

EPM12V2

Non-isolated DC-DC converter



Product features

- Non-isolated DC-DC converter
- 3 - 14.4 Vdc input voltage range
- Efficiency up to 91%
- Operating ambient temperature from -40 °C to +90 °C
- Short circuit protection and remote ON/OFF function
- Programmable output voltage from 0.6 - 5.5 Vdc
- EN62368 safety approval

Engineering tools

- EPM12V2 Evaluation kit available (2 options)
- PN: EPM12V2-P-EVK (Positive logic version)
Includes evaluation board with EPM12V2 sample
- PN: EPM12V2-N-EVK (Negative logic version)
Includes evaluation board with EPM12V2 sample
- [EPM12V2 Evaluation kit user guide](#)

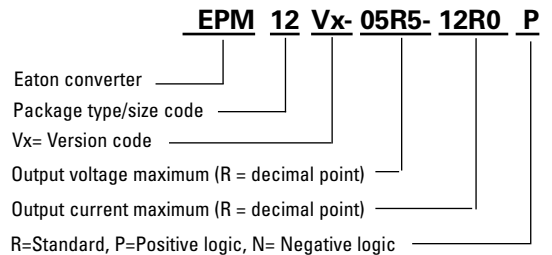
Applications

- Industrial
 - Automation & testing equipment
 - Displays
 - Lighting
 - IoT
 - Power Supply
- Energy
 - Solar and wind inverters
 - Battery management
- Medical
 - Hospital & home care equipment
 - Inventory tracking
 - Diagnostics
- Telecom
 - Networking and telecommunications
 - Infrastructure

