

VI-J00 MiniMod DC-DC Converters 25 to 100 Watts

Converter Selection Chart



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

Input Voltage				Output Voltage			
Nominal	Range	Brownout/Transient*					
0 = 12V	10 - 20V(5)	n/a	22V	Z = 2V	2 = 15V		
1 = 24V	21 - 32V(2)	18V	36V	Y = 3.3V	N = 18.5V		
W = 24V	18 - 36V(2)	n/a	n/a	O = 5V	3 = 24V		
2 = 36V	21 - 56V(6)	18V	60V	X = 5.2V	L = 28V		
3 = 48V	42 - 60V(3)	36V	72V	W = 5.5V	J = 36V		
N = 48V	36 - 76V(2)	n/a	n/a	V = 5.8V	K = 40V		
4 = 72V	55 - 100V(2)	45V	110V	T = 6.5V	4 = 48V		
T = 110V	66 - 160V(2)	n/a	n/a	R = 7.5V	H = 52V		
5 = 150V	100 - 200V(2)	85V	215V	M = 10V	F = 72V		
6 = 300V	200 - 400V(3)	170V	425V	1 = 12V	D = 85V		
7 = 150/300V	100 - 375V(6)	90V	n/a	P = 13.8V	B = 95V		

Product Grade/Operating Temp.		Product Grade/Storage Temp.		Output Power/Current			
				V _{OUT} ≥ 5V		V _{OUT} < 5V	
E = -10°C to +100°C	E = -20°C to +105°C	Z = 25W	Z = 5A				
C = -25°C to +100°C	C = -40°C to +105°C	Y = 50W	Y = 10A				
I = -40°C to +100°C	I = -55°C to +105°C	X = 75W	X = 15A				
M = -55°C to +100°C	M = -65°C to +105°C	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 $T_{BP} = 25^{\circ}\text{C}$, 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.		
■ 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($\frac{V_{in}}{V_{out}}$)		30+20Log($\frac{V_{in}}{V_{out}}$)			dB	120 Hz, nominal line
				20+20Log($\frac{V_{in}}{V_{out}}$)				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)	

¹10V, 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.