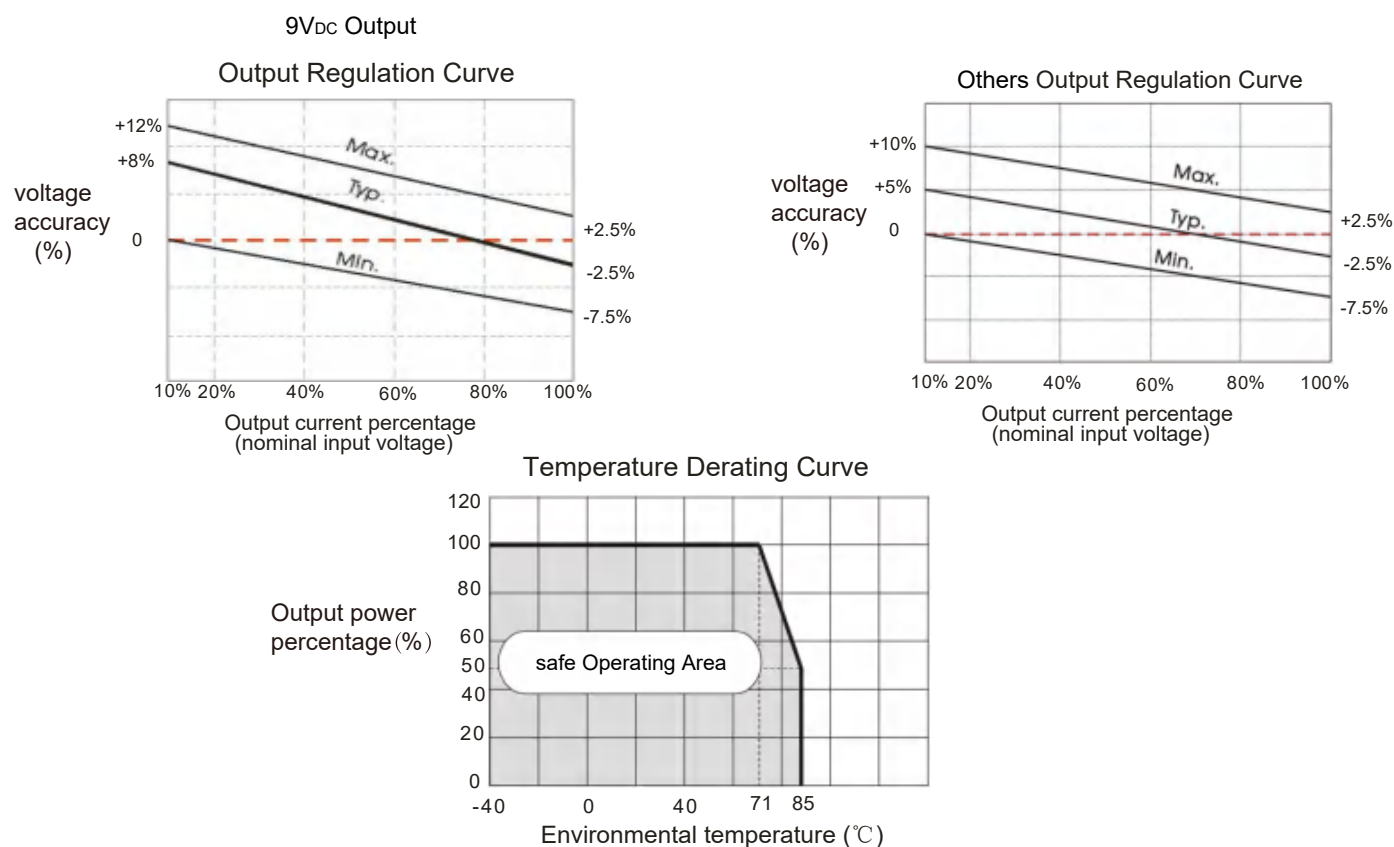
Mechanical Specifications

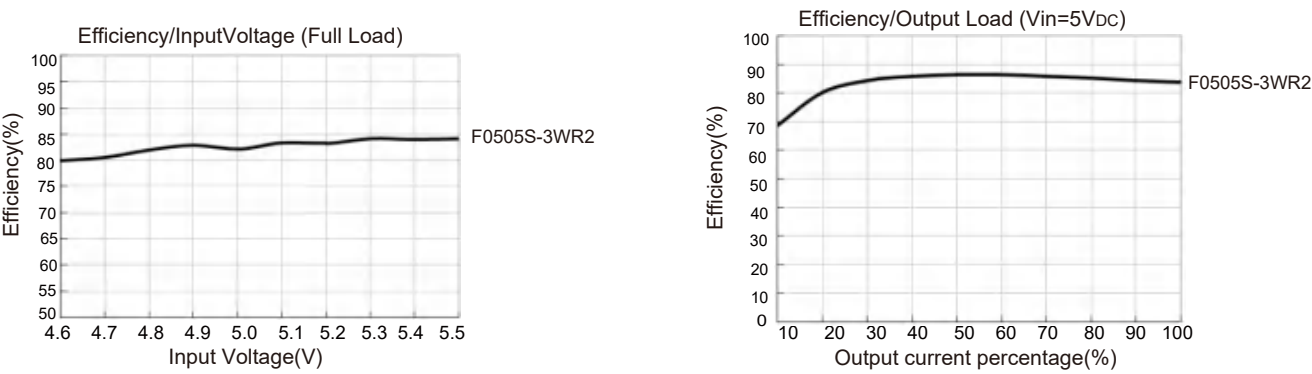
Case Material	Black plastic; flame-retardant and heat-resistant(UL94V-0)
Dimensions	19.65x7.05x10.16mm
Weight	2.4g(Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility(EMC)