Environmental compliance

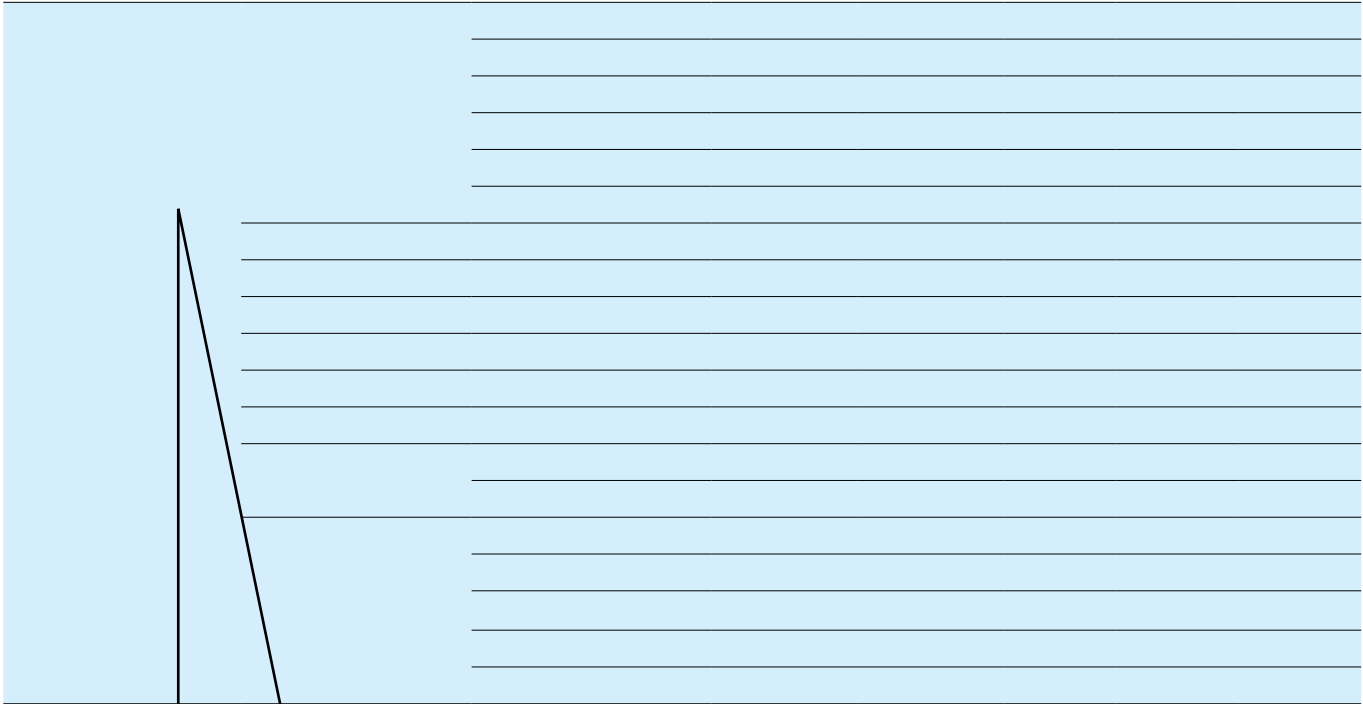


Ordering part number

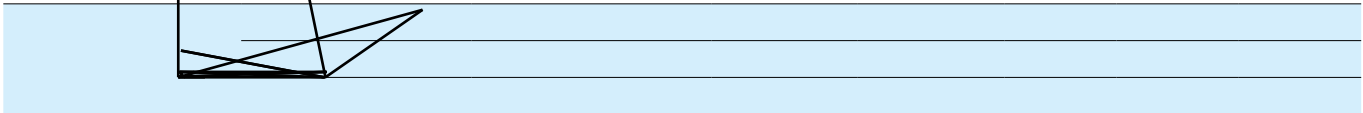


Powering Business Worldwide

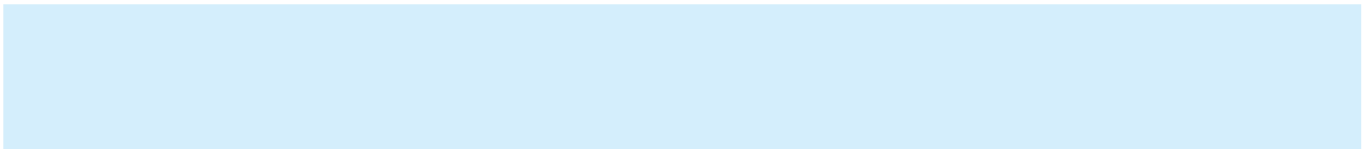
Specifications



The diagram shows a large light blue rectangular area. On the left side, there is a technical drawing of a triangle with a vertical left side and a horizontal base. A line extends from the top vertex of the triangle towards the right, crossing several horizontal lines. To the right of the triangle, there are several horizontal lines, some of which are grouped together by a vertical line on the left.



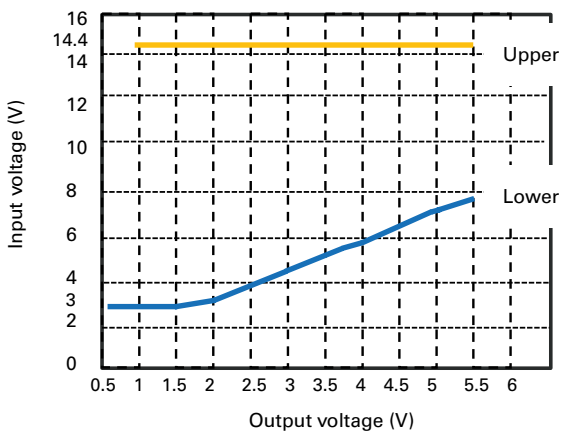
The diagram shows a light blue rectangular area. On the left side, there is a technical drawing of a triangle with a vertical left side and a horizontal base. A line extends from the top vertex of the triangle towards the right, crossing several horizontal lines. To the right of the triangle, there are several horizontal lines, some of which are grouped together by a vertical line on the left.



Part number	Input voltage	Output voltage	Output current @ full load	Input current @ no load	Efficiency ¹ typical	Capacitive load

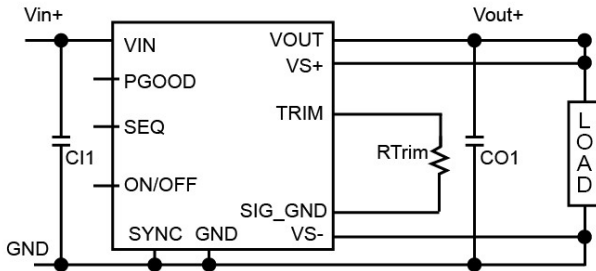
Derating curve

Output voltage vs. input voltage



Application information

Output voltage trim



Trim resistor equation

$$R_{trim} (k\Omega) = \frac{12K}{V_o - 0.6}$$

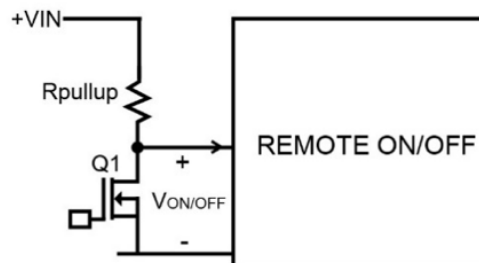
Output voltage	Calculated Rtrim (kΩ)
5.0 V	2.727
3.3 V	4.444
2.5 V	6.316
1.8 V	10
1.5 V	13.3
1.2 V	20
0.6 V	∞ (Open)

