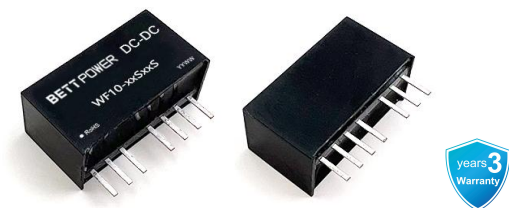


WF10-xxSxxS Series

DC-DC Converter | 10W | SIP8 | 2:1 Wide Input Voltage, Regulated Output | 3000VDC



Features

- SIP8 package
- Operating Temperature Range: -40°C ~ +105°C
- 2:1 wide input voltage range
- Isolation Voltage: 3000VDC
- Full Load Efficiency: 87% (typ.)
- Input Under-voltage Protection, Output Short Circuit Protection, Over-current Protection
- Designed to meet IEC/EN/BS EN/UL 62368

Product Description



The WF10-xxSxxS series is an industrial-grade DC-DC converter module with 2:1 wide input voltage, regulated output. It features a compact SIP-8 plastic pin package, high efficiency, remote on/off control, and continuous short circuit protection. The small size and excellent cost design make this converter an ideal solution for applications in communication equipment, instrumentation, and industrial electronics.

Selection Guide

Certification	Part No.	Input Voltage (VDC)		Output		Full Load Efficiency (%) Typ.	Capacitive Load (μF) Max.
		Nominal (Range)	Max.	Output Voltage (VDC)	Max. Current (mA)		
EN/UL pending	WF10-12S03S	12 (9~18)	20	3.3	2400	80	2200
	WF10-12S05S	12 (9~18)	20	5	2000	82	2200
	WF10-12S06S	12 (9~18)	20	6	1667	82	1800
	WF10-12S09S	12 (9~18)	20	9	1111	84	680
	WF10-12S12S	12 (9~18)	20	12	833	85	470
	WF10-12S15S	12 (9~18)	20	15	667	86	330
	WF10-12S24S	12 (9~18)	20	24	417	86	220
	WF10-24S03S	24 (18~36)	40	3.3	2400	82	2200
	WF10-24S05S	24 (18~36)	40	5	2000	84	2200
	WF10-24S06S	24 (18~36)	40	6	1667	84	1800
	WF10-24S09S	24 (18~36)	40	9	1111	84	680
	WF10-24S12S	24 (18~36)	40	12	833	86	470

WF10-xxSxxS Series



DC-DC Converter | 10W | SIP8 | 2:1 Wide Input Voltage, Regulated Output | 3000VDC

	WF10-24S15S	24 (18~36)	40	15	667	87	330
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Selection Guide

Certification	Part No.	Input Voltage (VDC)		Output		Full Load Efficiency (%) Typ.	Capacitive Load (μF) Max.
		Nominal (Range)	Max.	Output Voltage (VDC)	Max. Current (mA)		
EN/UL pending	WF10-24S24S	24 (18~36)	40	24	417	87	220
	WF10-48S03S	48 (36~75)	80	3.3	2400	80	2200
	WF10-48S05S	48 (36~75)	80	5	2000	81	2200
	WF10-48S06S	48 (36~75)	80	6	1667	81	1800
	WF10-48S09S	48 (36~75)	80	9	1111	82	680
	WF10-48S12S	48 (36~75)	80	12	833	83	470
	WF10-48S15S	48 (36~75)	80	15	667	83	330
	WF10-48S24S	48 (36~75)	80	24	417	83	220

Note:

