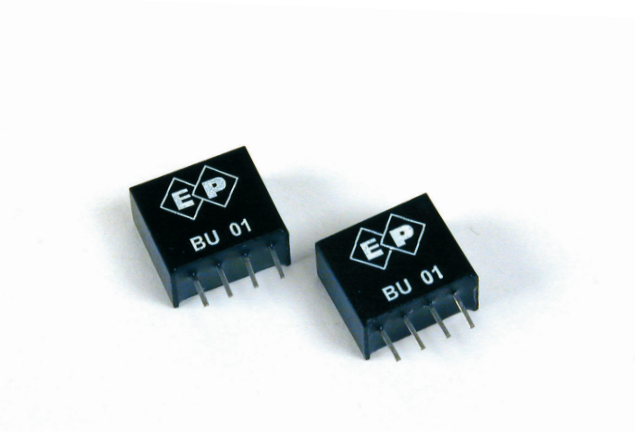
Electronic Products
Elektronisches Knowhow aus einer Hand

1W Unregulated
DC-DC Converter

SIL 4

## Features:

- 1500 VDC & 3000 VDC Isolation
- Efficiency Up To 82%
- Internal Smd Technology
- Low Cost
- No Heatsink Required
- Up To 1W Unregulated Output Power
- Single In Line Package
- 100% Burned In
- MTBF > 2.000 000 Hours




## Specifications:

| | | |
|---|---|---|
| Output Specifications | Voltage Setpoint Accuracy | +/-2% max |
| | Temperature Coefficient | +/-0.05%/°C |
| | Ripple & Noise (20MHz BW)[1] | 100mVp-p max |
| | Line Regulation[2] | +/-1.2% max |
| | Load Regulation[3] | +/-8 % max |
| | Load Regulation[4] | +/-12 % max |
| | Minimum Load | 10 % of Full Load |
| | Short Circuit Protection | Momentary |
| Input Specifications | Input Voltage Range | +/-10% max |
| | Input Filter | Capacitor Type |
| | Input Reflected Ripple Current | 50mAp-p max |
| | Protection | Fuse Recommended |
| Environmental Specifications | Operating Temperature | -25 °C to +71 °C |
| | Storage Temperature | -55 °C to +125 °C |
| | Case Temperature | +90 °C max |
| | Humidity | 95% max |
| | Cooling | Free-Air Convection |
| General Specifications | Efficiency | 70%-82% |
| | Isolation Voltage[5] | 1500-3000 VDC min |
| | Isolation Resistance | $10^9$ ohms min |
| | Switching Frequency | 100 KHz min |
| | Isolation Capacitance | 80pF max |
| | MTBF[6] | 2,000,000 Hours |
| | Weight | 1.3g Typ |
| | Case Material | Non-Conductive Plastic |
| | Case Size | 11.7mm*6.0mm*10.2mm |
| | | 11.7mm*7.5mm*10.1mm |
| | Conducted Emissions | EN55022 Class A |
| | Radiated Emissions | EN55022 Class A |

All Specifications Typical at Nominal Line, Full Load , and 25 °C Unless Otherwise Noted.

Footnotes:
[1] Measured with 1uF ceramic capacitor connect to the output pins.
[2] Line Regulation is for a 1.0% change in input Voltage.
[3] Load Regulation is for output load current change from 20% to 100%.
[4] Load Regulation is for output load current change from 20% to 100% when Input voltage 3 V and 3.3 V
[5] 1500VDC for 10 seconds, 3000VDC for 3 seconds.
[6] MIL-HDBK-217F @25°C , Ground Benign.