Power good

Power good monitor output. This open-drain output goes low during overcurrent, short-circuit, UVLO, overvoltage and undervoltage, overtemperature, or when the output is not regulated (such as a pre-bias output). An external pullup resistor to VDD or to an external rail is required. Included is a 20-μs deglitch filter. PGOOD pin can be connected through a pullup resistor suggested value 100 kΩ) to a source of 5 Vdc or lower.

Synchronization

The module switching frequency can be synchronized to a signal with an external frequency within a specified range. Synchronization can be done by using the external signal applied to the SYNC pin of the module, with the converter :



Logic type active mode

Positive Logic

DC/DC ON : Q1 OFF

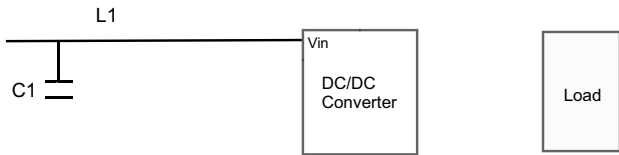
DC/DC OFF : Q1 ON

Negative Logic

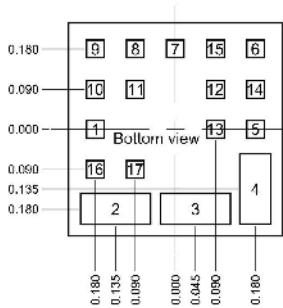
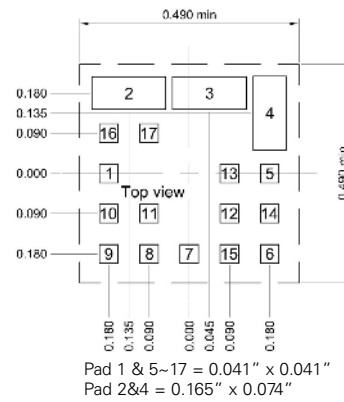
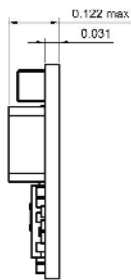
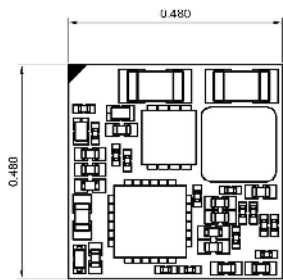
DC/DC ON : Q1 ON

DC/DC OFF : Q1 OFF

EMC filtering circuit

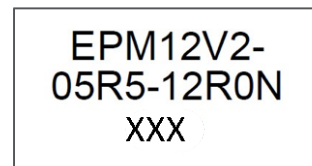


Mechanical dimension and pinning - inches



Projection: Third angle projection
 Tolerance: ± 0.01
 Pad 1&5~12 = 0.04 x 0.04
 Pad 2~4 = 0.07 x 0.157

