



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China







# VICOR PRODUCT CATALOG

BRICKS



V-I CHIP



PICOR



CONFIGURABLE PSUs



MIL-COTS



CUSTOM





# VICOR CORPORATION

## Power Solutions

Vicor's product line of modular power components and complete power systems includes thousands of combinations of input voltage, output voltage, and power levels, complete with accessory components that integrate other power system functions. Together, these products allow designers around the world to meet their unique power requirements by selecting and interconnecting standard modular parts. The benefits for you are rapid, flexible design of complete power systems at any power level.

If you don't find the converter you need from our thousands of predefined DC-DC converters, you can design your own custom product on the web using Vicor's PowerBench Design System. We offer a wide range of solutions with 1 – 20 outputs and autoranging, PFC, or three-phase inputs. There are several chassis sizes to choose from, both with and without integral cooling fans. Also available from Vicor is a strong offering of front ends and filters to complete your design. Our extensive MIL-COTS product line incorporates the technology and features of our commercial products into a cost-effective alternative for military, aerospace, and other high-reliability, harsh-environment applications. Standard inputs of 28, 48, 155, 270, and 375 Vdc are available.

Vicor is pioneering the second wave of the power component revolution with the introduction of flexible, high-performance power components. V•I Chip™ Factorized Power Architecture provides the means to more efficient power distribution and the V•I Chips provide the building blocks with the right attributes of high density and efficiency, flexibility, and fast transient response that enable power architects to more easily design small, high-performance, cost-effective power system solutions. V•I Chip PRMs™ (regulators), VTMs™ (voltage transformers) and BCMs™ (bus converters) are available for a wide range of DC-DC conversion and Intermediate Bus Architecture applications. MIL-COTS versions are also available.

New power options are available with Picor's first standard semiconductor solution – Cool-ORing™ – that can substantially reduce power dissipation and size, while providing superior dynamic response for Active ORing applications in redundant power architectures. Another new option is the new modular power platform: VI BRICK. The new VI BRICK family is an advanced modular power platform that incorporates the superior technical attributes of V•I Chip technology and a robust packaging that facilitates thermal management and through-hole assembly. Models include high-current density / low-voltage DC-DC converters, a wide range of highly efficient bus converters (BCM), and individual modules – PRM and VTM – for both regulation and transformation.

Vicor Custom Power provides complete power solutions for communications, industrial, datacom, test equipment, medical diagnostics, and MIL-COTS. Using the extensive Vicor line of DC-DC converters in a modular, building-block design approach, Custom Power offers total solutions to unique power requirements in the shortest possible time.

All our products deliver agency-approved reliability and the predictable performance of field-proven power technology, including conformance to RoHS if desired. Vicor is ISO 9001:2000 certified and places heavy emphasis on the "Plan-Do-Check-Act" model (PDCA) to foster continuous improvement. This enables proactive actions to be undertaken to improve our technology, our products, our processes, and our service to our customers. Our new [Quality Center on vicorpower.com](http://Quality.Center.on.vicorpower.com) enables quality managers, purchasing agents, and designers to see comprehensive video of our facilities as well as generate customized ISO 9001:2000 reports about our quality systems.

Be assured that Vicor is on a continuous quest for the best technical solution for you. Moreover, our commitment to the elegance and affordability of your design is backed up by our global staff of experienced applications engineers. Rely on Vicor as your dedicated design partner.



## TABLE OF CONTENTS

Product Overview Chart.....	2 – 3
<b>DC-DC V-I Chip™ Advantage</b> .....	<b>4</b>
<i>Power Conversions Using PRM, VTM &amp; BCMs</i> .....	4
<i>Bus Converter (BCM™)</i> .....	5
<i>Regulator (PRM™)</i> .....	6
<i>Voltage Transformer (VTM™)</i> .....	7
<b>VI BRICKS</b> .....	<b>8</b>
<i>PRM, VTM, BCM &amp; DC-DC Converter</i> .....	8 – 11
<b>DC-DC BRICKS</b> .....	<b>12</b>
<i>VI-200 &amp; VI-100 Series Converter Modules</i> .....	12 – 13
<i>Maxi, Mini &amp; Micro Series Converter Modules</i> .....	14 – 15
<b>Power Path Management Solutions</b> .....	<b>16</b>
<i>Cool-ORing™ Series</i> .....	16 – 17
<b>AC-DC Front Ends</b> .....	<b>18</b>
<i>Harmonic Attenuator Module (HAM)</i> .....	18
<i>AC-DC / DC-DC PFC FrontEnd</i> .....	19
<i>Alternating Input Module (AIM)</i> .....	20
<i>Autoranging Rectifier Module (ARM)</i> .....	21
<i>Filter / Autoranging Rectifier Module (FARM)</i> .....	21
<i>Modular AC Front-end System (ENMods)</i> .....	22
<b>Brick</b> .....	<b>23</b>
<i>BatMod Battery Charger</i> .....	23
<i>Packaging Options</i> .....	23
<b>Filters</b> .....	<b>24</b>
<i>Filter Input Attenuator Module (FIAM)</i> .....	24
<i>Input Attenuator Module (IAM)</i> .....	24
<i>Ripple Attenuator Module (RAM)</i> .....	25
<i>Output Ripple Attenuator Module (MicroRAM)</i> .....	25
<i>Active EMI Filters (QPI Family)</i> .....	26
<i>Output Ripple Attenuators (QPO Family)</i> .....	27
<b>AC-DC / DC-DC Configurable Power Solutions</b> .....	<b>28</b>
<i>AC-DC FlatPAC Family</i> .....	28
<i>AC-DC PFC FlatPAC</i> .....	29
<i>AC-DC VIPAC Power System</i> .....	30
<i>DC-DC VIPAC Arrays</i> .....	31
<i>DC-DC ComPAC Family</i> .....	32
<i>DC-DC MegaMod Family</i> .....	33
<b>MIL-COTS Products</b> .....	<b>34 – 37</b>
<b>Westcor Configurable Power Solutions</b> .....	<b>38</b>
<i>AC-DC / DC-DC LoPAC Family</i> .....	38
<i>AC-DC / DC-DC FlatPAC-EN</i> .....	39
<i>AC-DC / DC-DC MegaPAC Family</i> .....	40
<i>DC-DC (only) ConverterPACs</i> .....	41
<b>Custom Power Solutions</b> .....	<b>42 – 43</b>
<b>Custom Configurable Power Solutions</b> .....	<b>44 - 45</b>
<i>DC-DC MegaPAC</i> .....	44
<i>VME450 DC-DC Power Supply</i> .....	44
<i>Badger AC-DC Power Supply</i> .....	45
<i>Javelin AC-DC Power Supply</i> .....	45
<i>PowerBank AC-DC Power Supply</i> .....	45
<b>Evaluation Boards</b> .....	<b>46 – 47</b>
<b>Accessories</b> .....	<b>48 – 52</b>
<b>Quality / RoHS Compliance</b> .....	<b>53</b>
<b>Vicorpower.com Technical</b> .....	<b>54</b>
<b>PowerBench Tools</b> .....	<b>55</b>
<b>Applications Support</b> .....	<b>56</b>
<b>Customer Support</b> .....	<b>57</b>

# WHAT'S NEW

Vicor develops new products all the time, so, to keep everyone up-to-date, we've created a special area on vicorpower.com where you can always see "what's new." Just go to vicorpower.com and click on "What's New." It will take you to our new products page. From there you'll be able to link to detailed design information.

## Web ExpressCode

### Web ExpressCode provides quick access to detailed product information

Each product description in the Vicor catalog includes a unique Web ExpressCode. Each code provides direct access to the corresponding, information rich product pages on vicorpower.com. Just enter the Web ExpressCode into the Web ExpressCode search box on vicorpower.com's homepage. You'll be sent to the exact page you want with access to all related information such as product description, operating specifications, access to data sheets, outline drawings, and product configuration tools.



## PowerBench™ You Design It ,We Build It

PowerBench is the most advanced suite of online power tools available. They can help you design, select and configure products whether you are just beginning or experienced in designing power, PowerBench can take you from beginning to end of any power project. All of this in real time.

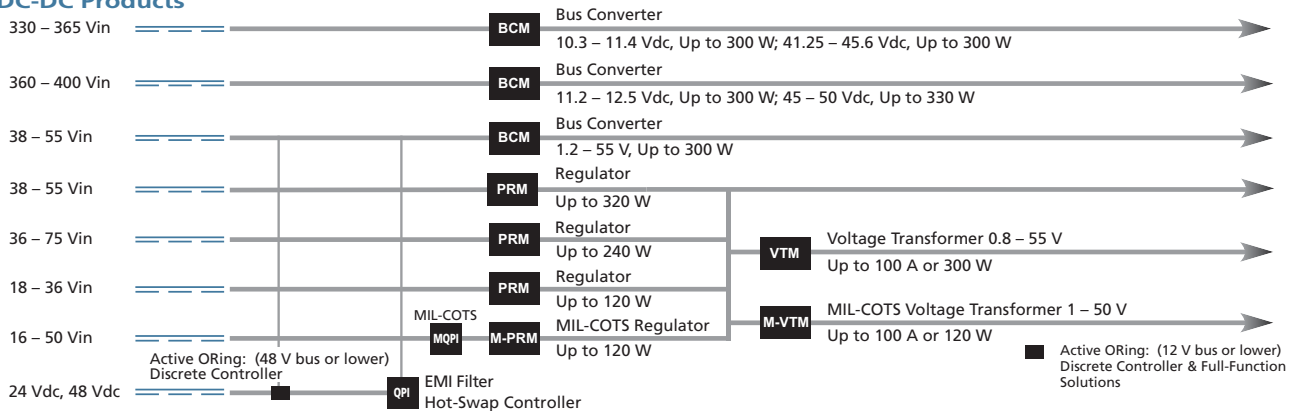
See for yourself what Vicor can do for you on [Page 55](#) or go to the Vicor website, click PowerBench and start building.



