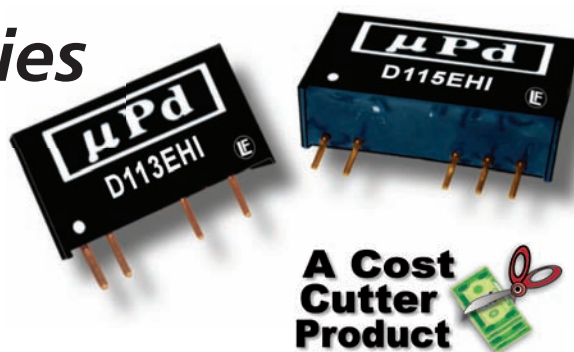


# D100EHI Series

## Low Cost, Miniature SIP 1W, Very High Isolation DC/DC Converters



### Key Features:

- 1W Output Power
- 6,000 VDC Isolation
- 7 Pin SIP Case
- 5V and 12V Inputs
- Single & Dual Outputs
- 16 Standard Models
- 3.5 MH MTBF
- **LOWEST COST!!**



**RoHS Compliant**

### MicroPower Direct

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### Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

#### Input

| Parameter                 | Conditions         | Min. | Typ. | Max.  | Units |
|---------------------------|--------------------|------|------|-------|-------|
| Input Voltage Range       | 5 VDC Input        | 4.5  | 5.0  | 5.5   | VDC   |
|                           | 12 VDC Input       | 10.8 | 12.0 | 13.2  |       |
| Input Filter              | Internal Capacitor |      |      |       |       |
| Short Circuit Input Power |                    |      |      | 1,500 | mW    |

#### Output

| Parameter                        | Conditions                     | Min. | Typ.  | Max.  | Units    |
|----------------------------------|--------------------------------|------|-------|-------|----------|
| Output Voltage Accuracy          |                                |      | ±2.0  | ±4.0  | %        |
| Output Voltage Balance           | Dual Output, Balanced Loads    |      | ±1.0  | ±3.0  | %        |
| Line Regulation                  | For Vin Change of 1%           |      |       | ±1.2  | %/%      |
| Load Regulation, 5V Input        | I <sub>out</sub> = 10% to 100% |      |       | ±15   | %        |
| Load Regulation, 12V & 24V Input | I <sub>out</sub> = 10% to 100% |      |       | ±10   | %        |
| Ripple & Noise (20 MHz) (Note 1) |                                |      | 250   | 300   | mV P - P |
| Output Power Protection          |                                | 120  |       |       | %        |
| Temperature Coefficient          |                                |      | ±0.01 | ±0.03 | %/°C     |
| Output Short Circuit             | Momentary (1.0 Seconds)        |      |       |       |          |

#### General

| Parameter             | Conditions   | Min.  | Typ. | Max. | Units |
|-----------------------|--------------|-------|------|------|-------|
| Isolation Voltage     | 60 Seconds   | 6,000 |      |      | VDC   |
| Isolation Resistance  | 500 VDC      | 1,000 |      |      | MΩ    |
| Isolation Capacitance | 100 kHz, 1V  |       |      | 20   | pF    |
| Switching Frequency   | 5 VDC Input  |       | 250  |      | kHz   |
|                       | 12 VDC Input |       | 50   |      |       |

#### Environmental

| Parameter                   | Conditions          | Min. | Typ. | Max. | Units |
|-----------------------------|---------------------|------|------|------|-------|
| Operating Temperature Range | Ambient             | -40  |      | +85  | °C    |
| Storage Temperature Range   |                     | -55  |      | +125 | °C    |
| Cooling                     | Free Air Convection |      |      |      |       |
| Humidity                    | RH, Non-condensing  |      |      | 95   | %     |

#### Physical

|               |                                                  |  |  |  |  |
|---------------|--------------------------------------------------|--|--|--|--|
| Case Size     | 0.77 x 0.38 x 0.50 Inches (19.5 x 9.8 x 12.5 mm) |  |  |  |  |
| Case Material | Non-Conductive Black Plastic (UL94-V0)           |  |  |  |  |
| Weight        | 0.42 Oz (12g)                                    |  |  |  |  |

