



10S8W4_1.6RP series

10W - Single/Dual Output DC-DC Converter - Wide Input - Isolated & Regulated

DC-DC Converter

10 Watt

- ⊕ SIP8 package
- ⊕ Operating temperature range: -40°C to +85°C
- ⊕ 1600VDC isolation voltage
- ⊕ Up to 86% efficiency
- ⊕ Input undervoltage protection
- ⊕ Short circuit protection (SCP)
- ⊕ Over current protection
- ⊕ MTBF 1,000,000 hours

Introducing our new 10S8W4_1.6RP series. Designed in a compact SIP8 package, this high-performance module delivers robust reliability and efficiency. With an operating temperature range of -40°C to +85°C and an isolation voltage of 1600VDC, it is built for demanding industrial environments. Efficiency reaches up to 86%, supported by comprehensive protection features including input undervoltage protection, short circuit protection (SCP), and over current protection. With an MTBF of 1,000,000 hours, the 10S8W4_1.6RP series ensures long-term stability and confidence in mission-critical applications.



Common specifications	
Short circuit protection	Input voltage range, continuous, self recovery
Switching frequency	300 kHz (Full Load, nominal input voltage)
Operation temperature	-40°C ~+85°C (see figure 1)
Storage temperature	-55°C ~+125°C
Pin welding can withstand the highest temperature	+300°C (soldering spot is 1.5mm away from case for 10 seconds)
Storage humidity	5~95% RH (non-condensing)
Certification	UL - 62368-1; CB - 62368-1; CE - 62368-1
Safety standard	IEC/UL62368-1; IEC/EN60335-1; IEC/EN61558-1
MTBF: (MIL-HDBK-217F@25°C)	1,000,000 hours
Input filter	Capacitance filter
Hot plug	Unavailable
Case material	Black plastic; flame-retardant and heat-resistant (UL 94V-0 rated)
Package dimensions	22.00 x 9.50 x 12.00mm
Weight	4.8g (typ.)
Cooling method	Free air convection

Output specifications						
Item	Test condition	Min	Typ	Max	Units	
Output voltage accuracy	5% - 100% Load / Vo1		±1.0	±3.0	%	
	5% - 100% Load / Vo2		±3.0	±5.0		
Linear regulation (full load, input voltage from low limit to high limit)	Vo1		±0.2	±0.5	%	
	Vo2		±0.4	±1.0		
Load regulation (5% - 100% Load)	Vo1		±0.5	±1.0	%	
	Vo2		±1.0	±1.5		
Ripple & noise	20MHz bandwidth		75	150	mV	
Transient recovery time	25% load step change, nominal input voltage		0.3	0.5	ms	
Transient response deviation (25% load step change, nominal input voltage)	3.3VDC, 5VDC output other output		±5	±8	%	
			±3	±5		
Temperature coefficient	full load			±0.03	%/°C	
Over current protection	Input voltage range	110	160	230	%Io	

- Note: 1. Under the load condition of 0% - 100%, the load regulation rate index is ±3%.
2. The testing method for ripple and noise adopts the industry-standard parallel line test method. The ripple and noise of 0%-5% load are less than or equal to 200mV.

Input specifications						
Item	Test condition	Min	Typ	Max	Units	
Input current (full load/no load)	24VDC Input-3.3VDC Output		418/25	430/45	mA	
	24VDC Input-5/6/9/VDC Output		521/25	530/45		
	24VDC Input-Other Output		484/9	496/18		
	48VDC Input-3.3VDC Output		206/25	211/45		
	48VDC Input-5/6/9/VDC Output		254/25	265/45		
	48VDC Input-Other Output		245/9	250/18		
Reflected ripple current			50		mA	
Impulse voltage	24VDC Input	-0.7		50	VDC	
	48VDC Input	-0.7		100		
Starting voltage	24VDC Input			9	VDC	
	48VDC Input			18		
Undervoltage protection	24VDC Input	5.5	6.5		VDC	
	48VDC Input	13	16			
CTRL	turn off module	Connected to GND or (0-1.2VDC)				
	turn on module	Suspended or (3.5-12VDC)				

Example:
10S8W4_2405S1.6RP
 10 = 10Watt; S8 = SIP; W4 = Wide input; 24 = 24Vin; 05 = 5Vout; S = Single Output; 1.6 = 1600VDC isolation; R = Regulated Output; P = Short circuit protection.

