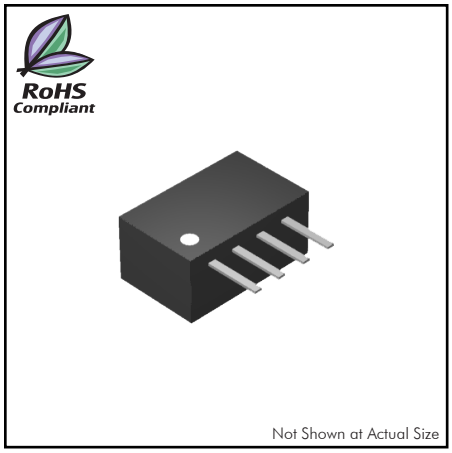
02-561F Series

Fixed Input, Isolated & Unregulated 1W Single Output



FEATURES

Applications: 02-561F Series is specially designed for applications where an isolated voltage is required in a distributed power supply system. These products apply to:

- Where the voltage of the input power supply is fixed (voltage variation ±10%Vin)
- Where the isolation is necessary between input and output (isolation voltage ≤1500VDC)
- Where the regulation of the output voltage and the output ripple noise are not demanding such as: typical application, digit circuit condition, normal-low frequency artificial circuit condition; relay drive circuit and data switching circuit condition, etc.

Efficiency: To 80%
Isolation: 1.5KVDC
Miscellaneous: Single output voltage. Industry standard pinout. Small footprint. PCB mounting. Miniature SIP packaging style.
Samples available. See website for ordering information.

CHARACTERISTICS

Storage Humidity: 95%RH
Operating Temperature: -40°C to 105°C
Storage Temperature: -55°C to 125°C
Temp. rise at full load: 25°C Typ.
Lead Temperature: 300°C Max. (1.5mm from case for 10 seconds)
Short Circuit Protection: 1 Second Max. (Supply voltage must be discontinued at the end of short circuit duration for 0303~0312 & 2403~2424)
Cooling: Free air convection
Case Material: Plastic (UL94-V0)
MTBF: >3,500 K hours
Weight: 1.3g Typ.
Miscellaneous: RoHS Compliant.

SPECIFICATIONS

Part Number	Vin Nom. (VDC)	Input Range (VDC)	Vout (VDC)	Iout Max. (mA)	Iout Min. (mA)	Effi. Min./Typ. (%)	Max. Capacitive Load (µF)
02-561F-0303-S1.5K-1	3.3	(2.97-3.63)	3.3	303	30	68/72	220
02-561F-0305-S1.5K-1	3.3	(2.97-3.63)	5	200	20	72/76	220
02-561F-0312-S1.5K-1	3.3	(2.97-3.63)	12	84	9	76/80	220
02-561F-0503-S1.5K-1	5	(4.5-5.5)	3.3	303	30	68/72	220
02-561F-0505-S1.5K-1	5	(4.5-5.5)	5	200	20	76/80	220
02-561F-0509-S1.5K-1	5	(4.5-5.5)	9	111	12	76/80	220
02-561F-0512-S1.5K-1	5	(4.5-5.5)	12	84	9	76/80	220
02-561F-0515-S1.5K-1	5	(4.5-5.5)	15	67	7	76/80	220
02-561F-0524-S1.5K-1	5	(4.5-5.5)	24	42	4	76/80	220
02-561F-1203-S1.5K-1	12	(10.8-13.2)	3.3	303	30	68/72	220
02-561F-1205-S1.5K-1	12	(10.8-13.2)	5	200	20	76/80	220
02-561F-1209-S1.5K-1	12	(10.8-13.2)	9	111	12	76/80	220
02-561F-1212-S1.5K-1	12	(10.8-13.2)	12	84	9	76/80	220
02-561F-1215-S1.5K-1	12	(10.8-13.2)	15	67	7	76/80	220
02-561F-1224-S1.5K-1	12	(10.8-13.2)	24	42	4	76/80	220
02-561F-1505-S1.5K-1	15	(13.5-16.5)	5	200	20	76/80	220
02-561F-1512-S1.5K-1	15	(13.5-16.5)	12	84	9	76/80	220
02-561F-1515-S1.5K-1	15	(13.5-16.5)	15	67	7	76/80	220
02-561F-2403-S1.5K-1	24	(21.6-26.4)	3.3	303	30	68/72	220
02-561F-2405-S1.5K-1	24	(21.6-26.4)	5	200	20	76/80	220
02-561F-2409-S1.5K-1	24	(21.6-26.4)	9	111	12	76/80	220
02-561F-2412-S1.5K-1	24	(21.6-26.4)	12	84	9	76/80	220
02-561F-2415-S1.5K-1	24	(21.6-26.4)	15	67	7	76/80	220
02-561F-2424-S1.5K-1	24	(21.6-26.4)	24	42	4	76/80	220

