

8W isolated DC-DC converter in YMD package
Ultra-wide input and regulated single output



Patent Protection RoHS



FEATURES

- Ultra-wide input voltage range (8:1)
- I/O isolation test voltage 2.6k VAC
- Input under-voltage protection, output short-circuit and over-current protection
- Operating ambient temperature range: -40°C to +105°C
- Industry standard pin-out
- Meets AEC - Q100 standards
- Meets IEC62368, UL62368, EN62368 standards

CUWF1215YMD-8WR3 of isolated 8W DC-DC converter product with an ultra-wide 8:1 input voltage range. They feature efficiencies of up to 78%, 2600VAC input to output isolation, operating ambient temperature range of -40°C to +105°C, input under-voltage protection, output short-circuit and over-current protection. They are widely used in applications such as industrial control, electric power and automobile electronic.

Selection Guide

Certification	Part No.	Input Voltage (VDC)		Output		Full Load Efficiency ^② Min./Typ.	Max. Capacitive Load ^③ (μF)
		Nominal (Range)	Max. ^①	Voltage (VDC)	Current(mA) Max./Min.		
--	CUWF1215YMD-8WR3	12 (4.5-36)	40	15	533/0	76/78	330

Notes:

- ① Exceeding the maximum input voltage may cause permanent damage;
- ② Efficiency is measured in nominal input voltage and rated output load;
- ③ The maximum capacitive load offered were tested under the condition of $V_{in} \geq 9V$.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	Nominal input voltage	--	834/15	855/--	mA
Reflected Ripple Current		--	50	--	
Surge Voltage (1sec. max.)		-0.7	--	40	VDC
Start-up Voltage		--	--	4.5	
Input Under-voltage Protection		3	3.5	--	
Start-up Time		Nominal input voltage & constant resistance load	--	20	--
Input Filter		Pi filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Voltage Accuracy	5%-100% load	--	±1	±3	%
Linear Regulation	Input voltage variation from low to high at full load	--	±0.2	±0.5	
Load Regulation	5%-100% load	--	±0.5	±1	%
Transient Recovery Time	25% load step change, nominal input voltage	--	250	500	μs
Transient Response Deviation	25% load step change, input voltage range	--	±3	±5	%
Temperature Coefficient	Full load	--	--	±0.03	%/°C
Ripple & Noise*	20MHz bandwidth, nominal input voltage, 5%-100% load	--	60	150	mVp-p
Over-current Protection	Input voltage range from 9 to 36V	110	170	300	%Io
Short-circuit Protection		Continuous, self-recovery			

Note: *Ripple & Noise at < 5% load is 300mV max. The "parallel cable" method is used for Ripple and Noise test, please refer to DC-DC Converter Application Notes for specific information.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output Electric Strength Test for 1 minute with a leakage current of 3mA max.	2600	--	--	VAC
Insulation Resistance	Input-output resistance at 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	500	--	pF
Operating Temperature	Nominal input voltage, See Fig. 1, working with full load at 85°C, derating when operating at 105°C	-40	--	+105	°C
Storage Temperature		-55	--	+125	
Storage Humidity	Non-condensing	5	--	95	%RH
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	+300	°C
Vibration		10-1000Hz, 10G, 1.0mm, 2h			
Switching Frequency *	PWM mode	--	230	--	kHz
MTBF	MIL-HDBK-217F@25°C	1000	--	--	k hours

Note: *Switching frequency is measured at full load. The module reduces the switching frequency for light load (below 50%) efficiency improvement.

