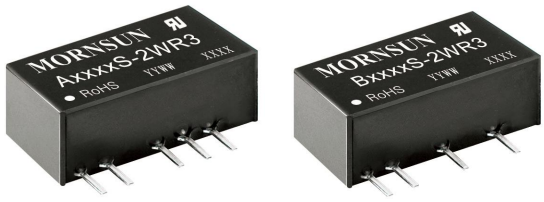
2W isolated DC-DC converter
Fixed input voltage, unregulated dual/ single output



3 years Warranty

Continuous Short Circuit Protection

c UL us CE CB Patent Protection RoHS

UL 62368-1 EN 62368-1 IEC62368-1

FEATURES

- Continuous short-circuit protection
- No-load input current as low as 8mA
- Operating ambient temperature range: -40℃ to +105℃
- High efficiency up to 86%
- High power density
- I/O isolation test voltage 1.5k VDC
- Industry standard pin-out

A_S-2WR3 & B_S-2WR3 series are specially designed for applications where an (two) isolated voltage is required in a distributed power supply system. They are suitable for:

1. The voltage of the input power supply is relatively stable with a variation of ±10%Vin or less;

2. An input to output isolation voltage of up to 1500VDC is necessary;

3. The requirement for a tight output regulation is not as strict.

Selection Guide

Certification	Part No.	Input Voltage (VDC)	Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load*(μF) Max.
		Nominal (Range)	Voltage (VDC)	Current (mA) Max./Min.		
UL/EN/IEC	A1203S-2WR3	12 (10.8-13.2)	±3.3	±303/±30	71/75	1200
	A1205S-2WR3		±5	±200/±20	76/80	
--	A1207S-2WR3		±7.2	±139/±13	76/80	470
	A1209S-2WR3		±9	±111/±11	78/82	
UL/EN/IEC	A1212S-2WR3		±12	±83/±8	79/83	220
	A1215S-2WR3		±15	±67/±7	79/83	
--	A1224S-2WR3		±24	±42/±4	79/83	100
--	B1203S-2WR3		3.3	400/40	75/79	2400
UL/EN/IEC	B1205S-2WR3		5	400/40	78/82	2400
--	B1209S-2WR3		9	222/22	78/82	1000
UL/EN/IEC	B1212S-2WR3		12	167/17	80/84	560
	B1215S-2WR3		15	133/13	81/85	
	B1224S-2WR3		24	83/8	82/86	220
--	A1505S-2WR3	15 (13.5-16.5)	±5	±200/±20	76/80	1200
	A1515S-2WR3		±15	±67/±7	78/82	220
	B1505S-2WR3		5	400/40	76/80	2400
	B1515S-2WR3		15	133/13	77/81	560
	B1524S-2WR3		24	83/8	77/81	220
UL/EN/IEC	A2403S-2WR3	24 (21.6-26.4)	±3.3	±303/±30	70/76	1200
	A2405S-2WR3		±5	±200/±20	74/80	
--	A2407S-2WR3		±7.2	±139/±13	74/80	470
	A2409S-2WR3		±9	±111/±11	75/81	
UL/EN/IEC	A2412S-2WR3		±12	±83/±8	77/83	220
	A2415S-2WR3		±15	±67/±7	77/83	
--	A2424S-2WR3		±24	±42/±4	77/83	100
	B2403S-2WR3		3.3	400/40	70/76	2400
UL/EN/IEC	B2405S-2WR3		5	400/40	74/80	2400
--	B2409S-2WR3		9	222/22	75/81	1000

UL/EN/IEC	B2412S-2WR3	24 (21.6-26.4)	12	167/17	78/84	560
UL/EN/IEC	B2415S-2WR3		15	133/13	80/86	
	B2424S-2WR3		24	83/8	80/86	220
Note: * 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)	12V input	--	223/8	235/--	mA
	15V input	--	167/8	176/--	
	24V input	--	110/8	120/--	
Reflected Ripple Current		--	15	--	
Surge Voltage (1sec. max.)	12V input	-0.7	--	18	VDC
	15V input	-0.7	--	21	
	24V input	-0.7	--	30	
Input Filter		Capacitance filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy			See output regulation curve(Fig. 1)			
Linear Regulation	Input voltage change: ±1%	3.3VDC output	--	--	±1.5	--
		Others	--	--	±1.2	
Load Regulation	10%-100% load	3.3VDC output	--	15	--	%
		5VDC output	--	7	--	
		7.2VDC output	--	6	--	
		9VDC output	--	5	--	
		12VDC output	--	5	--	
		15VDC output	--	4	--	
		24VDC output	--	3	--	
Ripple & Noise*	20MHz bandwidth		--	75	180	mVp-p
Temperature Coefficient	Full load		--	±0.02	--	%/℃
Short-circuit Protection			Continuous, self-recovery			
Notes: * 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 1mA max.	1500	--	--	VDC
Insulation Resistance	Input-output resistance at 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	20	--	pF
Operating Temperature	Derating when operating temperature≥85℃, (see Fig. 2)	-40	--	105	℃
Storage Temperature		-55	--	125	
Case Temperature Rise	Ta=25℃	--	15	--	
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	
Storage Humidity	Non-condensing	5	--	95	%RH
Vibration		10-150Hz, 5G, 0.75mm. along X, Y and Z			
Switching Frequency	Full load, nominal input voltage	--	260	--	kHz
MTBF	MIL-HDBK-217F @ 25℃	3500	--	--	k hours