# OVERVIEW

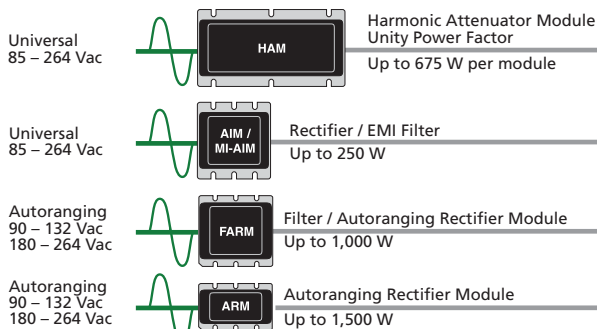
## V•I Chip & VI BRICK Solutions

### DC-DC Products

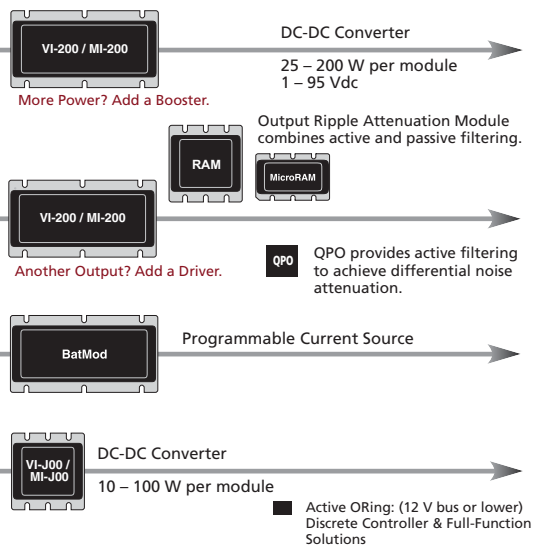


## Component Power Solutions: VI-200 & VI-J00 Series

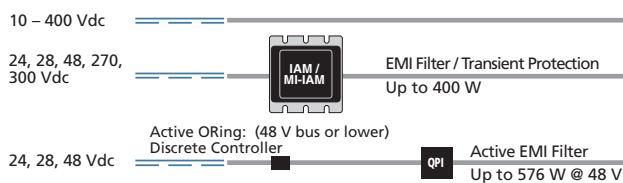
### AC-DC Products



### DC-DC Products

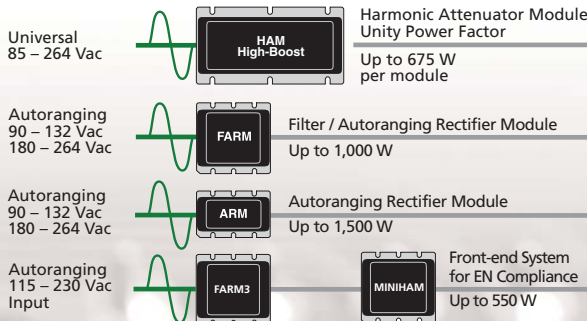


### DC-DC Products

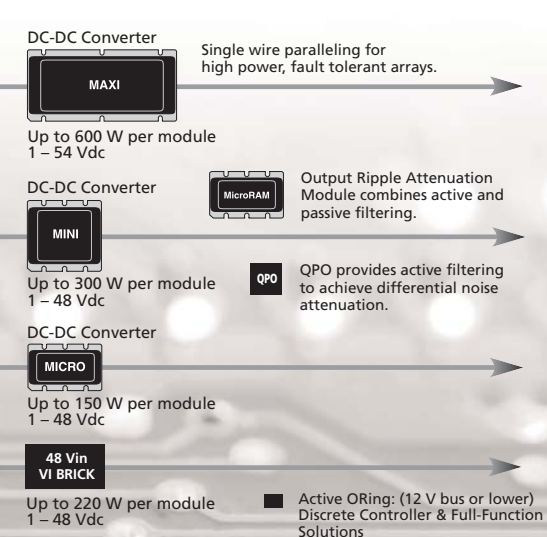


## Component Power Solutions: Maxi, Mini, Micro & VI BRICK Series

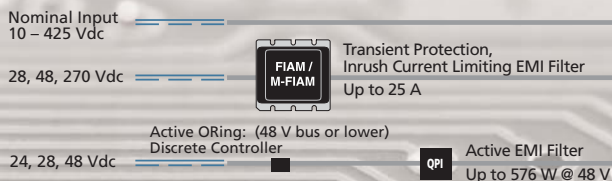
### AC-DC Products



### DC-DC Products



### DC-DC Products



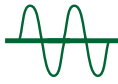


# OVERVIEW

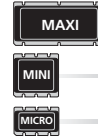
## Configurable Power Solutions

### VIPAC Power Systems

90 – 132 Vac  
180 – 264 Vac



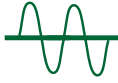
1 – 3 Outputs using  
Maxi, Mini & Micro  
Series Modules



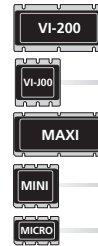
Up to  
900 W

### LoPAC Family

85 – 264 Vac  
100 – 380 Vdc



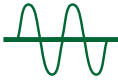
1 – 6 Outputs using  
VI-200, VI-J00 Series or  
Maxi, Mini & Micro  
Series Modules



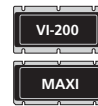
Up to  
1,500 W

### FlatPAC Family

90 – 132 Vac  
180 – 264 Vac  
85 – 264 Vac (PFC)



1 – 3 Outputs using  
VI-200 / Maxi  
Series Modules



Up to 600 W

Up to 575 W

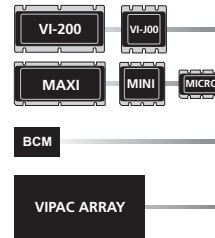
### PFC FrontEnd

85 – 264 Vac  
100 – 380 Vdc



1 – 4 Outputs using  
VI-200, VI-J00 Series or  
Maxi, Mini & Micro  
Series Modules

Can also be used  
with VIPAC Array,  
V-I Chip BCM,  
and more



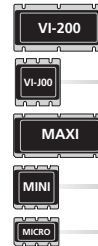
Up to  
2,200 W

### FlatPAC-EN

90 – 132 Vac  
180 – 264 Vac  
250 – 380 Vdc



1 – 4 Outputs using  
VI-200, VI-J00 Series or  
Maxi, Mini & Micro  
Series Modules



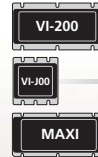
Up to  
500 W  
(425 W for  
EN compliance)

### MegaPAC Family

85 – 264 Vac  
3ø 208/240 Vac  
100 – 380 Vdc



1 – 20 Outputs using  
VI-200, VI-J00 & Maxi  
Series Modules



Up to  
4,000 W

### VIPAC Arrays

DC Inputs  
24, 28, 48, 72, 110,  
150, 300, 375 Vdc



1 – 4 Outputs using  
Maxi, Mini & Micro  
Series Modules



Parallel for  
High Power

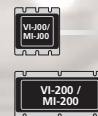
Up to  
750 W

### MegaMod Family (Chassis Mount)

DC Inputs  
10 – 400 Vdc



1 – 3 Outputs using  
VI-200 / MI-200 or  
VI-J00 / MI-J00  
Series Modules



Up to 300 W

Up to 600 W

### CompAC Family

DC Inputs  
24, 28, 48, 270,  
300 Vdc



1 – 3 Outputs using  
VI-200 / MI-200  
Series Modules



Up to 600 W

Front-end filtering optimized for communication and defense applications

U.S. & CANADA: 800-735-6200 VICORPOWER.COM

# V•I CHIP SOLUTIONS



## 48 V BCM™ Bus Converter



page 5

- ZVS / ZCS isolated Sine Amplitude Converter
- Input: 38 – 55 Vdc
- Output: Eleven models, 1.5 to 48 V
- Power: Up to 300 W (450 W for 1 ms)
- Efficiency: Up to 96.5%
- High density: Up to 1,036 W/in<sup>3</sup> (68 W/cm<sup>3</sup>)
- Small footprint: 1.1 in<sup>2</sup> (7.1 cm<sup>2</sup>)
- 125°C operation (Tj)
- Low weight: 0.5 oz (15 g)
- >3.5 million hours MTBF
- Low noise: No output filtering required
- J-Lead package pick & place / SMD compatible
- Through-hole pin option, full size

## 48 V PRM™ Regulator



page 6

- 48 Vin ZVS buck / boost regulator
- Input: 36 – 75 Vdc or 38 – 55 Vdc
- Provides 26 – 55 Vdc output factorized bus for 48 Vin VTMs
- Efficiency: Up to 97%
- High density: Up to 1,105 W/in<sup>3</sup> (55 W/cm<sup>3</sup>)
- Small footprint: 1.1 in<sup>2</sup> (7.1 cm<sup>2</sup>)
- 125°C operation (Tj)
- Low weight: 0.5 oz (15 g)
- J-Lead package pick & place / SMD compatible
- Through-hole pin option

## VTM™ Voltage Transformer



page 7

- 48 Vin Sine Amplitude Converter
- 26 – 55 Vdc input range
- 0.8 – 55 Vdc outputs
- Efficiency: Up to 97%
- High density: Up to 345 A/in<sup>3</sup>
- Up to 100 A or 300 W
- Small footprint: Up to 90 A/in<sup>2</sup>
- 125°C operation (Tj)
- Low weight: 0.5 oz (15 g)
- Isolation to 2,250 Vdc
- <1 μs transient response
- Low noise: No output filtering required
- J-Lead package pick & place / SMD compatible
- Through-hole pin option

[MIL-COTS Version Available](#)

[Page 34](#)

## High Voltage BCM Bus Converter



page 5

- ZVS / ZCS isolated Sine Amplitude Converter
- 330 – 365 Vdc to 11 Vdc @ 300 W
- 360 – 400 Vdc to 12 Vdc @ 300 W
- Efficiency: Up to 97%
- High density: Up to 1,034 W/in<sup>3</sup>
- Small footprint: 1.1 in<sup>2</sup> (7.1 cm<sup>2</sup>)
- 125°C operation (Tj)
- Isolation to 4,242 Vdc
- >2.6 million hours MTBF
- Low noise: No output filtering required
- Low weight: 0.5 oz (15 g)
- J-Lead package pick & place / SMD compatible
- Through-hole pin option

## 24 V PRM Regulator



page 6

- 24 Vin ZVS buck / boost regulator
- Input: 18 – 36 Vdc
- Provides 26 – 55 Vdc output factorized bus for 48 Vin VTMs
- Efficiency: Up to 95%
- High density: Up to 414 W/in<sup>3</sup> (25 W/cm<sup>3</sup>)
- Small footprint: 1.1 in<sup>2</sup> (7.1 cm<sup>2</sup>)
- 125°C operation (Tj)
- Low weight: 0.5 oz (15 g)
- J-Lead package pick & place / SMD compatible
- Through-hole pin option

[MIL-COTS Version Available](#)

[Page 34](#)

## QPI for V•I Chips Input Filter Module



page 26

- Support EN55022, Class B limits
- Compatible with 48 and 24 V V•I Chips
- Efficiency: >99%
- Up to 65 dB CM attenuation at 1 MHz
- Up to 80 dB DM attenuation at 1 MHz
- 7 A models, parallelable for up to 14 A
- Hot-Swap models available
- Supports AdvancedTCA® PICMG3.0 requirements
- 12,5 x 25 x 4,5 mm LGA package
- 25 x 25 x 4,5 mm package for Hot-Swap models

## VI BRICK

Thermally enhanced packaging option available for PRM, VTM, BCM, [Page 8 – 10](#)



## Evaluation Boards Available

[Page 46](#)



# BRICK SOLUTIONS



## VI-200 / VI-J00 DC-DC Converter



page 12-13

MIL-COTS Version Available  
Page 35

- Input voltage ranges: 10 – 400 Vdc
- Output voltages: 1 – 95 Vdc
- Output power (per module):  
VI-200: 50 – 200 W • VI-J00: 25 – 100 W
- Parallelable for higher power
- 100°C operation: 85°C for VI-200
- Efficiency: Up to 90%
- Agency approvals: CE Marked  
cULus, cTUVus

## Maxi / Mini / Micro DC-DC Converter

MIL-COTS Version Available

Page 35



page 14-15

- Input voltages: 24, 28, 48, 72, 110, 150, 300, 375 Vdc
- Output power: 50 – 600 W
- 100°C, no derating
- High efficiency
- Low-noise ZCS / ZVS
- High power density: Up to 120 W/in<sup>3</sup>

## VI BRICK PRM / VTM / BCM



page 8-10

MIL-COTS Version Available  
Page 34

- Brick solution for Factorized Power
- Thermally enhanced package – baseplate and through-hole pin
- 100°C baseplate operation
- Small footprint: 2.08 in<sup>2</sup>
- Low profile: 0.37 inches above board
- Efficiency: Up to 97%
- High power density: Up to 390 W/in<sup>3</sup>

## VI BRICK DC-DC Converter



page 11

- Input range: 36 – 75 Vdc
- Efficiency: Up to 93%
- Output voltages: 1 – 48 V
- Fast dynamic response
- Low noise
- Maximum case temperature: 100°C, no derating

## QPI Family Active EMI Input Filters



page 26

QuietPower™

- Up to 60 dB CM attenuation at 250 kHz
- Up to 80 dB DM attenuation at 250 kHz
- Up to 14 A
- Efficiency: >99% at full load
- High density, low profile LGA package
- Designed to support EN Class B
- Integrated Hot-Swap in select models
- Current rating supports ATCA® blades
- 40°C to +100°C PCB temperature
- Compatible with most industry standard DC-DC converters

