

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

Product Highlights

The VI-200 family, with over 12 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.

Packaging Options

SlimModsTM, high power density, flangeless devices and FinModsTM, featuring integral finned heatsinks.

SlimMod: Option suffix: **- S** Example: VI - 2XX - XX **- S**

FinMod: Option suffix: - F1, - F2, -F3 or -F4

Examples:

VI - 2XX - XX -F1, 0.25" fins, longitudinal VI - 2XX - XX -F2, 0.50" fins, longitudinal VI - 2XX - XX -F3, 0.25" fins, transverse

VI - 2XX - XX - **F3**, 0.25 fins, transverse VI - 2XX - XX - **F4**, 0.50" fins, transverse

BusMod: Option suffix: -B1 **MegaMod:** VI - LXX - XX

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



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

^[b] Maximum Power	5 V Outputs	>5 V Outputs	<5 V Outputs
(1)	75 W	75 W	15 A
(2)	150 W	150 W	30 A
(3)	100 W	100 W	20 A
(4)	200 W	200 W	40 A
(5)	150 W	200 W	40 A
(6)	75 W	100 W	20 A
(7)	50 W	75 W ^[d]	15 A

[[]c] Transient voltage for 1 second.

Output Voltage

Z =	2.0 V	2 =	15 V
Y =	3.3 V	N =	18.5 V
0 =	5.0 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					
$\mathbf{E} = -10 \text{ to } +85$	$\mathbf{E} = -20 \text{ to } +100$					
$\mathbf{C} = -25 \text{ to } +85$	$\mathbf{C} = -40 \text{ to } +100$					
I = -40 to +85	I = -55 to +100					
M = -55 to +85	M = -65 to +100					
Overtemperature sh	nutdown 95°C typical					
(recycle pow	ver to restart)					

Output Power/Current Vout

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

For additional output power use "Boosters".

Change (VI-2xx-xx) to (VI-Bxx-xx)

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Rev. 2.4

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[[]d] X,V, and T outputs are 50 W max.

CONVERTER SPECIFICATIONS

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

■ INPUT SPECIFICATIONS

	V	I-200 E-Grad	<u>e</u>	<u>VI</u> .	-200 C-, I-, M-	Grade		
Parameter	Min	Тур	Max	Min	Тур	Max	Units	Test Conditions
Inrush charge		120 x 10 ⁻⁶			120 x 10 ⁻⁶	200 x 10 ⁻⁶	Coulombs	Nominal line
Input reflected ripple current – pp		10%			10%			Nominal line, full load
Input ripple rejection	$25+20 \operatorname{Log}\left(\frac{\operatorname{Vin}}{\operatorname{Vout}}\right)$				$30+20 \operatorname{Log}\left(\frac{\operatorname{Vin}}{\operatorname{Vout}}\right)$			120 Hz, nominal line
				:	$20+20 \operatorname{Log}\left(\frac{\operatorname{Vii}}{\operatorname{Vo}}\right)$	$\frac{n}{ut}$	dB	2400 Hz, nominal line
No load power dissipation		1.35	2		1.35	2	Watts	

■ OUTPUT CHARACTERISTICS

	VI	-200 E-Grac	l <u>e</u>	VI-	VI-200 C-, I-, M-Grade			
Parameter	Min	Тур	Max	Min	Тур	Max	Units	Test Conditions
Setpoint accuracy		1%	2%		0.5%	1%	Vnom	
Load/line regulation			0.5%		0.05%	0.2%	Vnom	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%	Vnom	20 MHz bandwidth
10 – 48 V			3%		0.75%	1.5%	Vnom	20 MHz bandwidth
Trim range ^[a]	50%		110%	50%		110%	Vnom	
Total remote sense compensation	0.5			0.5			Volts	0.25 V max. neg. leg
OVP set point		125% ^[b]		115%	125% ^[b]	135%	Vnom	Recycle power
Current limit	105%		135%	105%		125%	Іпом	Automatic restart
Short circuit current [c]	20%		140%	20%		130%	Іпом	

[[]a] 10 V, 12 V, 15 V outputs, and V input range (10 – 36 V) 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.

■ CONTROL PIN SPECIFICATIONS

	VI-200 E-Grade			<u>VI-2</u>	VI-200 C-, I-, M-Grade			
Parameter	Min	Тур	Max	Min	Тур	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		

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[[]b] 131% nominal for booster modules.

[[]c] Output voltages of 3.3 V or 5 V incorporate foldback current limiting; all other outputs provide constant current limiting.

CONVERTER SPECIFICATIONS (cont.)

■ DIELECTRIC WITHSTAND CHARACTERISTICS

	VI-200 E-Grade			VI-2	VI-200 C-, I-, M-Grade			
Parameter	Min	Тур	Max	Min	Тур	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-200 E-Grade					VI-200 C-, I-, M-Grade			
Parameter	Min	Тур	Max	Min	Тур	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

	VI-200 E-, C-Grade			<u>VI</u> -	VI-200 I-, M-Grade			
Parameter	Min	Тур	Max	Min	Тур	Max	Units	Test Conditions
Weight	6.2 (176)	6.3 (178)	6.4 (181)	7.2 (205)	7.3 (208)	7.4 (210)	Ounces (Grams)	

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