



# Half Brick, DC-DC Converters



VI-J00  
VE-J00



25 to 100 Watts

## Features

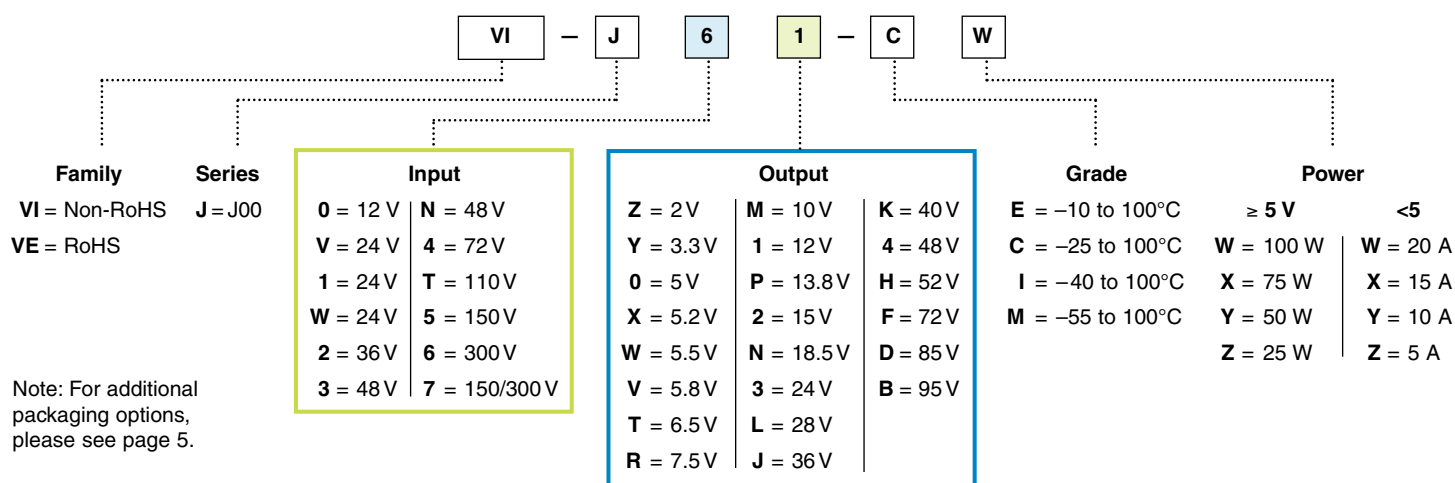
- Isolated output
- Up to 50 Watts per cubic inch
- cURus, cTUVus
- CE Marked
- Up to 90% efficiency
- Size: 2.28" x 2.4" x 0.5"  
(57,9 x 61,0 x 12,7)
- Remote sense and current limit
- Logic disable
- Wide range output adjust
- ZCS power architecture
- Low noise FM control
- RoHS compliant (VE versions)

## Product Highlights

The VI-J00 MiniMod family established a new standard in component-level DC-DC converters. This “junior” size complement to the higher power VI-200 family offers up to 100 W of isolated and regulated power in a board mounted package. With thousands of input/output/power combinations, and with a maximum operating temperature rating of 100°C, the MiniMod provides nearly unlimited flexibility for power system designers to meet demanding time to market requirements.

Utilizing Vicor’s “zero-current-switching” forward converter technology, proven by an installed base of over 8 million units, the MiniMod family combines state of the art power density with the efficiency, low noise and reliability required by next generation power systems.

