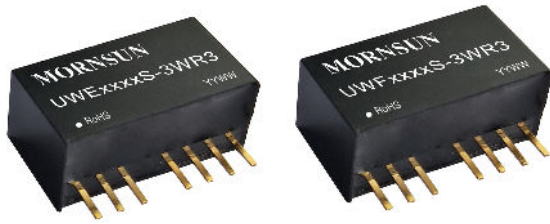


3W isolated DC-DC converter in SIP package  
Ultra-wide input and regulated single/dual output



CE Patent Protection RoHS

## FEATURES

- Ultra-wide 8:1 input voltage range
- High efficiency up to 79%
- No-load power consumption as low as 0.12W
- I/O isolation test voltage 3K VDC
- Input under-voltage protection, output short circuit, over-current protection
- Operating ambient temperature range: -40°C to +105°C
- Industry standard pin-out
- EN62368 approved

*UWE/F\_S-3WR3 series of isolated 3W DC-DC 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°C to +105°C, input under-voltage protection, output over-current, short circuit 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 <sup>®</sup> Min./Typ.	Max. Capacitive Load <sup>®</sup> (μF)
		Nominal (Range)	Max. <sup>①</sup>	Voltage(VDC)	Current (mA) (Max./Min.)		
CE	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
	UWF1205S-3WR3			5	600	75/77	1000
	UWF1212S-3WR3			12	250	77/79	330
	UWF1215S-3WR3			15	200	77/79	220

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/±5V output	--	324/8	334/16	mA
	Others	--	316/8	325/16	
Reflected Ripple Current		--	50	--	VDC
Surge Voltage (1sec. max.)		-0.7	--	50	
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 <sup>①</sup>	0% -100% load	--	±1	±3	%
Linear Regulation	Input voltage variation from low to high at full load	Vo1	--	±0.5	
		Vo2	--	±1	
Load Regulation <sup>®</sup>	5% -100% load	Vo1	--	±1	
		Vo2	--	±1.5	

Cross Regulation	Dual outputs, Vo1 load at 50%, Vo2 load at range of 25%-100%	--	--	±5	%
Transient Recovery Time	25% load step change, nominal input voltag	--	300	500	μs
Transient Response Deviation	25% load step change, nominal input voltage	5V/±5V output	--	±5	±8
		Others	--	±3	±5
Temperature Coefficient	Full load	--	--	±0.03	%/°C
Ripple & Noise <sup>①</sup>	20MHz bandwidth, 5% -100% load	--	60	100	mV p-p
Over-current Protection	Input voltage range	110	--	300	%Io
Short-circuit Protection	Input voltage range	Continuous, self-recovery			
Note: ①Ripple & Noise at <5% load is 5%Vo max. The "parallel cable" method is used for ripple and noise test, please refer to <i>DC-DC Converter Application Notes</i> 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	°C
Storage Humidity	Without condensation	5	--	95	%RH
Storage Temperature		-55	--	+125	°C
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°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.					

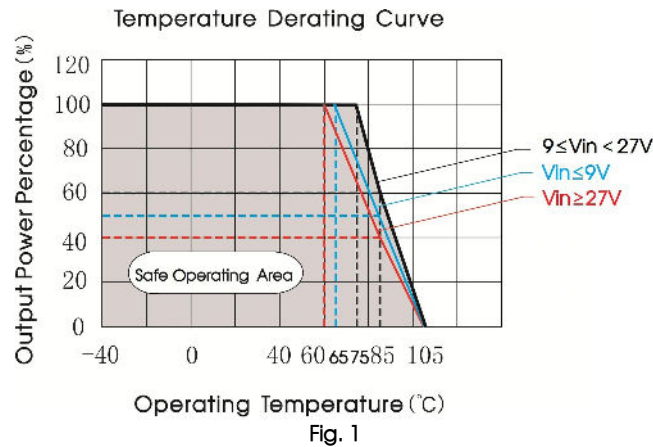
## Mechanical Specifications

Case Material	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

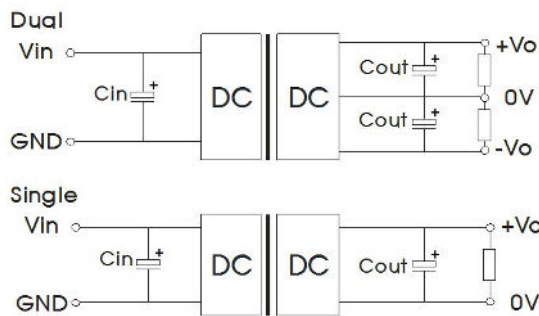
Typical Characteristic Curves



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  $C_{in}$  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.



