

# VI-J00

## MiniMod

### DC-DC Converters

#### 25 to 100 Watts

### Converter Selection Chart

## VI-J

### Features

- Up to 50W/Cubic Inch
- UL, CSA, TÜV, VDE, BABT
- CE Marked
- 80-90% 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

### Product Highlights

The VI-J00 MiniMod family establishes a new standard in component-level DC-DC converters. This "junior" size complement to the higher power VI-200 family offers up to 100W of isolated and regulated power in a board mounted package. At one-half the size and twice the power density of previous 100W modules, and with a maximum operating temperature rating of 100°C, the MiniMod opens new horizons for board-mounted (distributed) power architectures.

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.

### Packaging Options

SlimMods™, high power density, flangeless packages and FinMods™, featuring integral finned heatsinks.

**SlimMod:** Option suffix: - S

Example: VI - JXX - XX - S

**FinMod:** Option suffix: - F1 and - F2

Examples:

VI - JXX - XX - F1, 0.75" height

VI - JXX - XX - F2, 1.00" height

Input Voltage				Brownout/Transient*		Output Voltage			
Nominal	Range					Z	Y	O	M
0 = 12V	10 - 20V(4)	n/a	22V	Z	=	2V			
1 = 24V	21 - 32V(2)	18V	36V	Y	=	3.3V			
W = 24V	18 - 36V(2)	n/a	n/a	O	=	5V			
2 = 36V	21 - 56V(1)	18V	60V	M	=	10V			
3 = 48V	42 - 60V(2)	36V	72V	1	=	12V			
N = 48V	36 - 76V(2)	n/a	n/a	2	=	15V			
4 = 72V	55 - 100V(4)	45V	110V	3	=	24V			
T = 110V	66 - 160V(2)	n/a	n/a	L	=	28V			
5 = 150V	100 - 200V(2)	85V	215V	4	=	48V			
6 = 300V	200 - 400V(3)	170V	425V						
7 = 150/300V	100 - 375V(1)	90V	n/a						

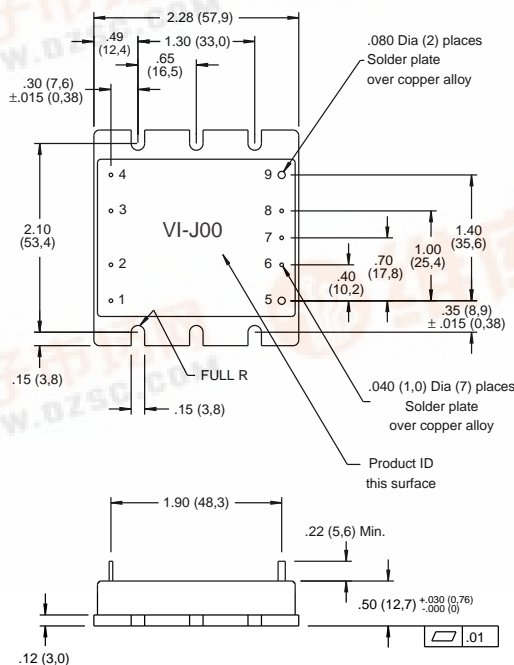
1 to 95V, consult factory.

Product Grade/Operating Temp.		Product Grade/Storage Temp.		Output Power/Current					
E	C	I	M	$V_{OUT} \geq 5V$		$V_{OUT} < 5V$			
-10°C to +100°C	-25°C to +100°C	-40°C to +100°C	-55°C to +100°C	Z	=	25W	Z	=	5A
				Y	=	50W	Y	=	10A
				X	=	75W	X	=	15A
				W	=	100W	W	=	20A

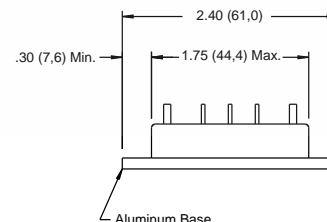
Max. Output For	5V Outputs	> 5V Outputs	< 5V Outputs	Max. Output For	5V Outputs	> 5V Outputs	< 5V Outputs
(1)	50W	50W	10A	(3)	100W	100W	20A
(2)	75W	100W	20A	(4)	50W	75W	15A

\*Brownout 75% of rated load; transient voltage for 1 second.

### Mechanical Drawing



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



## Converter Specifications

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

PARAMETER	VI-J00 E-Grade			VI-J00 C-, I-, M-Grade			UNITS	TEST CONDITIONS
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
<b>■ Input Characteristics</b>								
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		$25 + 20 \log\left(\frac{V_{in}}{V_{out}}\right)$		$30 + 20 \log\left(\frac{V_{in}}{V_{out}}\right)$				120 Hz, nominal line
					$20 + 20 \log\left(\frac{V_{in}}{V_{out}}\right)$			
No load power dissipation		1.35	2	1.35	2		Watts	
<b>■ Output Characteristics</b>								
Setpoint accuracy		1.0%	2.0%	0.5%	1.0%		$V_{NOM}$	
Load/line regulation			0.5%	0.05%	0.2%		$V_{NOM}$	LL to HL, 10% to Full Load
Load/line regulation			1.0%	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			$\%/1\text{K hours}$	
Output ripple - pp:								
2V, 3.3V		200		100	150		mV	20 MHz bandwidth
5V		5%		2%	3%			20 MHz bandwidth
10-48V		3%		0.75%	1.5%			20 MHz bandwidth
Trim range <sup>1</sup>	50%		110%	50%	110%		$V_{NOM}$	
Total remote sense compensation	0.5			0.5			Volts	0.25V max. neg. leg
Current limit	105%		135%	105%	125%		$I_{NOM}$	Automatic restart
Short circuit current	105%		140%	105%	130%		$I_{NOM}$	
<b>■ Control Pin Characteristics</b>								
Gate out impedance		50		50			Ohms	
Gate in impedance		$10^3$		$10^3$			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	
<b>■ Dielectric Withstand Characteristics</b>								
Input to output	3,000			3,000			$V_{RMS}$	Baseplate earthed
Output to baseplate	500			500			$V_{RMS}$	
Input to baseplate	1,500			1,500			$V_{RMS}$	
<b>■ Thermal Characteristics</b>								
Efficiency		78-88%		80-90%				
Baseplate to sink		0.4		0.4			$^{\circ}\text{C}/\text{Watt}$	With Vicor P/N 04308
<b>■ Mechanical Specifications</b>								
Weight		3.0 (85)		3.0 (85)			Ounces (Grams)	

<sup>1</sup>10V, 12V and 15V outputs, standard trim range  $\pm 10\%$ . Consult factory for wider trim range.

For product compliance with agency standards please refer to pages 67 - 69.