## Part Numbering



## Maximum Power Available for VI-Jxx-xx

| Input                   |                              |                          |                    | Output           |          |        |          |          |          |          |          |         |         |           |         |           |         |         |         |         |         |         |         |         |         |  |
|-------------------------|------------------------------|--------------------------|--------------------|------------------|----------|--------|----------|----------|----------|----------|----------|---------|---------|-----------|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|
| Voltage<br>Nom. (Range) | Low Line<br>75%<br>Max Power | Transient <sup>[a]</sup> | Vin<br>Designators | Vout Designators |          |        |          |          |          |          |          |         |         |           |         |           |         |         |         |         |         |         |         |         |         |  |
|                         |                              |                          |                    | 2<br>Z           | 3.3<br>Y | 5<br>0 | 5.2<br>X | 5.5<br>W | 5.8<br>V | 6.5<br>T | 7.5<br>R | 10<br>M | 12<br>1 | 13.8<br>P | 15<br>2 | 18.5<br>N | 24<br>3 | 28<br>L | 36<br>J | 40<br>K | 48<br>4 | 52<br>H | 72<br>F | 85<br>D | 95<br>B |  |
| 12 (10-20)              | n/a                          | 22                       | 0                  | X                | X        | Y      | Y        | Y        | Y        | Y        | X        | X       | X       | X         | X       | X         | X       | X       | X       | X       | X       | X       | X       | X       | X       |  |
| 24 (10-36)              | n/a                          | n/a                      | V                  | --               | Y        | Y      | Y        | Y        | Y        | Y        | Y        | Y       | Y       | Y         | Y       | Y         | Y       | Y       | Y       | Y       | --      | --      | --      | --      | --      |  |
| 24 (21-32)              | 18                           | 36                       | 1                  | W                | W        | W      | W        | W        | W        | X        | X        | W       | W       | W         | W       | W         | W       | W       | W       | W       | W       | W       | W       | W       | W       |  |
| 24 (18-36)              | n/a                          | n/a                      | W                  | W                | W        | W      | W        | W        | W        | X        | X        | W       | W       | W         | W       | W         | W       | W       | W       | W       | W       | W       | W       | W       | W       |  |
| 36 (21-56)              | 18                           | 60                       | 2                  | Y                | Y        | Y      | Y        | Y        | Y        | Y        | X        | X       | X       | X         | X       | X         | X       | X       | X       | X       | X       | X       | --      | --      | --      |  |
| 48 (42-60)              | 36                           | 72                       | 3                  | W                | W        | W      | W        | W        | W        | X        | X        | W       | W       | W         | W       | W         | W       | W       | W       | W       | W       | W       | W       | W       | W       |  |
| 48 (36-76)              | n/a                          | n/a                      | N                  | W                | W        | X      | X        | X        | X        | X        | X        | W       | W       | W         | W       | W         | W       | W       | W       | W       | W       | W       | W       | W       | W       |  |
| 72 (55-100)             | 45                           | 110                      | 4                  | W                | W        | W      | W        | W        | W        | X        | X        | W       | W       | W         | W       | W         | W       | W       | W       | W       | W       | W       | W       | W       | W       |  |
| 110 (66-160)            | n/a                          | n/a                      | T                  | W                | W        | X      | X        | X        | X        | X        | X        | W       | W       | W         | W       | W         | W       | W       | W       | W       | W       | W       | W       | --      | --      |  |
| 150 (100-200)           | 85                           | 215                      | 5                  | W                | W        | W      | W        | W        | W        | X        | X        | W       | W       | W         | W       | W         | W       | W       | W       | W       | W       | W       | W       | W       | W       |  |
| 150 (100-375)           | n/a                          | n/a                      | 7                  | Y                | Y        | Y      | Y        | Y        | Y        | Y        | X        | X       | X       | X         | X       | X         | X       | X       | X       | X       | X       | X       | --      | --      | --      |  |
| 300 (200-400)           | 170                          | 425                      | 6                  | W                | W        | W      | W        | W        | W        | X        | X        | W       | W       | W         | W       | W         | W       | W       | W       | W       | W       | W       | W       | W       | W       |  |

<sup>[a]</sup> Transient voltage for 1 second.

## CONVERTER SPECIFICATIONS

(typical at  $T_{BP} = 25^{\circ}\text{C}$ , nominal line and 75% load, unless otherwise specified)

### ■ INPUT SPECIFICATIONS

| Parameter                           | VI-J00 E-Grade |                                                   |     | VI-J00 C-, I-, M-Grade |                                                   |                      | Units    | Test Conditions         |
|-------------------------------------|----------------|---------------------------------------------------|-----|------------------------|---------------------------------------------------|----------------------|----------|-------------------------|
|                                     | Min            | Typ                                               | Max | Min                    | Typ                                               | Max                  |          |                         |
| Inrush charge                       |                | $60 \times 10^{-6}$                               |     |                        | $60 \times 10^{-6}$                               | $100 \times 10^{-6}$ | Coulombs | Nominal line            |
| Input reflected ripple current – pp |                | 10%                                               |     |                        | 10%                                               |                      | $I_{IN}$ | Nominal line, full load |
| Input ripple rejection              |                | $25 + 20 \log\left(\frac{V_{in}}{V_{out}}\right)$ |     |                        | $30 + 20 \log\left(\frac{V_{in}}{V_{out}}\right)$ |                      | dB       | 120 Hz, nominal line    |
|                                     |                |                                                   |     |                        | $20 + 20 \log\left(\frac{V_{in}}{V_{out}}\right)$ |                      | dB       | 2400 Hz, nominal line   |
| No load power dissipation           |                | 1.35                                              | 2   |                        | 1.35                                              | 2                    | Watts    |                         |