#### Reliability Specifications

| Parameter | Conditions                      | Min. | Typ. | Max. | Units  |
|-----------|---------------------------------|------|------|------|--------|
| MTBF      | MIL HDBK 217F, 25°C, Gnd Benign | 3.5  |      |      | MHours |

#### Absolute Maximum Ratings

| Parameter                   | Conditions                   | Min. | Typ. | Max.  | Units |
|-----------------------------|------------------------------|------|------|-------|-------|
| Input Voltage Surge (1 Sec) | 5 VDC Input                  | -0.7 |      | 7.5   | VDC   |
|                             | 12 VDC Input                 | -0.7 |      | 15.0  |       |
| Lead Temperature            | 1.5 mm From Case For 10 Sec. |      |      | 300   | °C    |
| Internal Power Dissipation  | All Models                   |      |      | 1,500 | mW    |

Caution: Exceeding Absolute Maximum Ratings may damage the module. These are not continuous operating ratings.

## Model Selection Guide

| Model Number | Input         |             |              |         | Output        |                   |                   | Efficiency (% Typ) | Fuse Rating Slow-Blow (mA) |
|--------------|---------------|-------------|--------------|---------|---------------|-------------------|-------------------|--------------------|----------------------------|
|              | Voltage (VDC) |             | Current (mA) |         | Voltage (VDC) | Current (mA, Max) | Current (mA, Min) |                    |                            |
|              | Nominal       | Range       | Full-Load    | No-Load |               |                   |                   |                    |                            |
| D101EHI      | 5             | 4.5 - 5.5   | 286          | 60      | 5.0           | 200               | 20.0              | 72                 | 1,000                      |
| D102EHI      | 5             | 4.5 - 5.5   | 286          | 60      | 9.0           | 111               | 12.0              | 72                 | 1,000                      |
| D103EHI      | 5             | 4.5 - 5.5   | 278          | 60      | 12.0          | 84                | 9.0               | 75                 | 1,000                      |
| D104EHI      | 5             | 4.5 - 5.5   | 278          | 60      | 15.0          | 67                | 7.0               | 75                 | 1,000                      |
| D105EHI      | 5             | 4.5 - 5.5   | 277          | 60      | ±5.0          | ±100              | ±10.0             | 72                 | 1,000                      |
| D106EHI      | 5             | 4.5 - 5.5   | 277          | 60      | ±9.0          | ±56               | ±6.0              | 72                 | 1,000                      |
| D107EHI      | 5             | 4.5 - 5.5   | 267          | 60      | ±12.0         | ±42               | ±5.0              | 75                 | 1,000                      |
| D108EHI      | 5             | 4.5 - 5.5   | 267          | 60      | ±15.0         | ±33               | ±4.0              | 75                 | 1,000                      |
| D111EHI      | 12            | 10.8 - 13.2 | 113          | 40      | 5.0           | 200               | 20.0              | 74                 | 250                        |
| D112EHI      | 12            | 10.8 - 13.2 | 113          | 40      | 9.0           | 111               | 12.0              | 74                 | 250                        |
| D113EHI      | 12            | 10.8 - 13.2 | 110          | 40      | 12.0          | 84                | 9.0               | 76                 | 250                        |
| D114EHI      | 12            | 10.8 - 13.2 | 110          | 40      | 15.0          | 67                | 7.0               | 76                 | 250                        |
| D115EHI      | 12            | 10.8 - 13.2 | 111          | 40      | ±5.0          | ±100              | ±10.0             | 75                 | 250                        |
| D116EHI      | 12            | 10.8 - 13.2 | 111          | 40      | ±9.0          | ±56               | ±6.0              | 75                 | 250                        |
| D117EHI      | 12            | 10.8 - 13.2 | 107          | 40      | ±12.0         | ±42               | ±5.0              | 78                 | 250                        |
| D118EHI      | 12            | 10.8 - 13.2 | 107          | 40      | ±15.0         | ±33               | ±4.0              | 78                 | 250                        |