Mechanical Specifications

Case Material	Aluminum alloy
Dimensions	25.40 × 25.40 × 11.70 mm
Weight	16g (Typ.)
Cooling method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR25	CLASS 4 (see Fig.3 for recommended circuit)	
	RE	CISPR25	CLASS 4 Current Method/ Voltage Method (see Fig.3 for recommended circuit)	
Immunity	ESD	IEC/EN61000-4-2	Contact ±8kV / Air ±15kV perf. Criteria B	
	RS	ISO11452-2	150V/m(see Fig.3 for recommended circuit) perf. Criteria B	
	BCI	ISO11452-4	1MHz-400MHz,150mA (see Fig.3 for recommended circuit) perf. Criteria B	
	Electrical Transient Conduction along Supply Lines Only	ISO7637-2 (see Fig.3 for recommended circuit)		
		Impulse 1:	perf. Criteria C	
	Impulse 2a:	perf. Criteria A		
	Impulse 2b:	perf. Criteria C		
	Impulse 3a:	perf. Criteria A		
	Impulse 3b:	perf. Criteria A		

Typical Characteristic Curves

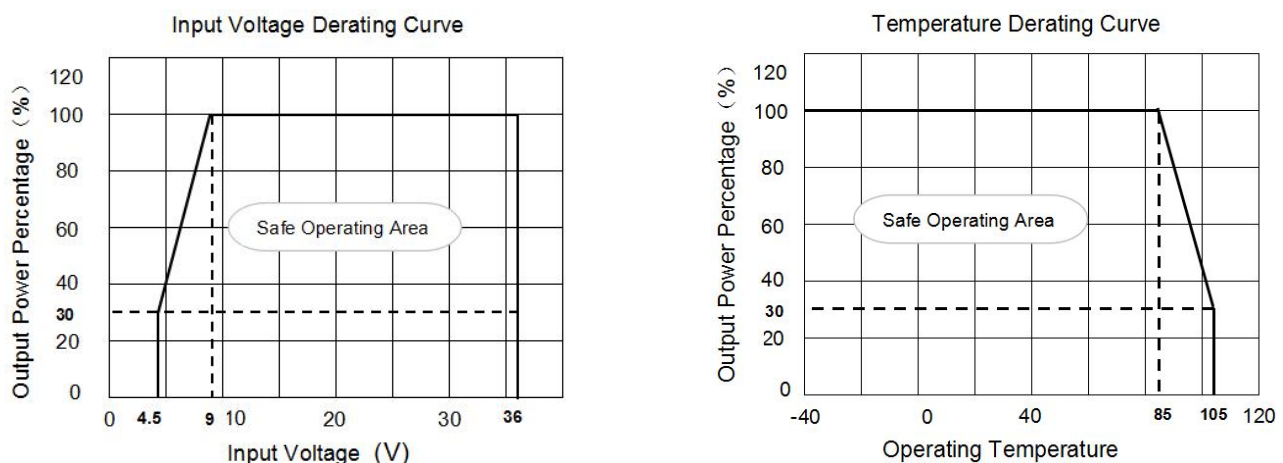


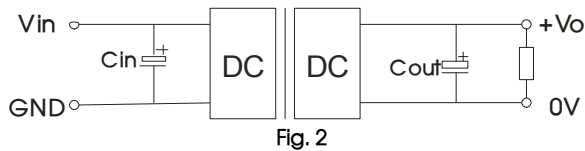
Fig. 1

Design Reference

1. Typical application

All DC-DC converters of this series are tested before delivery using the recommended circuit shown in Fig. 2.

Input and/or output ripple can be further reduced by appropriately increasing the input & output capacitor values C_{in} and C_{out} and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance is not exceeding the specified max. capacitive load value of the product.



Vout	Cin	Cout
15VDC	100μF/50V	47μF/50V

2. EMC compliance circuit

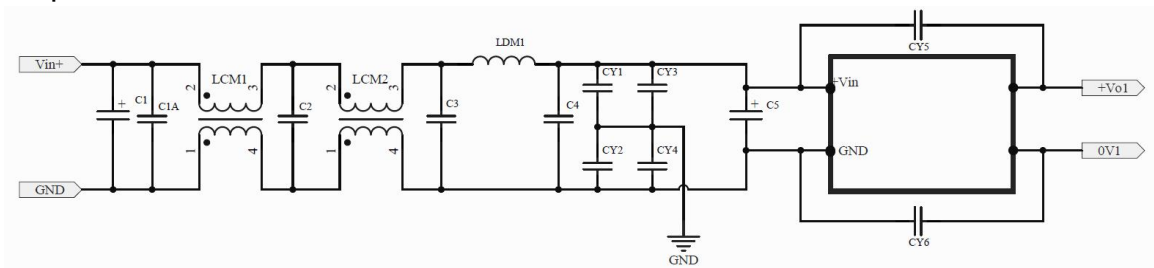


Fig. 3

Notes: C1 is mainly used for filtering in Fig.3. If correlative filtering exists in the front stage of the power module, C1 can be removed.

