# EPM7-1V

## 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 82%
- Isolation voltage: 4 kVdc
- SIP7 (4 and 5 pin) package
- Operating ambient temperature from -40 °C to +100 °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

RoHS

### Ordering part number

**EPM 7 05 1V 3R3 303 S H**

- 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
- H= Higher 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) | | -40 | | +100 | °C |
| | Storage temperature | | -55 | | +125 | °C |
| | Relative humidity | | 5 | | 95 | %RH |
| | Vibration | | | MIL-STD-202G | | |
| **Function** | Isolation voltage 1 min., Input to Output | | 4 | | | kVdc |
| | Isolation resistance | | 10 | | | GΩ |
| | Isolation capacitance | | | 80 | | pF |
| | MTBF (MIL-HDBK-217F) | +25 °C | | 17,100 | | khours |
| | | +85 °C | | 10,400 | | khours |
| | Certification | | | IEC62368-1/ EN55032&35 | | |
| **Physical** | Dimension | | | 0.774 x 0.402 x 0.278 inch | | |
| | Weight | | | 2.8 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, 3 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, 3 Vrms | | Criteria A | | |
| | PFMF | IEC 61000-4-8, 1 A/m | | Criteria A | | |

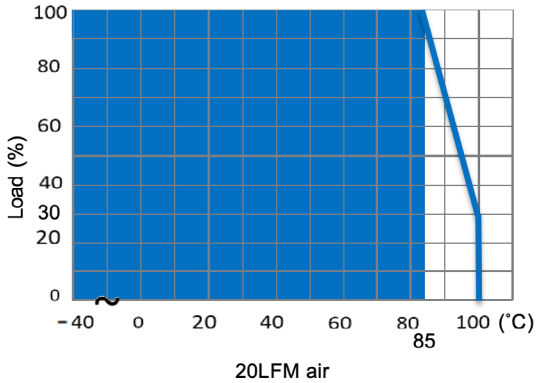
1. The ripple & noise are measured with 0.1 µF capacitor at 20 MHz BW.
2. All specifications valid at nominal input, full load and +25 °C after warm-up time unless otherwise stated.
3. The product information and specifications are subject to change without prior notice.

## Selection guide

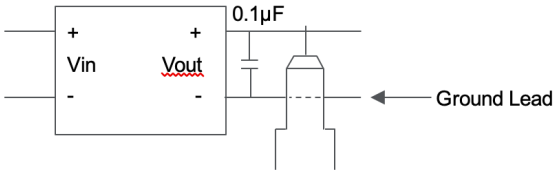
| Part number | Input voltage (Vdc) | Output voltage (Vdc) | Output current @ full load (mA) | Efficiency[1] minimum | Efficiency[1] typical | Capacitive load[2] maximum (µF) |
|---|---|---|---|---|---|---|
| EPM7051V-3R3-303SH | 5 | 3.3 | 303 | 71% | 74% | 1500 |
| EPM7051V-05R-200SH | 5 | 5 | 200 | 76% | 79% | 1500 |
| EPM7051V-12R-084SH | 5 | 12 | 84 | 75% | 78% | 470 |
| EPM7051V-15R-067SH | 5 | 15 | 67 | 82% | 85% | 220 |
| EPM7051V-3R3-152DH | 5 | ±3.3 | ±152 | 72% | 75% | ±470 |
| EPM7051V-05R-100DH | 5 | ±5 | ±100 | 74% | 77% | ±470 |
| EPM7051V-12R-042DH | 5 | ±12 | ±42 | 77% | 80% | ±220 |
| EPM7051V-15R-034DH | 5 | ±15 | ±34 | 77% | 80% | ±220 |
| EPM7121V-3R3-303SH | 12 | 3.3 | 303 | 76% | 79% | 1500 |
| EPM7121V-05R-200SH | 12 | 5 | 200 | 79% | 82% | 1500 |
| EPM7121V-12R-084SH | 12 | 12 | 84 | 77% | 80% | 470 |
| EPM7121V-15R-067SH | 12 | 15 | 67 | 78% | 81% | 220 |
| EPM7121V-3R3-152DH | 12 | ±3.3 | ±152 | 77% | 80% | ±470 |
| EPM7121V-05R-100DH | 12 | ±5 | ±100 | 73% | 76% | ±470 |
| EPM7121V-12R-042DH | 12 | ±12 | ±42 | 77% | 80% | ±220 |
| EPM7121V-15R-034DH | 12 | ±15 | ±34 | 78% | 81% | ±220 |
| EPM7241V-3R3-303SH | 24 | 3.3 | 303 | 75% | 78% | 1500 |
| EPM7241V-05R-200SH | 24 | 5 | 200 | 76% | 79% | 1500 |
| EPM7241V-12R-084SH | 24 | 12 | 84 | 76% | 79% | 470 |
| EPM7241V-15R-067SH | 24 | 15 | 67 | 77% | 80% | 220 |
| EPM7241V-3R3-152DH | 24 | ±3.3 | ±152 | 73% | 76% | ±470 |
| EPM7241V-05R-100DH | 24 | ±5 | ±100 | 77% | 80% | ±470 |
| EPM7241V-12R-042DH | 24 | ±12 | ±42 | 77% | 80% | ±220 |
| EPM7241V-15R-034DH | 24 | ±15 | ±34 | 78% | 81% | ±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.

