Technical Specification

EVP3F Series (SIP6)

Fixed Input, 3W DC/DC Converters

FEATURES

- Cost-effective
- Efficiency up to 88%
- 1.5KVDC/1min. isolation
- Fixed input : 12VDC (±10%)
- Single isolated output: 5, 12VDC
- Fixed switching frequency
- Industrial standard footprint: SIP6
- Operating temperature range: -40°C to +85°C
- All material compliance with UL94V-0
- Fully encapsulated, high reliability
- MTBF up to 3.5M hours
- RoHS Compliance

PRODUCT OVERVIEW

The EVP3F modules are highly reliable, and efficient isolated DC/DC converter with industrial potted module technology. Wide temperature range and encapsulated package is ideal for industrial applications. Intended target markets include industrial control, power electronics, instrumentations, medical systems, transportation where power modules must meet rugged environmental requirements, impact size and isolated output voltages are required.

The EVP3F modules provide voltage isolation from input to output up to 1.5KVDC. The operation temperature range is from -40℃ to +85℃ . These modules are ideal for applications that do not require any heat sink or forced air cooling.

The EVP3F series are designed to IEC/EN 62368-1 safety standards.

Models Selections

Basic Models	Input Voltage [VDC]	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency Typ. [%]	Capacitive Load Max. [μF]	Package [inch]
EVP3F12S05	12	10.8-13.2	5	600	85	220	0.77"×0.28"×0.40" SIP6
EVP3F12S12	12	10.8-13.2	12	250	88	220	

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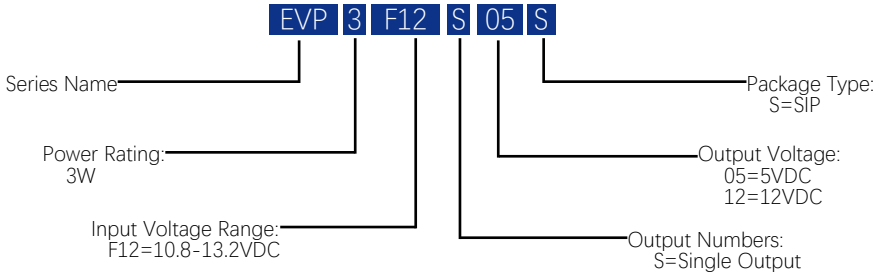
Model Numbering



Absolute Maximum Ratings

Parameters	Conditions	Min.	Typ.	Max.	Units
Input Voltage				18	VDC
Operating Environment Temperature	⩾ 71℃ with derating	-40		85	°C
Storage Temperature Range		-50		125	°C
Soldering Temperature	Lead temperature, 1.5mm from case for 10 seconds			300	°C

General Specifications

Parameters	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	Input to output (test for 1 min.)	1500			VDC
	Input to case (test for 1 min.)	1000			VDC
	Output to case (test for 1 min.)	1000			VDC
Isolation Resistance (Viso=1000VDC)	Input to output	1000			MΩ
Isolation Capacitance	Input to output, 100KHz/0.1V		20		pF
Case Temperature Above Ambient			25		℃
Switching Frequency			250		KHz
Relative Humidity				95	%
Cooling	Free air convection				

Input Specifications					
Parameters	Conditions	Min.	Typ.	Max.	Units
Input Voltage Range	See the Model Selection on page 1.				
Input Current @ No Load			5	15	mA
Input Current @ Min. Line			271		mA
Reflected Ripple Current			15		mA p-p

Output Specifications					
Parameters	Conditions	Min.	Typ.	Max.	Units
Output Power				3	W
Vout Accuracy	See voltage accuracy envelope on page 4.				
Line Regulation				±1.2	%/%
Load Regulation	5 Vout type		12		%
	12 Vout type		8		%
Tempeature Coefficient				±0.03	% of Vout/℃
Ripple & Noise ①			75	150	mV
Minimum Load ②		0			%
Output Short Protection	Continuous short protection, auto-recover				

Notes:

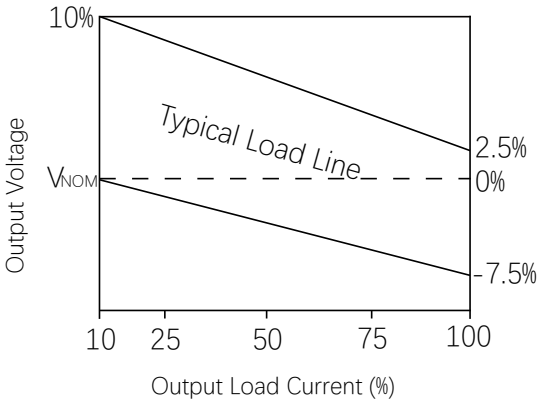
① For output ripple & noise test conditions, please see output ripple & noise in technical notes on page 7 for details.

② Operating below 10% load will not harm the converter, but specifications may not be met, such as the output voltage may be higher than rated output voltage.

