DC/DC Converter
A0303S-1WR2

MORNSUN®

1W isolated DC-DC converter
Fixed input voltage, unregulated dual output

RoHS

3 years Warranty

FEATURES

- High power density
- Ultra compact SIP package
- Operating ambient temperature range: -40℃ to +85℃
- I/O isolation test voltage 1.5k VDC
- No external component required
- Industry standard pin-out

A0303S-1WR2 is designed for use in distributed power supply systems and especially suitable in applications such as pure digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits, where:

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 line and load regulation is not as strict.

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Selection Guide

Part No.	Input Voltage (VDC)	Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load*(μF) Max.
	Nominal (Range)	Voltage (VDC)	Current(mA) (Max./Min.)		
A0303S-1WR2	3.3 (2.97-3.63)	±3.3	±152/±15	67/71	100

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)	3.3V input	--	400/30	--/60	mA
Surge Voltage (1sec. max.)	3.3V input	-0.7	--	5	VDC
Reflected Ripple Current		--	30	--	mA
Input Filter		Capacitor filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		See output regulation curve (Fig. 1)			
Line Regulation	Input voltage change: ±1%	--	--	±1.5	--
Load Regulation	10%-100% load	--	18	--	%
Ripple & Noise*	20MHz bandwidth	--	50	150	mVp-p
Temperature Coefficient	100% load	--	--	±0.04	%/℃
Short-circuit Protection**		--	--	1	s

Note: * Ripple and noise tested with "parallel cable" method, please see DC-DC Converter Application Notes for specific operation methods.
**The supply voltage must be discontinued at the end of short circuit duration.

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 if the temperature ⩾71° C, (see Fig. 2)	-40	--	85	℃
Storage Temperature		-55	--	125	

Casing Temperature Rise	Ta=25℃	--	25	--	℃
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	
Storage Humidity	Non-condensing	0	--	95	%RH
Switching Frequency	100% load, nominal input voltage	--	100	--	KHz
MTBF	MIL-HDFK-217F@25℃	3500	--	--	k hours

Physical Specifications

Casing Material	Black flame-retardant heat-proof epoxy resin ((UL94 V-0)
Package Dimensions	19.50*9.30*6.00 mm
Weight	2.4g(Typ.)
Cooling methods	Free air convection

EMC Specifications

EMI	Conducted disturbance	CISPR22/EN55032	CLASS B (see Fig. 4 for recommended circuit)
	Radiated emission	CISPR22/EN55032	CLASS B (see Fig. 4 for recommended circuit)
EMS	Electrostatic discharge	IEC/EN61000-4-2	Contact ±6KV perf. Criteria B

Product Characteristic Curve

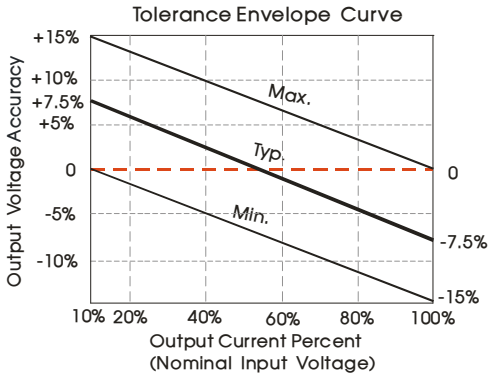


Fig. 1

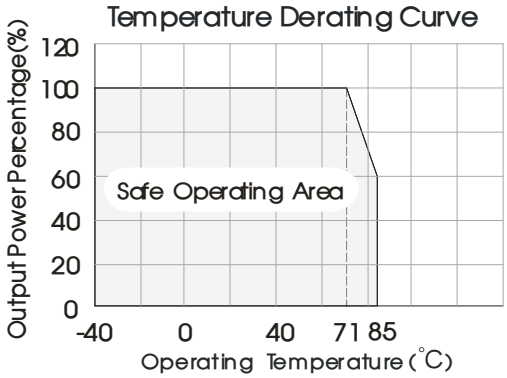


Fig. 2

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 problems caused by capacitor values that are too high. For recommended input and output capacitor values refer to Table 1.

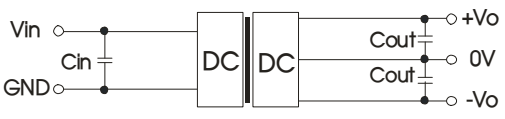


Fig.3

Recommended capacitive load value table (Table 1)

Vin (VDC)	Cin (μF)	Dual Vout (VDC)	Cout (μF)
3.3	4.7	±3.3	4.7

It is not recommended to connect any external capacitor when output power is less than 0.5W.

