MORNSUN
Industrial DC&AC converter professional

IA_KP-*W Series

1W/2W/3W, FIXED INPUT, ISOLATED & REGULATED DUAL OUTPUT DC-DC CONVERTER

multi-country patent protection **RoHS**

FEATURES

Low ripple
Good dynamic feature
1KVDC Isolation
DIP Package
Temperature Range: -40°C to +85°C
UL94-V0 Package
No Heatsink Required
No External Component Required
Internal SMD construction
RoHS Compliance

APPLICATIONS

The IA_KP-3W & IA_KP-2W & IA_KP-1W 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.

MODEL SELECTION

IA0 5 12KP -3W

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

PRODUCT PROGRAM

Part Number	Input Voltage (VDC) Nominal	Input Voltage (VDC) Range	Output Voltage (VDC)	Output Current (mA) Max	Output Current (mA) Min	Efficiency (%, Typ)
IA0512KP-1W	5	4.75-5.25	±12	±42	±5	64
IA0515KP-1W			±15	±33	±4	65
IA0509KP-2W *			±9	±100	±10	62
IA0512KP-2W			±12	±83	±9	63
IA0515KP-2W			±15	±67	±7	64
IA0512KP-3W			±12	±100	±10	64
IA0515KP-3W			±15	±100	±10	62
IA1212KP-1W *	12	11.4-12.6	±12	±42	±5	64
IA1215KP-1W *			±15	±33	±4	65
IA1209KP-2W			±9	±100	±10	63
IA1212KP-2W			±12	±83	±9	65
IA1215KP-2W *			±15	±67	±7	66
IA1212KP-3W *			±12	±100	±10	65
IA1215KP-3W			±15	±100	±10	68
IA2412KP-1W *	24	22.8-25.2	±12	±42	±5	64
IA2415KP-1W			±15	±33	±4	65
IA2409KP-2W *			±9	±100	±10	63
IA2412KP-2W			±12	±83	±9	66
IA2415KP-2W			±15	±67	±7	67
IA2412KP-3W			±12	±100	±10	68
IA2415KP-3W *			±15	±100	±10	69

* Designing.

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

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min	Typ	Max	Units
Line regulation	For Vin change of ±5%(1W&2W)			±0.25	%
	For Vin change of ±5%(3W)			±0.3	
	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(1W)		10	20	mVp-p
	20MHz Bandwidth(2W&3W)		20	40	
Output Noise*	20MHz Bandwidth(1W&2W)		50	150	
	20MHz Bandwidth(3W)		150	300	
Switching frequency	Full load, nominal input		75		KHz

*Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

Note:
1. All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. See below recommended circuits for more details.

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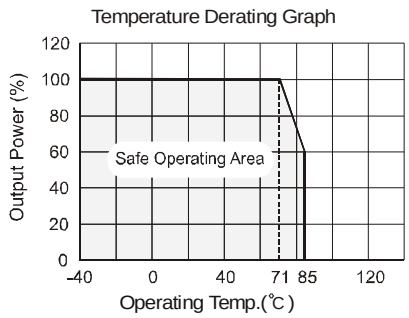
COMMON SPECIFICATION

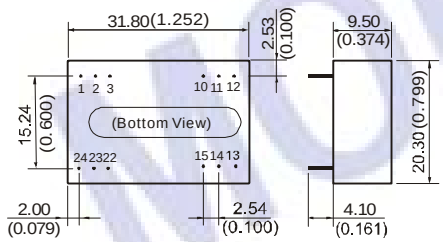
Item	Test conditions	Min	Typ	Max	Units
Storage humidity				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Temp. rise at full load			20	30	
Lead temperature)	1.5mm from case for 10 seconds			300	
Short circuit protection*				1	s
Cooling		Free air convection			
Case material		Plastic(UL94-V0)			
MTBF		3500			K hours
Weight			11		g
*Supply voltage must be discontinued at the end of short circuit duration.					

TYPICAL CHARACTERISTICS

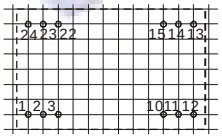


OUTLINE DIMENSIONS & PIN CONNECTIONS

First Angle Projection



RECOMMENDED FOOTPRINT
Top view,grid:2.54mm(0.1inch)
diameter:1.00mm(0.039inch)



FOOTPRINT DETAILS

Pin	Duals
1,24	Vin
2,23	-Vo
3,10,15,22	0V
11,14	+Vo
12,13	GND

Note:
Unit:mm(inch)
Pin diameter:0.50mm (0.020inch)
Pin diameter tolerances:±0.10mm(±0.004inch)
General tolerances:±0.25mm(±0.010inch)

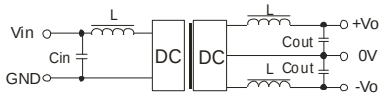
APPLICATION NOTE

Requirement on output load

To ensure this module can operate efficiently and reliably, During operation, the minimum output load is not less than 10% of the full load, and 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.

Recommended circuit

If you want to further decrease the input/output ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, see (Figure 1).



(Figure 1)

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. 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 (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

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

Overload Protection

Under normal operating conditions, the output circuit of these products has no protection against over-current and short-circuits. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit.

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)

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

No parallel connection or plug and play.

НИОКР СИСТЕМС

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