



# Data Sheet

## VI-J00, VE-J00

### Half Brick

### DC-DC Converters

### 25 to 100 Watts



#### Features

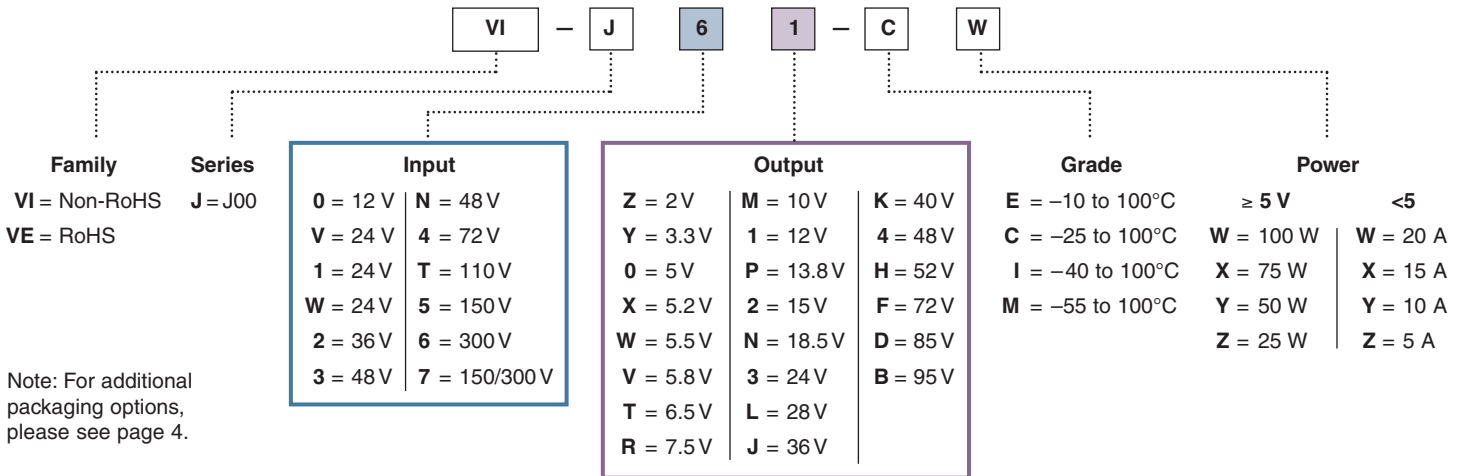
- RoHS compliant (VE versions)
- Up to 50 Watts per cubic inch
- cULus, cTUVus
- CE Marked
- Up to 90% efficiency
- Size: 2.28" x 2.4" x 0.5" (57,9 x 61,0 x 12,7)
- Remote sense and current limit
- Logic disable
- Wide range output adjust
- ZCS power architecture
- Low noise FM control
- Isolated output

#### 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 Nom. (Range)	Low Line 75% Max Power	Transient <sup>[a]</sup>	Vin Designators	Vout Designators																				
				2	3.3	5	5.2	5.5	5.8	6.5	7.5	10	12	13.8	15	18.5	24	28	36	40	48	52	72	85
12 (10-20)	n/a	22	<b>0</b>	X	X	Y	Y	Y	Y	Y	Y	Y	X	X	X	X	X	X	X	X	X	X	X	X
24 (10-36)	n/a	n/a	<b>V</b>	--	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	--	--	--	--
24 (21-32)	18	36	<b>1</b>	W	W	W	W	W	W	X	X	W	W	W	W	W	W	W	W	W	W	W	W	W
24 (18-36)	n/a	n/a	<b>W</b>	W	W	W	W	W	W	X	X	W	W	W	W	W	W	W	W	W	W	W	W	W
36 (21-56)	18	60	<b>2</b>	Y	Y	Y	Y	Y	Y	Y	Y	X	X	X	X	X	X	X	X	X	--	--	--	--
48 (42-60)	36	72	<b>3</b>	W	W	W	W	W	W	X	X	W	W	W	W	W	W	W	W	W	W	W	W	W
48 (36-76)	n/a	n/a	<b>N</b>	W	W	X	X	X	X	X	X	W	W	W	W	W	W	W	W	W	W	W	W	W
72 (55-100)	45	110	<b>4</b>	W	W	W	W	W	W	X	X	W	W	W	W	W	W	W	W	W	W	W	W	W
110 (66-160)	n/a	n/a	<b>T</b>	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	<b>5</b>	W	W	W	W	W	W	X	X	W	W	W	W	W	W	W	W	W	W	W	W	W
150 (100-375)	90	n/a	<b>7</b>	Y	Y	Y	Y	Y	Y	Y	Y	X	X	X	X	X	X	X	X	X	X	X	X	--
300 (200-400)	170	425	<b>6</b>	W	W	W	W	W	W	X	X	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		$25 + 20 \text{Log}\left(\frac{V_{in}}{V_{out}}\right)$		$30 + 20 \text{Log}\left(\frac{V_{in}}{V_{out}}\right)$			dB	120 Hz, nominal line
				$20 + 20 \text{Log}\left(\frac{V_{in}}{V_{out}}\right)$			dB	2400 Hz, nominal line
No load power dissipation		1.35	2	1.35	2		Watts	

