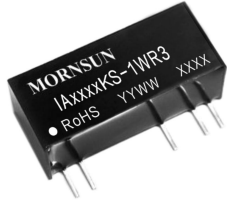


1W isolated DC-DC converter  
Fixed input voltage, regulated dual output



Patent Protection RoHS

## FEATURES

- Continuous short-circuit protection
- No-load input current as low as 8mA
- Operating ambient temperature range: -40°C to +85°C
- High efficiency up to 73%
- I/O isolation test voltage 1.5k VDC
- Industry standard pin-out

IA\_KS-1WR3 series is specially designed for applications where two isolated voltage is required in a distributed power supply system. They are suitable for occasions of: pre-interference isolation, ground interference elimination, pure digital circuit, voltage isolation conversion, general low frequency analog circuit, relay drive circuit, etc.

## 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.		
--	IA0505KS-1WR3	5 (4.75-5.25)	±5	±100/±10	64/68	1200
	IA0512KS-1WR3		±12	±42/±4	66/70	100
	IA0515KS-1WR3		±15	±33/±3	66/70	100
	IA1205KS-1WR3	12 (11.4-12.6)	±5	±100/±10	69/73	1200
	IA1209KS-1WR3		±9	±56/±6	69/73	470
	IA1212KS-1WR3		±12	±42/±5	69/73	220
	IA2405KS-1WR3	24 (22.8-25.2)	±5	±100/±10	64/70	1200
	IA2412KS-1WR3		±12	±42/±5	64/70	220
	IA2415KS-1WR3		±15	±33/±3	64/70	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)	5VDC input	5VDC output	--	294/11	313/20	mA
		12VDC/15VDC output	--	286/20	303/40	
	12VDC input	--	115/8	121/--		
	24VDC input	--	60/8	66/--		
Reflected Ripple Current*		--	15	--		
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	
Linear Regulation	Input voltage change: ±1%	--	--	±0.25	%
Load Regulation	10%-100% load	--	--	±2	
Ripple & Noise*	20MHz bandwidth	--	30	100	mVp-p
Temperature Coefficient	100% 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	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 $\geq 71^{\circ}\text{C}$ (see Fig.1)	-40	--	85	°C
Storage Temperature		-55	--	125	
Case Temperature Rise	Ta=25°C	--	25	--	
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	100% load, nominal input voltage	--	260	--	kHz
MTBF	MIL-HDBK-217F@25°C	3500	--	--	k hours

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Dimensions	27.50 x 9.50 x 12.00mm
Weight	5.2g(Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B
	RE	CISPR32/EN55032 CLASS B
Immunity	ESD	IEC/EN61000-4-2 Air $\pm 8\text{kV}$ , Contact $\pm 6\text{kV}$ perf. Criteria B

Note: Refer to Fig.3 for recommended circuit test.

Typical Characteristic Curves

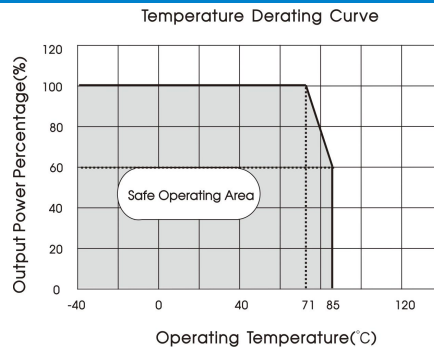
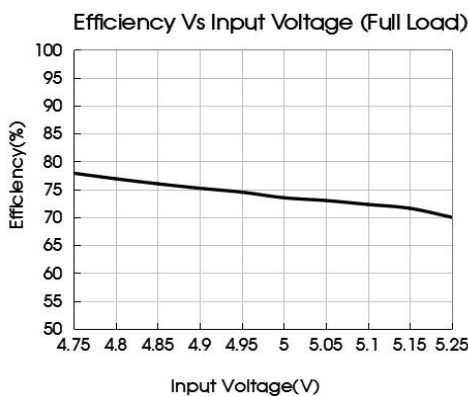
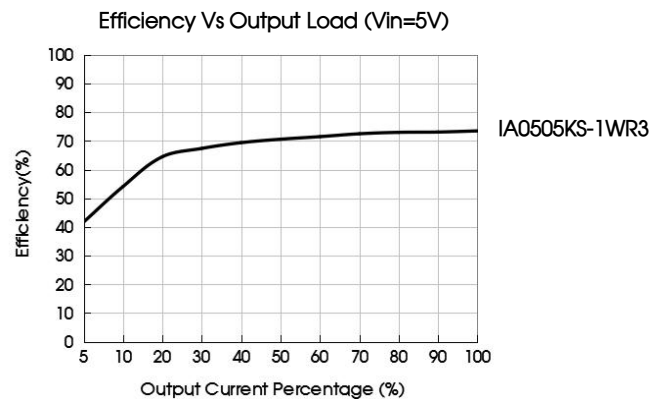