Emissions	CE	CISPR32/EN55032 CLASS B (see Fig.4 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig.4 for recommended circuit)
Immunity	ESD	IEC/EN61000-4-2 Contact ±6KV perf. Criteria B

Typical Characteristic Curves





Design Reference

1. Typical application

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown in Fig.3.

Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems caused by capacitor values that are too high. For recommended input and output capacitor values refer to Table 1.

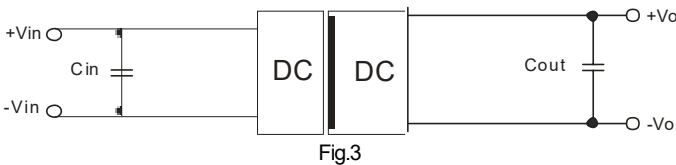


Table 1: Recommended input and output capacitor values

Vin(Vdc)	Cin(μF)	Vo(Vdc)	Cout(μF)
5	4.7	5	10
12/15	2.2	9	4.7
--	--	12/15	2.2

2. EMC(CLASS B)compliancecircuit

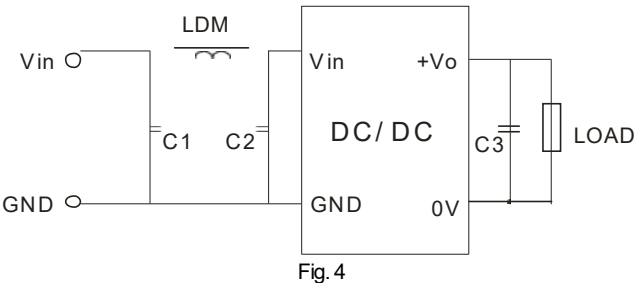


Table 2: Recommended EMC filter values

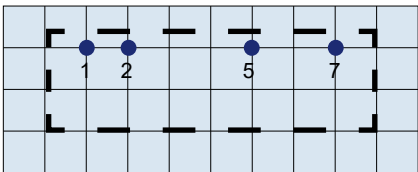
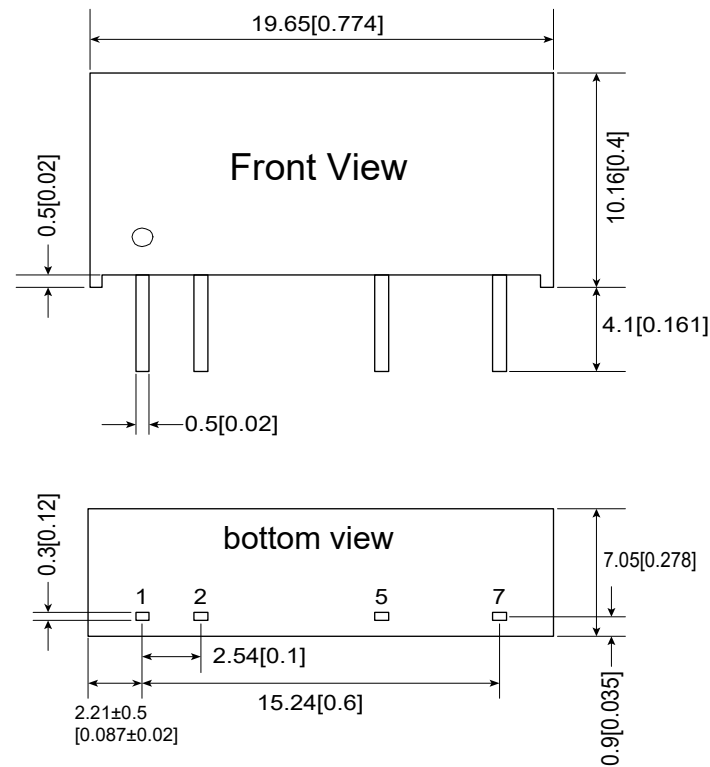
Input voltage(Vdc)		5/12	15
Emissions	C1/C2	4.7μF/50V	
	C3	Refer to the Coutin Fig.3	
	LDM	6.8μH	12μH

3. Minimum Output load requirement

For a reliable and efficient operation of the converter, the minimum load should never be less than 10% of the rated output load. If the total required output power is below 10%, a parallel bleeding resistor is required on the output, ensuring that the sum of the power consumption is always maintained at 10% minimum.

Dimensions and Recommended Layout

Third angle projection



Note:Grid 2.54*2.54mm

Pin	Function
1	+Vin
2	-Vin
5	-Vo
7	+Vo

NC:No Connection

Note:
Unit:mm[inch]
Pin diameter tolerances:+0.1[+0.004]
General tolerances:+0.5[+0.02]



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