### 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%		$V_{NOM}$	
Load/line regulation			0.5%	0.05%	0.2%		$V_{NOM}$	LL to HL, 10% to Full Load
			1%	0.2%	0.5%		$V_{NOM}$	LL to HL, No Load to 10%
Output temperature drift		0.02		0.01	0.02		% / $^{\circ}\text{C}$	Over rated temperature
Long term drift		0.02		0.02			%/1K hours	
Output ripple – pp:			200	100	150		mV	20 MHz bandwidth
	2 V, 3.3 V						$V_{NOM}$	20 MHz bandwidth
	5 V		5%	2%	3%		$V_{NOM}$	20 MHz bandwidth
10 – 95 V		3%		0.75%	1.5%		$V_{NOM}$	20 MHz bandwidth
Trim range <sup>[a]</sup>	50%		110%	50%	110%		$V_{NOM}$	
Total remote sense compensation	0.5			0.5			Volts	0.25 V max. neg. leg
Current limit	105%		135%	105%	125%		$I_{NOM}$	Automatic restart
Short circuit current	105%		140%	105%	130%		$I_{NOM}$	

<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

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

### ■ 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		$^{\circ}\text{C}/\text{Watt}$	With Vicor P/N 20267

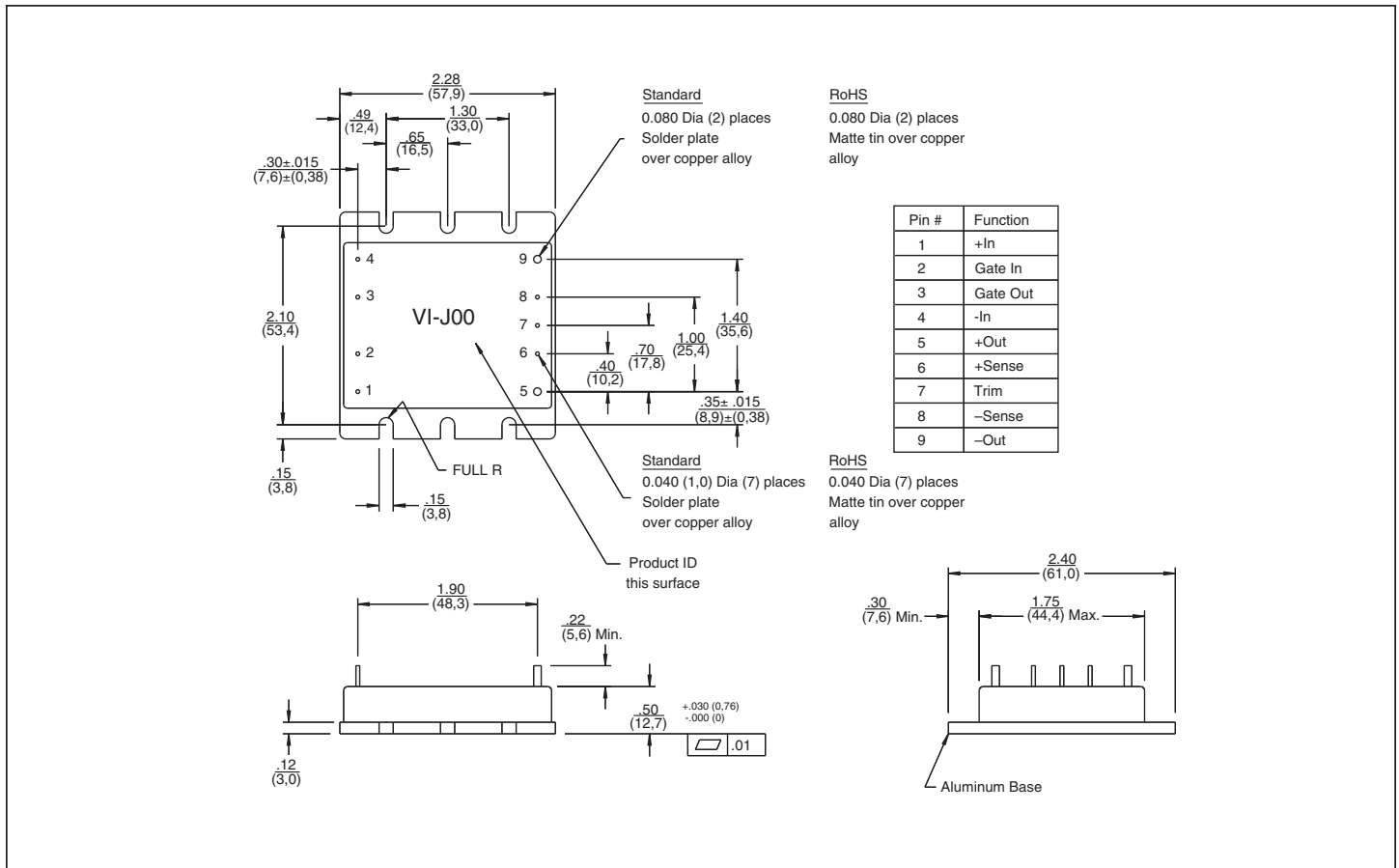
### ■ MECHANICAL SPECIFICATIONS

Parameter	VI-J00 E-Grade			VI-J00 C-, 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	$^{\circ}\text{C}$	
C	-40 to +105	-25 to + 100	$^{\circ}\text{C}$	
I	-55 to +105	-40 to + 100	$^{\circ}\text{C}$	
M	-65 to +105	-55 to + 100	$^{\circ}\text{C}$	

# MECHANICAL DRAWING



## 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" fins — add suffix "-F1"  
Longitudinal, 0.50" fins — add suffix "-F2"



Transverse, 0.25" fins — add suffix "-F3"  
Transverse, 0.50" fins — add suffix "-F4"

Available with longitudinal or transverse fins of 0.25" or 0.50" 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

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**Vicor Corporation**  
25 Frontage Road  
Andover, MA, USA 01810  
Tel: 800-735-6200  
Fax: 978-475-6715

### **email**

Customer Service: [custserv@vicorpower.com](mailto:custserv@vicorpower.com)  
Technical Support: [apps@vicorpower.com](mailto:apps@vicorpower.com)