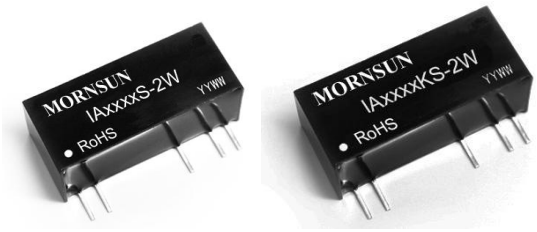
MORNSUN®

IA_KS-2W & IA_S-2W Series

2W, FIXED INPUT, ISOLATED & REGULATED DUAL OUTPUT DC-DC CONVERTER



Patent Protection RoHS

FEATURES

- SIP Package
- 1KVDC Isolation
- Temperature Range: -40°C to +85°C
- No Heat sink Required
- Internal SMD Construction
- No External Component Required
- Industry Standard Pinout
- RoHS Compliance

MODEL SELECTION

IA 2409 KS-2W

- Rated Power
- Package Style
- Output Voltage
- Input Voltage
- Product Series

APPLICATIONS

The IA_KS-2W & IA_S-2W Series are specially designed for applications where a group of polar power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

These products apply to:

1) Where the voltage of the input power supply is fixed (voltage variation ≤±5%);
2) Where isolation is necessary between input and output (isolation voltage ≤1000VDC);
3) Where the regulation of the output voltage and the output ripple noise are demanded.

PRODUCT PROGRAM

Model	Input		Output			Efficiency (%, Typ.)	Switching frequency (KHz, Typ)
	Voltage (VDC)		Voltage (VDC)	Current (mA)			
	Nominal	Nominal		Max.	Max.		
IA0505S-1W5	5	4.75-5.25	±5	±150	±15	69	100
IA0505S-2W			±5	±200	±20	70	55
IA0509KS-2W			±9	±100	±10	62	67
IA0512KS-2W			±12	±83	±9	64	67
IA0515KS-2W			±15	±67	±7	65	200
IA1205S-1W5	12	11.4-12.6	±5	±150	±15	70	83
IA1209KS-2W			±9	±100	±10	63	91
IA1212KS-2W			±12	±83	±9	65	91
IA1215KS-2W *			±15	±67	±7	68	200
IA2405S-1W5	24	22.8-25.2	±5	±150	±15	70	83
IA2409KS-2W			±9	±100	±10	63	100
IA2412KS-2W			±12	±83	±9	67	200
IA2415KS-2W			±15	±67	±7	69	91

* Designing.

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Line regulation	For Vin change of ±5%	--	--	±0.25	%
Load regulation	10% to 100% full load	--	--	±1	
Output voltage accuracy	100% full load	--	--	±3	
Temperature drift	100% full load	--	--	0.03	%/℃
Output ripple*	20MHz Bandwidth	--	20	30	mVp-p
Noise*	20MHz Bandwidth	--	75	150	

*Test ripple and noise by “parallel cable” method. See detailed operation instructions at DC-DC Application Notes.

COMMON SPECIFICATIONS

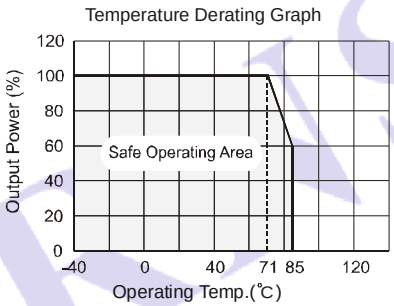
Item	Test conditions	Min.	Typ.	Max.	Unit
Storage humidity range		--	--	95	%
Operating temperature		-40	--	85	℃
Storage temperature		-55	--	125	
Lead temperature		--	20	30	
Temp. rise at full load	1.5mm from case for 10 seconds	--	--	300	
Cooling		Free air convection			
Case material		Plastic (UL94-V0)			
Short circuit protection	IAXX05S-2W/1W5	Continuous			
	Others*	--	--	1	s
MTBF		3500	--	--	K hours
Weight		--	5.2	--	g

*Supply voltage must be discontinued at the end of short circuit duration.

