Data Sheet
VI-200, VE-200
DC-DC Converters
50 to 200 Watts

Features
- RoHS compliant (VE-200)
- Up to 50 W/in^3
- cULus, cTÜVus
- Up to 90% efficiency
- Size: 4.6" x 2.4" x 0.5" (116,8 x 61,0 x 12,7mm)
- Remote sense and current limit
- OVP, thermal shutdown
- Logic disable
- Wide range output adjust
- Compatible power booster modules
- ZCS power architecture
- Low noise FM control
- CE Marked
- Isolated output

Product Highlights

The VI-200 family, with over 14 million units shipped, is Vicor's broad series of "zero-current-switching" component-level DC-DC converters.

Operating at frequencies up to 2 MHz, VI-200 family converters offer exceptional power density, efficiency, noise performance, reliability and ease of use. Booster modules (VI-Bxx) provide a simple, cost-effective, off-the-shelf solution for higher power output requirements. One or more boosters may be used to create synchronous arrays capable of supplying several kilowatts of output power.

The flexibility of Vicor's power components is also available in half-size, half-power VI-J00 MiniMods.

Part Numbering

VI — **2** **6** **1** — **C** **W**

Family
VI = Non-RoHS
VE = RoHS

Series
2 = 200
B = Booster

Note: For additional packaging options, please see page 4.

Input

0 = 12 V	**N** = 48 V
V = 24 V	**4** = 72 V
1 = 24 V	**T** = 110 V
W = 24 V	**5** = 150 V
2 = 36 V	**6** = 300 V
3 = 48 V	**7** = 150/300 V

Output

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

Grade
E = –10 to 85°C
C = –25 to 85°C
I = –40 to 85°C
M = –55 to 85°C

Power

≥ 5 V	< 5 V
U = 200 W	**U** = 40 A
V = 150 W	**V** = 30 A
W = 100 W	**W** = 20 A
X = 75 W	**X** = 15 A
Y = 50 W	**Y** = 10 A

Maximum Power Available for VI-2xx-xx [a]

Input				Output																						
				Vout Designators																						
Voltage Nom. (Range)	Low Line 75% Max Power	Transient[b]	Vin Designators	2	3.3	5	5.2	5.5	5.8	6.5	7.5	10	12	13.8	15	18.5	24	28	36	40	48	52	72	85	95
				Z	Y	0	X	W	V	T	R	M	1	P	2	N	3	L	J	K	4	H	F	D	B
12 (10-20)	n/a	22	**0**	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
24 (10-36)	n/a	n/a	**V**	--	X	Y	Y	Y	Y	Y	X	X	X	X	X	X	X	X	X	X	X	--	--	--	--
24 (21-32)	18	36	**1**	U	U	U	U	U	U	V	V	U	U	U	U	U	U	U	U	U	U	U	U	U	U
24 (18-36)	n/a	n/a	**W**	V	V	V	V	V	V	W	W	V	V	V	V	V	V	V	V	V	V	V	V	V	V
36 (21-56)	18	60	**2**	W	V	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	--	--	--
48 (42-60)	36	72	**3**	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
48 (36-76)	n/a	n/a	**N**	V	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
72 (55-100)	45	110	**4**	U	U	U	U	U	U	V	V	U	U	U	U	U	U	U	U	U	U	U	U	U	U
110 (66-160)	n/a	n/a	**T**	V	V	V	V	V	V	W	W	V	V	V	V	V	V	V	V	V	V	V	V	--	--
150 (100-200)	85[c]	215	**5**	U	U	V	V	V	V	V	V	U	U	U	U	U	U	U	U	U	U	U	U	U	U
150 (100-375)	n/a	n/a	**7**	W	W	Y	Y	Y	Y	W	W	W	W	W	W	W	W	W	W	W	W	W	--	--	--
300 (200-400)	170[d]	425	**6**	U	U	U	U	U	U	V	V	U	U	U	U	U	U	U	U	U	U	U	U	U	U

[a] For additional output power, "booster" modules are available. (VI-Bxx-xx)
[b] Transient voltage for 1 second.
[c] 15 Vout, 200 W models are limited to 90 Vdc
[d] 15 Vout, 200 W models are limited to 185 Vdc

CONVERTER SPECIFICATIONS

(typical at T_{BP} = 25°C, nominal line and 75% load, unless otherwise specified)

