

EPM6-1V

1 Watt isolated DC-DC converter



Product features

- 1 Watt isolated DC-DC converter
- Input voltage: 5 Vdc, 12 Vdc, and 24 Vdc
- Efficiency up to 84%
- Isolation voltage: 1 kVdc and 2 kVdc
- SIP4 package
- Operating ambient temperature from -40 °C to +90 °C
- No minimum load required
- IEC62368-1/ EN55032&35 certified

Applications

- Computing/telecom
- Distributed power architectures
- Servers and workstations
- LAN /WAN applications
- Data processing applications
- Industrial IoT equipment, sensors
- Power supply, battery backup
- Wireless TX/RX modules
- Renewable energy products

Environmental compliance



Ordering part number

	<u>EPM</u>	<u>6</u>	<u>05</u>	<u>1V</u>	<u>3R3</u>	<u>303</u>	<u>S</u>	<u>H</u>
Eaton converter	_____	_____	_____	_____	_____	_____	_____	_____
Package type/size code	_____	_____	_____	_____	_____	_____	_____	_____
Maximum rated input voltage	_____	_____	_____	_____	_____	_____	_____	_____
Version code	_____	_____	_____	_____	_____	_____	_____	_____
Output voltage (maximum, R=decimal point)	_____	_____	_____	_____	_____	_____	_____	_____
Output current (maximum, in mA)	_____	_____	_____	_____	_____	_____	_____	_____
S = single output, D = dual output	_____	_____	_____	_____	_____	_____	_____	_____
R= Standard isolation voltage, H= High isolation voltage	_____	_____	_____	_____	_____	_____	_____	_____



Powering Business Worldwide

Specifications

	Parameter	Conditions	Minimum	Typical	Maximum	Unit
Input	Input filter			Internal capacitors		
	Input voltage range		-10		+10	%
Output	Efficiency			Selection guide		
	Minimum load		0			%
	Line regulation	LL-HL at 100% load		1.2% typ. @1% of Vin		
	Load regulation (10-100% Load)	Vout = 3.3 Vdc, 5 Vdc			15	%
		Vout = 12 Vdc, 15 Vdc			10	%
	Voltage accuracy		-5		+5	%
	Operating frequency	100% Load at Nominal Vin	50			kHz
	Ripple & noise ¹				100	mVp-p
Environment	Operating temperature (with derating)	Vin = 5 Vdc, 12 Vdc	-40		+95	°C
		Vin = 24 Vdc	-40		+90	°C
	Storage temperature		-55		+125	°C
	Relative humidity		5		95	%RH
	Vibration			MIL-STD-202G		
Function	Isolation voltage 1 min., Input to Output	R	1			kVdc
		H	2			kVdc
	Isolation resistance		10			GΩ
	Isolation capacitance			20		pF
	MTBF (MIL-HDBK-217F)	+25 °C		13,100		khours
		+85 °C		8,100		khours
	Certification			IEC62368-1/ EN55032&35		
Physical	Dimension			0.457 x 0.402 x 0.236 inch		
	Weight			1.4 g		
	Case material			UL94V-0 black plastic		
	Potting material			Epoxy (UL94V-0)		
EMC	EMI	EN 55032		Class A/B with external circuit		
	ESD	IEC 61000-4-2 Air ± 8 kV; Contact ± 6 kV		Criteria A		
	RS	IEC 61000-4-3, 10 V/m		Criteria A		
	EFT	IEC 61000-4-4, ± 0.5 kV		Criteria A		
	Surge	IEC 61000-4-5, ± 0.5 kV		Criteria A		
	CS	IEC 61000-4-6, 10 Vrms		Criteria A		
	PFMF	IEC 61000-4-8, 1 A/m		Criteria A		

1. The ripple & noise are measured with 0.1 µF capacitor at 20 MHz BW.

2. All specifications valid at nominal input, full load and +25 °C after warm-up time unless otherwise stated.

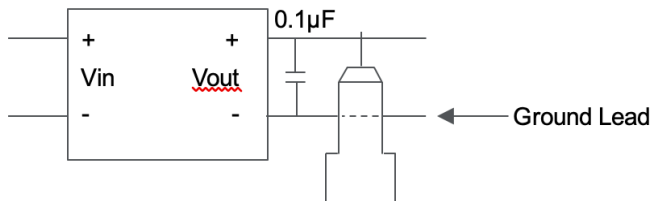
3. The product information and specifications are subject to change without prior notice.

