MORNSUN
mini power professional

VFA_MP-5W Series

2:1 WIDE INPUT ISOLATED & REGULATED
5W OUTPUT DUAL OUTPUT
24 DIP PACKAGE

RoHS
multi-country patent protection

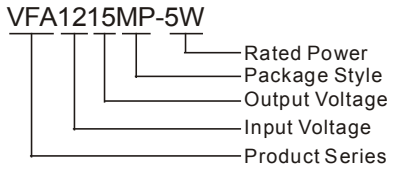
FEATURES

- Wide (2:1) Input Range
- 1500VDC Isolation
- Efficiency up to 85%
- Operating Temperature: -40°C~+85°C
- Dual Output
- Metal Shielding Package
- No Heat Sink Required
- 24PIN Industry Standard Pin out
- MTBF>1,000,000 hours
- Continuous Short-Circuit Protection
- RoHS Compliance

APPLICATIONS

The VFA_MP-5W Series are specially designed for applications where a wide range input voltage 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 wide range (voltage range: 2:1);
2) Where isolation is necessary between input and output
(Isolation Voltage =1500VDC);
3) Where the regulation of the output voltage and the output ripple noise are demanded.

MODEL SELECTION



PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (%, Typ)	Package Style
	Voltage (VDC)			Voltage (VDC)	Current (mA)			
	Nominal	Range	Max*		Max	Min**		
VFA1205MP-5W	12	9~18VDC	20	±5	±500	±50	75	DIP
VFA1212MP-5W	12	9~18VDC	20	±12	±210	±21	77	DIP
VFA1215MP-5W	12	9~18VDC	20	±15	±166	±17	79	DIP
VFA1224MP-5W	12	9~18VDC	20	±24	±105	±11	81	DIP
VFA2405MP-5W	24	18~36VDC	40	±5	±500	±50	75	DIP
VFA2412MP-5W	24	18~36VDC	40	±12	±210	±21	78	DIP
VFA2415MP-5W	24	18~36VDC	40	±15	±166	±17	82	DIP
VFA2424MP-5W	24	18~36VDC	40	±24	±105	±11	85	DIP
VFA4805MP-5W	48	36~72VDC	80	±5	±500	±50	78	DIP
VFA4812MP-5W	48	36~72VDC	80	±12	±210	±21	81	DIP
VFA4815MP-5W	48	36~72VDC	80	±15	±166	±17	84	DIP
VFA4824MP-5W	48	36~72VDC	80	±24	±105	±11	85	DIP

* Input voltage can't exceed this value, or will cause the permanent damage.

** The load shouldn't be less than 10%,otherwise ripple will increase dramatically.

ISOLATION SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Flash tested for 60 seconds	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min	Typ	Max	Units
5W Output Power	See below products program			5	W
Positive Voltage Accuracy	Refer to recommended circuit		±1	±3	%
Negative Voltage Accuracy	Refer to recommended circuit		±3	±5	
Load Regulation	From 10% to 100% load		±0.5	±1	
Line Regulation	Input voltage from low to high		±0.2	±0.5	
Temperature Drift(Vout)	Refer to recommended circuit		0.02		%/°C
Ripple	20Hz-300KHz bandwidth		30	50	mVp-p
Noise	DC-20MHz bandwidth		100	300	
Switching Frequency	100% load,nominal Input voltage		300		KHz

Note:
1.All specifications measured at T_A=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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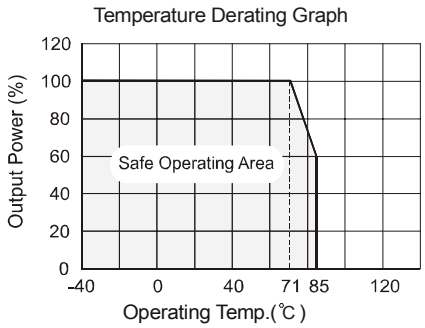
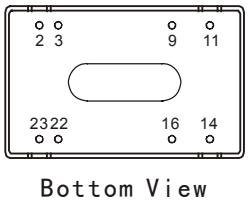
COMMON SPECIFICATION

Output Short Circuit Protection	Continuous 1 hour
Temperature Rise at Full Load	40°C (TYP)
Cooling	Free Air Convection
Operating Temperature Range	-40°C~+85°C
Storage Temperature Range	-55°C ~+125°C
Lead Temperature***	300°C (1.5mm from case for 10 seconds)
Storage Humidity Range	≤ 95%
Case Material	Metal
MTBF	>1,000,000 hours
***Lead Temperature 1.5mm from case for 10 seconds.	

TYPICAL CHARECTERISTICS

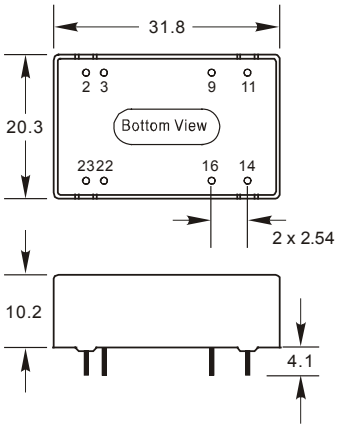


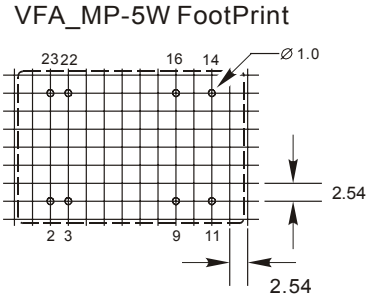
FOOTPRINT DETAILS



Pin	Function
2,3	GND
14	+Vo
11	-Vo
9,16	0V
22,23	Vin

OUTLINE DIMENSIONS & RECOMMENDED FOOTPRINT





Note: All Pins on a 2.54mm pitch; All Pin diameters are 0.50 mm(Tolerance:±0.10); All dimensions in mm.

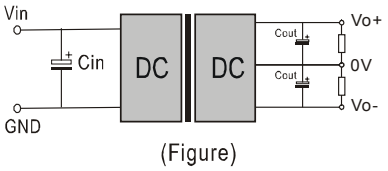
APPLICATION NOTE

Recommended Circuit

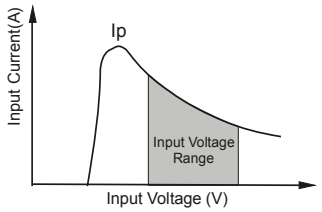
All the VFA_MP-5W Series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load. Never be tested under no load (See Figure 1 & 2). If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance should not be too high.(See table 1).

Input Current

When it is used in unregulated power supply, be sure that the fluctuating range of the power supply and the rippled voltage do not exceed the module standard. Input current of power supply should afford the startup current of this kind of DC/DC module. (See figure 2)



(Figure)



(Figure 2)

External Capacitor

Although this series of DC/DC converter can work without external capacitor, in order to keep an optimum performance, however, it needs external capacitor. (See Table 1)

The products cannot be used in parallel and in hot plug.

External Capacitor Table(See Table 1)

Vin	Cin	Vout	Cout
12V	100uF	5V	100uF each 1A Current
24V	100uF	12V	
48V	100uF	15V	
		24V	

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