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# Selection Guide 1W Output 1500VDC Isolation

| MODEL NUMBER | INPUT VOLTAGE (VDC) | OUTPUT VOLTAGE (VDC) | OUTPUT CURRENT (mA) | INPUT[4] CURRENT(mA) FULL LOAD | INPUT[4] CURRENT(mA) NO LOAD | EFF (%)[5] | ISOLATION (VDC) | PACKAGE |
|---|---|---|---|---|---|---|---|---|
| EPM-BU-30 | 3 | 3 | 333 | 475 | 35 | 70 | 1500 | B |
| EPM-BU-31 | 3.3 | 3 | 333 | 425 | 43 | 71 | 1500 | B |
| EPM-BU-32 | 3.3 | 3.3 | 303 | 403 | 43 | 75 | 1500 | B |
| EPM-BU-33 | 3 | 5 | 200 | 475 | 50 | 70 | 1500 | B |
| EPM-BU-34 | 3.3 | 5 | 200 | 404 | 46 | 75 | 1500 | B |
| EPM-BU-35 | 5 | 3.3 | 303 | 282 | 32 | 71 | 1500 | B |
| EPM-BU-01 | 5 | 5 | 200 | 274 | 30 | 73 | 1500 | A |
| EPM-BU-02 | 5 | 9 | 110 | 260 | 27 | 77 | 1500 | A |
| EPM-BU-03 | 5 | 12 | 84 | 253 | 26 | 79 | 1500 | A |
| EPM-BU-04 | 5 | 15 | 67 | 253 | 28 | 79 | 1500 | A |
| EPM-BU-29 | 5 | 24 | 42 | 253 | 28 | 79 | 1500 | B |
| EPM-BU-05 | 12 | 3.3 | 300 | 112 | 11 | 74 | 1500 | A |
| EPM-BU-11 | 12 | 5 | 200 | 112 | 11 | 74 | 1500 | A |
| EPM-BU-12 | 12 | 9 | 110 | 105 | 11 | 79 | 1500 | A |
| EPM-BU-13 | 12 | 12 | 84 | 102 | 11 | 82 | 1500 | A |
| EPM-BU-14 | 12 | 15 | 67 | 102 | 12 | 82 | 1500 | A |
| EPM-BU-15 | 24 | 3.3 | 300 | 57 | 8 | 73 | 1500 | B |
| EPM-BU-21 | 24 | 5 | 200 | 57 | 8 | 73 | 1500 | B |
| EPM-BU-22 | 24 | 9 | 110 | 54 | 8 | 77 | 1500 | B |
| EPM-BU-23 | 24 | 12 | 84 | 54 | 8 | 77 | 1500 | B |
| EPM-BU-24 | 24 | 15 | 67 | 54 | 10 | 77 | 1500 | B |
| EPM-BU-25 | 24 | 24 | 42 | 54 | 10 | 77 | 1500 | B |
| EPM-BU-26 | 48 | 5 | 200 | 29 | 10 | 72 | 1500 | B |

Footnotes: [4] Nominal Input Voltage
[5] Nominal Input Voltage,full Load

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# Selection Guide 1W 3000VDC Isolation

| MODEL NUMBER | INPUT VOLTAGE (VDC) | OUTPUT VOLTAGE (VDC) | OUTPUT CURRENT (mA) | INPUT[4] CURRENT(mA) FULL LOAD | INPUT[4] CURRENT(mA) NO LOAD | EFF (%)[5] | ISOLATION (VDC) | PACKAGE |
|---|---|---|---|---|---|---|---|---|
| EPM-BU-32-3K | 3.3 | 3.3 | 303 | 403 | 43 | 75 | 3000 | B |
| EPM-BU-01-3K | 5 | 5 | 200 | 274 | 26 | 73 | 3000 | B |
| EPM-BU-02-3K | 5 | 9 | 110 | 260 | 27 | 77 | 3000 | B |
| EPM-BU-03-3K | 5 | 12 | 84 | 253 | 26 | 79 | 3000 | B |
| EPM-BU-04-3K | 5 | 15 | 67 | 253 | 28 | 79 | 3000 | B |
| EPM-BU-05-3K | 12 | 3.3 | 300 | 112 | 11 | 74 | 3000 | B |
| EPM-BU-11-3K | 12 | 5 | 200 | 112 | 11 | 74 | 3000 | B |
| EPM-BU-12-3K | 12 | 9 | 110 | 105 | 11 | 79 | 3000 | B |
| EPM-BU-13-3K | 12 | 12 | 84 | 102 | 11 | 82 | 3000 | B |
| EPM-BU-14-3K | 12 | 15 | 67 | 102 | 12 | 82 | 3000 | B |
| EPM-BU-15-3K | 24 | 3.3 | 300 | 57 | 8 | 73 | 3000 | B |
| EPM-BU-21-3K | 24 | 5 | 200 | 57 | 8 | 73 | 3000 | B |
| EPM-BU-22-3K | 24 | 9 | 110 | 54 | 8 | 77 | 3000 | B |
| EPM-BU-23-3K | 24 | 12 | 84 | 54 | 8 | 77 | 3000 | B |
| EPM-BU-24-3K | 24 | 15 | 67 | 54 | 10 | 77 | 3000 | B |