■ INPUT SPECIFICATIONS

Parameter	VI-200 E-Grade Min	VI-200 E-Grade Typ	VI-200 E-Grade Max	VI-200 C-, I-, M-Grade Min	VI-200 C-, I-, M-Grade Typ	VI-200 C-, I-, M-Grade Max	Units	Test Conditions
Inrush charge		120×10^{-6}			120×10^{-6}	200×10^{-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-200 E-Grade Min	VI-200 E-Grade Typ	VI-200 E-Grade Max	VI-200 C-, I-, M-Grade Min	VI-200 C-, I-, M-Grade Typ	VI-200 C-, I-, M-Grade 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
Load/line regulation			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 temp.
Long term drift		0.02			0.02		%/1K hours	
Output ripple – pp:								
2 V, 3.3 V			150		60	100	mV	20 MHz bandwidth
5 V			5%		2%	3%	V_{NOM}	20 MHz bandwidth
10 – 95 V			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
OVP set point		125%[b]		115%	125%[b]	135%	V_{NOM}	Recycle power
Current limit	105%		135%	105%		125%	I_{NOM}	Automatic restart
Short circuit current [c]	20%		140%	20%		130%	I_{NOM}	

[a] 10 V, 12 V, 13.8 V, 15 V outputs, or "V" input range have standard trim range ±10%. Consult factory for wider trim range.
3.3 V output trim range 2.20 to 3.63 V, 95 V output –50 + 0% trim range.

[b] 131% nominal for booster modules.

[c] Output voltages of 3.3 V or 5 V incorporate foldback current limiting; For output voltages from 5.2 V to 7.5 V consult factory; All other outputs provide constant current limiting.

■ CONTROL PIN SPECIFICATIONS

Parameter	VI-200 E-Grade Min	VI-200 E-Grade Typ	VI-200 E-Grade Max	VI-200 C-, I-, M-Grade Min	VI-200 C-, I-, M-Grade Typ	VI-200 C-, I-, M-Grade Max	Units	Test Conditions
Gate out impedance		50			50		Ohms	
Gate in impedance		1000			1000		Ohms	
Gate in open circuit voltage		6			6		Volts	Use open collector
Gate in low threshold	0.65			0.65			Volts	
Gate in low current			6			6	mA	
Power sharing accuracy	0.95		1.05	0.95		1.05		

■ DIELECTRIC WITHSTAND CHARACTERISTICS

Parameter	VI-200 E-Grade Min	Typ	Max	VI-200 C-, I-, M-Grade 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

Parameter	VI-200 E-Grade Min	Typ	Max	VI-200 C-, I-, M-Grade Min	Typ	Max	Units	Test Conditions
Efficiency		78 – 88%			80 – 90%			
Baseplate to sink thermal impedance		0.07			0.07		°C/Watt	With Vicor P/N 20266
Thermal shutdown[d] (Drivers only)	90	95	105	90	95	105	°C	Cool and recycle power to restart

[d] No overtemp protection in booster modules.

