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, cTÜVus
- 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 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 flexibiliy 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 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

V I* -J ▪ ▪ ▪▪ ▪▪

*E for RoHS compliant

▪ Input Voltage

Nominal	Range	Max Power**	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

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

****Brownout 75% of rated load; 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 Temperatures (°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	< 5V
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°C, nominal line and 75% load, unless otherwise specified)

■ INPUT SPECIFICATIONS

Parameter	VI-J00 E-Grade Min	Typ	Max	VI-J00 C-, I-, M-Grade Min	Typ	Max	Units	Test Conditions
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		$25+20\,\mathrm{Log}\left(\frac{Vin}{Vout}\right)$			$30+20\,\mathrm{Log}\left(\frac{Vin}{Vout}\right)$		dB	120 Hz, nominal line
					$20+20\,\mathrm{Log}\left(\frac{Vin}{Vout}\right)$		dB	2400 Hz, nominal line
No load power dissipation		1.35	2		1.35	2	Watts	

■ OUTPUT CHARACTERISTICS

Parameter	VI-J00 E-Grade Min	Typ	Max	VI-J00 C-, I-, M-Grade Min	Typ	Max	Units	Test Conditions
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	% / °C	Over rated temperature
Long term drift		0.02			0.02		%/1K hours	
Output ripple – pp:								
2 V, 3.3 V			200		100	150	mV	20 MHz bandwidth
5 V			5%		2%	3%	V_{NOM}	20 MHz bandwidth
10 – 48 V			3%		0.75%	1.5%	V_{NOM}	20 MHz bandwidth
Trim range[1]	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}	

■ CONTROL PIN SPECIFICATIONS

Parameter	VI-J00 E-Grade Min	Typ	Max	VI-J00 C-, I-, M-Grade Min	Typ	Max	Units	Test Conditions
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°C, nominal line and 75% load, unless otherwise specified)

■ DIELECTRIC WITHSTAND CHARACTERISTICS

	VI-J00 E-Grade			VI-J00 C-, I-, M-Grade				
Parameter	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Units**	**Test Conditions**
Input to output	3,000			3,000			VRMS	Baseplate earthed
Output to baseplate	500			500			VRMS	
Input to baseplate	1,500			1,500			VRMS	

■ THERMAL CHARACTERISTICS

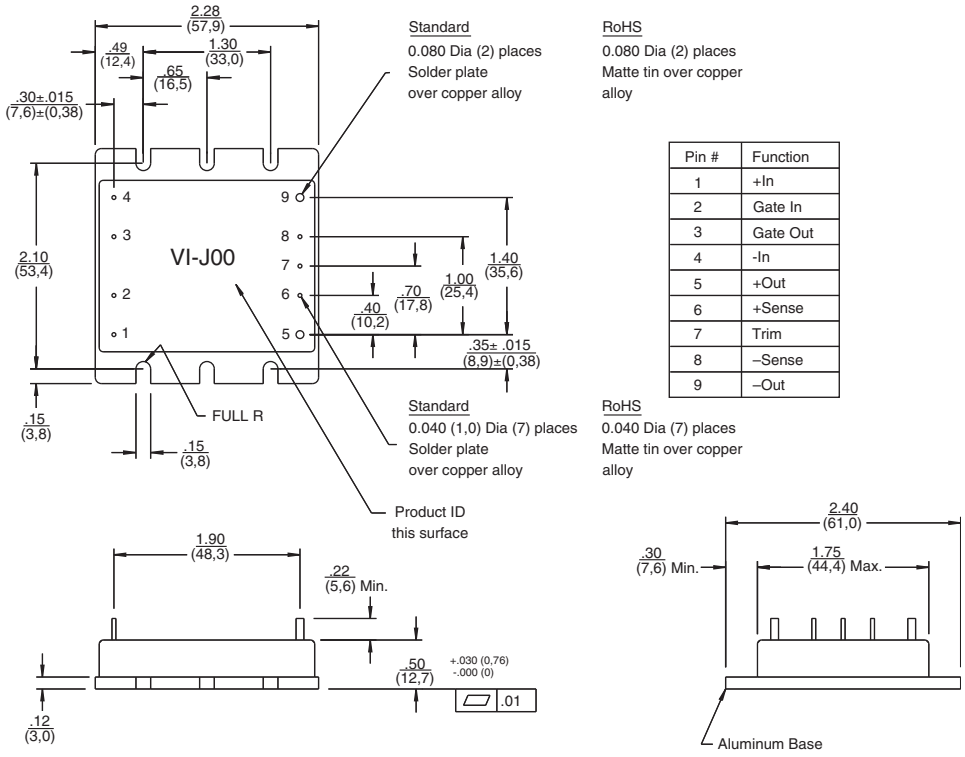
	VI-J00 E-Grade			VI-J00 C-, I-, M-Grade				
Parameter	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Units**	**Test Conditions**
Efficiency		78 – 88%			80 – 90%			
Baseplate to sink		0.14			0.14		°C/Watt	With Vicor P/N 20267

■ MECHANICAL SPECIFICATIONS

	VI-J00 E-Grade			VI-J00 C-, I-, M-Grade				
Parameter	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Units**	**Test Conditions**
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.

MECHANICAL DRAWING



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

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