**CONVERTER SPECIFICATIONS (cont.)****■ OUTPUT CHARACTERISTICS**

| Parameter                       | VI-J00 E-Grade |      |      | VI-J00 C-, I-, M-Grade |       |      | Units                  | Test Conditions            |
|---------------------------------|----------------|------|------|------------------------|-------|------|------------------------|----------------------------|
|                                 | Min            | Typ  | Max  | Min                    | Typ   | Max  |                        |                            |
| Setpoint accuracy               |                | 1%   | 2%   |                        | 0.5%  | 1%   | V <sub>NOM</sub>       |                            |
| Load/line regulation            |                |      | 0.5% |                        | 0.05% | 0.2% | V <sub>NOM</sub>       | LL to HL, 10% to Full Load |
|                                 |                |      | 1%   |                        | 0.2%  | 0.5% | V <sub>NOM</sub>       | LL to HL, No Load to 10%   |
| Output temperature drift        |                | 0.02 |      |                        | 0.01  | 0.02 | % / °C                 | Over rated temperature     |
| Long term drift                 |                | 0.02 |      |                        | 0.02  |      | %/1K hours             |                            |
| Output ripple – pp:             |                |      |      |                        |       |      |                        |                            |
| 2 V, 3.3 V                      |                |      | 200  |                        | 100   | 150  | mV                     | 20 MHz bandwidth           |
| 5 V                             |                |      | 5%   |                        | 2%    | 3%   | V <sub>NOM</sub>       | 20 MHz bandwidth           |
| 10 – 95 V                       |                |      | 3%   |                        | 0.75% | 1.5% | V <sub>NOM</sub>       | 20 MHz bandwidth           |
| Trim range <sup>[a]</sup>       | 50%            |      | 110% | 50%                    |       | 110% | V <sub>NOM</sub>       |                            |
| Total remote sense compensation | 0.5            |      |      | 0.5                    |       |      | Volts                  | 0.25 V max. neg. leg       |
| Current limit                   | 105%           |      | 135% | 105%                   |       | 125% | I <sub>full load</sub> | Automatic restart          |
| Short circuit current           | 105%           |      | 140% | 105%                   |       | 130% | I <sub>full load</sub> | Automatic restart          |

<sup>[a]</sup> 10 V, 12 V, 13.8 V, 15 V outputs, or “V” input range have standard trim range  $\pm 10\%$ . Consult factory for wider trim range.  
 95 V output  $-50 + 0\%$  trim range.

**■ CONTROL PIN SPECIFICATIONS**

| Parameter              | VI-J00 E-Grade |      |     | VI-J00 C-, I-, M-Grade |      |     | Units | Test Conditions    |
|------------------------|----------------|------|-----|------------------------|------|-----|-------|--------------------|
|                        | Min            | Typ  | Max | Min                    | Typ  | Max |       |                    |
| Gate out impedance     |                | 50   |     |                        | 50   |     | Ohms  |                    |
| Gate in impedance      |                | 1000 |     |                        | 1000 |     | Ohms  |                    |
| Gate in high threshold |                | 6    |     |                        |      | 6   | Volts | Use open collector |
| Gate in low threshold  | 0.65           |      |     | 0.65                   |      |     | Volts |                    |
| Gate in low current    |                |      | 6   |                        |      | 6   | mA    |                    |

## CONVERTER SPECIFICATIONS (cont.)

### ■ DIELECTRIC WITHSTAND CHARACTERISTICS

| Parameter           | VI-J00 E-Grade |     |     | VI-J00 C-, I-, M-Grade |     |     | Units            | Test Conditions   |
|---------------------|----------------|-----|-----|------------------------|-----|-----|------------------|-------------------|
|                     | Min            | Typ | Max | Min                    | Typ | Max |                  |                   |
| Input to output     | 3,000          |     |     | 3,000                  |     |     | V <sub>RMS</sub> | Baseplate earthed |
| Output to baseplate | 500            |     |     | 500                    |     |     | V <sub>RMS</sub> |                   |
| Input to baseplate  | 1,500          |     |     | 1,500                  |     |     | V <sub>RMS</sub> |                   |

### ■ THERMAL CHARACTERISTICS

| Parameter         | VI-J00 E-Grade |          |     | VI-J00 C-, I-, M-Grade |          |     | Units   | Test Conditions      |
|-------------------|----------------|----------|-----|------------------------|----------|-----|---------|----------------------|
|                   | Min            | Typ      | Max | Min                    | Typ      | Max |         |                      |
| Efficiency        |                | 78 – 88% |     |                        | 80 – 90% |     |         |                      |
| Baseplate to sink |                | 0.14     |     |                        | 0.14     |     | °C/Watt | With Vicor P/N 20267 |