### Notes:

- Output load regulation is specified for a load change of 10% to 100%.
- These units should not be operated with a load under 10% of full load. Operation at no-load may cause damage to the unit.
- These converters will operate without external components. However, when measuring output ripple, it is recommended that an external ceramic capacitor be placed from the +Vout pin to the -Vout pin for single output units and from each output to common for dual output units. An input capacitor will enhance stability over temperature and input line variations. Recommended capacitor values are given in the table above.  

| Vin    | Input Capacitor | Vout   | Output Capacitor |
|--------|-----------------|--------|------------------|
| 5 VDC  | 4.7 $\mu$ F     | 5 VDC  | 4.7 $\mu$ F      |
| 12 VDC | 2.2 $\mu$ F     | 9 VDC  | 2.2 $\mu$ F      |
|        |                 | 12 VDC | 1.0 $\mu$ F      |
|        |                 | 15 VDC | 0.47 $\mu$ F     |

For applications requiring very low output noise levels, a simple Pi filter should be effective. Component values would depend upon the application, but capacitor values of 4.7  $\mu$ F and inductor values of 10  $\mu$ H are often sufficient.
- Dual output units may be connected to provide a 10V, 18V, 24V or 30 VDC output. To do this, connect the load across the positive (+Vout) and negative (-Vout) outputs and float the output common.
- It is recommended that a fuse be used on the input of a power supply for protection. See the Model Selection table above for the correct rating.

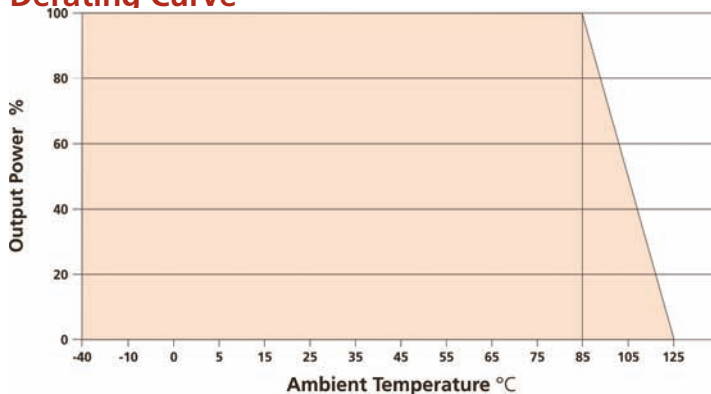
### Pin Connections

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

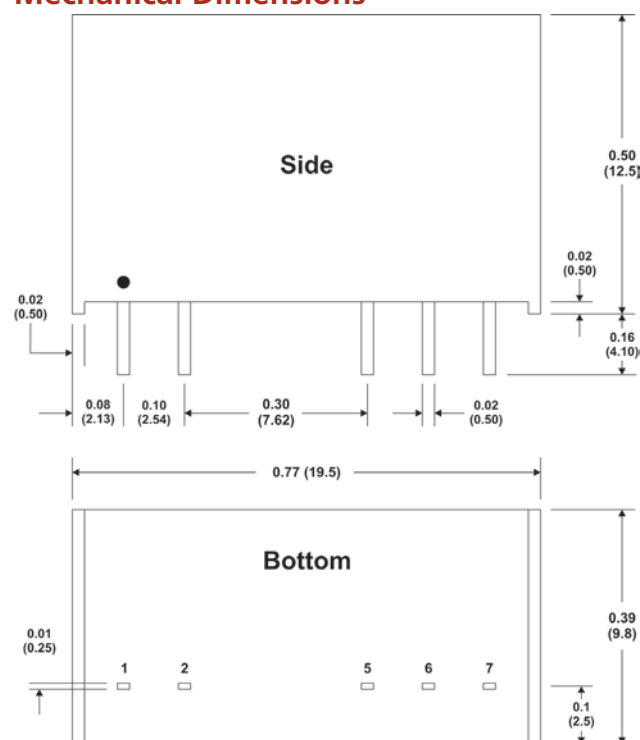
### Mechanical Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.01 (±0.25)

### Derating Curve



### Mechanical Dimensions



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