Isolation specifications						
Item	Test condition	Min	Typ	Max	Units	
Isolation voltage	I-O, test time 1 minute, leakage current less than 1mA	1600			VDC	
Isolation resistance	Input - output, insulated voltage 500VDC	1000			MΩ	
Isolation capacitance	Input - output, 100kHz 1V		1000		pF	

- The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
- 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;
- Suggested dual output module load imbalance: $\leq \pm 5\%$. If it exceeds $\pm 5\%$, it cannot be guaranteed that the product performance meets all performance indicators in this datasheet;
- The maximum capacitive load is tested within the input voltage range and under full load conditions;
- Unless otherwise specified, all indicators in this manual are measured at $T_a = 25^\circ\text{C}$, humidity $< 75\%$ RH, nominal input voltage, and output rated load;
- All indicator testing methods in this datasheet are based on our company's corporate standards;
- Product specifications are subject to change without prior notice.

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EMC specifications				
EMI	CE	CISPR32/EN55032	CLASS B (recommended circuit as shown in Figure 3)	
EMI	RE	CISPR32/EN55032	CLASS B (recommended circuit as shown in Figure 3)	
EMS	ESD	IEC/EN61000-4-2	Contact ±6kV	perf. criteria B
EMS	RS	IEC/EN61000-4-3	10V/m	Perf. criteria A
EMS	EFT	IIEC/EN61000-4-4	±2kV (recommended circuit as shown in Figure 3-①)	Perf. criteria B
EMS	Surge	IEC/EN61000-4-5	line to line ±2kV (recommended circuit as shown in Figure 3-①)	Perf. criteria B
EMS	CS	IEC/EN61000-4-6	3Vr.m.s	Perf. criteria A

Product Selection Guide

Approval	Part number	Input Voltage Nominal Range (VDC)	Input Voltage Max. (VDC)	Output Voltage (VDC)	Output Current (mA) Max.	Full Load Efficiency (%) Typ.	Capacitive Load Max. (µF)
UL	10S8W4_2403S1.6RP	24 (9-36)	40	3.3	2400	80	2200
UL	10S8W4_2405S1.6RP	24 (9-36)	40	5	2000	82	2200
UL	10S8W4_2406S1.6RP	24 (9-36)	40	6	1667	82	680
UL	10S8W4_2409S1.6RP	24 (9-36)	40	9	1111	83	680
UL	10S8W4_2412S1.6RP	24 (9-36)	40	12	833	85	470
UL	10S8W4_2415S1.6RP	24 (9-36)	40	15	667	85	330
UL	10S8W4_2424S1.6RP	24 (9-36)	40	24	417	85	220
	10S8W4_4803S1.6RP	48 (18-75)	80	3.3	2400	80	2200
	10S8W4_4805S1.6RP	48 (18-75)	80	5	2000	82	2200
	10S8W4_4806S1.6RP	48 (18-75)	80	6	1667	82	680
	10S8W4_4809S1.6RP	48 (18-75)	80	9	1111	84	680
	10S8W4_4812S1.6RP	48 (18-75)	80	12	833	86	470
	10S8W4_4815S1.6RP	48 (18-75)	80	15	667	86	330
	10S8W4_4824S1.6RP	48 (18-75)	80	24	417	86	220

Note:

1. The input voltage must not exceed the maximum value; otherwise, it may cause permanent and irreparable damage.
2. The above efficiency values were measured within 10 seconds of starting the machine when the input nominal voltage was applied and the output was fully loaded.

Approval	Part number	Input Voltage Nominal Range (VDC)	Input Voltage Max. (VDC)	Output Voltage (VDC)	Output Current (mA) Max.	Full Load Efficiency (%) Typ.	Capacitive Load Max. (µF)
	10S8W4_2403D1.6RP	24 (9-36)	40	±3.3	±1200	82	1000
	10S8W4_2405D1.6RP	24 (9-36)	40	±5	±1000	82	1000
	10S8W4_2406D1.6RP	24 (9-36)	40	±6	±883	82	1000
	10S8W4_2409D1.6RP	24 (9-36)	40	±9	±556	83	330
	10S8W4_2412D1.6RP	24 (9-36)	40	±12	±417	85	220
	10S8W4_2415D1.6RP	24 (9-36)	40	±15	±333	85	100
	10S8W4_2424D1.6RP	24 (9-36)	40	±24	±208	85	47
	10S8W4_4803D1.6RP	48 (18-75)	80	±3.3	±1200	82	1000
	10S8W4_4805D1.6RP	48 (18-75)	80	±5	±1000	82	1000
	10S8W4_4806D1.6RP	48 (18-75)	80	±6	±883	82	1000
	10S8W4_4809D1.6RP	48 (18-75)	80	±9	±556	83	330
	10S8W4_4812D1.6RP	48 (18-75)	80	±12	±417	85	220
	10S8W4_4815D1.6RP	48 (18-75)	80	±15	±333	85	100
	10S8W4_4824D1.6RP	48 (18-75)	80	±24	±208	85	47

Note:

1. The input voltage must not exceed the maximum value; otherwise, it may cause permanent and irreparable damage.
2. The above efficiency values were measured within 10 seconds of starting the machine when the input nominal voltage was applied and the output was fully loaded.