Footnotes: [4] Nominal Input Voltage
[5] Nominal Input Voltage,full Load

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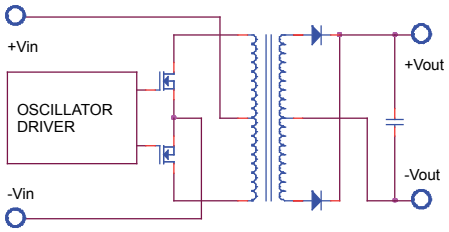
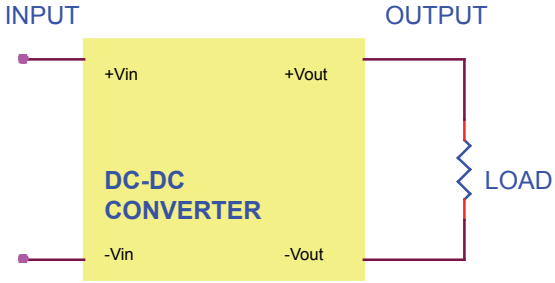
## Simplified Schematic & Typical Applications



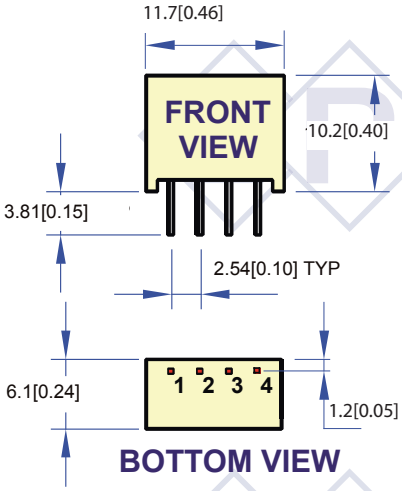



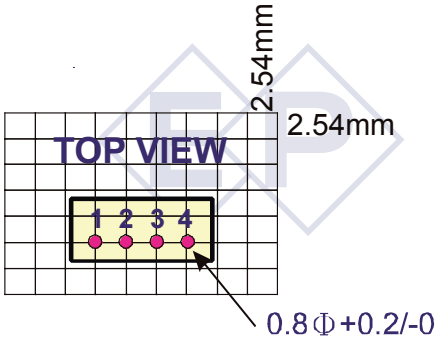

## Mechanical Dimensions & Recommended Footprint Details

### Package A

| PIN | SINGLE |
|---|---|
| 1 | -Vin |
| 2 | +Vin |
| 3 | -Vout |
| 4 | +Vout |

Note:
Pin Size is Tolerance
0.5 Ø ±0.05 mm
All Dimensiones in mm (Inches)
Tolerance .x or .xx = ±0.05 mm