## Derating curve

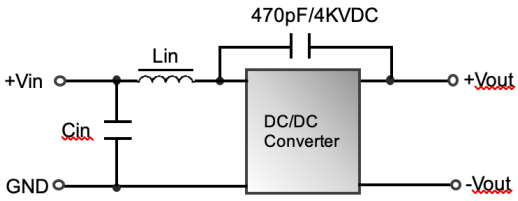



## Measure method



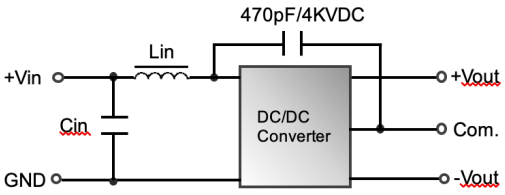
## EMC filtering circuit

### Single



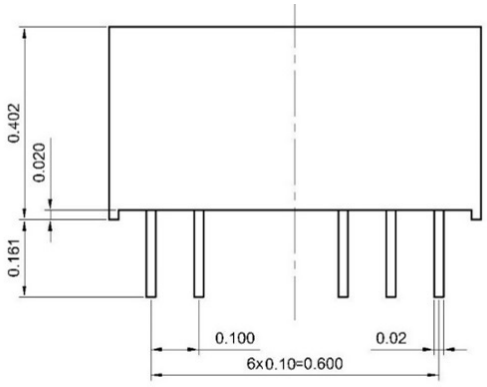

| Class | 5 Vin | 12 Vin | 24 Vin |
|---|---|---|---|
| Class A | 47 µH/ 2.2 µF | 22 µH/ 2.2 µF | 10 µH/ 2.2 µF |
| Class B | 47 µH/ 10 µF | 22 µH/ 4.7 µF | 22 µH/ 4.7 µF |

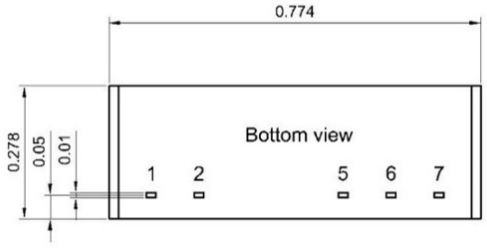
### Dual




| Class | 5 Vin | 12 Vin | 24 Vin |
|---|---|---|---|
| Class A | 22 µH/ 2.2 µF | 22 µH/ 2.2 µF | 10 µH/ 2.2 µF |
| Class B | 100 µH/ 4.7 µF | 22 µH/ 4.7 µF | 47 µH/ 2.2 µF |

## Dimensions - inches

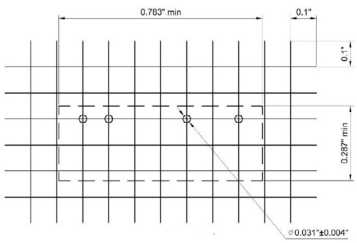


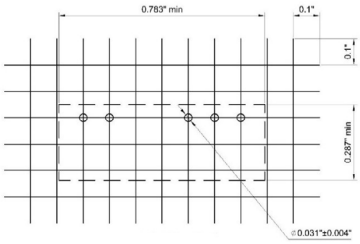

Projection: Third angle projection
Unit: inch
PIN tolerance: ± 0.004
Tolerance: X.XX ± 0.02 X.XXX ± 0.01

## Recommended PCB layout

### Single




### Dual

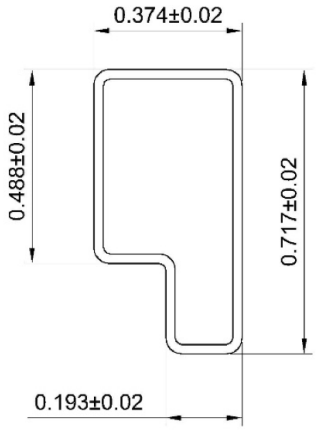


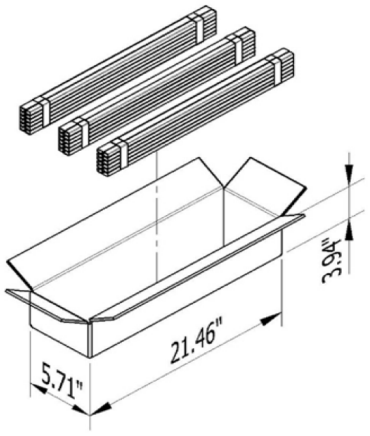

## Marking


WLY = lot code

| Pin | Single | Dual |
|---|---|---|
| 1 | +Vin | +Vin |
| 2 | -Vin | -Vin |
| 5 | -Vout | -Vout |
| 6 | No pin | Common |
| 7 | +Vout | +Vout |

**Packaging- Inches**




Unit: inch
1 tube = 25 pieces
Length: 20.47 ± 0.08

Carton = 21.46*5.71*3.94 inch
25 (pieces/tube)*12(tube/bundle)*3(bundle) = 900 pieces

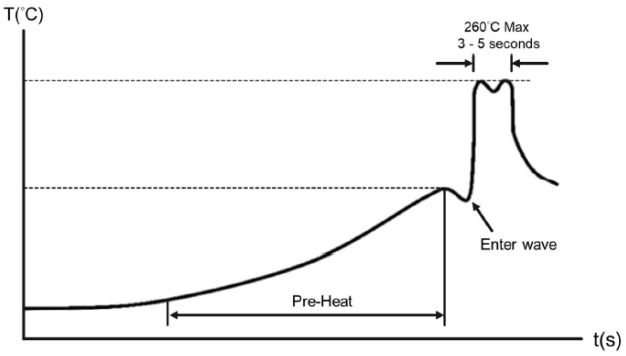
## General information

### 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 temperture of +260 °C maximum.






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