ISOLATION SPECIFICATIONS

Item	Test Condition	Min.	Typ.	Max.	Units
Isolation Voltage	Tested for 1 minute	1500			VDC
Isolation Resistance	Test at 500VDC	1000			MΩ
Isolation Capacitance	100kHz/0.1V		20		pF

INPUT SPECIFICATIONS

Item	Oprating Conditions	Min.	Typ.	Max.	Unit
Input Current (Full load/ No-load)	3.3V Input	-	404/30	--/70	mA
	5V Input	-	277/20	--/60	
	12V Input	-	115/15	--/50	
	15V Input	-	83/10	--/35	
	24V Input	-	57/17	--/30	
Reflected Ripple Current		-	15	--	mA
Surge Voltage (1 Sec. Max.)	3.3V Input	-0.7	-	5	VDC
	5V Input	-0.7	-	9	
	12V Input	-0.7	-	18	
	15V Input	-0.7	-	21	
	24V Input	-0.7	-	30	
Input Filter	Filter Capacitor				
Hot Plug	Unavailable				

OUTPUT SPECIFICATIONS

Item	Test Condition		Min.	Typ.	Max.	Units
Output Voltage Accuracy	-		See Tolerance Envelope Graph (Fig. 1)			
Line Regulation	For Vin change of ±1%	3.3VDC output	-	-	±1.5	-
		Other output	-	-	±1.2	
Load Regulation	10%~100% load	3.3VDC output	-	18	-	%
		5VDC output	-	12	-	
		9VDC output	-	8	-	
		12VDC output	-	7	-	
		15VDC output	-	6	-	
		24VDC output	-	5	-	
Ripple & Noise*	20MHz bandwidth		-	60	150	mVp-p
Temperature Drift	100% full load		-	-	±0.03	%°C
Switching Frequency	Full load, nominal input		-	100	-	KHz

*Test ripple and noise by **"parallel cable"** method

CTDD1160SF-S1.5K-1

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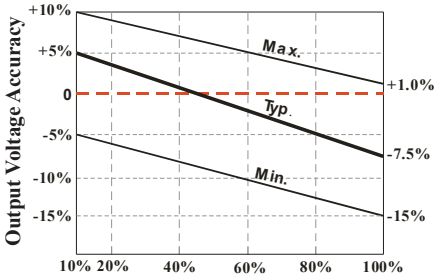
TYPICAL CHARACTERISTICS & CURVE

3.3 VDC Ouput
Tolerance Envelope Curve



Other Ouput
Tolerance Envelope Curve

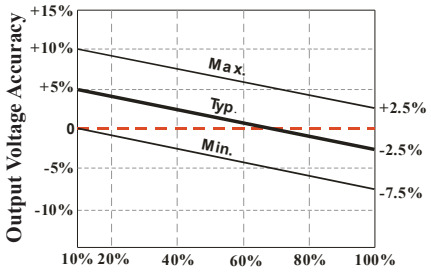


Fig. 1

Temperature Derating Curve

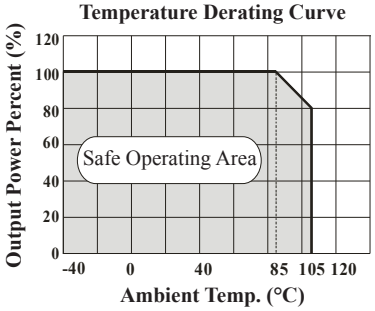
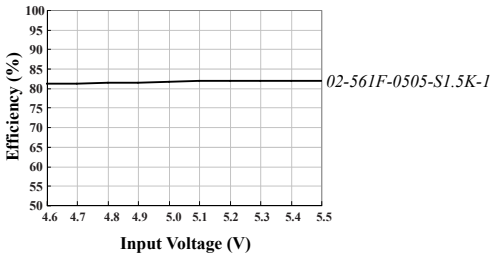
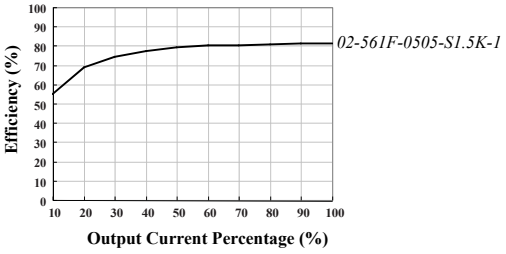


