PDENSITYPOWER

Technical Specification EVP2F Series (SIP6)

Fixed Input, 2W DC/DC Converters

FEATURES

- Cost-effective
- Efficiency up to 85%
- 1.5KVDC isolation
- Fixed input : 3.3, 5, 12, 24VDC (±10%)
- Single and bipolar isolated outputs: 3.3, 5, 9, 12, 15, 24, ±3.3, ±5, ±9, ±12, ±15, ±24VDC
- Fixed switching frequency
- Industrial standard footprint: SIP6
- Operating temperature range: -40°C to +105°C
- All material compliance with UL94V-0
- Fully encapsulated, high reliability
- MTBF up to 3.5M hours
- RoHS Compliance



PRODUCT OVERVIEW

The EVP2F 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 EVP2F modules provide voltage isolation from input to output up to 1.5KVDC. The operation temperature range is from -40 $^{\circ}$ C to +105 $^{\circ}$ C. These modules are ideal for applications that do not require any heat sink or forced air cooling.

The EVP2F 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]
EVP2F03S03	3.3	2.9-3.6	3.3	400	82	4000	
EVP2F03S05	3.3	2.9-3.6	5	400	85	4000	
EVP2F03S09	3.3	2.9-3.6	9	222	85	2000	
EVP2F03S12	3.3	2.9-3.6	12	167	85	2000	
EVP2F05S03	5	4.5-5.5	3.3	400	84	4000	0 77"×0 28"×0 40"
EVP2F05S05	5	4.5-5.5	5	400	85	4000	0.11 ×0.20 ×0.40
EVP2F05S12	5	4.5-5.5	12	167	85	2000	SIP6
EVP2F05S15	5	4.5-5.5	15	133	85	1000	
EVP2F05B05	5	4.5-5.5	±5	±200	85	±1000	
EVP2F05B12	5	4.5-5.5	±12	±83	85	±680	
EVP2F05B15	5	4.5-5.5	±15	±67	85	±560	



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Basic Models	Input Voltage [VDC]	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency Typ. [%]	Capacitive Load Max. [µF]	Package [inch]
EVP2F12S03	12	10.8-13.2	3.3	400	84	4000	
EVP2F12S05	12	10.8-13.2	5	400	85	4000	
EVP2F12S09	12	10.8-13.2	9	222	85	2000	
EVP2F12S12	12	10.8-13.2	12	167	85	2000	
EVP2F12S15	12	10.8-13.2	15	133	85	1000	
EVP2F12S24	12	10.8-13.2	24	83	85	680	
EVP2F12B05	12	10.8-13.2	±5	±200	85	±1000	
EVP2F12B09	12	10.8-13.2	±9	±111	85	±1000	
EVP2F12B12	12	10.8-13.2	±12	±83	85	±680	
EVP2F12B15	12	10.8-13.2	±15	±67	85	±560	
EVP2F12B24	12	10.8-13.2	±24	±42	85	±470	0 77"×0 28"×0 40"
EVP2F24S03	24	21.6-26.4	3.3	400	85	4000	0.11 ×0.20 ×0.40
EVP2F24S05	24	21.6-26.4	5	400	85	4000	SIP6
EVP2F24S09	24	21.6-26.4	9	222	85	2000	
EVP2F24S12	24	21.6-26.4	12	167	85	2000	
EVP2F24S15	24	21.6-26.4	15	133	85	1000	
EVP2F24S24	24	21.6-26.4	24	83.3	85	680	
EVP2F24B03	24	21.6-26.4	±3.3	±303	84	±1000	
EVP2F24B05	24	21.6-26.4	±5	±200	85	±1000	
EVP2F24B09	24	21.6-26.4	±9	±111	85	±1000	
EVP2F24B12	24	21.6-26.4	±12	±83	85	±680	
EVP2F24B15	24	21.6-26.4	±15	±67	85	±560	
EVP2F24B24	24	21.6-26.4	±24	±41.65	85	±470	

Model Numbering



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Absolute Maximum Ratings					
Parameters	Conditions	Min.	Тур.	Max.	Units
	3.3Vin type			5.5	VDC
	5Vin type			9	VDC
input voltage	12Vin type			18	VDC
	24Vin type			30	VDC
Operating Environment Temperature	≥ 85°C with derating	-40		105	°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.	Тур.	Max.	Units
leclation Valtage	Input to output	1500			VDC
(Tost for 1 minuto)	Input to case	1000			VDC
	Output to case	1000			VDC
lsolation Resistance (Viso=1000VDC)	Input to output	1			GΩ
Isolation Capacitance	Input to output, 100KHz/0.1V		20		рF
Case Temperature Above Ambient			25		°C
Switching Frequency			250		KHz
Relative Humidity		5		95	%
Cooling	Free air convection				
Input Specifications					
Parameters	Conditions	Min.	Тур.	Max.	Units
Input Voltage Range	See the Model Selection on page	e 1-2.			
	3.3 Vin		5	15	mA
Input Current @ No Load	5Vin		5	15	mA
	12Vin		5	15	mA
	24Vin		5	15	mA
	3.3 Vin		740		mA
Input Current @ Min Line	5Vin		506		mA
Imput Current @ Min. Line	12Vin		208		mA
	24Vin		104		mA
Reflected Ripple Current			15		mA p-p



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Output Specifications							
Parameters	Conditions	Min.	Тур.	Max.	Units		
Output Power				2	W		
Vout Accuracy	See voltage accuracy envelope on page 4.						
Line Degulation	3.3 Vout type			±1.5	%/%		
Line Regulation	Other types			±1.2	%/%		
	3.3 Vout type		18		%		
	5 Vout type		12		%		
Load Degulation	9 Vout type		9		%		
LUAU REGUIATION	12 Vout type		8		%		
	15 Vout type		7		%		
	24 Vout type		6		%		
Ripple & Noise $^{\textcircled{1}}$			75	200	mV		
Minimum Load [©]		0			%		
Output Short Protection	Continuous short protection, auto	o-recover					
Notes:							

 For output ripple & noise test conditions, please see output ripple & noise in technical notes on page 8 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.



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Performance Data





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Mechanical Specifications

MECHANICAL DIMENSIONS



*Pin is not fitted on single output modules. Unless otherwise specified, all dimensions are in $mm \pm 0.25$ (inches ± 0.01).

PIN Connections						
Single	Output	Bipolar Output				
Pin	Function	Pin	Function			
1	+Vin	1	+Vin			
2	-Vin	2	-Vin			
4	-Vout	4	-Vout			
6	+Vout	5	GND			
		6	+Vout			

RECOMMENDED FOOTPRINT DETAILS



*Hole is not required for single output modules. 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 ± 2 mm (20.87) Tube quantity : 25pcs



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Emissions Performance

Density Power measures its products for emissions against the CISPR32/EN55032 standards. The maximum output power of the module is 2W 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		

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These EVP2F 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

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

The EVP2F 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

oscilloscope bandwidth is set to 20MHz.

consideration.

testing.

ISOLATION VOLTAGE

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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 EVP2F 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.

OUTPUT RIPPLE & NOISE



Figure 1 Output Ripple & Noise for Single Output



Figure 2 Output Ripple & Noise for Bipolar Outputs



This product is subject to the following operating requirements and the Life and Safety Critical Application Sales Policy:

Refer to: http://www.densitypower.com

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Specifications are subject to change without prior notice.

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