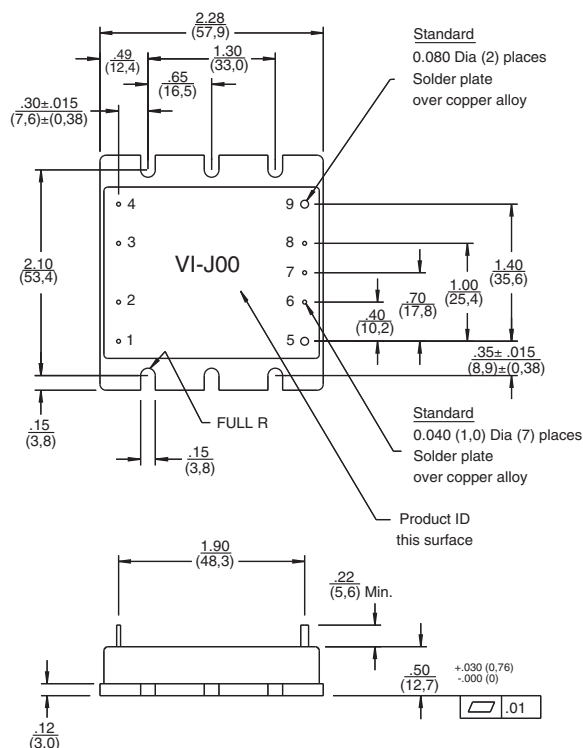
### ■ MECHANICAL SPECIFICATIONS

| Parameter | VI-J00 E-, C-Grade |     |       | VI-J00 I-, M-Grade |     |       | Units  | Test Conditions |
|-----------|--------------------|-----|-------|--------------------|-----|-------|--------|-----------------|
|           | Min                | Typ | Max   | Min                | Typ | Max   |        |                 |
| Weight    | 2.9                | 3.2 | 3.6   | 3.4                | 3.8 | 4.1   | Ounces |                 |
|           | 82.8               | 92  | 101.2 | 96.3               | 107 | 117.7 | Grams  |                 |

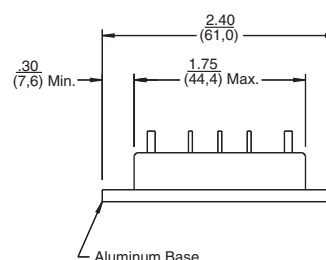
### ■ PRODUCT GRADE TEMPERATURES

| Parameter | Storage     | Operating    | Units | Notes |
|-----------|-------------|--------------|-------|-------|
| E         | -20 to +105 | -10 to + 100 | °C    |       |
| C         | -40 to +105 | -25 to + 100 | °C    |       |
| I         | -55 to +105 | -40 to + 100 | °C    |       |
| M         | -65 to +105 | -55 to + 100 | °C    |       |

## MECHANICAL DRAWING



| Pin # | Function |
|-------|----------|
| 1     | +In      |
| 2     | Gate In  |
| 3     | Gate Out |
| 4     | -In      |
| 5     | +Out     |
| 6     | +Sense   |
| 7     | Trim     |
| 8     | -Sense   |
| 9     | -Out     |



## PACKAGING OPTIONS

## Flangeless package



2.28"L x 1.80"W x 0.50"H  
(57,9 x 45,7 x 12,7 mm)

To order the SlimMod configuration add the suffix "-S" to the standard module part number.

Qty (2) grounding clips are included with each SlimMod  
P/N 32187

Flangeless package  
with integral heat sink

Longitudinal, 0.25"(6.35 mm) fins — add suffix "-F1"  
Longitudinal, 0.50"(12.7 mm) fins — add suffix "-F2"



Transverse, 0.25"(6.35 mm) fins — add suffix "-F3"  
Transverse, 0.50"(12.7 mm) fins — add suffix "-F4"

Available with longitudinal or transverse fins of 0.25"(6.35 mm) or 0.50"(12.7 mm) height. Add the appropriate suffix to the module part number.

Qty (4) grounding clips are included with each FinMod  
F1, F2 P/N 32185  
F3, F4 P/N 32186

## MegaMod Jr.

Chassis mount alternatives, one, two, or three outputs: up to 300 W



1 up — 2.58" x 2.5" x 0.62" (65,5 x 63,5 x 15,7 mm)  
2 up — 2.58" x 4.9" x 0.62" (65,5 x 124,5 x 15,7 mm)  
3 up — 2.58" x 7.3" x 0.62" (65,5 x 185,4 x 15,7 mm)

## BusMod



2.28"L x 2.40"W x 1.08"H  
(57,9 x 61,0 x 27,4 mm)

To order the BusMod fully assembled, add suffix "-B1" to the standard module part number.

To order the BusMod separately:  
Half-sized BusMod — P/N 18952

[See BusMod Mechanical Drawings for more details.](#)

## **Vicor's comprehensive line of power solutions includes high density AC-DC and DC-DC modules and accessory components, fully configurable AC-DC and DC-DC power supplies, and complete custom power systems.**

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