Mechanical Specifications

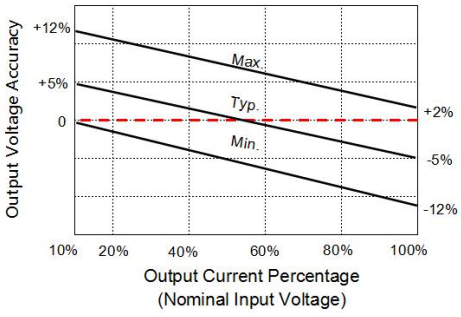
Case Material	Black plastic; flame-retardant and heat-resistant (UL94-V0)
Dimensions	19.65 x 7.05 x 10.16mm
Weight	2.4g(Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

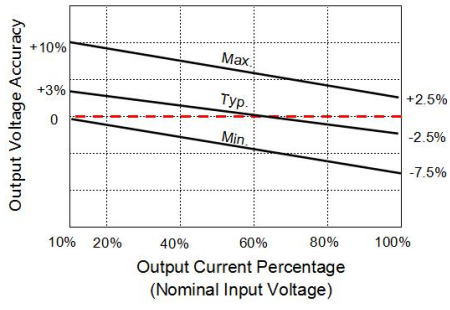
Emission	CE	CISPR32/EN55032	CLASS B
	RE	CISPR32/EN55032	CLASS B
Immunity	ESD	IEC/EN61000-4-2	Air ±8kV, Contact ±6kV perf. Criteria B
Note: Refer to Fig.4 for recommended circuit test			

Typical Performance Curves

3.3VDC Output
Output Regulation Curve



5/7.2VDC output
Output Regulation Curve



Others
Output Regulation Curve

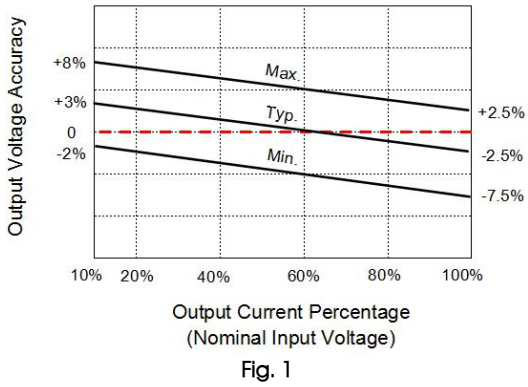


Fig. 1

Temperature Derating Curve

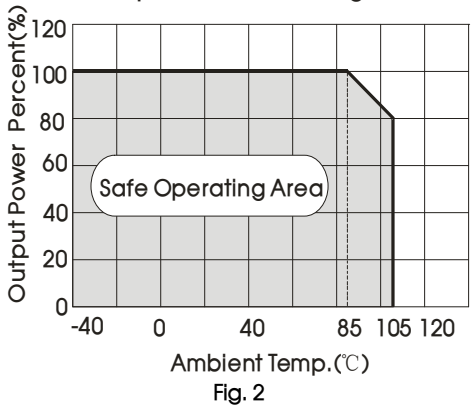


Fig. 2

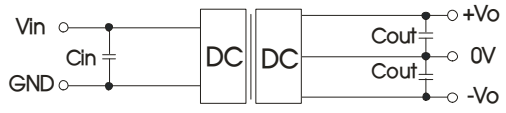
Design Reference

1. Typical application

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown in Fig.3.

Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problem caused by capacitor values that are too high. For recommended input and output capacitor values refer to Table 1.