## QPO Family Active Output Ripple Attenuators



page 27

QuietPower™

- >30 dB PARD attenuation, 1 kHz to 500 kHz
- 3 – 30 Vdc and 0.3 – 5.5 Vdc input models
- Up to 20 A
- Supports precise point-of-load regulation
- Reduces required number of output capacitors to support dynamic loads
- Selectable optimization of attenuation, power dissipation, transient load response
- Compatible with most industry standard DC-DC converters

## Front-end Modules



page 18-22

MIL-COTS Version Available  
Page 35

- Up to 1,000 W power output
- 85 – 264 Vac input
- Efficiency: 90 – 98%
- Agency approvals: CE Marked, cTUVus, cULus
- Operating temperature: –55°C to +100°C
- Inrush current limiting

## Input Filter Modules



page 24

MIL-COTS Version Available  
Page 36

- 24, 48 and 300 V models
- Efficiency: Up to 98%
- Agency approvals: CE Marked, cTUVus, cULus
- Operating temperature: –55°C to +100°C
- Designed to meet EN Class B, Bellcore and FCC transient and immunity

## Output Filter Modules



page 25

MIL-COTS Version Available  
Page 36

- 5 – 50 V, Up to 20 A
- 3 – 30 V, Up to 30 A
- Efficiency: Up to 98%
- Up to 40 dB attenuation from 60 Hz to 1 MHz
- Operating temperature: –55°C to +100°C



# PICOR SOLUTIONS



## Cool-ORing™ Series Controllers



page 16

- Fast dynamic response
- 4 A gate discharge current
- Accurate MOSFET voltage sensing
- Overtemperature fault detection
- Adjustable reverse current blanking timer
- Withstands 100 V transients in low-side applications
- Master / Slave I/O for paralleling
- Active low-fault flag output
- Compatible with bricks and V•I Chips

## Cool-ORing™ Series Full-Function Solutions



page 17

- Combines a high-speed ORing MOSFET controller and a very low on-state resistance ORing MOSFET
- Integrated high-performance MOSFET
  - PI2121: 8 V, 24 A, 1.5 mΩ
  - PI2122: 7 V, 12 A, 6 mΩ (back-to-back MOSFET)
  - PI2123: 15 V, 15 A, 3 mΩ
  - PI2125: 30 V, 12 A, 5.5 mΩ
- Very small, high density optimized solution
- Fast dynamic response
- Accurate sensing capability
- Compatible with bricks and V•I Chips

# CONFIGURABLE POWER SUPPLIES



## VIPAC AC-DC or DC-DC Power Solution



page 30

- Input voltage ranges: 115/230 Vac, 28 Vdc (MIL-COTS)
- Output voltages: 2 – 48 Vdc
- Output power: Up to 900 W
- Single, dual, or triple outputs
- Efficiency: 80 – 90%
- Local or remote control

## VIPAC Arrays DC Input Power System



page 31

[MIL-COTS Version Available](#)  
Page 37

- Input voltages: 24, 300, Vdc
- Output voltages: 2 – 54 Vdc
- Output power: 50 – 650 W
- Array power: Up to 750 W
- Single, dual, triple or quad outputs
- Rugged, low profile, coldplate chassis
- High-temperature capability

## FlatPAC AC-DC Power Solution



page 28

- Input voltage: 115/230 Vac input, autoranging
- Output voltages: 1 – 95 Vdc
- Output power: 50 – 600 W
- Single, dual, or triple outputs
- Low-noise ZCS / ZVS power technology
- Agency approvals: CE Marked, cTÜVus, cULus

## ComPAC Input Power Solution



page 32

[MIL-COTS Version Available](#)  
Page 37

- Input voltages: 24, 48 and 300 Vdc
- Output voltages: 1 – 95 Vdc
- Efficiency: 80 – 90%
- Power density: Up to 10 W/in<sup>3</sup>
- Low-noise FM control
- ZCS / ZVS power architecture

## MegaMod Chassis-mount Converter



page 33

[MIL-COTS Version Available](#)  
Page 37

- Input voltage range: 10 – 400 Vdc
- Output voltages: 1 – 95 Vdc
- Output power: Up to 600 W
- Single, dual, or triple outputs
- Efficiency: 80 – 90%
- Low-noise ZCS power architecture

## PFC FrontEnd 384 Vdc Output Front End



page 19

- Input voltage ranges: 85 – 264 Vac and 100 – 380 Vdc
- Output power: Up to 2,200 W
- Up to 4 non-isolated outputs
- Operating temperature: –20°C to +45°C (full power)
- DIN rail mountable

# CONFIGURABLE POWER SUPPLIES



## PFC FlatPAC Single-Output Power System



page 29

- Input voltage range: 85 – 264 Vac
- Output power: Up to 575 W  
2 – 54 Vdc
- High efficiency
- Current limit
- Remote sense

## LoPAC Family Switcher Power Supplies



page 38

- Input voltage ranges: 85 – 264 Vac and 100 – 380 Vdc
- Output voltages: 2 – 95 Vdc (higher voltage available with series arrays)
- Output power: 25 – 1,500 W
- Up to 6 user-specifiable outputs
- Power density: Up to 11 W/in<sup>3</sup>

## MegaPAC Family User-Configured



page 40

- Input voltage ranges: 85 – 264 Vac and 100 – 380 Vdc
- Output voltage: 2 – 95 Vdc (higher voltage available with series arrays)
- Output power: 25 – 4,000 W
- Up to 20 outputs
- High power density

## FlatPAC-EN AC-DC Power Solution



page 39

- Input voltage ranges: 90 – 132 / 180 – 264 Vac  
250 – 380 Vdc
- Output voltages: 2 – 95 Vdc
- Output power: Up to 500 W
- Up to 4 user-specifiable outputs

## DC MegaPAC™ Power Switcher



page 45

- Input voltage range: 12 – 72 Vdc
- Output voltages: 2 – 95 Vdc
- Output power: Up to 1,600 W
- Up to 16 outputs

## VME450™ Single-slot Power Supply



page 45

- Vin max range: 18 – 36 Vdc
- Input power: 650 W
- Output power: 550 W
- Temperature: –40 to +85°C
- Low profile: 0.670 in. max. height
- Utilizes Vicor's V•I Chips

## Javelin™ MIL-COTS Power Supply



page 44

- Input voltage ranges: 85 – 254 Vac (PFC) / 85 – 380 Vdc
- Output voltages: Single output 2, 3.3, 5, 12, 15, 24, 28, 48 Vdc
- Output power: 600 – 5,400 W

## PowerBank™ Low Profile Supply



page 44

- Input voltage: 115/230 Vac
- Output voltages: 1.8 – 52 V
- Output power: 1000 W @ 230 Vac input, 800 W @ 115 Vac input
- Operating temperature: –20°C to +50°C

## Badger™ MIL-COTS Power Supply



page 44

- Input voltage ranges: 85 – 264 Vac and 100 – 380 Vdc
- Output power: Up to 1,800 W
- Up to 12 non-isolated outputs
- Operating temperature: –55°C to +65°C

## CUSTOM SOLUTIONS

Don't see what you need...

Vicor Custom Power can design and manufacture a power supply built to your unique specifications. We specialize in turnkey custom power systems for electronic equipment manufacturers in the datacom, telecom, industrial, test equipment, medical, information technology, and MIL-COTS markets.

Utilizing Vicor component power modules in a building-block design approach offers low cost, quick turnaround, and reliable performance.

For more information on custom solutions, see [pages 42 – 43](#).





## The V•I Chip™ Advantage Density, Efficiency, Flexibility, & Speed

RoHS

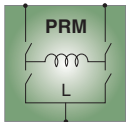
Vicor's V•I Chips, new families of integrated power components, give the power architect new ways to create small, cost-effective, high-performance power system solutions.

V•I Chips increase power system flexibility by separating or factorizing a DC-DC converter into two components. One component provides a regulation function (PRM™), and another provides transformation and isolation (VTM™ / BCM™). This allows the power system designer to select only the functions that are needed, where they are needed.



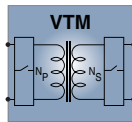
Shown at actual size.

### Regulation

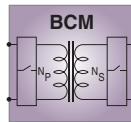


Regulator

### Transformation & Isolation



Voltage Transformer



Bus Converter

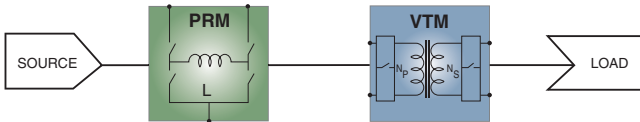
### VI BRICKS

PRM, VTM, BCM models available  
Baseplate with through-hole pins  
[Page 8 – 10](#)

## DC-DC Conversion Using PRM & VTM

System solution with low component count

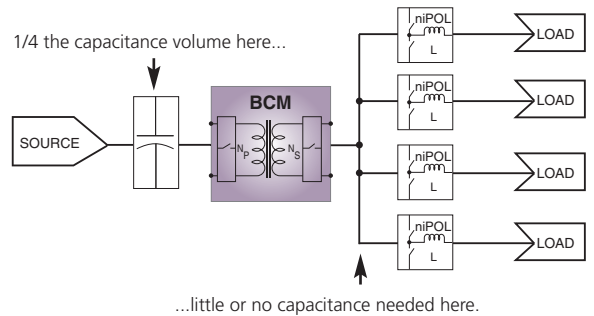
- VTM isolation and transformation at the point of load
- PRM regulation can be collocated with or remote from the VTM
- Efficiency: Up to 93%
- High power density: Up to 517 W/in<sup>3</sup>



## Bus Conversion Using BCMs

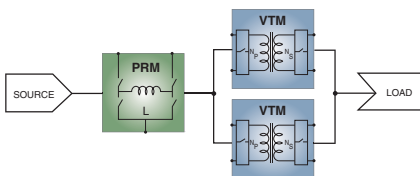
Enable dense IBA Power Systems

- High density bus converter > 1,000 W/in<sup>3</sup>
- Efficiency: Up to 96.5%
- Minimize total system capacitance



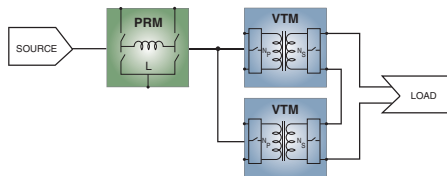
### High Current Low Voltage Supply

- Enable twice the current in half the space
- Up to 295 W or 200 A



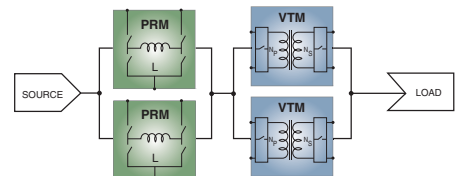
### High Voltage Outputs

- Put VTM stages in series to achieve output voltages greater than 55 V



### High Power Arrays

- Parallel PRMs and VTMs to create multi-kW power systems



# DC-DC V•I Chip

Web ExpressCode: **bcm**

## BCM™ Bus Converter Module

RoHS

The BCM is a member of the new family of V•I Chips. It provides an isolated intermediate bus voltage to power non-isolated POL converters from a narrow range DC input, or it can be used as an independent DC source. The BCM offers superior performance and lower cost than conventional bus converters. BCMs are available in standard 48 V telecom as well as in high-voltage offline input ranges. Due to the fast response time and low noise of the BCM, the need for limited life aluminum electrolytic or tantalum capacitors at the load is reduced – or eliminated – resulting in savings of board area, materials, and total system cost.