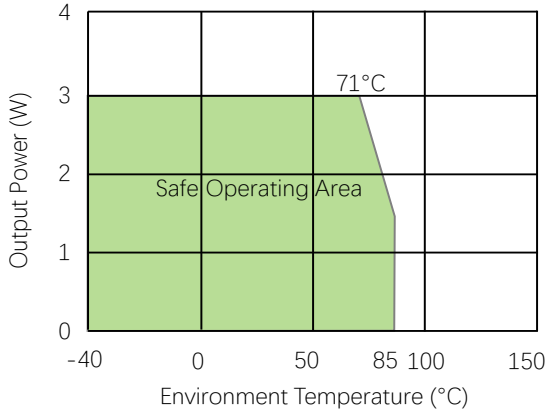
All specifications are tested at 25 °C ambient temperature, nominal input voltage, rated output current conditions unless otherwise specified.

Performance Data

VOUT ACCURACY ENVELOPE

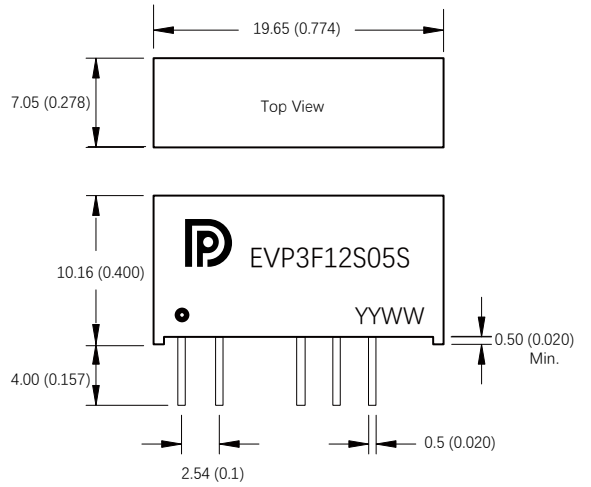


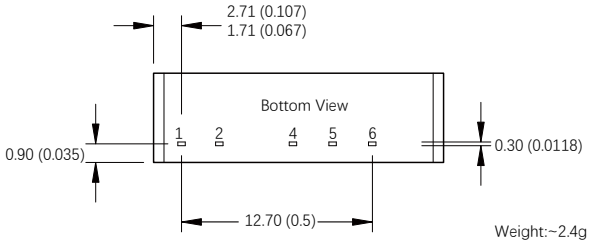
TEMPERATURE DERATING



Mechanical Specifications

MECHANICAL DIMENSIONS

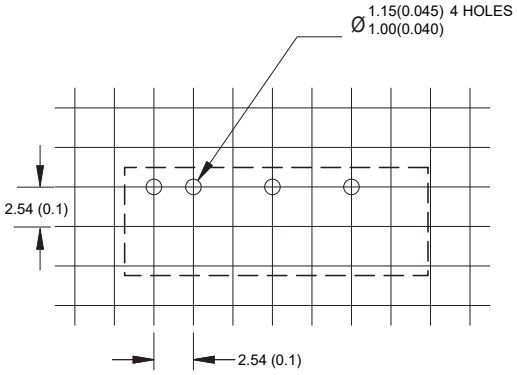




Unless otherwise specified, all dimensions are in mm±0.25 (inches ±0.01).

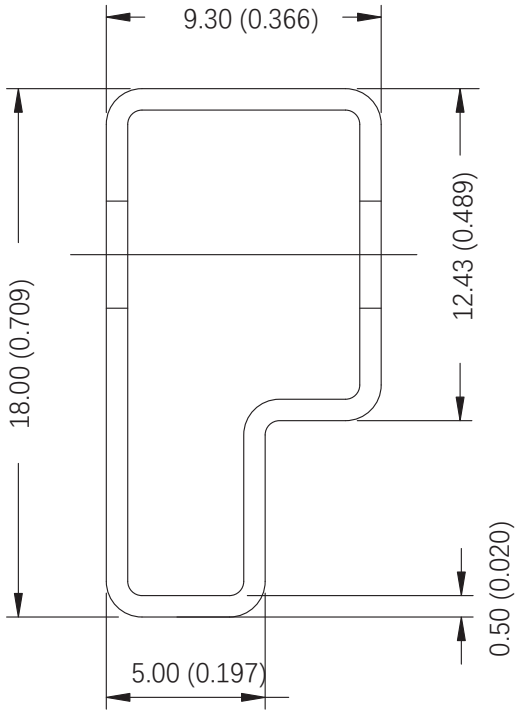
PIN Connections	
Pin	Function
1	+Vin
2	-Vin
4	-Vout
5	No Pin
6	+Vout

RECOMMENDED FOOTPRINT DETAILS



Unless otherwise specified, all dimensions are in mm ±0.5 (inches±0.02).

