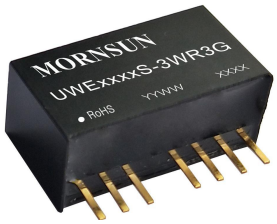
3W isolated DC-DC converter in SIP package
Ultra-wide input and regulated dual output



Patent Protection RoHS

FEATURES

- Ultra-wide 8:1 input voltage range
- High efficiency up to 79%
- No-load power consumption as low as 0.096W
- I/O isolation test voltage 3k VDC
- Input under-voltage protection, output short-circuit, over-current protection
- Operating ambient temperature range: -40℃ to +105℃
- Industry standard pin-out

UWE_S-3WR3G series of isolated 3W DC-DC converter products with an ultra-wide 8:1 input voltage range. They feature efficiencies of up to 79%, 3000VDC input to output isolation, operating ambient temperature range of -40℃ to +105℃, input under-voltage protection, output short-circuit, over-current protection and they are widely used in applications such as medical care, industrial control, electric power, instruments and communication fields.

Selection Guide

Certification	Part No.	Input Voltage (VDC)		Output		Full Load Efficiency ② (%) Min./Typ.	Capacitive Load ③ (μF)Max.
		Nominal (Range)	Max. ①	Voltage(VDC)	Current (mA) Max./Min.		
--	UWE1205S-3WR3	12 (4.5-36)	40	±5	±300	75/77	470
	UWE1212S-3WR3			±12	±125	77/79	220
	UWE1215S-3WR3			±15	±100	77/79	100

Notes: ① Exceeding the maximum input voltage may cause permanent damage;
② Efficiency is measured at nominal input voltage and rated output load;
③ The specified maximum capacitive load for positive and negative output is identical.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load/no-load)	±5V output	--	325/8	334/16	mA
	Others	--	317/8	325/16	
Reflected Ripple Current		--	50	--	
Surge Voltage (1sec. max.)		-0.7	--	50	VDC
Start-up Voltage		--	--	4.5	
Input Under-voltage Protection		2.5	3.5	--	
Input Filter		Capacitance Filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy	0%-100% load		--	±1	±3	%
Linear Regulation	Input voltage variation from low to high at full load		--	--	±1	
Load Regulation	5%-100% load	Vo1	--	--	±1	
		Vo2	--	--	±1.5	
Cross Regulation	Dual output, Vo1 load at 50%, Vo2 load at range of 25%-100%		--	--	±5	
Transient Recovery Time	25% load step change, nominal input voltage		--	300	500	μs
Transient Response Deviation	25% load step change, nominal input voltage	±5V output	--	±5	±8	%
		Others	--	±3	±5	
Temperature Coefficient	Full load		--	--	±0.03	%/℃
Ripple & Noise ①	20MHz bandwidth, 5%-100% load		--	60	100	mVp-p
Over-current Protection	Input voltage range		110	--	300	%Io

Short-circuit Protection	Input voltage range	Continuous, self-recovery

Note:
①Under 0% -5% load conditions, ripple & noise does not exceed 5%Vo. The "parallel cable" method is used for ripple and noise test, please refer to *DC-DC Converter Application Notes* for specific information.

General Specification

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output Electric Strength test for 1 minute with a leakage current of 1mA max.	3000	--	--	VDC
Insulation Resistance	Input-output insulation at 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	40	--	pF
Operating Temperature	See Fig. 1	-40	--	+105	℃
Storage Humidity	Without condensation	5	--	95	%RH
Storage Temperature		-55	--	+125	℃
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	+300	
Vibration		10-150Hz, 5G, 0.75mm. along X, Y and Z			
Switching Frequency *	PWM mode	--	300	--	kHz
MTBF	MIL-HDBK-217F@25℃	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	Black plastic; flame-retardant and heat-resistant (UL94-V0)
Dimensions	22.00 x 9.50 x 12.00 mm
Weight	4.5g (Typ.)
Cooling method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B (see Fig.3-② for recommended circuit)/CLASS A (see Fig.4 for recommended circuit)	
	RE	CISPR32/EN55032	CLASS B (see Fig.3-② for recommended circuit)/CLASS A (see Fig.4 for recommended circuit)	
Immunity	ESD	IEC/EN61000-4-2	Contact ±4kV	perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±2kV (see Fig.3-① for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±2kV (see Fig.3-① for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6	3 Vr.m.s	perf. Criteria A

Typical Characteristic Curves

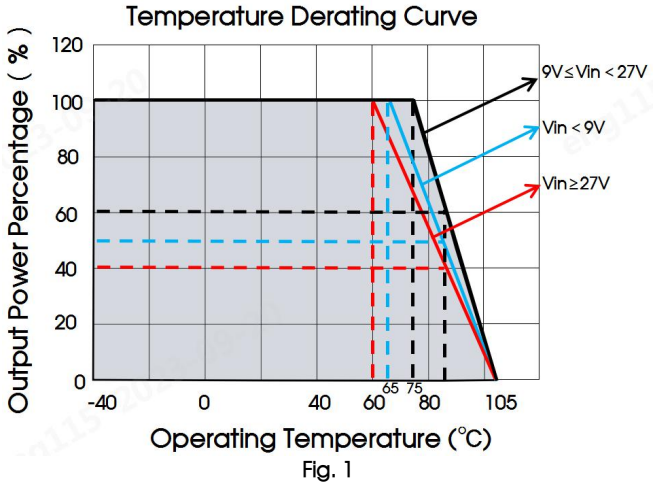


Fig. 1

Design Reference

1. Typical application

All the 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 Cin and Cout 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.