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Typical characteristics

Temperature derating graph

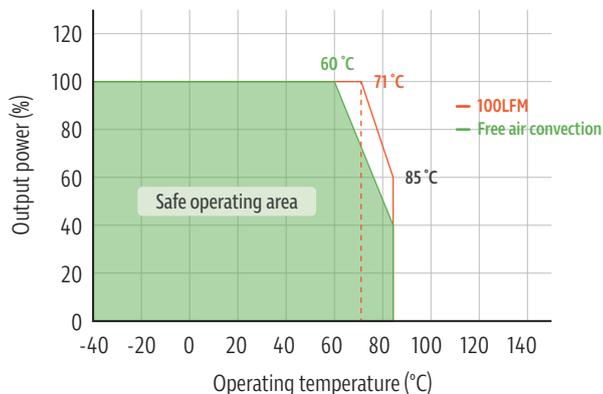
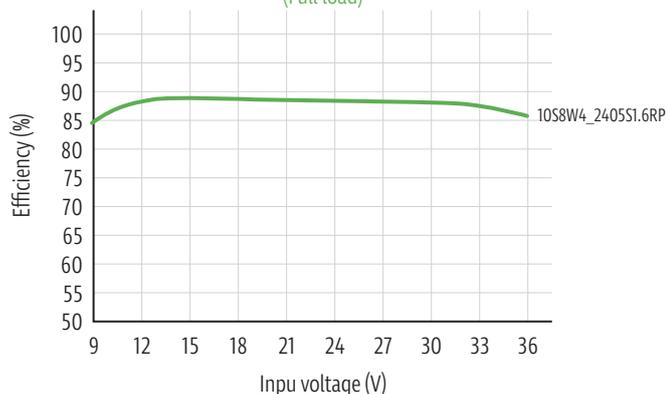
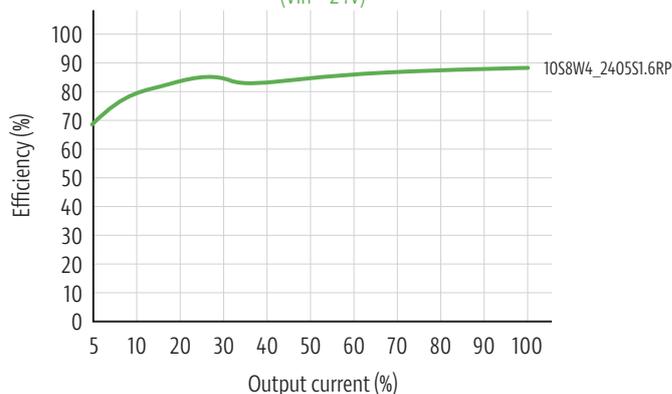


Figure 1

Efficiency vs input voltage (Full load)

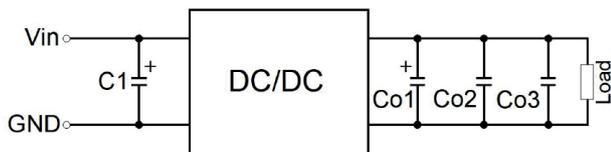


Efficiency vs output load (Vin = 24V)



Typical circuit design and application

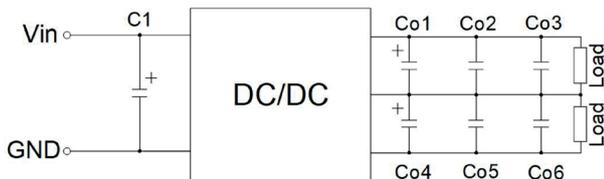
Single



Recommended Capacitive Load Value Table

Vout (VDC)	C1 (uF)	Co1 (uF)	Co2 (uF)	Co3 (uF)
3.3/5/6VDC	100µF/100V	100µF/16V	10µF/50V	0.1µF/16V
9/12/15VDC	100µF/100V	47µF/25V	10µF/50V	0.1µF/25V
24/28VDC	100µF/100V	47µF/50V	10µF/50V	0.1µF/50V

