



Data Sheet

VI-200, VE-200



DC-DC Converters

50 to 200 Watts



Features

- RoHS compliant (VE-200)
- Up to 50 W/in³
- cULus, cTUVus
- 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

SlimMods™, high power density, flangeless packages and FinMods™, featuring integral finned heatsinks.

SlimMod: Option suffix: - S

Example: VI - 2XX - XX - S

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

Examples:

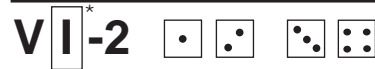
VI - 2XX - XX - F1, 0.25" fins, longitudinal

VI - 2XX - XX - F2, 0.50" fins, longitudinal

VI - 2XX - XX - F3, 0.25" fins, transverse

VI - 2XX - XX - F4, 0.50" fins, transverse

Converter Selection Chart



*E for RoHS compliant

Input Voltage

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

**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

*** Brownout 75% of rated load; 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
E = -10 to +85	E = -20 to +100
C = -25 to +85	C = -40 to +100
I = -40 to +85	I = -55 to +100
M = -55 to +85	M = -65 to +100
Overtemperature shutdown 95°C typical (recycle power 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

For additional output power use "Boosters".
Change (VI-2xx-xx) to (VI-Bxx-xx)

CONVERTER SPECIFICATIONS

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

INPUT SPECIFICATIONS

Parameter	VI-200 E-Grade			VI-200 C-, I-, M-Grade			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
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		$25 + 20 \text{Log}\left(\frac{V_{in}}{V_{out}}\right)$		$30 + 20 \text{Log}\left(\frac{V_{in}}{V_{out}}\right)$			dB	120 Hz, nominal line
				$20 + 20 \text{Log}\left(\frac{V_{in}}{V_{out}}\right)$				2400 Hz, nominal line
No load power dissipation		1.35	2	1.35	2		Watts	

OUTPUT CHARACTERISTICS

Parameter	VI-200 E-Grade			VI-200 C-, I-, M-Grade			Units	Test Conditions					
	Min	Typ	Max	Min	Typ	Max							
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		% / $^{\circ}\text{C}$	Over rated temp.					
Long term drift		0.02		0.02			%/1K hours						
Output ripple – pp:			150	60	100		mV	2 V, 3.3 V					
								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					
OVP set point		$125\%^2$		115%	$125\%^2$	135%	V_{NOM}	Recycle power					
Current limit	105%		135%	105%		125%	I_{NOM}	Automatic restart					
Short circuit current ³	20%		140%	20%		130%	I_{NOM}						

CONTROL PIN SPECIFICATIONS

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

CONVERTER SPECIFICATIONS (cont.)

■ DIELECTRIC WITHSTAND CHARACTERISTICS

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

Parameter	VI-200 E-Grade			VI-200 C-, I-, M-Grade			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
Efficiency		78 – 88%			80 – 90%			
Baseplate to sink thermal impedance		0.07			0.07		°C/Watt	With Vicor P/N 20266
Thermal shutdown ⁴ (Drivers only)	90	95	105	90	95	105	°C	Cool and recycle power to restart

■ MECHANICAL SPECIFICATIONS

Parameter	VI-200 E-Grade			VI-200 C-, I-, M-Grade			Units	Test Conditions
	Min	Typ	Max	Min	Typ	Max		
Weight		6.0 (170)			6.0 (170)		Ounces (Grams)	

Notes:

¹ 10 V, 12 V and 15 V outputs, standard trim range $\pm 10\%$. Consult factory for wider trim range.

3.3 V output trim range 2.20 to 3.63 V

² 131% nominal for booster modules.

³ Output voltages of 3.3 V or 5 V incorporate foldback current limiting; all other outputs provide constant current limiting.

⁴ No overtemp protection in booster modules.

MECHANICAL DRAWING