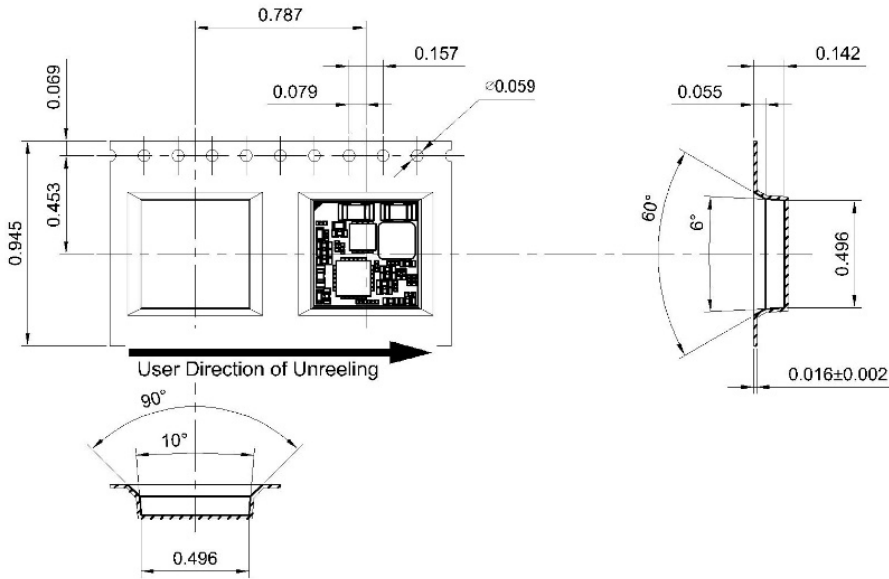
Marking



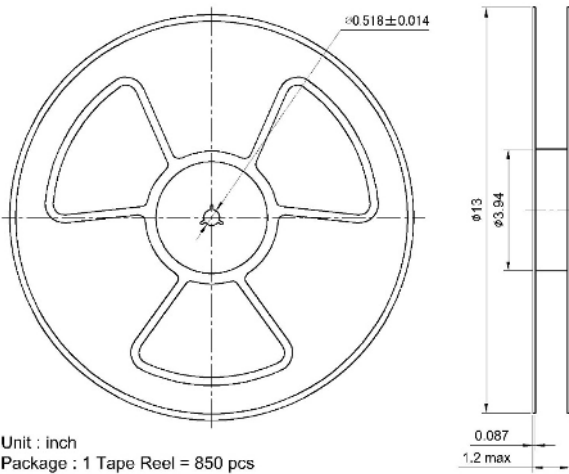
xxx= lot code

NC = no connection

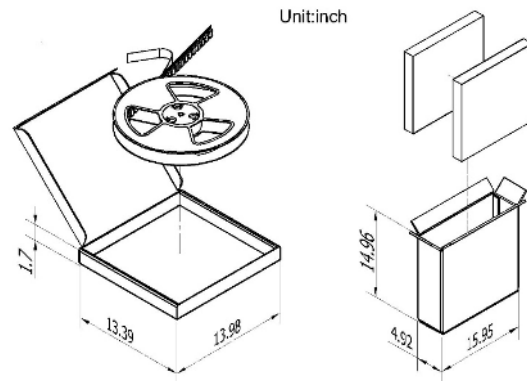
Packaging- Inches



- 1). 10 sprocket hole pitch cumulative tolerance ± 0.008 inch.
- 2). All dimensions meet EIA-481-2A requirements.
- 3). Component loader per 13" reel : 850 pcs.
- 4). All dimensions = ± 0.004 inch.



Unit : inch
Package : 1 Tape Reel = 850 pcs



1 Tape Reel = 850 converters

Unit:inch
Carton accommodates
2 boxes 1700 converters per carton

General information

Pick and place

The 12 A open frame modules use an open frame construction and are designed for a fully automated pick and place assembly process.

MSL rating

The 12 A Open frame modules have a MSL rating of 3.

Storage and handling

The recommended storage environment and handling procedures for moisture-sensitive surface mount packages is detailed in J-STD-033 (Handling, packing, shipping and use of moisture/reflow sensitive surface mount devices).

Moisture barrier bags (MBB) with desiccant are required for MSL ratings of 3 or greater. These sealed packages should not be broken until time of use. Once the original package is broken, the floor life of the product at conditions of 30 °C and 60% relative humidity 168 hours varies according to the MSL rating (see J-STD-033). The shelf life for dry packed SMT packages will be a maximum of 12 months from the bag seal date, when stored at the following conditions: < 40 °C, < 90% relative humidity.

Post solder cleaning and drying considerations

To avoid contamination on the soldering pads extra care has to be taken when handling the boards. Clean soldering surfaces do not generate as many gases when the flux reduce the metal oxides or react with contaminants during the soldering process.

Nozzle

The module weight has been kept to a minimum by using open frame construction. Variables such as nozzle size, tip style, vacuum pressure and placement speed should be considered to optimize this process.

Lead-free reflow profile

Power systems will comply with J-STD-020 (Moisture/reflow sensitivity classification for nonhermetic solid state surface mount devices) for both Pb-free solder profiles and MSL classification procedures. This standard provides a

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

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