VI-J00 MiniMod

DC-DC Converters 25 to 100 Watts

Features

- Up to 50W/Cubic Inch
- UL, CSA, TÜV, VDE, BABT
- 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

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

Converter Selection Chart

VI-J ▪ ▪ ▪ ▪

Input Voltage

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

Output Voltage

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

Product Grade/ Operating Temp.

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

Output Power/Current

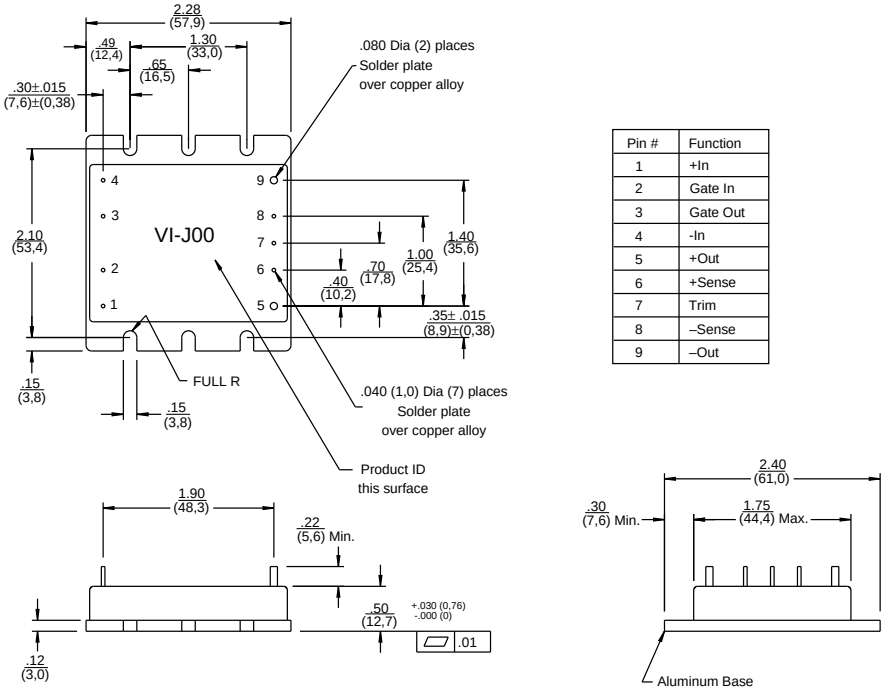
$V_{OUT} \geq 5V$	$V_{OUT} < 5V$
Z = 25W	Z = 5A
Y = 50W	Y = 10A
X = 75W	X = 15A
W = 100W	W = 20A

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

Max. Output For	5V Outputs	> 5V Outputs	< 5V Outputs
(4)	75W	75W	15A
(5)	50W	75W	15A
(6)	50W	75W	10A

*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°C, nominal line and 75% load, unless otherwise specified)

PARAMETER	VI-J00 E-Grade MIN.	VI-J00 E-Grade TYP.	VI-J00 E-Grade MAX.	VI-J00 C-, I-, M-Grade MIN.	VI-J00 C-, I-, M-Grade TYP.	VI-J00 C-, I-, M-Grade MAX.	UNITS	TEST CONDITIONS
■ Input Characteristics								
Inrush charge		$60x10^{-6}$			$60x10^{-6}$	$100x10^{-6}$	Coulombs	Nominal line
Input reflected ripple current – pp		10%			10%		I_{IN}	Nominal line, full load
Input ripple rejection		$25+20Log\left(\frac{Vin}{Vout}\right)$			$30+20Log\left(\frac{Vin}{Vout}\right)$		dB	120 Hz, nominal line
					$20+20Log\left(\frac{Vin}{Vout}\right)$		dB	2400 Hz, nominal line
No load power dissipation		1.35	2		1.35	2	Watts	
■ Output Characteristics								
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	%/°C	Over rated temperature
Long term drift		0.02			0.02		%/1K 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[1]	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}	
■ Control Pin Characteristics								
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	
■ Dielectric Withstand Characteristics								
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								
Efficiency		78-88%			80-90%			
Baseplate to sink		0.4			0.4		°C/Watt	With Vicor P/N 04308
■ Mechanical Specifications								
Weight		3.0 (85)			3.0 (85)		Ounces (Grams)	

[1]10V, 12V and 15V outputs, standard trim range ±10%. Consult factory for wider trim range.

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