Fig. 2

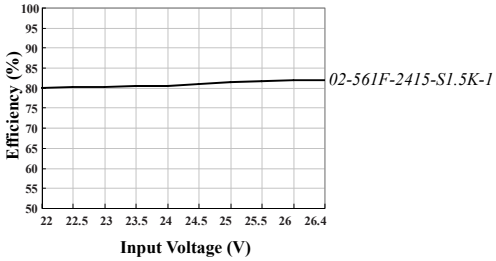
Efficiency Vs Input Voltage (Full Load)



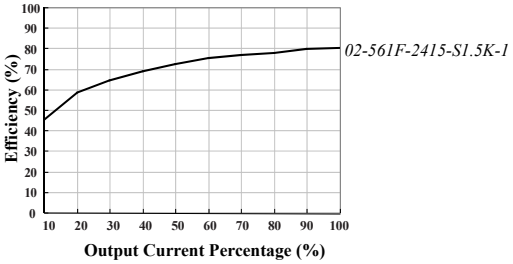
Efficiency Vs Output Load (Vin=5V)



Efficiency Vs Input Voltage (Full Load)



Efficiency Vs Output Load (Vin=24V)



CTDD1160SF-S1.5K-1

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DESIGN REFERENCE

Typical application circuit

If it is required to further reduce input and output ripple, a filter capacitor may be connected to the input and output terminals. Moreover, choosing a suibtable filter capacitor is very important, **start-up problems may be caused if the capacitance is too large**.

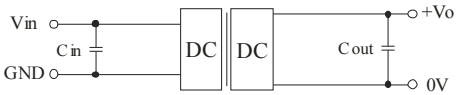


Fig.3

Recommended capacitive load value table

Vin(VDC)	Cin(μF)	Vo (VDC)	Cout(μF)
3.3/5	4.7	3.3/5	10
12	2.2	9	4.7
15	2.2	12	2.2
24	1	15	1
--	--	24	0.47

EMC solution-recommended circuit

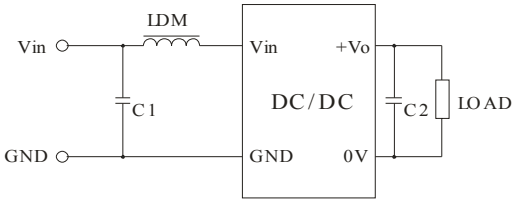


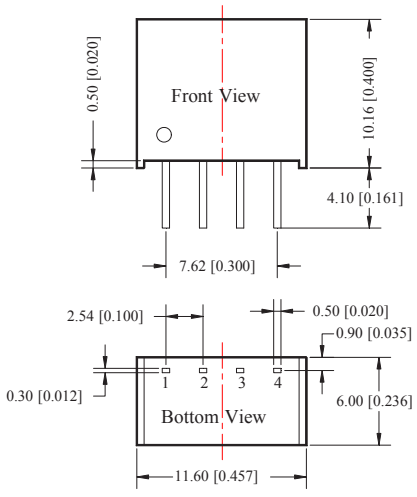
Fig. 4

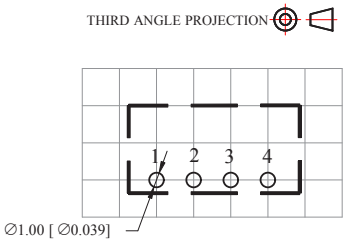
Input voltage (VDC)		3.3/5/12/15/24
EMI	C1	4.7μF /50V
	C2	Refer to the Cout in Fig.3
	LDM	6.8μH

Output load requirements

In order to ensure the converter can work reliably with high efficiency, the minimum load should not be less than 10% rated load when it is used. If the needed power is indeed small, please parallel a resistor in the output side (the sum of the efficient power and resistor consumption power is not less than 10%).

OUTLINE DIMENSIONS & RECOMMENDED FOOTPRINT DETAILS





Note：Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	GND
2	Vin
3	0V
4	+Vo

Note:
Unit: mm[inch]
Pin section tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]