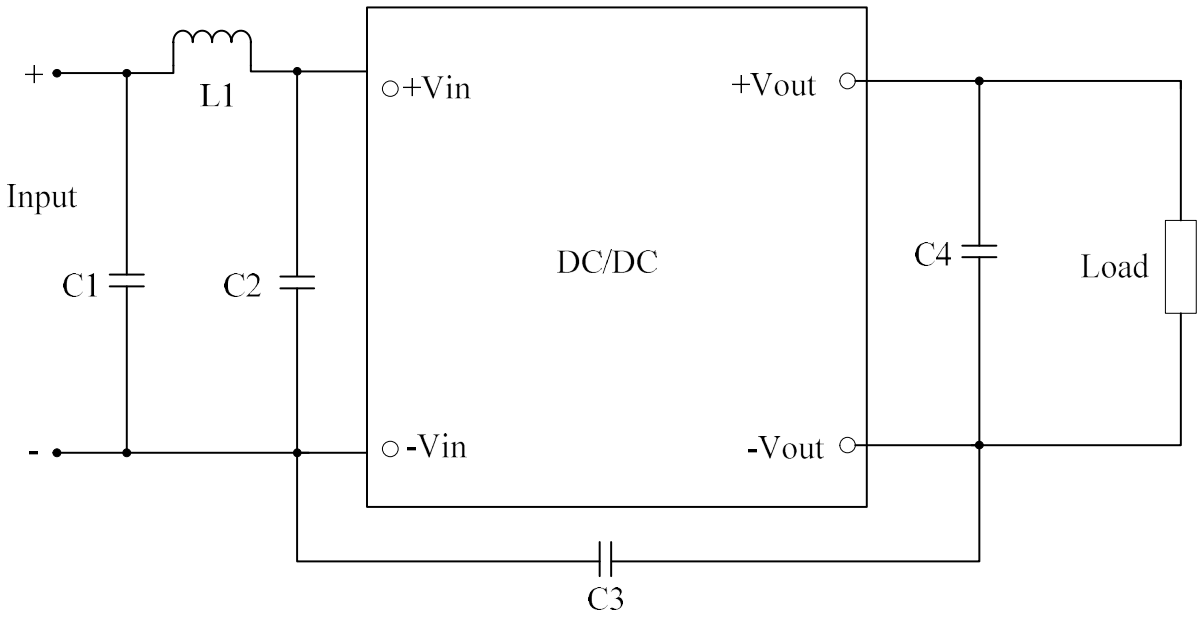
TUBE OUTLINE DIMENSIONS



Unless otherwise specified, all dimensions are in mm ±0.5 (inches±0.02).
Tube length : 520mm ±2mm (20.87)
Tube quantity : 25pcs

Emissions Performance

Density Power measures its products for emissions against the CISPR32/EN55032 standards. The maximum output power of the module is 3W and the conduction limits can meet class B.



Conducted Emissions Test Circuit

Conducted Emissions Parts List

REFERENCE	DESCRIPTION	REFERENCE	DESCRIPTION
C1	10μF	C3	2.2nF
C2	4.7μF	C4	According to capacitive loading in table on page 1
L1	6.8μH		

Technical Notes

INPUT FUSING

Certain applications may require fuse at the inputs of power conversion components. Fuses should also be used when there is possibility of sustained input voltage reversal which is not current limited. The EVP3F modules are not internally fused. We strongly recommend a slow blow fuse to be used in the ungrounded input supply line.

For safety agency approvals, the installer must install the converter in compliance with the end user safety standard.

ISOLATION VOLTAGE

The EVP3F series are 100% production tested at their specified isolation voltage. Parts can be expected to withstand the specified test voltage several times. But it is well known that repeated high-voltage isolation testing will degrade isolation capability which is depending on materials, construction and environment. Thus, the number of tests should be strictly limited and we strongly advise against repeated high voltage isolation testing.

OUTPUT RIPPLE & NOISE

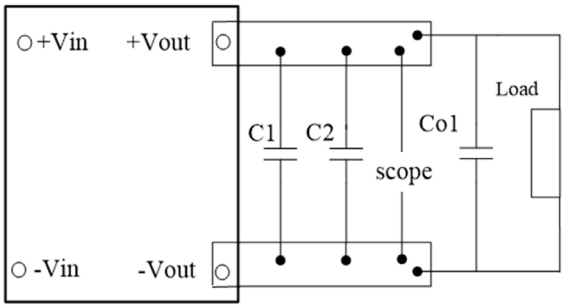


Figure 1 Output Ripple & Noise

These EVP3F series' output ripple and noise is measured at the rated input voltage and output current, along with 10uF and 0.1uF MLCC are used in parallel with appropriate voltage ratings. The oscilloscope bandwidth is set to 20MHz.

External output capacitors are required to reduce the ripple & noise. The output capacitors should be low ESR and appropriate frequency response with appropriate voltage ratings, and must be located as close to the converters as possible, also particular load and layout must be taken into consideration.

This product is subject to the following operating requirements and the Life and Safety Critical Application Sales Policy:
Refer to: http://www.densitypower.com