Dual Output



Single Output

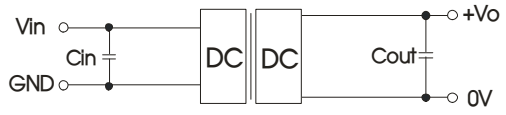


Fig. 3

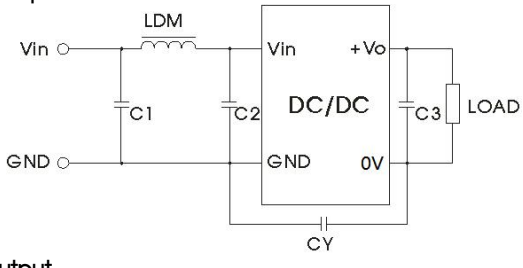
Table 1: Recommended input and output capacitor values

Vin	Cin	Single Vout	Cout	Dual Vout	Cout*
12VDC	2.2μF/25V	3.3VDC	10μF/16V	±3.3VDC	4.7μF/16V
15VDC	2.2μF/25V	5VDC	10μF/16V	±5VDC	4.7μF/16V
24VDC	1μF/50V	9VDC	2.2μF/25V	±7.2VDC	2.2μF/25V
--	--	12VDC	2.2μF/25V	±9VDC	2.2μF/25V
--	--	15VDC	1μF/25V	±12VDC	1μF/25V
--	--	24VDC	1μF/50V	±15VDC	1μF/25V
--	--	--	--	±24VDC	0.47μF/50V

Note: *The capacitor value of the positive and the negative output is identical.

2. EMC compliance circuit

Single Output



Input voltage		12/15/24VDC
Emission	C1/C2	4.7μF /50V
	CY	270pF /2kV
	C3	Refer to Cout in Fig.3
	LDM	6.8μH

Dual Output

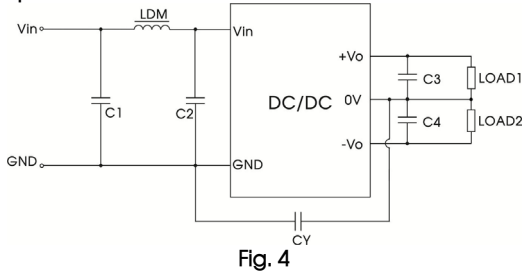
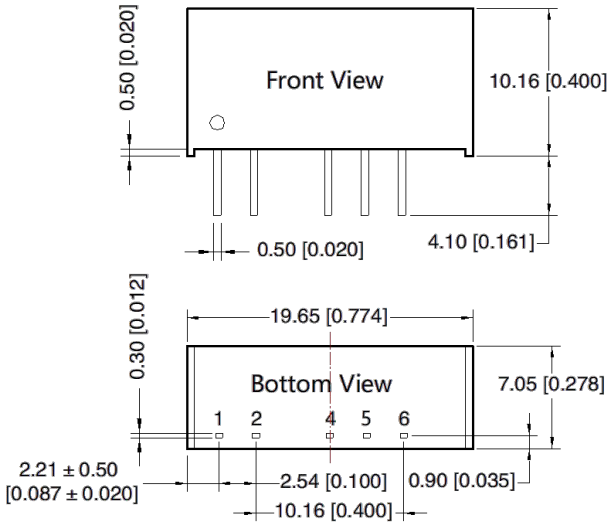


Fig. 4

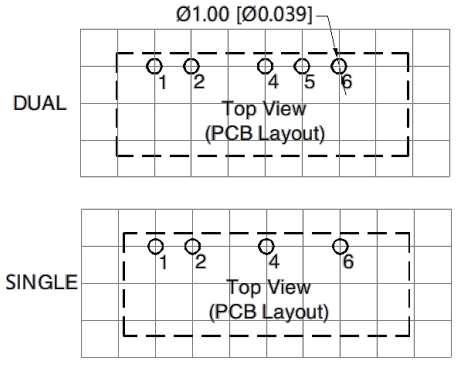
Input voltage		12/15/24VDC
Emission	C1/C2	4.7μF /50V
	CY	270pF /2kV
	C3/C4	Refer to Cout in Fig.3
	LDM	6.8μH

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Note:
Unit: mm[inch]
Pin section tolerances: ± 0.10[± 0.004]
General tolerances: ± 0.25[± 0.010]



Note: Grid 2.54*2.54mm

Pin-Out		
Pin	Single	Dual
1	Vin	Vin
2	GND	GND
4	0V	–Vo
5	No Pin	0V
6	+Vo	+Vo