- 1. The input voltage should not exceed the maximum value, otherwise it may cause permanent and irreparable damage;
- 2. The above efficiency values are measured at nominal input voltage and rated output load.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current (Full Load/No-load)	12VDC Input	3.3V Output	--	825/10	846/20	mA
		5/6V Output	--	1016/10	1042/20	mA
		Others	--	992/15	1016/30	mA
	24VDC Input	3.3V Output	--	402/5	413/10	mA
		5/6/9V Output	--	496/8	508/15	
		Others	--	484/10	496/20	mA
	48VDC Input	3.3V Output	--	206/10	212/20	mA
		5/6V Output	--	257/10	264/20	mA
		Others	--	254/15	260/30	mA
Reflected Ripple Current	Input Nominal Input Series		--	50	--	mA
Surge Voltage (1sec.max.)	12VDC Input		-0.7	--	25	VDC
	24VDC Input		-0.7	--	50	VDC
	48VDC Input		-0.7	--	100	VDC
Start-up Voltage	12VDC Input		--	--	9	VDC
	24VDC Input		--	--	18	VDC
	48VDC Input		--	--	36	VDC
Input Under-voltage Protection	12VDC Input		5.5	6.5	--	VDC
	24VDC Input		5.5	6.5	--	VDC
	48VDC Input		13	16	--	VDC
Ctrl	Module On		Ctrl pin open or pulled high (TTL2.7-12VDC)			
	Module Off		Ctrl pin pulled low to GND (0-1.2VDC)			
Input Filter Type			Capacitance Filtering			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	0%~100% load		--	± 1.0	±3.0	%
Line Regulation	Full load, input voltage from low limit to high limit		--	±0.2	±0.5	%
Load Regulation	5% to 100% load		--	±0.5	± 1.0	%
	0% to 100% load		--	± 1.0	±3.0	%
Ripple & Noise	20MHz bandwidth, 5%-100% load		--	100	150	mVp-p
Transient Recovery Time	25% load step change, nominal input voltage		--	300	500	μs
Transient Response Deviation	25% load step change, nominal input voltage	3.3/5/6V output	--	±5	±8	%
		Other outputs	--	±3	±5	%
Temperature Coefficient	Full load		--	--	±0.03	%/°C

Over current Protection	Input Voltage Range	110	160	--	%
Short Circuit Protection	Input Voltage Range	Continuous short circuit, self-recovery			

Note: Ripple & noise are measured at 20MHz of bandwidth with a 10uF electrolytic capacitor and a 1uF ceramic capacitor connected inparallel at the output.

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Voltage	Input-Output, Test Time 1 minute, leakage current less than 1mA		3000	--	--	VDC
Insulation Resistance	Input-Output, Insulation Voltage 500VDC		1000	--	--	MΩ
Isolation Capacitance	Input-Output, 100KHz/0.1V		--	1000	--	pF
Operating Temperature	See: Temperature Derating	12/24VDC Input	-40	--	+85	℃
	Curve	48VDC Input	-40	--	+105	℃
Storage Temperature			-55	--	+125	℃
Storage Humidity	No condensation		5	--	95	%RH
Soldering Profile	Wave soldering		260±5℃; Time: 5 - 10s			
	Manual soldering		360±10℃; Time: 3-5s			
Switching Frequency	Full load, nominal input voltage		--	300	--	kHz
Vibration			10-150Hz, 5g, 0.75mm, along X, Y and Z			
MTBF	MIL-HDBK-217F@25℃		>1000Kh			

Mechanical Specifications

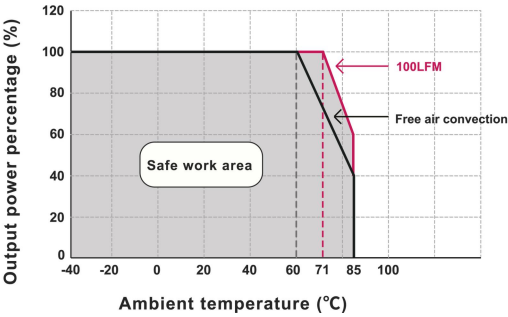
Case Material	Black flame-retardant heat-resistant plastic (UL94V-0)
Mechanical Dimensions	22.00 * 9.50 * 12.00mm
Weight	4.9g (typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

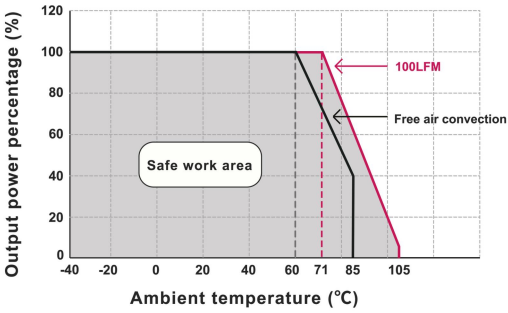
EMI	CE	CISPR32/EN55032 CLASS B (Recommended circuit see Figure 2/3-②)			
	RE	CISPR32/EN55032 CLASS B (Recommended circuit see Figure 2/3-②)			
EMS	ESD	IEC/EN61000-4-2 Contact ±6KV			perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m			perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV (Recommended circuit see Figure 2/3-①)			perf. Criteria B
	Surge	IEC/EN61000-4-5 line to line ±2KV (Recommended circuit see Figure 2/3-①)			perf. Criteria B
	CS	IEC/EN61000-4-6 3Vr.m.s			perf. Criteria A