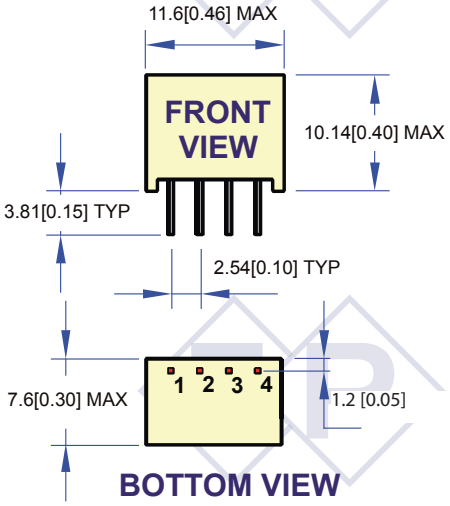


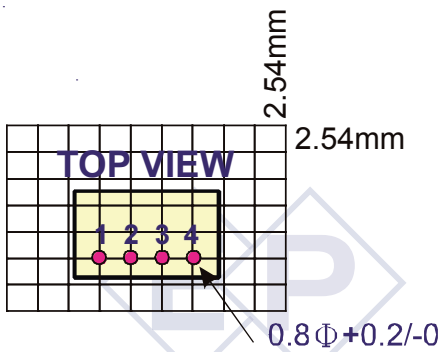




### Package B

| PIN | SINGLE |
|---|---|
| 1 | -Vin |
| 2 | +Vin |
| 3 | -Vout |
| 4 | +Vout |

Note:
Pin Size is Tolerance
0.5 Ø ±0.05 mm
All Dimensiones in mm (Inches)
Tolerance .x or .xx = ±0.05 mm

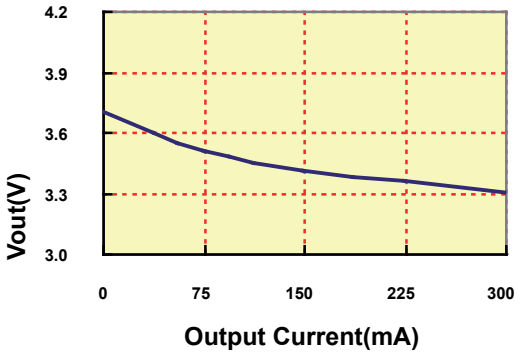


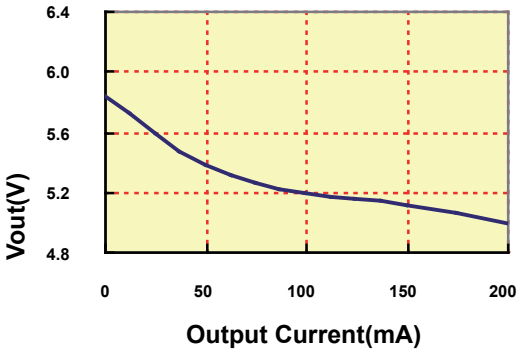
## Typical Performance Curves

Specifications typical at TA=25 °C, nominal input voltage, rated output current unless otherwise specified.

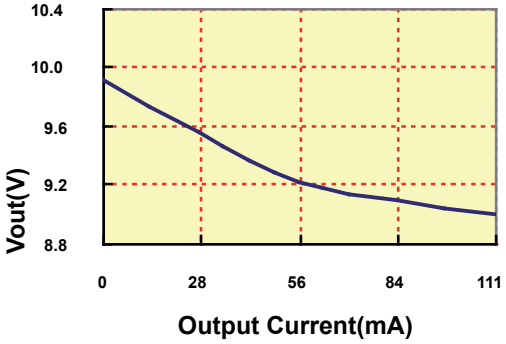
### Vout vs Load (3.3Vout Models)