Dual



Recommended Capacitive Load Value Table

Vout (VDC)	C1 (uF)	Co1, Co4 (uF)	Co2, Co5 (uF)	Co3, Co6 (uF)
3.3/5/6VDC	100µF/100V	100µF/16V	0.1µF/50V	10µF/50V
9/12/15VDC	100µF/100V	47µF/25V	0.1µF/50V	10µF/50V
24/28VDC	100µF/100V	47µF/50V	0.1µF/50V	10µF/50V

Figure 2

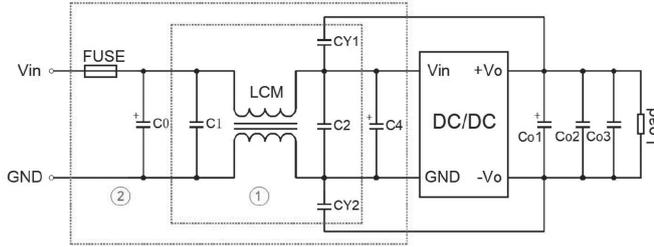
All DC-DC converters in this series are tested according to the recommended testing circuit (Figure 2) before leaving the factory. If further reduction of input and output ripple is required, the input and output external capacitors C1 and Co1, Co2, Co3, Co4, Co5, Co6 can be increased or a capacitor with a small series equivalent impedance value can be selected, but the capacitance value cannot exceed the maximum capacitive load of the product.

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Recommended EMC circuit diagram

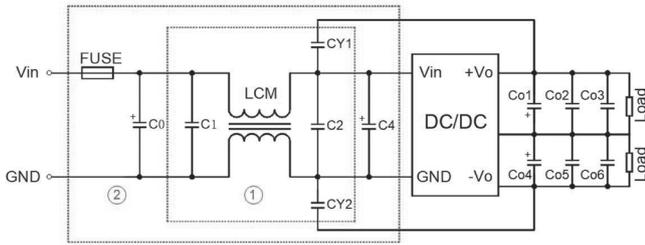
Single



EMI recommended component parameters

Vin	Vin: 24V	Vin: 48V
FUSE	Select according to the actual input current of the customer	
C0, C4	330uF/50V	220uF/100V
C1, C2	10µF/50V	
LCM	1.4mH	
Co1/Co2/Co3	Refer to the Cout parameters in Figure 2	
CY1, CY2	1nF/2000VDC	

Dual



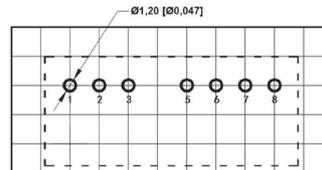
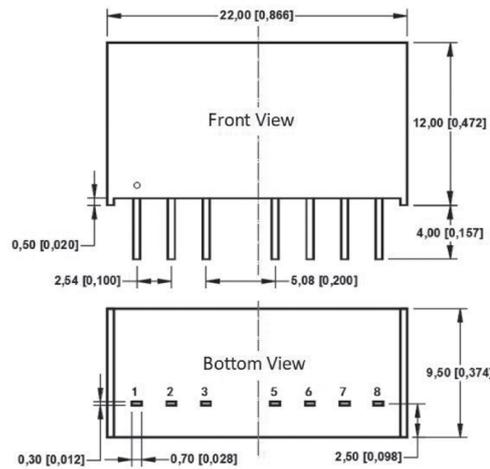
EMI recommended component parameters

Vin	Vin: 24V	Vin: 48V
FUSE	Select according to the actual input current of the customer	
C0,C4	330uF/50V	220uF/100V
C1, C2	10µF/50V	
LCM	1.4-1.7mH	
Co1/Co2/Co3/Co4/Co5/Co6	Refer to the Figure 2 Capacitive load value table	
CY1, CY2	1nF/400VAC	

Figure 3

Note: Part 1 in Figure 3 is for EMC testing; The second part is used for EMI filtering, which can be selected according to the demand.

Mechanical dimensions



The grid distance is 2.54mm x2.54mm

Pin definition table

Pin	Single	Dual
1	GND	GND
2	Vin	Vin
3	CTRL	CTRL
5	NC	NC
6	+Vo	+Vo
7	-Vo	COM
8	NC	-Vo

NC: Pin to be isolated from

Note:
 Unit: mm [inch]
 Pin section tolerances: ±0.10 [±0.004]
 General tolerances: ±0.50 [±0.020]