



IA_KS-2W & IA_S-2W Series

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

multi-country patent protection **RoHS**

FEATURES

SIP Package

1KVDC Isolation

Temperature Range: -40°C to +85°C

No Heatsink Required

No External Component Required

Industry Standard Pinout

RoHS Compliance

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:

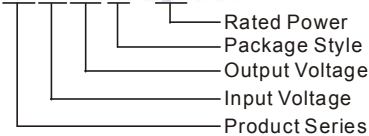
- 1) Where the voltage of the input power supply is fixed (voltage variation $\leq \pm 5\%$);
- 2) Where isolation is necessary between input and output (isolation voltage $\leq 1000\text{VDC}$);
- 3) Where the regulation of the output voltage and the output ripple noise are demanded.

These products don't apply to:

- 1) Where the input supply voltage varied (variation $\geq \pm 5\%$), otherwise our company's WRA series is recommended;
- 2) When the actual output power is less than 2W, the IA_KS-1W series are recommended.

MODEL SELECTION

IA 2409 KS-2W



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PRODUCT PROGRAM

Part Number	Input		Output			Efficiency (% Typ)	UL
	Voltage (VDC)		Voltage (VDC)	Current (mA)			
	Nominal	Range		Max	Nominal		
IA0505S-1W5	5	4.75~5.25	± 5	± 150	± 15	69	
IA0509KS-2W			± 9	± 100	± 10	62	
IA0512KS-2W			± 12	± 83	± 9	64	
IA0515KS-2W			± 15	± 67	± 7	65	
IA1205S-1W5	12	11.4~12.6	± 5	± 150	± 15	70	
IA1209KS-2W			± 9	± 100	± 10	63	
IA1212KS-2W			± 12	± 83	± 9	65	
IA1215KS-2W*			± 15	± 67	± 7	68	
IA2405S-1W5	24	22.8~25.2	± 5	± 150	± 15	70	
IA2409KS-2W			± 9	± 100	± 10	63	
IA2412KS-2W			± 12	± 83	± 9	67	
IA2415KS-2W			± 15	± 67	± 7	69	

* Designing.

Note: The IA_KS-1W series also are available in our company.

COMMON SPECIFICATION

Operating temperature range	-40°C to +85°C
Storage temperature range	-55°C to +125°C
Storage humidity range	$\leq 95\%$
Cooling	Free air convection
Lead temperature	300°C (1.5mm from case for 10 seconds)
Temperature rise at full load	25°C Max, 15°C Typ
Short circuit protection	1 second
Case material	Plastic (UL94-V0)
MTBF	>3,500,000 hours
Weigh	5.2g

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min	Typ	Max	Units
Output power		0.2		2	W
Line regulation	For V_{in} 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	%/°C
Output ripple	20MHz Bandwidth		20	30	mVp-p
Noise	20MHz Bandwidth		75	150	
Switching frequency	Full load, nominal input		75		KHz

Note:

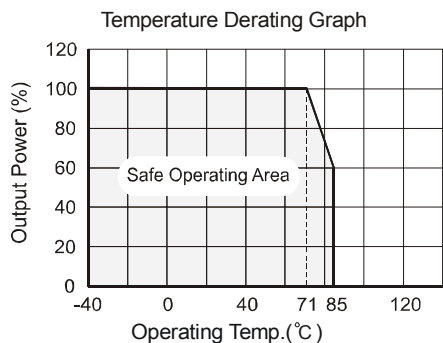
1. All specifications measured at $T_A=25^\circ\text{C}$, humidity <75%, nominal input voltage and rated output load unless otherwise specified.

2. See below recommended circuits for more details.

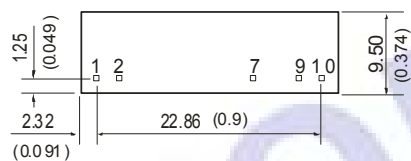
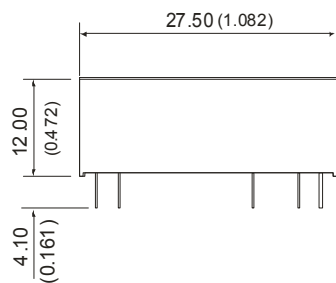
ISOLATION SPECIFICATIONS

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

TYPICAL CHARACTERISTICS



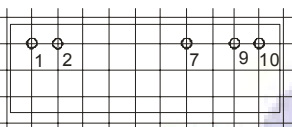
OUTLINE DIMENSIONS & PIN CONNECTIONS



Note:
Unit:mm(inch)
Pin section:0.50*0.30mm(0.0197*0.012inch)
General tolerances:±0.25mm (±0.010inch)

RECOMMENDED FOOTPRINT
Bottom view, grid:2.54mm(0.1inch)
ø diameter:1mm(0.0391inch)

Dual output



FOOTPRINT DETAILS

Pin	Function
1	Vin
2	GND
7	+Vo
9	-Vo
10	OV

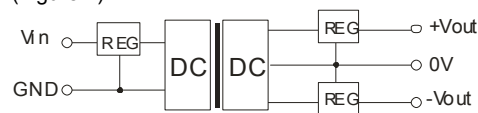
In some circuits which are sensitive to noise and ripple, a filtering capacitor may be added to the DC/DC output end and input end to reduce the noise and ripple. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For 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 (uF)	Vout (VDC)	Cout (uF)
5	4.7	±5	4.7
12	2.2	±9	2.2
24	1	±12	1
--	--	±15	0.47

Output Voltage Regulation and Over-voltage Protection Circuit

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



(Figure 2)

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

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

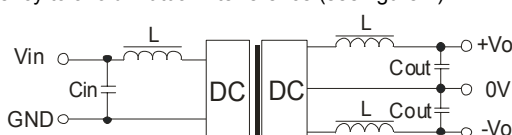
APPLICATION NOTE

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 is not less than 10% of the full load, that this product should never be operated under no 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 series).

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)