Selection guide

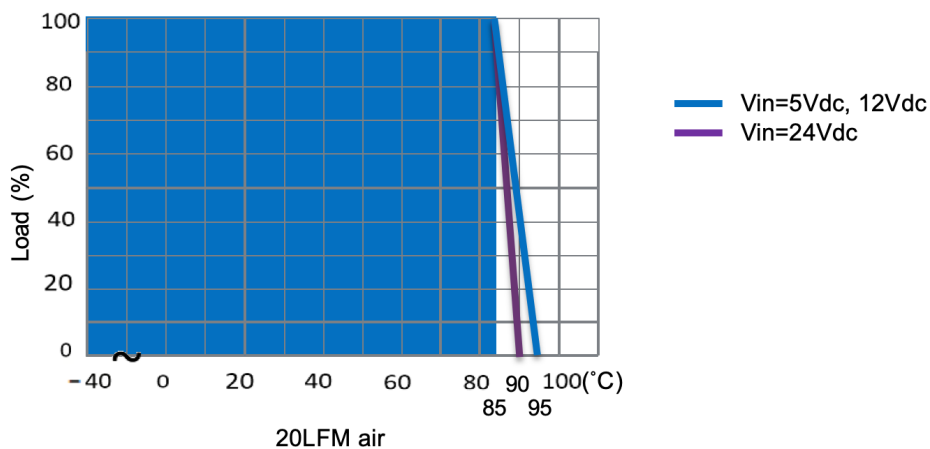
Part number	Input voltage (Vdc)	Output voltage (Vdc)	Output current @ full load (mA)	Efficiency ¹ minimum	Efficiency ¹ typical	Capacitive load ² maximum (μF)
EPM6051V-3R3-303S*	5	3.3	303	71%	74%	1500
EPM6051V-05R-200S*	5	5	200	75%	78%	1500
EPM6051V-12R-084S*	5	12	84	75%	78%	470
EPM6051V-15R-067S*	5	15	67	80%	83%	220
EPM6121V-3R3-303S*	12	3.3	303	76%	79%	1500
EPM6121V-05R-200S*	12	5	200	79%	82%	1500
EPM6121V-12R-084S*	12	12	84	77%	80%	470
EPM6121V-15R-067S*	12	15	67	78%	81%	220
EPM6241V-3R3-303S*	24	3.3	303	75%	78%	1500
EPM6241V-05R-200S*	24	5	200	76%	79%	1500
EPM6241V-12R-084S*	24	12	84	77%	80%	470
EPM6241V-15R-067S*	24	15	67	81%	84%	220

1. Efficiency is nominal input voltage and full load @ +25 °C.
2. Capacitive load is tested at minimum input voltage and a constant resistive load.
3. All specifications valid at nominal input voltage, full load and +25 °C after warm-up time unless otherwise stated.
4. * = Isolation option, R is for standard isolation voltage, H is for higher isolation voltage.

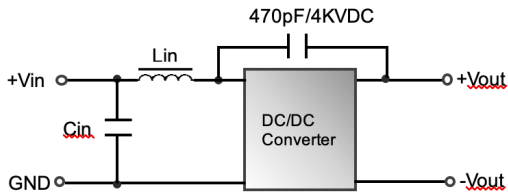
Measure method



Derating curve

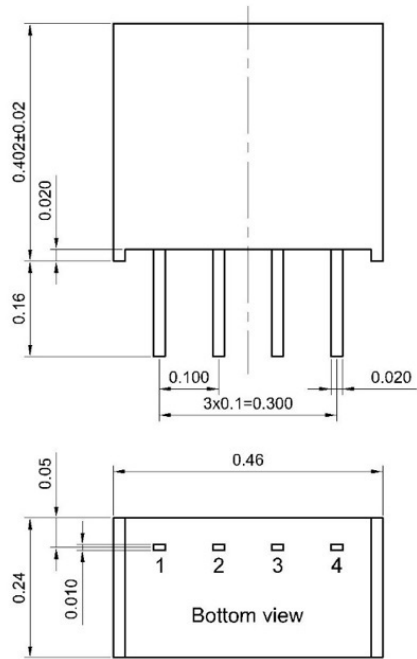


EMC filtering circuit



Class	5 Vin	12 Vin	24 Vin
Class A	47 μ H/ 2.2 μ F	22 μ H/ 2.2 μ F	22 μ H/ 2.2 μ F
Class B	47 μ H/ 10 μ F	22 μ H/ 4.7 μ F	47 μ H/ 4.7 μ F