Fig. 2

Parameter description:

Vout (VDC)	Cin	Cout
±5/±12/±15	100μF/50V	22μF/25V

2. EMC compliance circuit

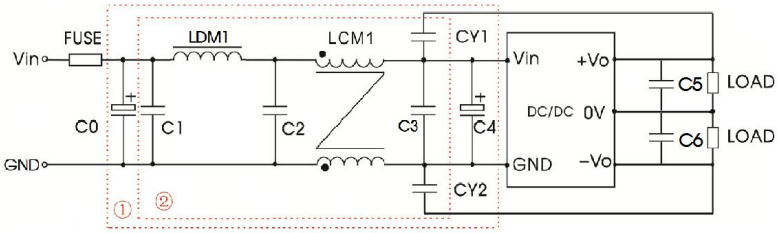


Fig. 3

Notes: For EMC tests we use Part ① in Fig. 3 for immunity and part ② for emissions test. Selecting based on needs

Parameter description:

Components	Vin: 12VDC
FUSE	Choose according to actual input current
C0	1000μF/50V
C4	330μF/50V
C1/C2/C3	10μF/50V
LCM1	3.3mH, recommended to use MORNSUN's FL2D-10-332
LDM1	4.7μH
CY1/CY2	1nF/3kV
C5/C6	Refer to the Cout in Fig.2

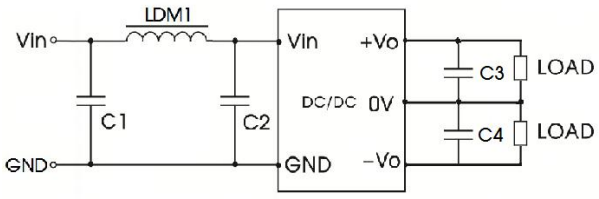


Fig. 4

Parameter description:

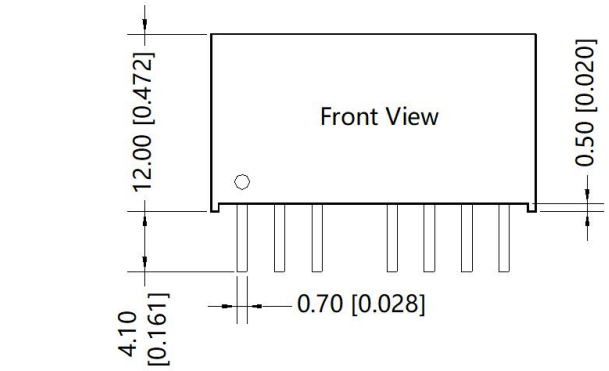
Components	Vin: 12VDC
FUSE	Choose according to actual input current
C1/C2	10μF/50V
LDM1	22μH
C3/C4	Refer to the Cout in Fig.2

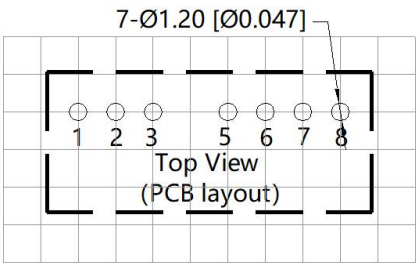
3. The products do not support parallel connection of their output

4. For additional information please refer to DC-DC converter application notes on www.mornsun-power.com

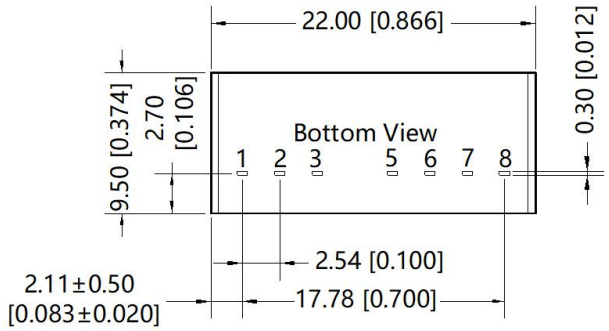
Dimensions and Recommended Layout

THIRD ANGLE PROJECTION





Note: Grid 2.54*2.54mm



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

Pin-Out	
Pin	Mark
1	GND
2	Vin
3	NC
5	NC
6	+Vo
7	0V
8	-Vo

NC: No connection

Note:
1. For additional information on Product Packaging please refer to www.mornsun-power.com. packaging number: 58210004;
2. The maximum capacitive load offered were tested at input voltage range and full load;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75%RH with nominal input voltage and rated output load;
4. All index testing methods in this datasheet are based on company corporate standards;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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