Parameter description:

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

Fig. 2

2. EMC compliance circuit

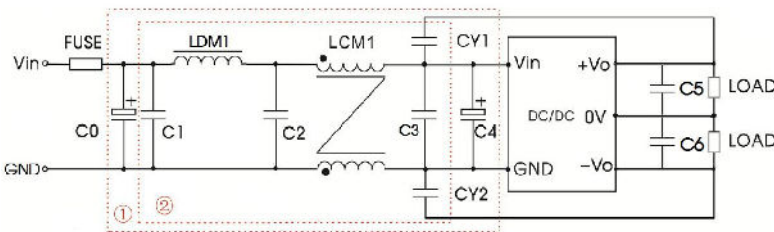


Fig. 3

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:12V
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

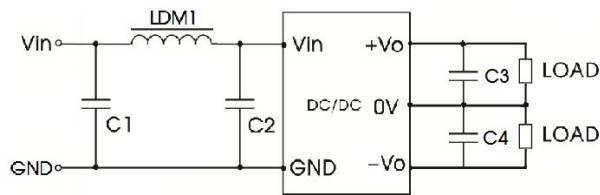


Fig. 4

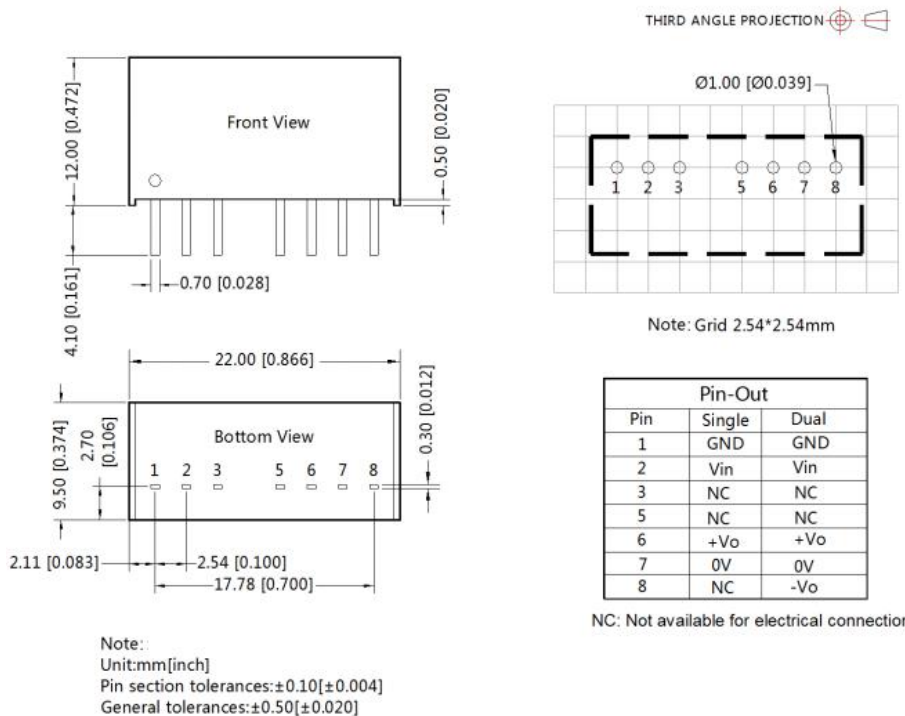
Parameter description:

Components	Vin:12V
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](http://www.mornsun-power.com)

## Dimensions and Recommended Layout



Note:

1. For additional information on Product Packaging please refer to [www.mornsun-power.com](http://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°C, 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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