Product Characteristic Curve

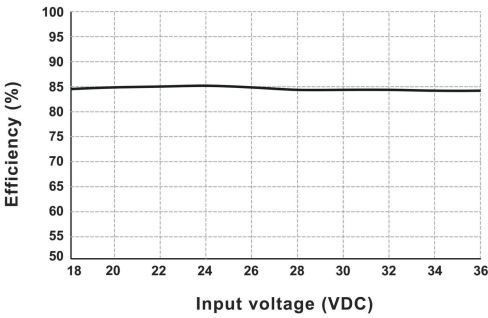
Temperature Derating Curve (12/24V input)



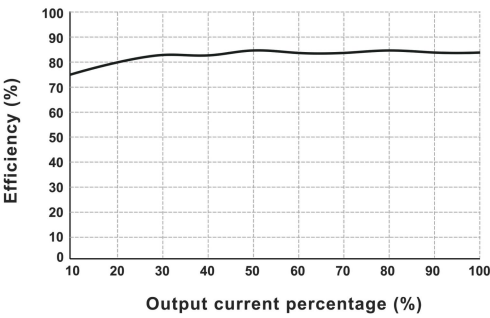
Temperature Derating Curve (48V input)



Efficiency VS Input Voltage (Full load, WF10-24S05S)

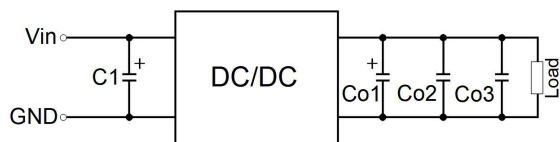


Efficiency VS Output Load (Vin=24V, WF10-24S05S)



Design Reference - Application Circuit

Application circuit



(Figure 1)

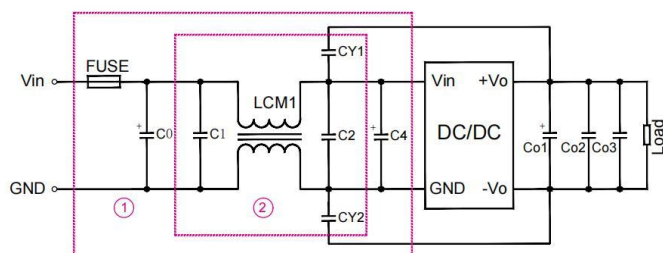
Recommended Capacitive Load Value Table

Vout	C1	Co1	Co2	Co3
3.3/5/6VDC	100μF/100V	100μF/16V	10μF/50V	0.1μF/16V
9/12/15VDC	100μF/100V	100μF/25V	10μF/50V	0.1μF/25V
24VDC	100μF/100V	100μF/50V	10μF/50V	0.1μF/50V

All DC/DC converters in this series are tested before shipment according to the recommended application circuit (Figure 1). If further reduction of input and output ripple is required, the external capacitors C1, Co1, Co2, Co3 at the input and output can be increased or capacitors with low series equivalent impedance can be selected. For each output, under safe and reliable operating conditions, the maximum capacitance of the filter capacitor must not exceed the maximum capacitive load of the product.

Design Reference - EMC Solutions - Recommended Circuits

EMC Recommended Circuit Design and Application

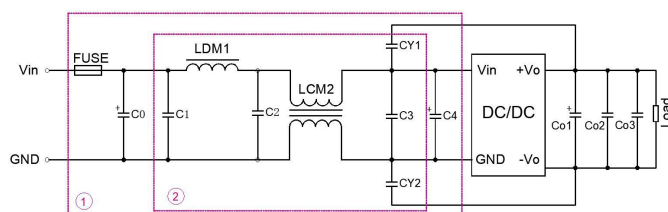


(Figure 2)

Recommended Parameter Table

Model	Vin: 12VDC	Vin: 24VDC
FUSE	Select according to the actual input current	
C0/C4	330μF/25V	330μF/50V
C1/C2	10μF/50V	
LCM1	470μH	
Co1/Co2/Co3	Refer to capacitor parameters in Figure 1	
CY1/CY2	1nF/2kVDC	

Note: Part ① is used for EMC testing; Part ② is used for EMI filtering, selectable based on requirements.



