



Data Sheet

VI-J00, VE-J00



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

Half Brick DC-DC Converters

25 to 100 Watts



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 100W 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.

Packaging Options

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

SlimMod: Option suffix: - S

Example: VI - JXX - XX - S

FinMod: Option suffix: - F1 and - F2

Examples:

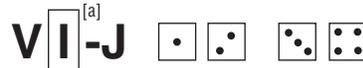
VI - JXX - XX - F1, 0.75" height

VI - JXX - XX - F2, 1.00" height

BusMod: Option suffix: -B1

MegaMod: VI - LJXX - XX

Converter Selection Chart



^[a]E for RoHS compliant

Input Voltage

Nominal	Input Range Full Power	Max Power ^[b]	Low Line 75% Max Power	Transient ^[c]
0 = 12 V	10 – 20 V	(5)	n/a	22 V
V = 24 V	10 – 36 V	(1)	n/a	n/a
1 = 24 V	21 – 32 V	(2)	18 V	36 V
W = 24 V	18 – 36 V	(2)	n/a	n/a
2 = 36 V	21 – 56 V	(6)	18 V	60 V
3 = 48 V	42 – 60 V	(3)	36 V	72 V
N = 48 V	36 – 76 V	(2)	n/a	n/a
4 = 72 V	55 – 100 V	(2)	45 V	110 V
T = 110 V	66 – 160 V	(2)	n/a	n/a
5 = 150 V	100 – 200 V	(2)	85 V	215 V
6 = 300 V	200 – 400 V	(3)	170 V	425 V
7 = 150/300 V	100 – 375 V	(6)	90 V	n/a

^[b] Maximum Power	5 V Outputs	>5 V Outputs	<5 V Outputs
(1)	50 W	50 W	10 A
(2)	75 W	100 W	20 A
(3)	100 W	100 W	20 A
(4)	75 W	75 W	15 A
(5)	50 W	75 W	15 A
(6)	50 W	75 W	10 A

^[c]Transient voltage for 1 second.

Output Voltage

Z = 2 V	2 = 15 V
Y = 3.3 V	N = 18.5 V
0 = 5 V	3 = 24 V
X = 5.2 V	L = 28 V
W = 5.5 V	J = 36 V
V = 5.8 V	K = 40 V
T = 6.5 V	4 = 48 V
R = 7.5 V	H = 52 V
M = 10 V	F = 72 V
1 = 12 V	D = 85 V
P = 13.8 V	B = 95 V

Product Grade Temperature (°C)

Operating	Storage
E = -10 to +100	E = -20 to +105
C = -25 to +100	C = -40 to +105
I = -40 to +100	I = -55 to +105
M = -55 to +100	M = -65 to +105

Output Power/Current Vout

≥ 5 V	< 5 V
Z = 25 W	Z = 5 A
Y = 50 W	Y = 10 A
X = 75 W	X = 15 A
W = 100 W	W = 20 A

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		60×10^{-6}		60×10^{-6}	100×10^{-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
				$20 + 20 \text{Log}\left(\frac{V_{in}}{V_{out}}\right)$				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							
	5 V		5%	2%	3%	V_{NOM}		
			3%	0.75%	1.5%		V_{NOM}	20 MHz bandwidth
Trim range ^[a]	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}	

^[a] 10 V, 12 V, 15 V outputs, and V input range (10 – 36 V) 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 _{RMS}	Baseplate earthed
Output to baseplate	500			500			V _{RMS}	
Input to baseplate	1,500			1,500			V _{RMS}	

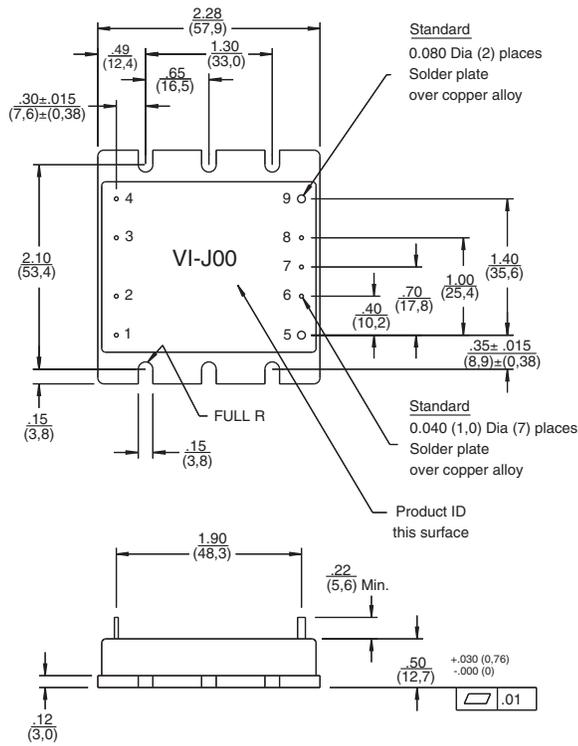
■ THERMAL CHARACTERISTICS

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	3.1	3.2	3.3	3.5	3.7	3.8	Ounces	
	90	92	94	101	107	109	Grams	

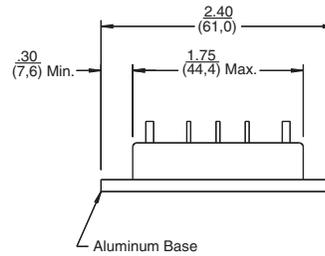
MECHANICAL DRAWING



RoHS
0.080 Dia (2) places
Matte tin over copper
alloy

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

RoHS
0.040 Dia (7) places
Matte tin over copper
alloy



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