

1 W isolated DC-DC converter
Fixed input voltage, regulated single output



FEATURES

- Continuous short-circuit protection
- Operating ambient temperature range: -40°C to +105°C
- Meets 8kV impulse withstand voltage
- I/O isolation test voltage 5k VAC or 7k VDC, reinforced insulation
- Industry standard pin-out
- Electrical clearance and creepage distance above 16mm
- Meets CTI level 1
- Isolation capacitance as low as 7pF



Patent Protection

Continuous Short Circuit Protection



RoHS

UL 62368-1

EN 62368-1

BS EN 62368-1

IEC 62368-1

H0505CS-1WR3 is specifically designed for applications where high voltage power systems such as photo voltaic and energy storage need to generate a set of voltage isolated from the input power supply. The design refers to IEC 62109-1 and IEC 62477-1 to meet the isolation requirements of 1500V system. It is suitable for:

1. Where the voltage of the input power supply is stable (voltage variation: $\pm 5\%V_{in}$);
2. Where isolation is necessary between input and output (isolation voltage $\leq 5k$ VAC or 7k VDC);
3. Where has high requirement of output voltage stability;

Selection Guide

Certification	Part No.	Input Voltage (VDC)	Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load(μ F) Max.
		Nominal (Range)	Voltage (VDC)	Current(mA) Max./Min.		
UL/EN/BS EN/IEC	H0505CS-1WR3	5 (4.75-5.25)	5	200/20	64/68	1000

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)		--	295/10	313/--	mA
Reflected Ripple Current*		--	200	--	
Surge Voltage (1sec. max.)		-0.7	--	9	VDC
Input Filter		Capacitance Filter			
Hot Plug		Unavailable			

Note: * Refer to DC-DC Converter Application Notes for detailed description of reflected ripple current test method.

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Voltage Accuracy		-3	--	3	%
Linear Regulation	Input voltage change: $\pm 1\%$	--	--	± 2	--
Load Regulation	10%-100% load	--	--	± 2	%
Ripple & Noise*	20MHz bandwidth	--	50	150	mVp-p
Temperature Coefficient	Full load	--	± 0.02	--	%/°C
Short-circuit Protection		Continuous, self-recovery			

Note:* 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 Voltage	Input-output electric strength test for 1 minute with a leakage current of 1mA max.	5000	--	--	VAC
		7000	--	--	VDC
Insulation Resistance	Input-output resistance at 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	7	--	pF
Operating Temperature	Derating when operating temperature up to 71°C, (see Fig. 1)	-40	--	105	°C
Storage Temperature		-55	--	125	
Case Temperature Rise	Ta=25°C	--	25	--	
Storage Humidity	Non-condensing	5	--	95	%RH
Pin Welding Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	°C
Wave-soldering Temperature*		Peak temp. ≤245°C, maximum duration time ≤60s over 217°C			
Switching Frequency	Full load, nominal input voltage	--	200	--	kHz
MTBF	MIL-HDBK-217F@25°C	20000	--	--	k hours
Creepage & Clearance Distance		16	--	--	mm

Note: * For actual application, please refer to IPC/JEDEC J-STD-020D.1.

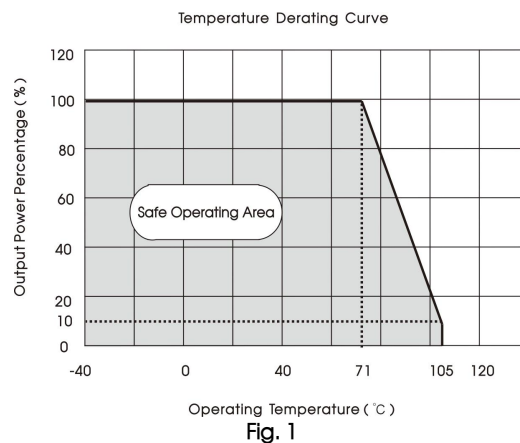
Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Dimensions	27.40 x 9.50 x 12.00 mm
Weight	5.5 g(Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B (see Fig. 3 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 3 for recommended circuit)
Immunity	ESD	IEC/EN61000-4-2 Contact ±6kV perf. Criteria B

Typical Characteristic Curves



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. 2

Table 1: Recommended input and output capacitor values

Vin	Cin	Vo	Cout
5VDC	4.7µF/16V	5VDC	10µF/16V

2. EMC (CLASS B) compliance circuit

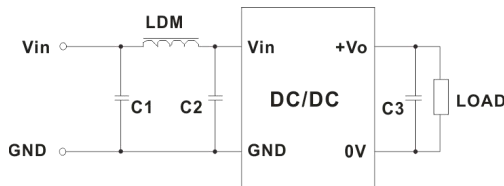


Fig. 3

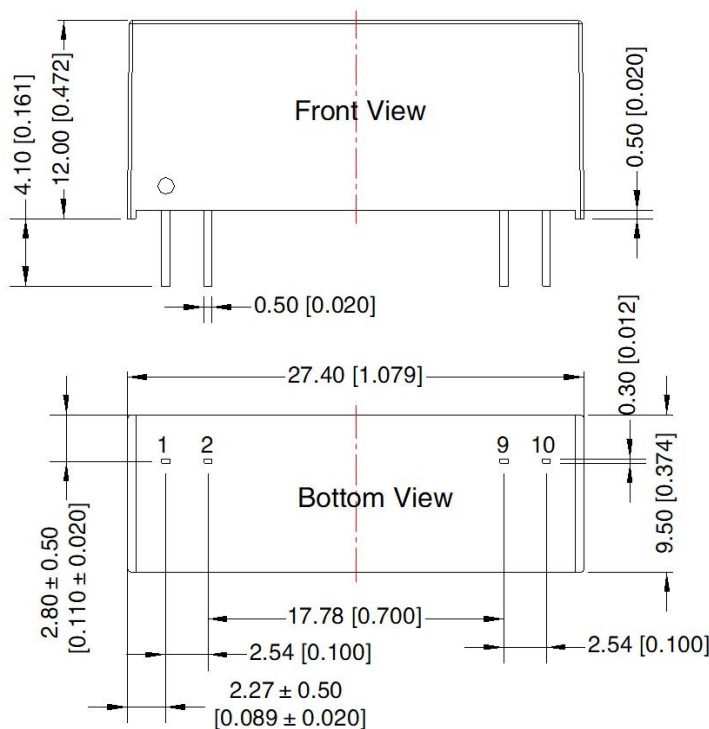
Table 2: Recommended EMC filter values

Output voltage		5VDC
Emissions	C1/C2	10µF /25V
	C3	Refer to the Cout in table 1
	LDM	12µH

3. 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

Pin-Out	
Pin	Mark
1	Vin
2	GND
9	0V
10	Vo

Note:

Unit: mm[inch]

Pin section tolerances: ± 0.10[± 0.004]

General tolerances: ± 0.50[± 0.020]

Notes:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58200015;
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 $T_a=25^{\circ}\text{C}$, 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.

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