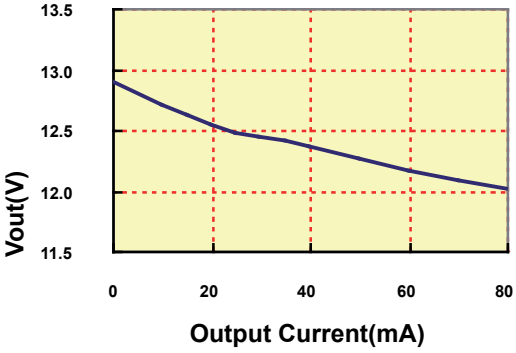

### Vout vs Load (5Vout Models)



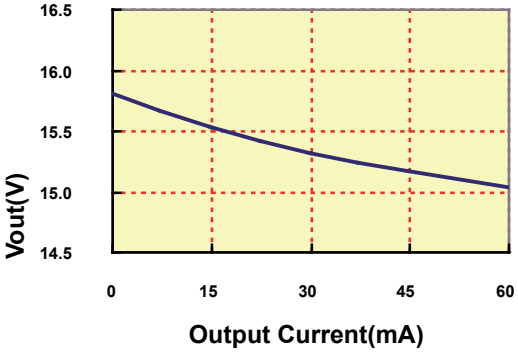

### Vout vs Load (9Vout Models)



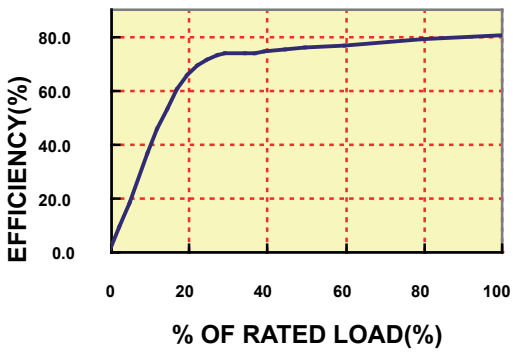

### Vout vs Load (12Vout Models)




### Vout vs Load (15Vout Models)




### Efficiency vs Load

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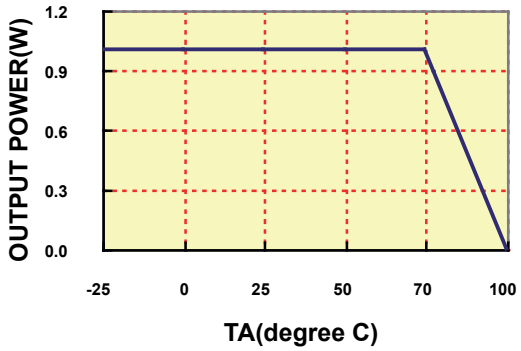
## Temperature Derating

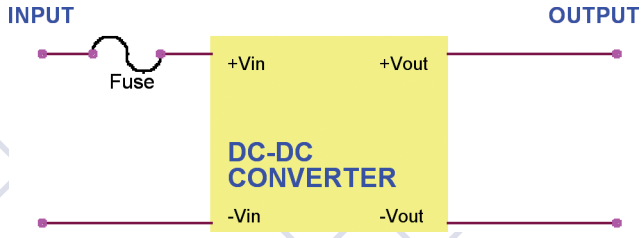
Specifications typical at TA=25 °C, nominal input voltage, rated output current unless otherwise specified.

Derating Curve




## Input Fuse Selection Guide

| 2.7-3.6V Input Voltage(VDC) | 4.5-5.5V Input Voltage(VDC) | 10.8-13.2V Input Voltage(VDC) | 21.6-26.4V Input Voltage(VDC) | 43.2-52.8V Input Voltage(VDC) |
|---|---|---|---|---|
| 1200mA Slow-Blow Type | 500mA Slow-Blow Type | 300mA Slow-Blow Type | 150mA Slow-Blow Type | 100mA Slow-Blow Type |




Note: Certain applications may require the installation of external fuse in front of the input.

## EPM-BU SERIES APPLICATION NOTES

External Capacitance Requirements:
Output filtering is required for operation. A minimum of 10uF is needed. Output capacitance may be increased for additional filtering, not to exceed 220uF.
To meet the reflected ripple requirements of the converter, an input impedance of less than 0.5 ohm from DC to 250KHz is required.

Negative Outputs:
A negative output voltage may be obtained by connecting the +OUT to circuit ground and connecting –OUT as the negative output.

Spezifikationen können jederzeit ohne Vorankündigung geändert werden.