### Features

- Fixed-ratio bus converter
- Available in 48, 352, and 384 V inputs
- High density: Up to 1,100 W/in<sup>3</sup>
- Isolation to 4,242 Vdc
- Efficiency: Up to 96.5%
- Output power: Up to 330 W
- Small footprint: 1.1in<sup>2</sup> (7.1 cm<sup>2</sup>)
- Pick & place / SMD compatible
- Through-hole pin option
- 125°C operation (Tj)
- >3.5 million hours MTBF

**VI BRICK**

BCM model Page 10

**Heat Sinks Available**

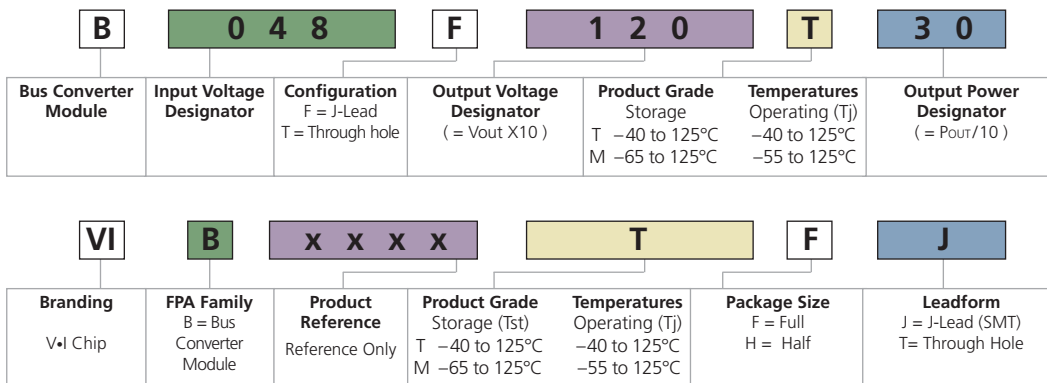
Page 48

**MIL-COTS Version Available**

Page 34

### Part Numbering

For a complete listing of our BCM model numbers, go to [vicorpower.com/vichip](http://vicorpower.com/vichip)



Input Voltage	K Factor	Vout		Max Power	Pack Size	BCM Model No.
		@ 48 Vin	Range			
38 – 55 Vdc	1/32	1.5 Vdc	1.19 – 1.71 Vdc	135 W	Full	B048F015T14
	1/16	3.0 Vdc	2.38 – 3.43 Vdc	210 W	Full	B048F030T21
	1/12	4.0 Vdc	3.17 – 4.58 Vdc	200 W	Full	B048F040T20
	1/8	6.0 Vdc	4.75 – 6.87 Vdc	240 W	Full	B048F060T24
	1/6	8.0 Vdc	6.34 – 9.16 Vdc	240 W	Full	B048F080T24
	1/5	9.6 Vdc	7.60 – 11.00 Vdc	240 W	Full	B048F096T24
	1/4	12.0 Vdc	9.50 – 13.75 Vdc	120 W	Half	VIB0101THJ
	1/4	12.0 Vdc	9.50 – 13.80 Vdc	300 W	Full	B048F120T30
	1/3	16.0 Vdc	12.70 – 18.30 Vdc	240 W	Full	B048F160T24
	1/2	24.0 Vdc	19.00 – 26.50 Vdc <sup>[b]</sup>	300 W	Full	B048F240T30
2/3	32.0 Vdc	25.30 – 36.70 Vdc	300 W	Full	B048F320T30	
1	48.0 Vdc	38.00 – 55.00 Vdc	300 W	Full	B048F480T30	

<sup>[b]</sup> Vin = 38 – 53 Vdc

Input Voltage	K Factor	Vout		Max Power	Pack Size	BCM Model No.
		@ Nom. Vin	Range			
360 – 400 Vdc	1/32	12.0 Vdc	11.30 – 12.50 Vdc	300 W	Full	B384F120T30
330 – 365 Vdc	1/32	11.0 Vdc	10.30 – 11.40 Vdc	300 W	Full	VIB0001TFJ
360 – 400 Vdc	1/8	48.0 Vdc	45.00 – 50.00 Vdc	325 W	Full	VIB0002TFJ
330 – 365 Vdc	1/8	44.0 Vdc	41.25 – 45.63 Vdc	325 W	Full	VIB0003TFJ



# DC-DC V-I Chip

## PRM™ Regulator

Web ExpressCode: [prm](#)

RoHS

The PRM is a high-efficiency, non-isolated regulator capable of both boosting and bucking a wide-range input voltage. PRMs may be used independently, as stand-alone regulators, or together with downstream V-I Chip VTMs™ — fast, efficient, isolated low-noise point-of-load (POL) converters.

PRMs feature unique "Adaptive Loop" compensation feedback: a single-wire alternative to traditional remote sensing and feedback loops that enables precise control of an isolated POL voltage without the need for either a direct connection to the POL or for noise sensitive, bandwidth limiting, isolation devices in the feedback path.



### VI BRICK

[PRM model Page 8](#)

## Features

- ZVS buck / boost regulator
- Provides factorized bus for 48 Vin VTMs
- Available in 24, 36 and 48 V models
- Efficiency: Up to 97%
- High density: Up to 1,105 W/in<sup>3</sup>
- Small footprint: 1.1 in<sup>2</sup> (7.1 cm<sup>2</sup>)
- 125°C operation (Tj)
- J-Lead package
- Through-hole pin option
- Pick & place / SMD compatible

[MIL-COTS Version Available](#)

[Page 34](#)

[Heat Sinks Available](#)

[Page 48](#)

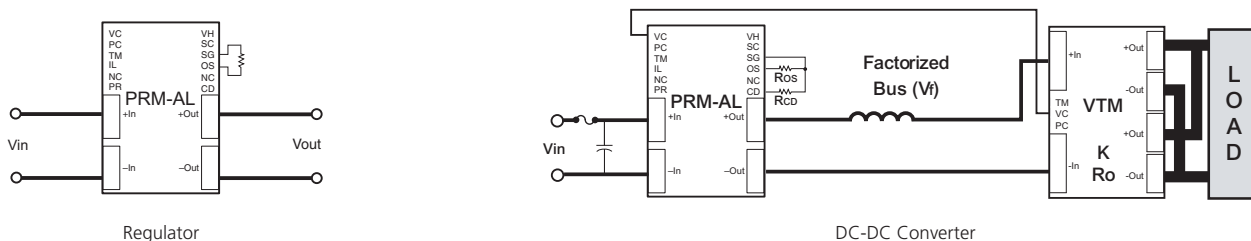
## Part Numbering For a complete listing of our PRM model numbers, go to [vicorpower.com/vichip](http://vicorpower.com/vichip)

P	0 4 8	F	0 4 8	T	2 4	A L	
Pre-Regulator Module	Input Voltage Designator	Configuration F = J-Lead T = Through Hole	Nominal Factorized Bus Voltage	Product Grade Storage T -40 to 125°C M -65 to 125°C	Temperatures Operating (Tj) -40 to 125°C -55 to 125°C	Output Power Designator (= Pf/10)	Adaptive Loop

Input Voltage	Max Output		PRM Model No.	Trim / Vf Range
	Power	Current		
36 – 75 Vdc	240 W	5.0 A	P048F048T24AL	26 – 55 V
	120 W	2.5 A	P048F048T12AL	
38 – 55 Vdc	320 W	6.6 A	P045F048T32AL	
	170 W	3.5 A	P045F048T17AL	
18 – 36 Vdc	120 W	2.5 A	P024F048T12AL	
18 – 60 Vdc	120 W	2.5 A	P036F048T12AL	

Note: See individual data sheets for additional model specifications and configurations.

## Application Examples



# DC-DC V-I Chip

Web ExpressCode: **vtm**

## VTM™ Voltage Transformer

RoHS

The VTM provides an isolated voltage to the point of load. Utilizing a Sine Amplitude Converter (SAC), it offers unprecedented performance in the critical areas of speed, noise, efficiency and density. VTMs address output requirements from 0.8 – 55 Vdc at up to 100 A, all in a surface-mount package only one-quarter of a cubic inch in volume. VTMs operate over an input voltage range of 26 – 55 Vdc — the "factorized bus" — and are a fixed-ratio device that requires a PRM or other stabilized voltage source for regulation.



### Features

- Fixed ratio DC-DC converter
- Output: Up to 100 A / 300 W
- High density: Up to 345 A/in<sup>3</sup>
- Small footprint: 1.1in<sup>2</sup> (7.1 cm<sup>2</sup>)
- Low weight: 0.5 oz (15 g)
- Pick & place / SMD compatible
- Efficiency: Up to 97%
- 125°C operation (T<sub>j</sub>)
- 1 μs transient response
- >3.5 million hours MTBF
- J-Lead package
- Through-hole pin option
- Isolation to 2,250 Vdc

#### VI BRICK

VTM model Page 9

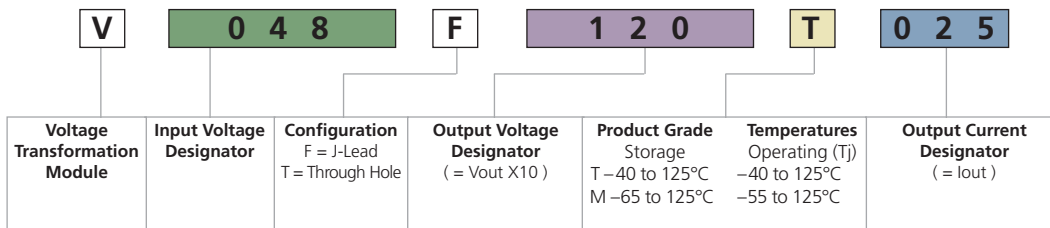
#### Heat Sinks Available

Page 48

#### MIL-COTS Version Available

Page 34

### Part Numbering For a complete listing of our VTM model numbers, go to [vicorpower.com/vichip](http://vicorpower.com/vichip)



Input Voltage	K Factor	Vout		Output Current	VTM Model No.
		@ 48 Vin	Range		
26 – 55 Vdc	1/32	1.5 Vdc	0.82 – 1.71 Vdc	100 A	V048F015T100
	1/24	2.0 Vdc	1.09 – 2.29 Vdc	80 A	V048F020T080
	1/16	3.0 Vdc	1.63 – 3.43 Vdc	70 A	V048F030T070
	1/12	4.0 Vdc	2.17 – 4.58 Vdc	50 A	V048F040T050
	1/8	6.0 Vdc	3.25 – 6.87 Vdc	40 A	V048F060T040
	1/6	8.0 Vdc	4.34 – 9.16 Vdc	30 A	V048F080T030
	1/5	9.6 Vdc	6.40 – 11.00 Vdc	25 A	V048F096T025 <sup>[a]</sup>
	1/4	12.0 Vdc	6.50 – 13.80 Vdc	25 A	V048F120T025
	1/3	16.0 Vdc	8.67 – 18.30 Vdc	15 A	V048F160T015
	1/2	24.0 Vdc	13.80 – 26.50 Vdc	12 A	V048F240T012 <sup>[b]</sup>
	2/3	32.0 Vdc	17.30 – 36.70 Vdc	9 A	V048F320T009
	1	48.0 Vdc	26.00 – 55.00 Vdc	6 A	V048F480T006

<sup>[a]</sup> Vout = 6.4 Vdc @ 32 Vin

<sup>[b]</sup> Vout = 14.0 Vdc @ 28 Vin



## VI BRICK PRM Thermally Enhanced Package

RoHS

The VI BRICK PRM is a very efficient non-isolated regulator designed to provide a controlled Factorized Bus distribution voltage for powering downstream VI BRICK or V•I Chip Voltage Transformation Modules. In combination, VI BRICK PRMs and VTMs form a complete DC-DC Converter subsystem offering all of the unique benefits of Vicor's Factorized Power Architecture (FPA): high density and efficiency; low noise operation; architectural flexibility; extremely fast transient response; elimination of bulk capacitance at the point of load (POL); in a brick style package.