ISOLATION SPECIFICATIONS

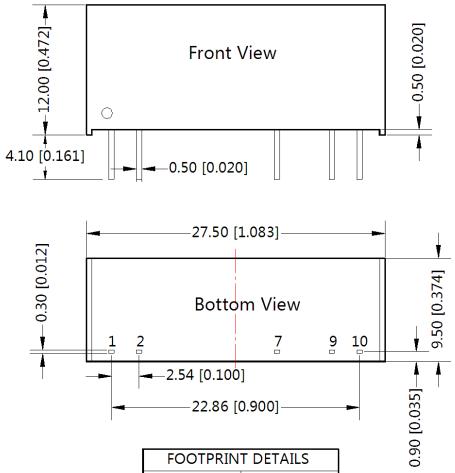
Item	Test conditions	Min	Typ.	Max.	Unit
Isolation voltage	Tested for 1 minute and 1mA max	1000	--	--	VDC
Isolation resistance	Test at 500VDC	1000	--	--	MΩ

TYPICAL CHARACTERISTICS



OUTLINE DIMENSIONS & PIN CONNECTIONS

MECHANICAL DIMENSIONS

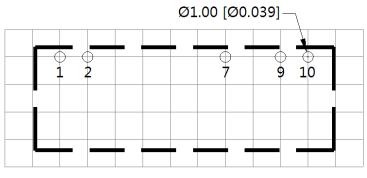


FOOTPRINT DETAILS	
Pin	Function
1	Vin
2	GND
7	+Vo
9	-Vo
10	0V

Note:
Unit :mm[inch]
Pin section tolerances:±0.10[±0.004]
General tolerances:±0.25[±0.01]

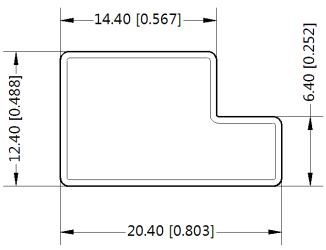
THIRD ANGLE PROJECTION

RECOMMENDED FOOTPRINT DETAILS



Note : grid : 2.54*2.54mm

TUBE PACKAGING DIMENSIONS



Note :
Unit:mm[inch]:±0.50[±0.02]
L=530[20.866] Tube Quantity:18pcs
L=220[8.661] Tube Quantity:7pcs
Inner carton(S): L*W*H=255*170*80
Outer carton(S): L*W*H=375*280*270, 6 inner cartons(S)
Inner carton(L): L*W*H=580*200*100
Outer carton(L): L*W*H=600*215*220, 2 inner cartons(L)
Outer carton(L): L*W*H=600*215*325, 3 inner cartons(L)

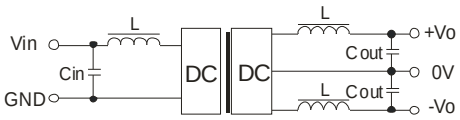
APPLICATION NOTE

1)Requirement on output load

To ensure this module can operate efficiently and reliably, a minimum load is specified for this kind of DC/DC converter in addition to a maximum load (namely full load). During operation, make sure the specified range of input voltage is not exceeded, the minimum output load ***could not be less than 10% of the full load***. If the actual output power is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load, or use our company's products with a lower rated output power (IA_KS –1W/IA_S-1W series).

2)Filtering

To get an extreme low ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, which may produce a more significant filtering effect. It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference (see figure 1).



(Figure 1)

In some circuits which are sensitive to noise and ripple, a filtering capacitor may be added to the DC/DC output end and input end to reduce the noise and ripple. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees the EXTERNAL CAPACITOR TABLE (see Table 1).

EXTERNAL CAPACITOR TABLE (Table 1)

Vin (VDC)	Cin (μF)	Vout (VDC)	Cout (μF)
5	4.7	±5	4.7
12	2.2	±9	2.2
24	1	±12	1
--	--	±15	0.47

It's not recommend to connect any external capacitor in the application field with less than 0.5 watt output.

3)Input Over-voltage Protection Circuit

The simplest device for input over-voltage protection is a linear voltage regulator with overheat protection that is connected to the input end in series (Figure 2).

(Figure 2)

4)When the environment temperature is higher than 71°C, the product output power should be less then 60% of the rated power.

5)It is not recommended to increase the output power capability by connecting two or more converters in parallel. The product is not hot-swappable.

6)Use dual output simultaneously, forbid opening output pin(0V) to use as single output.

Note:

1. Operation under minimum load will not damage the converter; However, they may not meet all specifications.
2. Max. Capacitive Load is tested at nominal input voltage and full load.
3. Unless otherwise noted, All specifications are measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load.
4. In this datasheet, all test methods are based on our corporate standards.
5. All characteristics are for listed models, and non-standard models may perform differently. Please contact our technical support for more detail.
6. Please contact our technical support for any specific requirement.
7. Specifications of this product are subject to changes without prior notice.

MORNSUN Science & Technology Co.,Ltd.
Address: No. 5, Kehui St. 1, Kehui development center, Science Ave., Guangzhou Science City, Luogang district, Guangzhou,P.R.China.
Tel: 86-20-38601850
Fax:86-20-38601272
E-mail: info@mornsun.cn
Http://www.mornsun-power.com