(Figure 3)

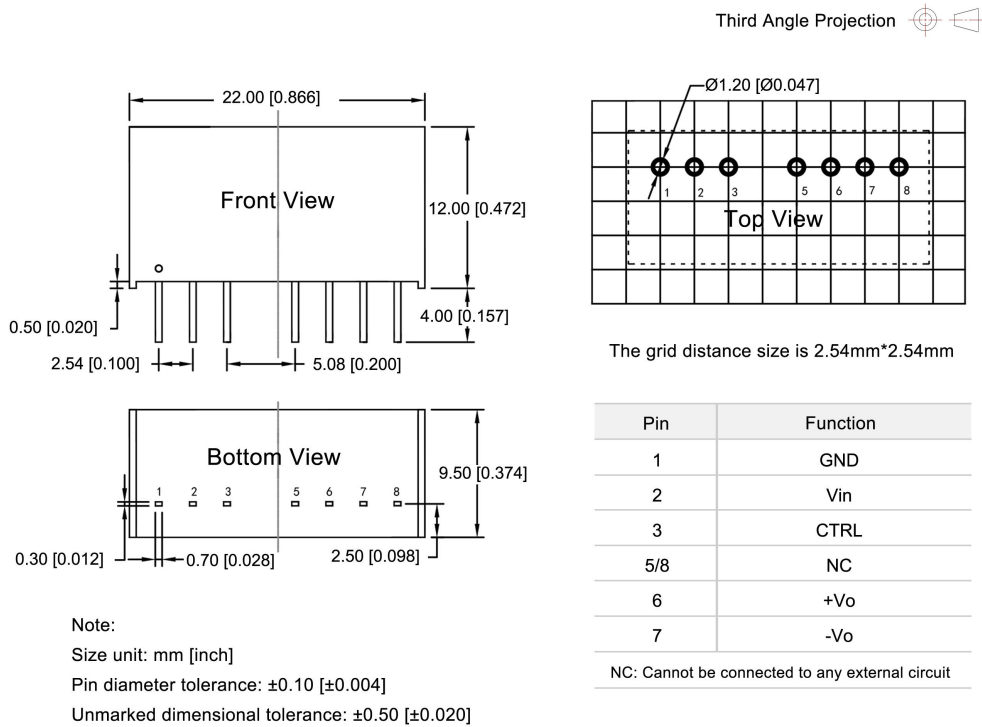
EMC Recommended Data Table

Model	Vin: 48VDC
FUSE	Select according to the actual input current
C0/C4	560μF/100V
C1/C2	10μF/100V
C3	27μF/100V
LDM1	4.7μH
LCM2	1mH
Co1/Co2/Co3	Refer to capacitor parameters in Figure 1
CY1/CY2	1nF/2kVDC

Note: Part ① is used for EMC testing; Part ② is used for EMI filtering, selectable based on requirements.

Dimensions and Recommended Layout

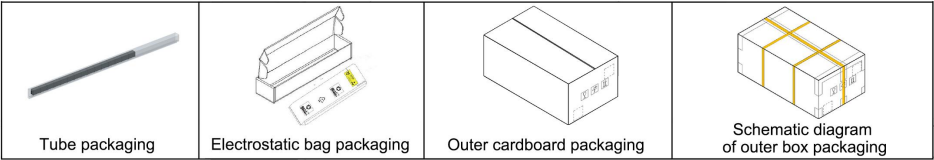
WF10-xxSxxS Dimensions and Recommended Layout



Packaging Information

Model series (Tube packaging)	Quantity per tube (pcs/ tube)	Quantity of electrostatic bag (pcs/ bag)	Quantity of inner box (pcs/ box)	Full box Quantity (pcs)
WF10-xxSxxS	23	230	920	3680

The schematic diagram of tube packaging is shown below:



Product precautions

1. The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
2. It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product;
3. The maximum capacitive load is tested within the input voltage range and under full load conditions;
4. Unless otherwise specified, all indicators in this manual are measured at $T_a=25\text{ }^{\circ}\text{C}$, humidity<75% RH, nominal input voltage, and output rated load;
5. All indicator testing methods in this manual are based on our company's corporate standards;
6. Our company can provide product customization, and specific requirements can be directly contacted by our technical personnel;
7. Product specifications are subject to change without prior notice.

Manufacturer contact information

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