### Features

- 100°C baseplate operation
- Input voltages: 24, 36, 45 and 48 Vdc
- Low profile: 0.37 in. (9.5 mm)
- Low weight: 1.07 oz (30.3 g)
- Small footprint: 2.08 in<sup>2</sup>
- ZVS buck-boost regulator
- Efficiency: Up to 97%
- Fast transient response
- Low noise operation
- Rugged robust package
- Lead free wave solder compatible
- Agency approvals

**MIL-COTS Version Available**

[Page 34](#)

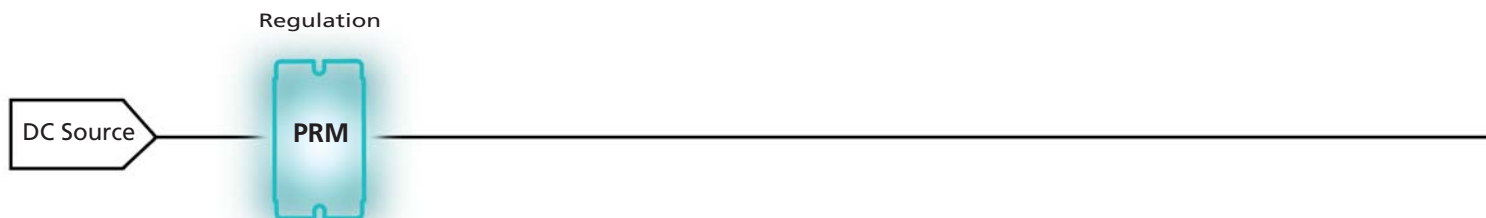
### Part Numbering Ordering, see back cover for contacts

<b>P R</b>	<b>0 4 8</b>	<b>A</b>	<b>4 8 0</b>	<b>T</b>	<b>0 2 4</b>	<b>F</b>	<b>P</b>	
<b>Pre-Regulator Module</b>	<b>Input Voltage Designator</b>	<b>Package Size</b>	<b>Output Voltage Designator</b> ( = V <sub>OUT</sub> X 10 )	<b>Product Grade</b> Storage T -40 to 125°C M -65 to 125°C	<b>Temperatures</b> Operating -40 to 100°C -55 to 100°C	<b>Output Power Designator</b> ( = P <sub>OUT</sub> / 10 )	<b>Baseplate</b> F = Slotted flange P = Pin-fin heat sink <sup>[a]</sup>	<b>Pin Style</b> P = Through hole

<sup>[a]</sup> Contact factory

Input Voltage	Max Output		PRM Model No.	Trim / Vf Range
	Power	Current		
36 – 75 Vdc	240 W	5.0 A	PR048A480T024FP	26 – 55 V
	120 W	2.5 A	PR048A480T012FP	
38 – 55 Vdc	320 W	6.6 A	PR045A480T032FP	
	170 W	3.5 A	PR045A480T017FP	
18 – 36 Vdc	120 W	2.5 A	PR024A480T012FP	
18 – 60 Vdc	120 W	2.5 A	PR036A480T012FP	

Note: See individual data sheets for additional model specifications and configurations.



## VI BRICK VTM Thermally Enhanced Package

RoHS

The VI BRICK VTM current multiplier excels at speed, density and efficiency to meet the demands of advanced power applications. Combined with the VI BRICK or V•I Chip PRM regulator the VI BRICK VTM creates a DC-DC converter with flexibility to provide isolation and regulation where needed. The PRM can be located with the VTM at the point of load or remotely in the back plane or on a daughtercard.



### Features

- 100°C baseplate operation
- Up to 100 A or 300 W
- High density: Up to 390 W/in<sup>3</sup>
- Small footprint: 2.08 in<sup>2</sup>
- Low profile: 0.37 in. (9.5 mm)
- Low weight: 1.10 oz (31.3 g)
- ZVS / ZCS isolated sine amplitude converter
- Efficiency: Up to 97%
- <1 μs transient response
- Isolated output
- No output filtering required
- Lead free wave solder compatible
- Agency approvals

**MIL-COTS Version Available**

[Page 34](#)

### Part Numbering Ordering, see back cover for contacts

<b>V T</b>	<b>0 4 8</b>	<b>A</b>	<b>1 2 0</b>	<b>T</b>	<b>0 2 5</b>	<b>F</b>	<b>P</b>	
<b>Voltage Transformation Module</b>	<b>Input Voltage Designator</b>	<b>Package Size</b>	<b>Output Voltage Designator (= V<sub>out</sub> X 10)</b>	<b>Product Grade Storage</b> T -40 to 125°C M -65 to 125°C	<b>Temperatures Operating</b> -40 to 100°C -55 to 100°C	<b>Output Current Designator (= I<sub>out</sub>)</b>	<b>Baseplate</b> F = Slotted flange P = Pin-fin heat sink <sup>[a]</sup>	<b>Pin Style</b> P = Through hole

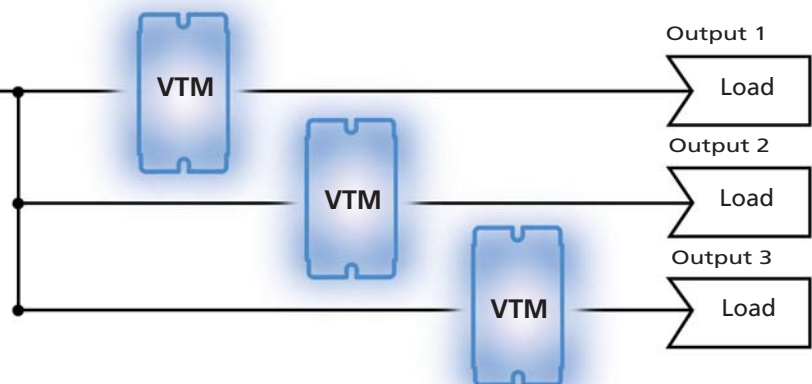
<sup>[a]</sup> Contact factory

Input Voltage	K Factor	V <sub>out</sub>		Output Current	VTM Model No.
		@ 48 Vin	Range		
26 – 55 Vdc	1/32	1.5 Vdc	0.82 – 1.71 Vdc	100 A	VT048A015T100FP
	1/24	2.0 Vdc	1.09 – 2.29 Vdc	80 A	VT048A020T080FP
	1/16	3.0 Vdc	1.63 – 3.43 Vdc	70 A	VT048A030T070FP
	1/12	4.0 Vdc	2.17 – 4.58 Vdc	50 A	VT048A040T050FP
	1/8	6.0 Vdc	3.25 – 6.87 Vdc	40 A	VT048A060T040FP
	1/6	8.0 Vdc	4.34 – 9.16 Vdc	30 A	VT048A080T030FP
	1/5	9.6 Vdc	6.40 – 11.00 Vdc	25 A	VT048A096T025FP <sup>[b]</sup>
	1/4	12.0 Vdc	6.50 – 13.80 Vdc	25 A	VT048A120T025FP
	1/3	16.0 Vdc	8.67 – 18.30 Vdc	15 A	VT048A160T015FP
	1/2	24.0 Vdc	13.80 – 26.50 Vdc	12 A	VT048A240T012FP <sup>[c]</sup>
2/3	32.0 Vdc	17.30 – 36.70 Vdc	9 A	VT048A320T009FP	
1	48.0 Vdc	26.00 – 55.00 Vdc	6 A	VT048A480T006FP	

Note: See individual data sheets for additional model specifications and configurations.

<sup>[b]</sup> V<sub>out</sub> = 6.4 Vdc @ 32 Vin <sup>[c]</sup> V<sub>out</sub> = 14.0 Vdc @ 28 Vin

### Transformation / Isolation





## VI BRICK BCM Thermally Enhanced Package

RoHS

VI BRICK BCM modules use advanced Sine Amplitude Converter™ (SAC) technology, thermally enhanced packaging technologies, and advanced manufacturing processes to provide high power density and efficiency, superior transient response, and improved thermal management. These modules can be used to provide an isolated intermediate bus to power non-isolated POL converters and due to the fast response time and low noise of the BCM, capacitance can be reduced or eliminated near the load.



### Features

- 100°C baseplate operation
- 48 V, 352, and 384 V Bus Converters
- High density: Up to 390 W/in<sup>3</sup>
- Small footprint: 2.08 in<sup>2</sup>
- Height above board: 0.37 in (9.5 mm)
- Efficiency: Up to 96%
- Isolated output
- No output filtering required
- <1 μs transient response
- Fast transient response
- Lead free wave solder compatible
- Agency approvals

### Part Numbering Ordering, see back cover for contacts

<b>B C</b>	<b>0 4 8</b>	<b>A</b>	<b>0 1 5</b>	<b>T</b>	<b>0 1 4</b>	<b>F</b>	<b>P</b>	
<b>Bus Converter Module</b>	<b>Input Voltage Designator</b>	<b>Package Size</b>	<b>Output Voltage Designator</b> (= Vout X 10)	<b>Product Grade</b> Storage T -40 to 125°C M -65 to 125°C	<b>Temperatures</b> Operating -40 to 100°C -55 to 100°C	<b>Output Power Designator</b> (= Pout / 10)	<b>Baseplate</b> F = Slotted flange P = Pin-fin heat sink <sup>[a]</sup>	<b>Pin Style</b> P = Through hole

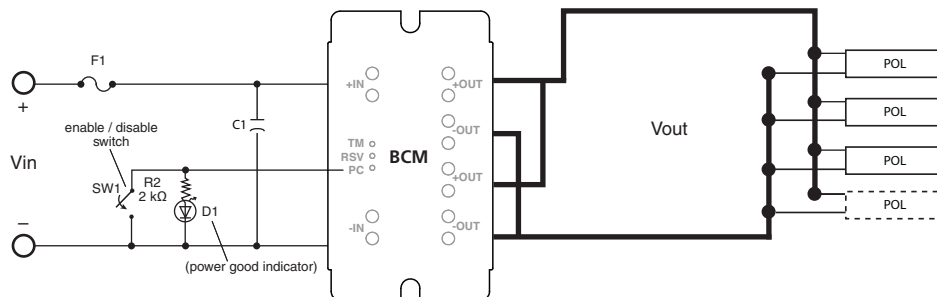
<sup>[a]</sup> Contact factory

Input Voltage	K Factor	Vout		Max Power	BCM Model No.
		@ 48 Vin	Range		
38 – 55 Vdc	1/32	1.5 Vdc	1.19 – 1.71 Vdc	135 W	BC048A015T014FP
	1/16	3.0 Vdc	2.38 – 3.43 Vdc	210 W	BC048A030T021FP
	1/12	4.0 Vdc	3.17 – 4.58 Vdc	200 W	BC048A040T020FP
	1/8	6.0 Vdc	4.75 – 6.87 Vdc	240 W	BC048A060T024FP
	1/6	8.0 Vdc	6.34 – 9.16 Vdc	240 W	BC048A080T024FP
	1/5	9.6 Vdc	7.60 – 11.00 Vdc	240 W	BC048A096T024FP
	1/4	12.0 Vdc	9.50 – 13.80 Vdc	300 W	BC048A120T030FP
	1/3	16.0 Vdc	12.70 – 18.30 Vdc	240 W	BC048A160T024FP
	1/2	24.0 Vdc	19.00 – 26.50 Vdc <sup>[b]</sup>	300 W	BC048A240T030FP
	2/3	32.0 Vdc	25.30 – 36.70 Vdc	300 W	BC048A320T030FP
	1	48.0 Vdc	38.00 – 55.00 Vdc	300 W	BC048A480T030FP
330 – 365 Vdc	1/32	11.0 Vdc	10.3 – 11.4 Vdc	240 W	BC352A110T024FP
330 – 365 Vdc	1/32	11.0 Vdc	10.3 – 11.4 Vdc	300 W	BC352A110T030FP
360 – 400 Vdc	1/32	12.0 Vdc	11.3 – 12.5 Vdc	300 W	BC384A120T030FP

Note: See individual data sheets for additional model specifications and configurations.