Fig. 1



IA0505KS-1WR3



IA0505KS-1WR3

Design Reference

1. Typical application circuit

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. 2.

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	4.7μF/16V
		±9VDC	1μF/16V
		+15VDC	1μF/25V
12VDC	2.2μF/25V	±5VDC	4.7μF/16V
		±9VDC	1μF/16V
		±12VDC	2.2μF/25V
24VDC	1μF/50V	±5VDC	4.7μF/16V
		±12VDC	2.2μF/25V
		+15VDC	1μF/25V

2. EMC compliance circuit

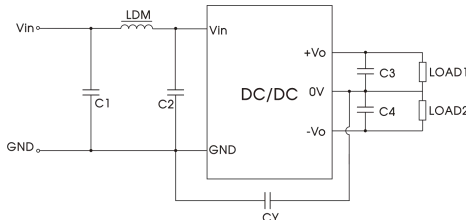


Fig. 3

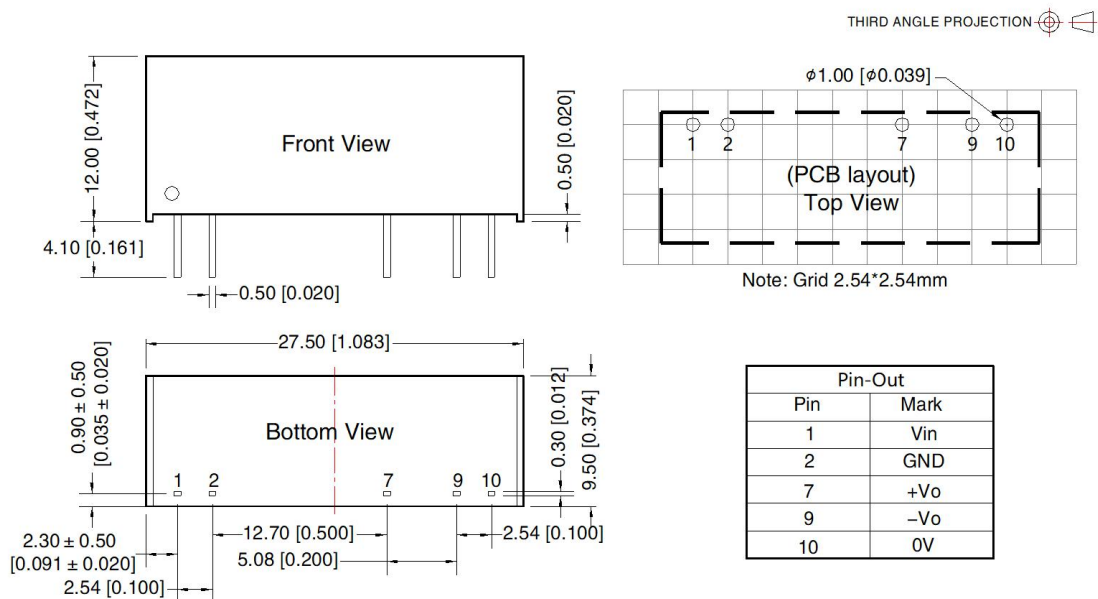
Table 2: Recommended EMC filter values

Emissions	C1/C2	4.7μF /50V
	CY	270pF /2kV
	C3/C4	Refer to the Cout in table 1
	LDM	6.8μH

3. 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: Grid 2.54\*2.54mm

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

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

Notes:

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