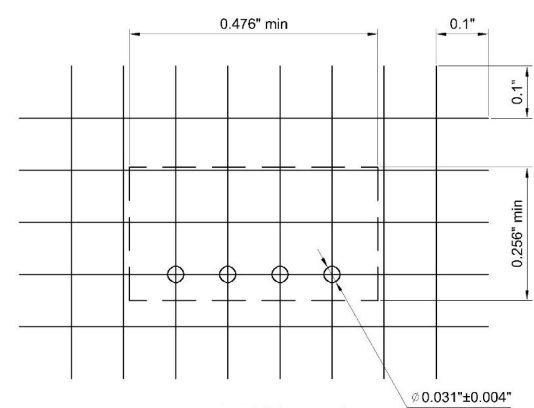
Dimensions - inches



Projection: Third angle projection
Unit: inch
PIN tolerance: ± 0.004
Tolerance: X.XX ± 0.02 X.XXX ± 0.01

Pin	Single
1	-Vin
2	+Vin
3	-Vout
4	+Vout

Recommended PCB layout

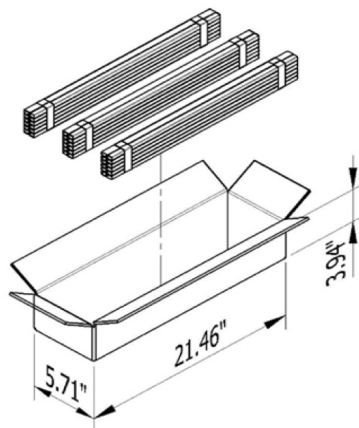
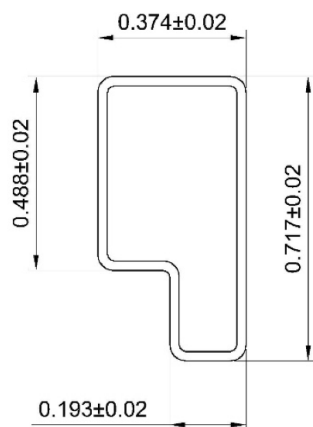


Marking



WLY = lot code

Packaging- Inches



Unit: inch
1 tube = 41 pieces
Length: 20.47 ± 0.08

Carton = $21.46 \times 5.71 \times 3.94$ inch
 $41 \text{ (pieces/tube)} \times 12 \text{ (tube/bundle)} \times 3 \text{ (bundle)} = 1476 \text{ pieces}$

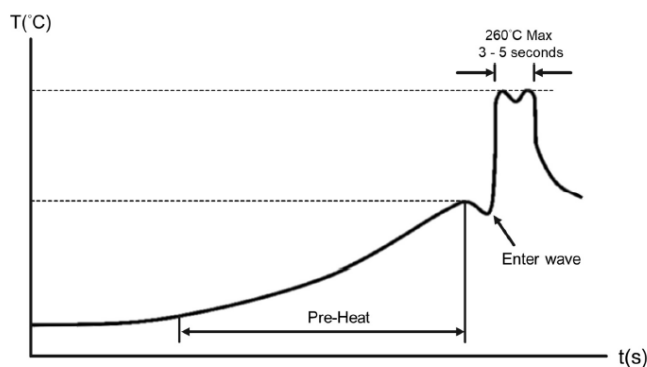
General information

Storage and handling

The shelf life will be a minimum of 36 months, when stored at the following conditions: < +40 °C, < 90% RH.

Wave solder profile

The wave solder profile is measured based on lead temperature. The recommended PCB pre-heat temperature is +80 °C to +100 °C, and the preheat rate of 1.5 to 2.5 °C/sec. The underside PCB temperature at the last pre-heat zone should be approximately +150 °C. The internal temperature of the solder parts should not exceed +210 °C. The duration of solder dwell time should be between 3 to 5 seconds, and not to exceed 10 seconds at a temperature of +260 °C maximum.



Life Support Policy: Eaton does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin.

Eaton
Electronics Division
1000 Eaton Boulevard
Cleveland, OH 44122
United States
www.eaton.com/electronics

© 2022 Eaton
All Rights Reserved
Printed in USA
Publication No. ELX1162 BU-ELX22021
March 2022

Eaton is a registered trademark.

All other trademarks are property
of their respective owners.

Follow us on social media to get the
latest product and support information.