<sup>[b]</sup> Vin = 38 – 53 Vdc

### Typical Application



# DC-DC VI BRICKS

Web ExpressCode: [vibdcdc](#)

## VI BRICK DC-DC Converter

RoHS

VI BRICK DC-DC converters use advanced Sine Amplitude Converter (SAC) technology, thermally enhanced packaging technologies, and advanced CIM processes to provide high power density and efficiency, superior transient response, and improved thermal management. The high speed 3.5 MHz, zero-current switching / zero-voltage switching (ZCS / ZVS) design enables efficient and low noise operation throughout the entire operating range.



### Features

- DC input range: 36 – 75 V
- Efficiency: Up to 93%
- DC output: 1 – 48 V
- Maximum operating temp: 100°C, full load
- Isolated output
- Low noise: Sine Amplitude Converter (SAC) technology
- Highly efficient: ZCS / ZVS switching
- Fast dynamic response
- Low profile: 0.37 in. (9.5 mm)
- Power density: Up to 145 W/in<sup>3</sup>
- Lead free wave solder compatible
- Agency approvals

### Part Numbering Ordering, see back cover for contacts

<b>D C</b>	<b>0 4 8</b>	<b>B</b>	<b>0 5 0</b>	<b>T</b>	<b>0 1 8</b>	<b>F</b>	<b>P</b>	
<b>DC-DC Converter Module</b>	<b>Input Voltage Designator</b>	<b>Package Size</b>	<b>Output Voltage Designator (= V<sub>out</sub> X 10)</b>	<b>Product Grade Storage T -40 to 125°C M -65 to 125°C</b>	<b>Temperatures Operating -40 to 100°C -55 to 100°C</b>	<b>Output Power Designator (= P<sub>out</sub> / 10)</b>	<b>Baseplate F = Slotted flange P = Pin-fin heat sink<sup>[a]</sup></b>	<b>Pin Style P = Through hole</b>

<sup>[a]</sup> Contact factory

Output Voltage	Output Power (W)	Current (A)	Efficiency (%)	Part Numbering
1.0 Vdc	100	100	85	DC048B010T010FP
1.5 Vdc	120	80	87	DC048B015T012FP
1.8 Vdc	144	80	89	DC048B018T014FP
2.5 Vdc	175	70	90	DC048B025T017FP
3.0 Vdc	180	60	91	DC048B030T018FP
3.3 Vdc	165	50	91	DC048B033T016FP
5 Vdc	180	36	91	DC048B050T018FP
10 Vdc	180	18	92	DC048B100T018FP
12 Vdc	220	18.33	92	DC048B120T022FP
15 vdc	200	13.33	92	DC048B150T020FP
24 Vdc	220	9.17	92	DC048B240T022FP
28 Vdc	190	6.79	92	DC048B280T019FP
48 Vdc	220	4.58	93	DC048B480T022FP



## VI-200 & VI-J00 Series Converter Modules

RoHS

VI-200 and VI-J00 converters feature wide input voltage ranges, remote sense, enhanced output programmability, logic disable, and low quiescent current. VI-200 product series feature output overvoltage protection and thermal shut down. VI-J00 product series, at half the size of VI-200 converters, operate to 100°C. Both product series are safety agency approved, accelerating your time to market.



### Features

- Input voltage range: 10 – 400 Vdc
- Output voltages: 1 – 95 Vdc
- Output power (per module):  
VI-200 Series: 50 – 200 W • VI-J00 Series: 25 – 100 W
- Parallelable for higher power (VI-200)
- 3,000 Vrms isolation
- 100°C operation: (85°C for VI-200 Series)
- Output voltage trim range: 50 – 110%
- Efficiency: Up to 90%
- Agency approvals: cULus, cTÜVus, CE Marked
- Dimensions:  
VI-200 Series: 4.6" x 2.4" x 0.5"  
(116,9 x 61,0 x 12,7 mm)
- VI-J00 Series: 2.28" x 2.4" x 0.5"  
(57,9 x 61,0 x 12,7 mm)
- Weight:  
VI-200 Series: 6.0 oz / 170 g  
VI-J00 Series: 3.0 oz / 85 g
- Low-noise ZCS / ZVS power architecture
- 4 temperature grades

[MIL-COTS Version Available](#)

[Page 35](#)

[Battery Charging & Packaging Options](#)

[Page 23](#)

### General Performance Refer to data sheet for detailed specifications

Parameter	C-, I-, M-Grade	E-Grade
Input voltage and output voltage	<a href="#">See chart on page 13</a>	
Set point accuracy	0.5%	1.0%
Load / line regulation (max)	0.2%	0.5%
Output temperature drift	0.01%/°C	0.02%/°C
Peak-to-peak output ripple (max)	1.5%	3%
Trim range <sup>[a]</sup>	50 – 110%	50 – 110%
Total remote sense compensation	0.5 V	0.5 V
OVP set point (VI-200 Series only)	125%	125%
Current limit	105 – 125%	105 – 135%
Efficiency (output ≥5 V)	80 – 90%	78 – 88%
Power sharing accuracy (VI-200 Series only)	±5%	±5%
Input reflected ripple current	10%	10%
No-load power dissipation	1.35 W	1.35 W
Isolation		
Input to output	3,000 Vrms	3,000 Vrms
Input to baseplate	1,500 Vrms	1,500 Vrms
Output to baseplate	500 Vrms	500 Vrms
Max. baseplate temperature: VI-200 Series (VI-J00 Series)	85°C ( 100°C )	85°C ( 100°C )

<sup>[a]</sup> 10 V, 12 V and 15 V outputs, standard trim range ±10-%. Consult factory for wider trim range. 95 V outputs cannot be trimmed up.

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## Part Number Configuration Chart VI-200 & VI-J00

### IMPORTANT NOTICE: PLEASE READ BEFORE STARTING

The part numbering format below is for Vicor VI-200 and VI-J00 DC-DC converters and configurables. The power levels shown are the maximum available for every input and output voltage combination. If you need more power than a VI-200 ("driver"), add parallel "booster" modules (of the same power level). For lower power versions use [PowerBench at vicorpower.com](#).

Configure Your BRICK Online



<b>VI</b>	-	<b>J</b>	<b>6</b>		<b>1</b>			-	<b>C</b>	<b>W</b>	
Family		Series	Input		Output				Grade	Output Power	
VI Non-RoHS		2 200	0 12 V	N 48 V	Z 2 V	M 10 V	K 40 V		E -10°C	≥ 5 V	< 5 V
VE RoHS		J J00	V 24 V	4 72 V	Y 3.3 V	1 12 V	4 48 V		C -25°C	U 200 W	U 40 A
		B Booster	1 24 V	T 110 V	0 5 V	P 13.8 V	H 52 V		I -40°C	V 150 W	V 30 A
			W 24 V	5 150 V	X 5.2 V	2 15 V	F 72 V		M -55°C	W 100 W	W 20 A
			2 36 V	6 300 V	W 5.5 V	N 18.5 V	D 85 V			X 75 W	X 15 A
			3 48 V	7 150/300 V	V 5.8 V	3 24 V	B 95 V			Y 50 W	Y 10 A
					T 6.5 V	L 28 V				Z 25 W	Z 5 A
					R 7.5 V	J 36 V					

### Designators VI-200 & VI-J00 Family and Accessory Modules

		Maximum Power available for VI-2(B)xx-xx																					
		Output Voltages																					
Vin Designator	Input Voltage	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
<b>0</b>	12 (10-20)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>V</b>	24 (10-36)	--	X	Y	Y	Y	Y	Y	X	X	X	X	X	X	X	X	X	X	--	--	--	--	--
<b>1</b>	24 (21-32)	U	U	U	U	U	U	V	V	U	U	U	U	U	U	U	U	U	U	U	U	U	U
<b>W</b>	24 (18-36)	V	V	V	V	V	V	W	W	V	V	V	V	V	V	V	V	V	V	V	V	V	V
<b>2</b>	36 (21-56)	W	V	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	--	--	--
<b>3</b>	48 (42-60)	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
<b>N</b>	48 (36-76)	V	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
<b>4</b>	72 (55-100)	U	U	U	U	U	U	V	V	U	U	U	U	U	U	U	U	U	U	U	U	U	U
<b>T</b>	110 (66-160)	V	V	V	V	V	V	W	W	V	V	V	V	V	V	V	V	V	V	V	V	--	--
<b>5</b>	150 (100-200)	U	U	V	V	V	V	V	V	U	U	U	U	U	U	U	U	U	U	U	U	U	U
<b>7</b>	150 (100-375)	W	W	Y	Y	Y	Y	W	W	W	W	W	W	W	W	W	W	W	W	W	--	--	--
<b>6</b>	300 (200-400)	U	U	U	U	U	U	V	V	U	U	U	U	U	U	U	U	U	U	U	U	U	U

		Maximum Power available for VI-Jxx-xx																					
		Output Voltages																					
Vin Designator	Input Voltage	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
<b>0</b>	12 (10-20)	X	X	Y	Y	Y	Y	Y	Y	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>V</b>	24 (10-36)	--	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	--	--	--	--	--
<b>1</b>	24 (21-32)	W	W	W	W	W	W	X	X	W	W	W	W	W	W	W	W	W	W	W	W	W	W
<b>W</b>	24 (18-36)	W	W	W	W	W	W	X	X	W	W	W	W	W	W	W	W	W	W	W	W	W	W
<b>2</b>	36 (21-56)	Y	Y	Y	Y	Y	Y	Y	Y	X	X	X	X	X	X	X	X	X	X	--	--	--	--
<b>3</b>	48 (42-60)	W	W	W	W	W	W	X	X	W	W	W	W	W	W	W	W	W	W	W	W	W	W
<b>N</b>	48 (36-76)	W	W	X	X	X	X	X	X	W	W	W	W	W	W	W	W	W	W	W	W	W	W
<b>4</b>	72 (55-100)	W	W	W	W	W	W	X	X	W	W	W	W	W	W	W	W	W	W	W	W	W	W
<b>T</b>	110 (66-160)	W	W	X	X	X	X	X	X	W	W	W	W	W	W	W	W	W	W	W	W	--	--
<b>5</b>	150 (100-200)	W	W	W	W	W	W	X	X	W	W	W	W	W	W	W	W	W	W	W	W	W	W
<b>7</b>	150 (100-375)	Y	Y	Y	Y	Y	Y	Y	Y	X	X	X	X	X	X	X	X	X	X	X	--	--	--
<b>6</b>	300 (200-400)	W	W	W	W	W	W	X	X	W	W	W	W	W	W	W	W	W	W	W	W	W	W

Note: See Design Guide & Applications Manual for VI-200 & VI-J00 Family, DC-DC Converters & Configurable Power Supplies



# DC-DC BRICKS

Web ExpressCode: [bricks2](#)

## Maxi, Mini, Micro Series Converter Modules

RoHS

Maxi, Mini, Micro Series DC-DC converter modules use advanced power processing, control, and packaging technologies to provide the performance, flexibility, and cost effectiveness expected of a mature power component. High-frequency ZCS / ZVS switching, advanced power semiconductor packaging, and thermal management provide high power density with low noise and high efficiency.

