VI-200

DC-DC Converters
50 to 200 Watts

Features

- Up to 50W/Cubic Inch
- UL, CSA, TÜV, VDE, BABT, AUSTEL
- 80-90% Efficiency
- Size: 4.6" x 2.4" x 0.5" (116,8 x 61,0 x 12,7)
- 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 8 million shipped, is Vicor's first generation 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. Power Boosters 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. (pg. 72)

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** and **- F2**

Examples:
VI - 2XX - XX **-F1**, 0.75" height
VI - 2XX - XX **-F2**, 1.00" height

Converter Selection Chart

VI-2 [ ] [ ] [ ] [ ]

Input Voltage

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

Output Voltage

Z	2V
Y	3.3V
0	5V
M	10V
1	12V
2	15V
3	24V
L	28V
4	48V

1 to 95V, consult factory.

Product Grade/ Operating Temp.

E	-10°C to +85°C
C	-25°C to +85°C
I	-40°C to +85°C
M	-55°C to +85°C

Product Grade/ Storage Temp.

E	-20°C to +100°C
C	-40°C to +100°C
I	-55°C to +100°C
M	-65°C to +100°C

Overtemperature shutdown 95°C typical (recycle power to restart).

Output Power/Current

$V_{OUT} \geq 5V$		$V_{OUT} < 5V$	
Y	50W	Y	10A
X	75W	X	15A
W	100W	W	20A
V	150W	V	30A
U	200W	U	40A

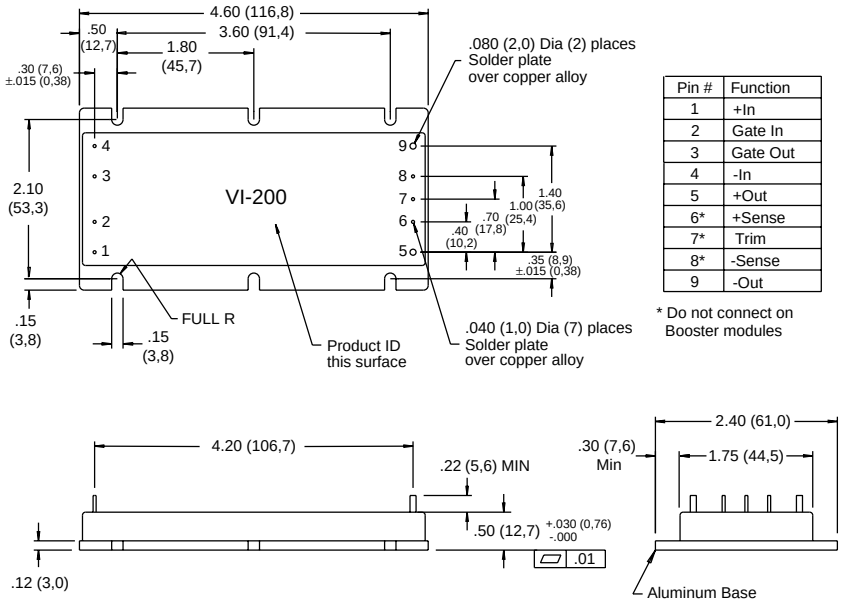
For additional output power use "Boosters". Change (VI-**2**xx-xx) to (VI-**B**xx-xx).

Max. Output For	5V Outputs	> 5V Outputs	< 5V Outputs
(1)	75W	75W	15A
(2)	150W	150W	30A
(3)	100W	100W	20A

Max. Output For	5V Outputs	> 5V Outputs	< 5V Outputs
(4)	200W	200W	40A
(5)	150W	200W	40A
(6)	75W	100W	20A

** 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

* Do not connect on Booster modules

Converter Specifications

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

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
■ Input Characteristics								
Inrush charge		$120x10^{-6}$			$120x10^{-6}$	$200x10^{-6}$	Coulombs	Nominal line
Input reflected ripple current – pp		10%			10%		I_{IN}	Nominal line, full load
Input ripple rejection		$25+20Log\left(\frac{Vin}{Vout}\right)$			$30+20Log\left(\frac{Vin}{Vout}\right)$		dB	120 Hz, nominal line
					$20+20Log\left(\frac{Vin}{Vout}\right)$		dB	2400 Hz, nominal line
No load power dissipation		1.35	2		1.35	2	Watts	
■ Output Characteristics								
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:								
2V, 3.3V			150 mV		60 mV	100 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%		
Total remote sense compensation	0.5			0.5			Volts	0.25V 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 Characteristics								
Gate out impedance		50			50		Ohms	
Gate in impedance		10^3			10^3		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								
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		0.2			0.2		°C/Watt	With Vicor P/N 01777
Thermal shutdown[4] (Drivers only)	90	95	105	90	95	105	°C	Cool and recycle power to restart
■ Mechanical Specifications								
Weight		6.0 (170)			6.0 (170)		Ounces (Grams)	

[1] 10V, 12V and 15V outputs, standard trim range ±10%. Consult factory for wider trim range.
[2] 131% nominal for booster modules.
[3] Output voltages of 5V or less incorporate foldback current limiting; outputs of 10V and above provide constant current limiting.
[4] No overtemp protection in booster modules.