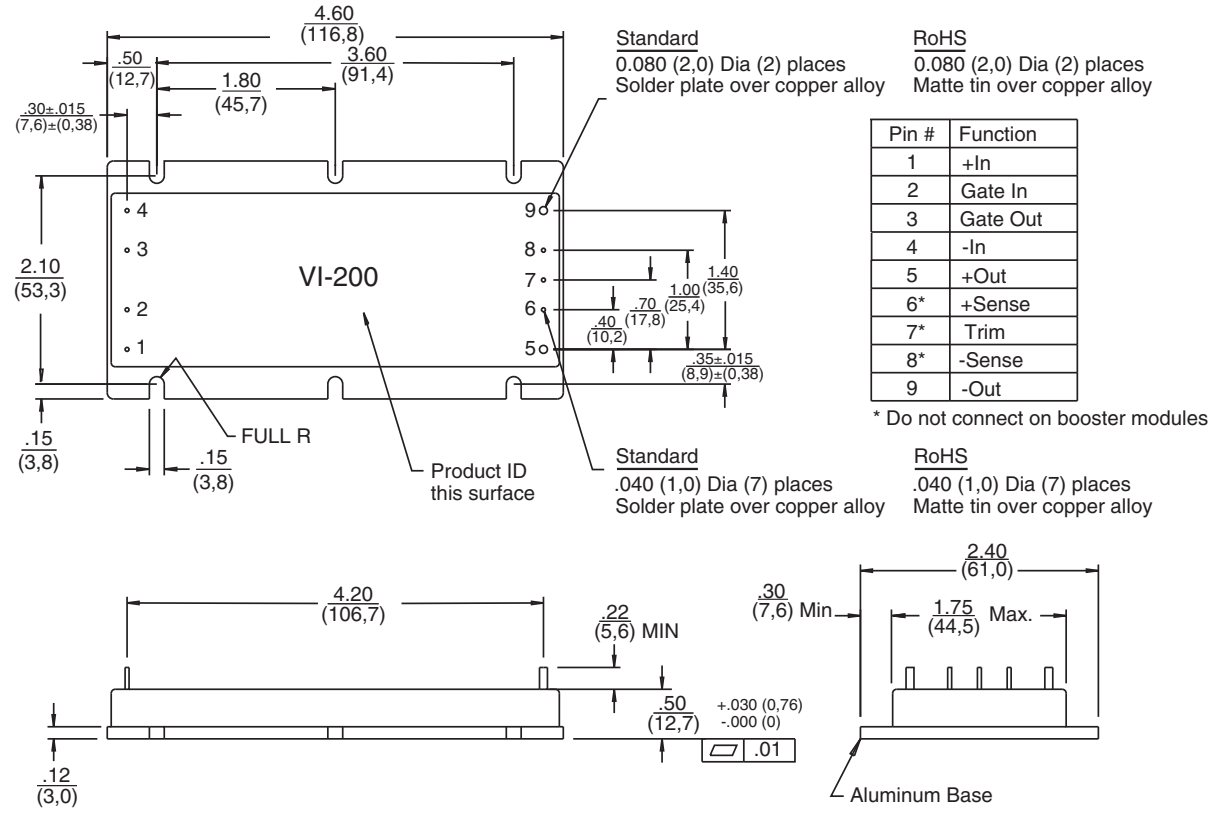
■ MECHANICAL SPECIFICATIONS

Parameter	VI-200 E-, C-Grade Min	Typ	Max	VI-200 I-, M-Grade Min	Typ	Max	Units	Test Conditions
Weight	5.7 (160.2)	6.3 (178)	6.9 (195.8)	6.6 (187.2)	7.3 (208)	8.1 (228.8)	Ounces (Grams)	

■ PRODUCT GRADE TEMPERATURES

Parameter	Storage	Operating	Units	Notes
E	-20 to +100	-10 to + 85	°C	Overtemperature shutdown 95°C typical (recycle power to restart)
C	-40 to +100	-25 to + 85	°C	
I	-55 to +100	-40 to + 85	°C	
M	-65 to +100	-55 to + 85	°C	

MECHANICAL DRAWING



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

* Do not connect on booster modules

■ PACKAGING OPTIONS

SlimMod
Flangeless package

4.60"L x 1.80"W x 0.50"H
(116,8 x 45,7 x 12,7 mm)

To order the SlimMod configuration add the suffix "–S" to the standard module part number.

Qty (2) grounding clips are included with each SlimMod P/N 32187

FinMod
Flangeless package with integral heat sink

Longitudinal, 0.25" fins — add suffix "–F1"
Longitudinal, 0.50" fins — add suffix "–F2"

Transverse, 0.25" fins — add suffix "–F3"
Transverse, 0.50" fins — add suffix "–F4"

Available with longitudinal or transverse fins of 0.25" or 0.50" height. Add the appropriate suffix to the module part number.

Qty (4) grounding clips are included with each FinMod
F1, F2 P/N 32185
F3, F4 P/N 32186

MegaMod
Chassis mount alternatives, one, two, or three outputs: up to 600 W

1 up – 4.9" x 2.5" x 0.62" (124,4 x 63,5 x 15,7 mm)
2 up – 4.9" x 4.9" x 0.62" (124,4 x 124,4 x 15,7 mm)
3 up – 4.9" x 7.3" x 0.62" (124,4 x 185,4 x 15,7 mm)

BusMod

4.60"L x 2.40"W x 1.08"H
(116,8 x 61,0 x 27,4 mm)

To order the BusMod fully assembled, add suffix "–B1" to the standard module part number.

To order the BusMod separately:
Full-sized BusMod — P/N 06322

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Vicor Corporation
25 Frontage Road
Andover, MA, USA 01810
Tel: 800-735-6200
Fax: 978-475-6715

email
Customer Service: custserv@vicorpower.com
Technical Support: apps@vicorpower.com