### Features

- 24 V input: 18 – 36 Vdc
- 28 V input: 10 – 36 Vdc
- 48 V input: 36 – 75 Vdc
- 72 V input: 43 – 110 Vdc
- 110 V input: 66 – 154 Vdc
- 150 V input: 100 – 200 Vdc
- 300 V input: 180 – 375 Vdc
- 375 V input: 250 – 425 Vdc
- 100°C, no derating
- High efficiency
- Low-noise ZCS / ZVS
- Up to 120 W/in<sup>3</sup>
- 3,000 Vac isolation
- Single-wire paralleling
- Input undervoltage lockout
- Output overvoltage protection
- Overtemperature shut down
- Module fault alarm
- ZCS / ZVS power architecture
- Output voltage trim: 10 – 110%
- Bias supply to power external circuitry
- Logic enable / disable
- 5 temperature grades



**Module Mounting & Interconnect Options**  
Page 50

**MIL-COTS Version Available**  
Page 35

**Configure Your BRICK Online**

**VICOR POWERBENCH**  
[vicorpower.com/powerbench](http://vicorpower.com/powerbench)

### General Performance Refer to data sheet for detailed specifications

Parameter	Specifications	Notes
Set point accuracy	±1% Vout nom.	Nominal input; full load; 25°C
Line regulation	±0.02% Vout nom.	Low line to high line; full load
Load regulation	±0.02% Vout nom.	No load to full load; nominal input
Temperature regulation	±0.002% Vout/°C	-20 to 100°C (C-Grade)
Remote sense compensation	0.5 V	Maxi and Mini only
Overvoltage set point	115% Vout nom.	
Current limit	115% Iout typ.	Vout 95% of nominal
Short-circuit current	115% Iout typ.	Output voltage <250 mV
Efficiency	Up to 90%	Nominal input; 80% load; 25°C
Programming range	10 – 110% Vout nom.	
Isolation voltage	3,000 Vrms	Input to output
Dimensions		
Maxi full-brick	4.6" x 2.2" x 0.5" (117 x 55,9 x 12,7 mm)	Up to 600 W
Mini half-brick	2.28" x 2.2" x 0.5" (57,9 x 55,9 x 12,7 mm)	Up to 300 W
Micro quarter-brick	2.28" x 1.45" x 0.5" (57,9 x 36,8 x 12,7 mm)	Up to 150 W
Agency approvals	cULus, cTUVus, CE Marked	

### Design Guide & Applications Manual Maxi, Mini, Micro Family DC-DC Converters & Accessory Modules

- High density DC-DC converter technology
- Control pin functions & applications
- Design requirements
- EMC considerations
- Current sharing in power arrays
- Thermal performance information
- Filter / autoranging rectifiers
- Modular AC front-end system
- High Boost HAM
- Filter Input Attenuator Module
- MIL-COTS Filter Input Attenuator
- Output ripple attenuator

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# DC-DC BRICKS

Web ExpressCode: [prodselect](#)

## Part Numbering Maxi, Mini & Micro Series Converters



Maxi example:  
**V24A48M400BN**  
24 Vin, Maxi, 48 Vout @ 400 W,  
long ModuMate pins, slotted baseplate



Mini example:  
**V48B28C250BG**  
48 Vin, Mini, 28 Vout @ 250 W,  
long RoHS pins, slotted baseplate



Micro example:  
**V375C24C150BG**  
375 Vin, Micro, 24 Vout @ 150 W,  
long RoHS pins, slotted baseplate

<b>V</b>	<b>48</b>	<b>A</b>	<b>48</b>	<b>C</b>	<b>500</b>	<b>B</b>	<b>L</b>	
<b>Input Voltage</b> <sup>[a]</sup>		<b>Package</b>	<b>Output Voltage</b> <sup>[a]</sup>	<b>Product Grade</b>	<b>Output Power</b>		<b>Pin Style</b>	<b>Baseplate</b>
		A = Maxi B = Mini C = Micro		E = -10 to +100°C C = -20 to +100°C T = -40 to +100°C H = -40 to +100°C M = -55 to +100°C			Blank = Short tin / lead L = Long tin / lead S = Short ModuMate N = Long ModuMate F = Short gold (RoHS) G = Long gold (RoHS)	Blank = Slotted 2 = Threaded 3 = Through hole

<sup>[a]</sup> Consult factory for other input / output / power models.

## Designators Maxi, Mini, Micro Family

Input Voltage	Maximum Power available for Maxi (Full Brick)												
	Output Voltages												
	2 V	3.3 V	5 V	6.5 V	8 V	12 V	15 V	24 V	28 V	32 V	36 V	48 V	54 V
24 (18-36)	--	264 W	400 W	400 W	300 W	400 W	400 W	400 W	400 W	--	400 W	400 W	--
28 (10-36)	--	150 W	175 W	200 W	200 W	200 W	200 W	200 W	200 W	--	200 W	200 W	--
48 (36-75)	--	264 W	400 W	--	--	500 W	500 W	500 W	500 W	--	500 W	500 W	--
72 (43-110)	--	264 W	300 W	--	--	400 W	400 W	400 W	400 W	--	400 W	400 W	--
110 (66-154)	--	200 W	300 W	--	300 W	400 W	400 W	400 W	400 W	--	400 W	400 W	--
150 (100-200)	--	264 W	400 W	--	400 W	500 W	500 W	500 W	500 W	--	500 W	500 W	--
300 (180-375)	160 W	264 W	400 W	--	400 W	500 W	500 W	500 W	500 W	--	500 W	500 W	--
375 (250-425)	160 W	264 W	400 W	--	400 W	600 W	600 W	600 W	600 W	600 W	600 W	600 W	600 W

Input Voltage	Maximum Power available for Mini (Half Brick)												
	Output Voltages												
	2 V	3.3 V	5 V	6.5 V	8 V	12 V	15 V	24 V	28 V	32 V	36 V	48 V	54 V
24 (18-36)	--	150 W	200 W	--	200 W	200 W	200 W	200 W	200 W	--	200 W	200 W	--
48 (36-75)	100 W	150 W	200 W	--	--	250 W	250 W	250 W	250 W	--	250 W	250 W	--
72 (43-110)	--	100 W	150 W	--	150 W	250 W	250 W	250 W	250 W	--	250 W	250 W	--
110 (66-154)	--	100 W	150 W	--	150 W	200 W	200 W	200 W	200 W	--	200 W	200 W	--
150 (100-200)	--	150 W	200 W	--	200 W	250 W	250 W	250 W	250 W	--	250 W	250 W	--
300 (180-375)	100 W	150 W	200 W	--	200 W	250 W	250 W	250 W	250 W	--	250 W	250 W	--
375 (250-425)	100 W	150 W	200 W	--	200 W	300 W	300 W	300 W	300 W	--	300 W	300 W	--

Input Voltage	Maximum Power available for Micro (Quarter Brick)												
	Output Voltages												
	2 V	3.3 V	5 V	6.5 V	8 V	12 V	15 V	24 V	28 V	32 V	36 V	48 V	54 V
24 (18-36)	--	75 W	100 W	--	100 W	100 W	100 W	100 W	100 W	--	100 W	100 W	--
28 (9-36)	--	50 W	50 W	--	--	100 W	100 W	100 W	100 W	--	100 W	100 W	--
48 (36-75)	50 W	75 W	100 W	--	--	150 W	150 W	150 W	150 W	--	150 W	150 W	--
72 (43-110)	--	75 W	100 W	--	100 W	150 W	150 W	150 W	150 W	--	150 W	150 W	--
110 (66-154)	--	50 W	75 W	--	75 W	100 W	100 W	100 W	100 W	--	100 W	100 W	--
150 (100-200)	--	75 W	100 W	--	100 W	150 W	150 W	150 W	150 W	--	150 W	150 W	--
300 (180-375)	50 W	75 W	100 W	--	100 W	150 W	150 W	150 W	150 W	--	150 W	150 W	--
375 (250-425)	50 W	75 W	100 W	--	100 W	150 W	150 W	150 W	150 W	--	150 W	150 W	--

See [Vicor PowerBench Online](#) for intermediate power modules and to customize a solution.  
See [Data Sheet](#) for detailed electrical specifications and intermediate power modules.

# Cool-ORing™ Series Universal Active ORing Controllers

Web ExpressCode: [oring](#)

## PI2001 / PI2002 / PI2003

RoHS

The Cool-ORing PI2001/2/3 are universal high-speed Active ORing controller IC solutions designed for use with N-channel MOSFETs in redundant power system architectures. The PI2001/2/3 Cool-ORing controllers enable an extremely low power loss solution with fast dynamic response to fault conditions, critical for high availability systems. The PI2001/3 control single or parallel MOSFETs to address Active ORing applications protecting against power source failures. The PI2003 is optimized for low side -48V Active ORing applications. An internal VC shunt regulator enables biasing of the controller directly from -48 V (GND). The PI2002 includes a load disconnect feature for use with back-to-back N-channel MOSFETs in redundant power architectures.

The gate drive output turns the MOSFET on in normal steady state operation, while achieving high-speed turn-off during input power source fault conditions, which cause reverse current flow, with auto-reset once the fault clears. The PI2002 has the added benefit of being able to protect against output load fault conditions that may induce excessive forward current and device over-temperature by removing gate drive from the back-to-back MOSFETs with an auto-retry programmable off-time.



### Features

- Fast dynamic response to power source failures, with 160 ns reverse current turn-off delay time
- 4 A gate discharge current
- Accurate MOSFET drain-to-source voltage sensing to indicate system level fault conditions
- Programmable under and overvoltage detection
- Overtemperature fault detection
- Adjustable reverse current blanking timer
- Withstands 100 V transients in low-side applications
- Master / Slave I/O for paralleling (TDFN package only)
- Active-low fault flag output

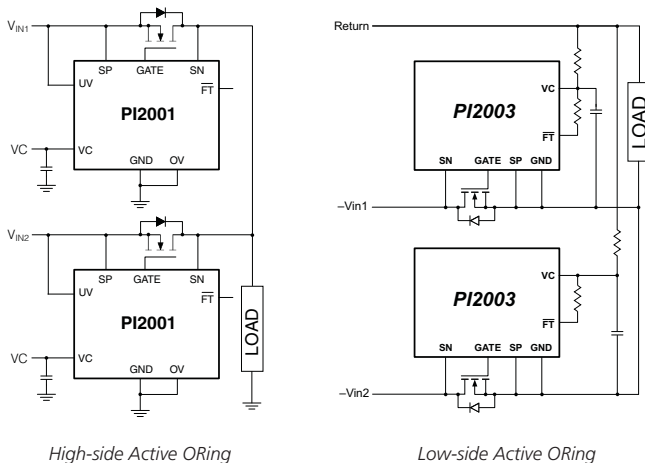
### Part Numbering

Part Number	Package	Target Application	Bias Supply	MOSFET Gate Drive Voltage	MOSFET Gate Discharge Current	Turn-off Delay Time	Shipment Packaging		
PI2001-00-QEIG	3 x 3 mm 10 Lead TDFN	Universal Low Voltage Active ORing	4.5 V – 13.2 V	8.5 V – 10.5 V	4 A (typ)	160 ns (typ.)	Tape and Reel		
PI2002-00-QEIG		Active ORing w/ Load Disconnect		9.0 V – 11.0 V		Reverse Fault, 120 ns (typ.) Forward Overcurrent, 150 ns (typ.)			
PI2003-00-QEIG		48 V Optimized Low Side Active ORing	Internal VC Clamp 10 V – 12 V	VC – 0.25 V		160 ns (typ.)			
PI2001-00-SOIG	8 Lead SOIC	Universal Low Voltage Active ORing	4.5 V – 13.2 V	8.5 V – 10.5 V		4 A (typ)		160 ns (typ.)	Tape and Reel
PI2002-00-SOIG		Active ORing w/ Load Disconnect		9.0 V – 11.0 V				Reverse Fault, 120 ns (typ.) Forward Overcurrent, 150 ns (typ.)	
PI2003-00-SOIG		48 V Optimized Low Side Active ORing	Internal VC Clamp 10 V – 12 V	VC – 0.25 V				160 ns (typ.)	