2. EMC (CLASS B) compliance circuit

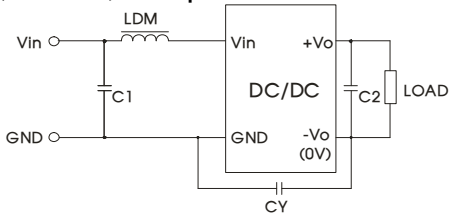


Fig. 4

Input voltage (VDC)		3.3
EMI	C1	4.7μF /50V
	C2	Refer to the Cout in Fig.3
	CY	--
	LDM	6.8μH

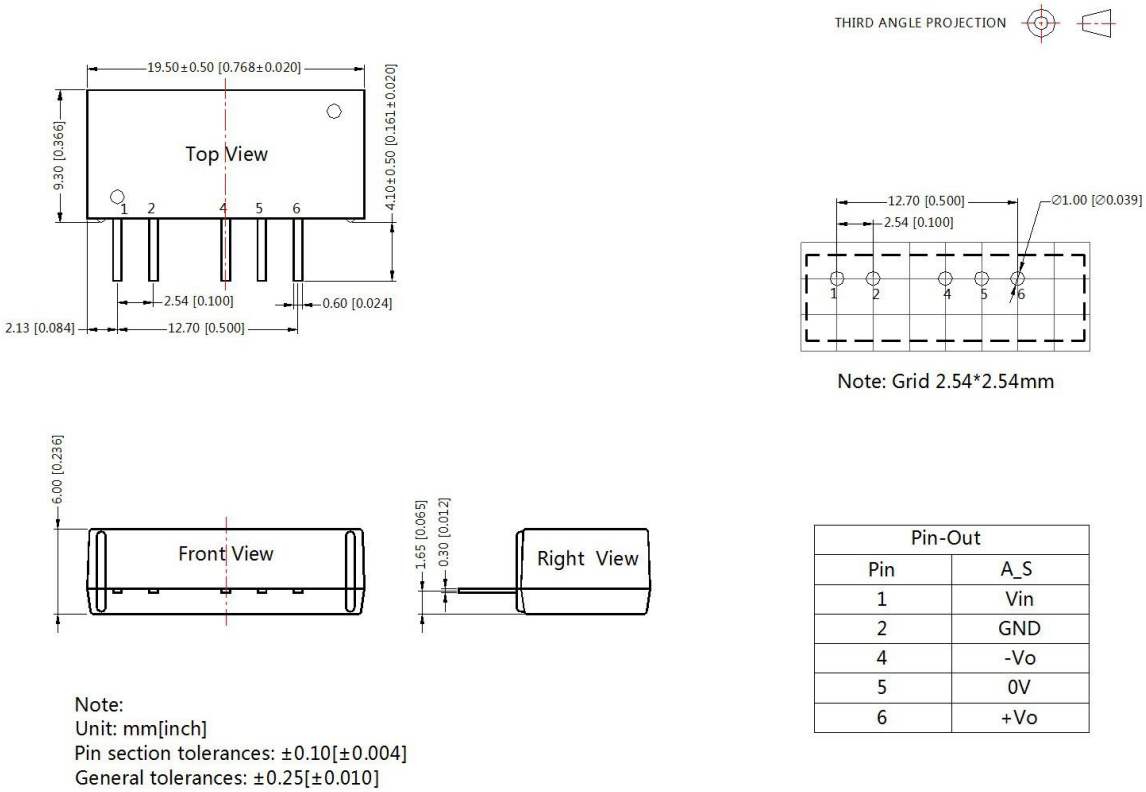
Note: It is not needed to add the component in the peripheral circuit when parameter with the symbol of "--".

3. Minimum Output Load Requirement

For a reliable and efficient operation of the converter, the minimum load should never be less than 10% of the rated output load. If the total required output power is below 10%, a parallel bleeding resistor is required on the output, ensuring that the sum of the power consumption is always maintained at 10% minimum.

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

Dimensions and Recommended Layout



Note: Grid 2.54*2.54mm

Pin-Out	
Pin	A_S
1	Vin
2	GND
4	-Vo
5	0V
6	+Vo

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

Notes:

- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58200029;
- 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;
- The maximum capacitive load offered were tested at input voltage range and full load;
- 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;
- All index testing methods in this datasheet are based on our company corporate standards;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see "Features" and "EMC";
- 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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