Parameter description:

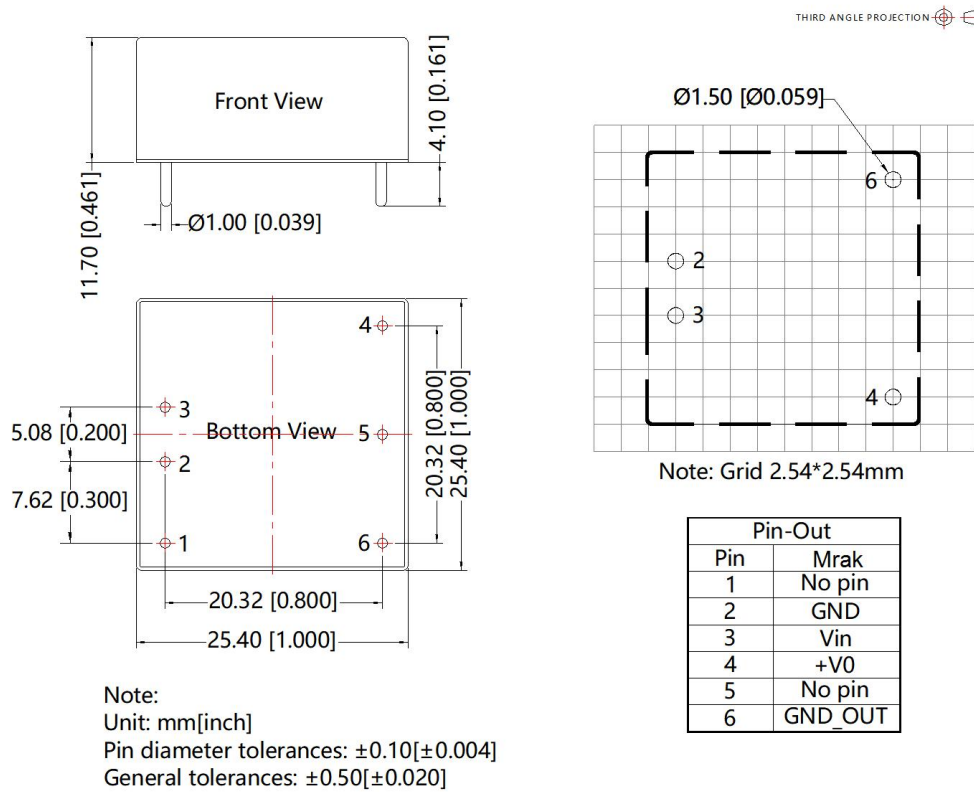
Model	CUWF1215YMD-8WR3
FUSE	Choose according to actual input current
C1	680μF/100V
C1A/C2/C3/C4	10μF/100V
LCM1	3mH. Recommend to use MORNSUN's FL2D-10-222
LCM2	15uH
LDM1	4.7μH
C5	47μF/100V
CY1/CY2	100pF/400VAC
CY3/CY4	1000pF/400VAC
CY5/CY6	470pF/500VAC

3. The products do not support parallel connection of their output

4. For additional information please refer to DC-DC converter application notes on

www.mornsun-power.com

Dimensions and Recommended Layout



Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58210003;
2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
3. The maximum capacitive load offered were tested at input voltage range and full load;
4. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75%RH with nominal input voltage and rated output load;
5. All index testing methods in this datasheet are based on our company corporate standards;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

Mornsun Guangzhou Science & Technology Co., Ltd.

Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Huangpu District, Guangzhou, P. R. China
Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: info@mornsun.cn www.mornsun-power.com