### Evaluation Boards

PI2001-EVAL1	PI2001 Evaluation Board using 3 x 3 mm TDFN package and SO-8 MOSFET in high-side configuration. (pg. 47)
PI2002-EVAL1	PI2002 Evaluation Board using 3 x 3 mm TDFN package and back-to-back SO-8 MOSFETs in high-side configuration. (pg. 47)
PI2003-EVAL1	PI2003 Evaluation Board using 3 x 3 mm TDFN package and 100 V SO-8 MOSFET in low-side configuration. (pg. 47)

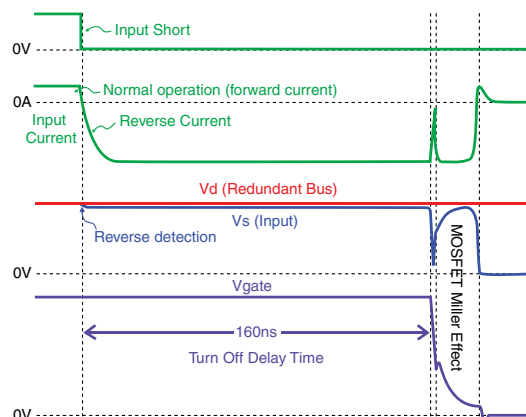
### Typical Application



High-side Active ORing

Low-side Active ORing

### PI2001 performance



Typical dynamic response of the PI2001 to an input power source short circuit fault condition



# Cool-ORing™ Series Full-Function Active ORing Solutions

Web ExpressCode: [oring2](#)

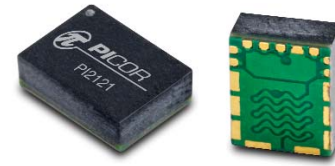
## PI2121 / PI2122 / PI2123 / PI2125

RoHS

The Cool-ORing PI2121/3/5 are complete full-function Active ORing solutions each with a high-speed ORing MOSFET controller and a very low on-state resistance MOSFET designed for use in redundant power system architectures. The PI2121/3/5 Cool-ORing solutions are offered in an extremely small, thermally enhanced 5 x 7 mm LGA package and can be used in low voltage ( $\leq 5$  V bus,  $\leq 9.6$  V bus and  $\leq 12$  V bus respectively) high side Active ORing applications. The PI2121/3/5 enable extremely low power loss with fast dynamic response to fault conditions, critical for high-availability systems. A master / slave feature allows the paralleling of PI2121/3/5 solutions for high-current, Active ORing requirements.

The PI2121/3/5 provide very high efficiency and low power loss during steady state operation, while achieving high-speed turn-off of the internal MOSFET during input power source fault conditions, which cause reverse current flow. The PI2121/3/5 provide an active low fault flag output to the system during excessive forward current, light load, reverse current, overvoltage, undervoltage and overtemperature fault conditions.

The PI2122 is configured with back-to-back MOSFETs designed for use in  $\leq 5$  V bus redundant power system architectures where added protection against load fault conditions is required. The back-to-back MOSFET provides a true bi-directional switch capability to disconnect load fault conditions that may induce excessive forward current and device over-temperature.



5 mm x 7 mm x 2 mm  
Thermally Enhanced LGA

### Features

- Combines a high-speed ORing MOSFET controller and low on-state resistance MOSFET
- Integrated high-performance MOSFET  
PI2121: 8 V, 24 A, 1.5 m $\Omega$   
PI2122: 7 V, 12 A, 6 m $\Omega$  (back-to-back MOSFET)  
PI2123: 15 V, 15 A, 3 m $\Omega$   
PI2125: 30 V, 12 A, 5.5 m $\Omega$
- Very small, high density fully optimized solution
- Fast dynamic response to power source failures, with 160 ns reverse current turn-off delay time
- Accurate sensing capability to indicate system fault conditions
- Programmable under and overvoltage functions
- Overtemperature fault detection
- Adjustable reverse current blanking timer
- Master / Slave I/O for paralleling
- Active-low fault flag output

### Part Numbering

Part Number	Package	Voltage Rating	Current Handling	Target Application	Internal MOSFET On-State Resistance	Bias Supply	Turn-off Delay Time	Shipment Packaging
PI2121-00-LGIZ	5 x 7 mm LGA	8 V (max)	24 A (max)	$\leq 5$ V Bus	1.5 m $\Omega$ (typ)	4.5 V – 13.2 V	160 ns (typ.)	Tape and Reel
PI2122-00-LGIZ		7 V (max)	12 A (max)	$\leq 5$ V Bus	6.0 m $\Omega$ (typ)			
PI2123-00-LGIZ		15 V (max)	15 A (max)	$\leq 9.6$ V Bus	3.0 m $\Omega$ (typ)			
PI2125-00-LGIZ		30 V (max)	12 A (max)	$\leq 12$ V Bus	5.5 m $\Omega$ (typ)			

#### Evaluation Boards

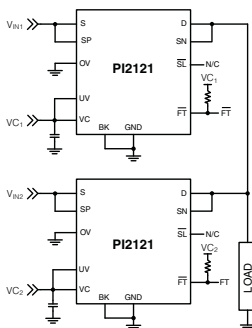
PI2121-EVAL1PI2121 Evaluation Board configured for a high-side ground referenced application. (pg. 47)

PI2122-EVAL1PI2122 Evaluation Board configured for a high-side application. (pg. 47)

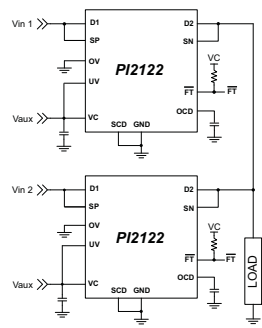
PI2125-EVAL2PI2125 Evaluation Board configured for a high-side floating application. (pg. 47)

Note: Both PI2121-EVAL1 and PI2125-EVAL2 are compatible with the PI2123 solution.

### Typical Applications

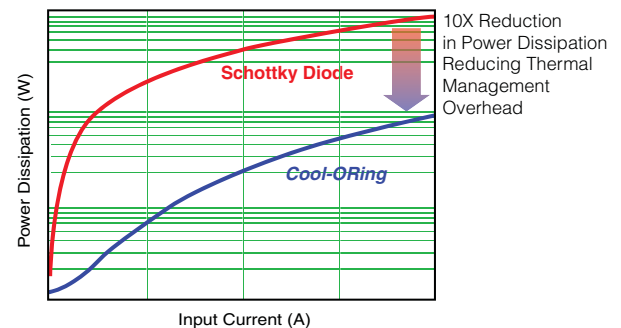


PI2121: High-side Active ORing



PI2122: High-side Active ORing with Load Disconnect

### PI2121 / PI2123 / PI2125 Performance



Power dissipation comparison between Picor's Cool-ORing solutions versus industry standard Schottky diode solutions

## HAM Input Harmonic Attenuator Module

RoHS

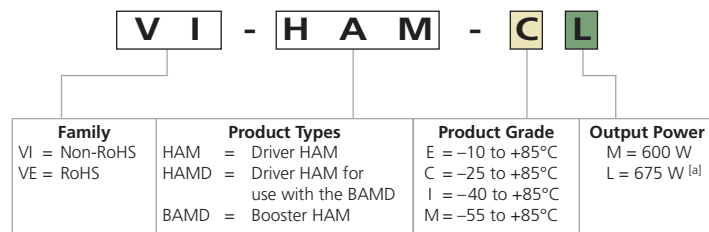
The Harmonic Attenuator Module (HAM) accepts an input of 85 – 264 Vac. The “M” version provides a DC output compatible with Vicor’s 26x, J6x and user-defined Maxi, Mini and Micro DC-DC converters. The “L” version is compatible with V375 series DC-DC converters. The combination of a HAM, one or more Vicor DC-DC converters, and the 30205 [line filter, listed on Page 51](#), offers a high-density power solution meeting EN61000-3-2.



### Features

- Power output: Up to 675 W
- Input: 85 – 264 Vac
- Meets EN61000-3-2
- 0.99 Power Factor
- Short-circuit protection
- High efficiency
- Input-surge limiting
- Dimensions:  
4.6" x 2.4" x 0.5"  
(117 x 61,0 x 12,7 mm)
- cULus, cTUVus, CE Marked

### Part Numbering Ordering, see back cover for contacts



<sup>[a]</sup> Compatible with V375 Maxi, Mini, Micro Series

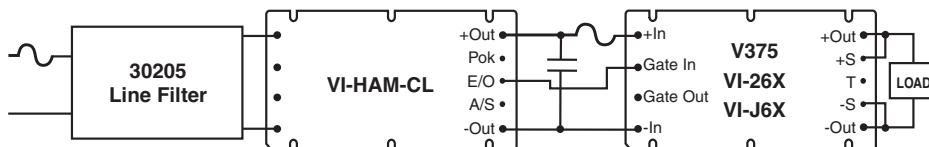
**Note:** If power requirements exceed the capability of one HAM, use a HAMD and one or more BAMDs, with an external bridge rectifier. HAM, HAMD, and BAMD modules require three surge suppressors in series directly across the input. These surge suppressors are already contained in the EMI filter PIN 30205. Also, use a 10 A, 3AG fast-blow fuse ahead of the line filter.

### General Performance Refer to data sheet for detailed specifications

Parameter	Specifications	Notes
AC line input	85 – 264 Vac 47 – 63 Hz	Continuous operation
Output power	Up to 675 W	
Efficiency	92%	
Power factor	0.99	
Total harmonic distortion <sup>[b]</sup>	<8.5%	
Output ripple	7 Vp-p	Cout = 1000 µF, 600 W
Inrush current	20 A peak	No external circuitry
Hold-up capacitance	500 – 3,000 µF	Power dependent
Isolation voltage		
Input to output	None	Provided by DC-DC converters
Input / output to baseplate	1,500 Vrms	
Auxiliary output	19 – 23 Vdc @ ≤3 mA	
Thermal shut down	90 to 100°C baseplate	
Short-circuit protection	Yes	
Weight	6 oz (170 g)	

<sup>[b]</sup> With sinusoidal input voltage ITHD – VTHD = THD

### Typical Configuration Not for design use; see data sheet for more information



## PFC FrontEnd 384 V Output

RoHS

The PFC FrontEnd from Westcor is a low-profile, 1 RU enclosed chassis-mount AC front end that may be used with any 375 Vin Vicor module, VIPAC Array, BCM, or other module to create a complete, high-density AC-DC power supply. Accepting universal input voltages of 85 – 264 Vac, and 100 – 380 Vdc, the PFC FrontEnd can deliver up to 2,200 Watts from four non-isolated outputs. With an extremely compact package size of 1.72" x 6.4" x 7" (43,6 x 162,6 x 177,8 mm), the PFC FrontEnd can provide >28 W/in<sup>3</sup>.

Besides meeting the UL, cTÜVus and CE Marked safety agency approvals, the PFC FrontEnd complies with harmonic current limits per EN61000-3-2, Electrical Fast Transient / burst EN61000-4-5. It also meets MIL-STD-810E for vibration.



Part Number

**FE375-1**

### Features

- Power Factor Corrected (PFC)
- Low profile: 1.72" (43,6 mm)
- Output power: Up to 2,200 Watts
- High power density
- Up to four non-isolated outputs
- Output voltage: 384 V
- Integral cooling fans
- Meets MIL-STD-810E for vibration
- DIN rail mountable
- Safety agency approvals: cTÜVus, CE Marked

### General Performance Refer to data sheet for detailed specifications

Product	Dimensions	Input Voltage	Output Power	Number of Outputs
PFC FrontEnd	1.72" x 6.4" x 7" (43,6 x 162,6 x 177,8 mm)	85 – 264 Vac	2,200 W @ 230 Vac	4 (non-isolated)
		47 – 800 Hz		
		100 – 380 Vdc	1,100 W @ 115 Vac	

### Typical Configuration With VIPAC Array; see data sheet for more information

