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), VTM™ (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 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.
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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.
V-I Chip & VI BRICK Solutions

DC-DC Products

- 330 – 365 Vin
  - Universal 85 – 264 Vac
  - Autoranging 90 – 132 Vac
  - Autoranging 90 – 132 Vac
  - 36 – 75 Vin
  - 18 – 36 Vin
  - 16 – 50 Vin
  - 24 Vdc, 48 Vdc

AC-DC Products

- Universal 85 – 264 Vac
  - Autoranging 90 – 132 Vac
  - Autoranging 90 – 132 Vac
- 10 – 400 Vdc
- 24, 28, 48, 270, 300 Vdc
- 24, 28 Vdc

DC-DC Converter

- 25 – 200 W per module
- 1 – 48 Vdc
- Active ORing (48 V bus or lower)

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

AC-DC Products

- Harmonic Attenuator Module
- Unity Power Factor
- EMI Filter
- Transient Protection
- Output Ripple Attenuation

DC-DC Products

- VI-200 / VI-J00
- 25 – 200 W per module
- 1 – 48 Vdc
- QPO provides active filtering to achieve differential noise attenuation.
- Active ORing (12 V bus or lower)

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

AC-DC Products

- Harmonic Attenuator Module
- Unity Power Factor
- EMI Filter
- Transient Protection
- Output Ripple Attenuation

DC-DC Products

- MAXI
- Up to 600 W per module
- 1 – 54 Vdc
- QPO provides active filtering to achieve differential noise attenuation.

Consult back cover for a complete list of contacts.
# 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**

## 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, VI-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**
**48 V BCM™ Bus Converter**

- 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/in³ (68 W/cm³)
- Small footprint: 1.1 in² (7.1 cm²)
- 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**

- 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/in³ (55 W/cm³)
- Small footprint: 1.1 in² (7.1 cm²)
- 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**

- 48 Vin Sine Amplitude Converter
- 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 345 A/in³
- Up to 100 A or 300 W
- Small footprint: Up to 90 A/in²
- 125°C operation (Tj)
- Low weight: 0.5 oz (15 g)
- J-Lead package pick & place / SMD compatible
- Through-hole pin option

**High Voltage BCM Bus Converter**

- ZVS / ZCS isolated Sine Amplitude Converter
- Input: 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/in³
- Small footprint: 1.1 in² (7.1 cm²)
- 125°C operation (Tj)
- Isolation to 2,250 Vdc
- >2.6 million hours MTBF
- Low noise: No output filtering required
- J-Lead package pick & place / SMD compatible
- Through-hole pin option

**24 V PRM Regulator**

- 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/in³ (25 W/cm³)
- Small footprint: 1.1 in² (7.1 cm²)
- 125°C operation (Tj)
- Low weight: 0.5 oz (15 g)
- J-Lead package pick & place / SMD compatible
- Through-hole pin option

**QPI for V-I Chips Input Filter Module**

- 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

**Evaluation Boards Available**
**VI-200 / VI-J00 DC-DC Converter**

- 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
- Parallel for higher power
- 100°C operation: 85°C for VI-200
- Efficiency: Up to 90%
- Agency approvals: CE Marked, cULus, cTÜVus

**Maxi / Mini / Micro DC-DC Converter**

- 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/in³

**VI BRICK PRM / VTM / BCM**

- Brick solution for Factorized Power
- Thermally enhanced package – baseplate and through-hole pin
- 100°C baseplate operation
- Small footprint: 2.08 in²
- Low profile: 0.37 inches above board
- Efficiency: Up to 97%
- High power density: Up to 390 W/in³

**VI BRICK DC-DC Converter**

- 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**

- 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**

- >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**

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

**Input Filter Modules**

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

**Output Filter Modules**

- 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
Cool-ORing™ Series Controllers

- 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

- 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

- 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

- 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

- 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

- Input voltages: 24, 48 and 300 Vdc
- Output voltages: 1 – 95 Vdc
- Efficiency: 80 – 90%
- Power density: Up to 10 W/in³
- Low-noise FM control
- ZCS / ZVS power architecture

MegaMod Chassis-mount Converter

- 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

- 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
- 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
- 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/in³

MegaPAC Family  User-Configured
- 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
- Input voltage range: 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
- 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
- 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 V4 Chips

Javelin™  MIL-COTS Power Supply
- Input voltage ranges: 85 – 254 Vac (PFC) / 85 – 380 Vdc
- Output voltages: Single output 2, 3, 3.3, 5, 12, 15, 24, 28, 48 Vdc
- Output power: 600 – 5,400 W

PowerBank™  Low Profile Supply
- 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
- 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.
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.

**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/in³

**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

**Bus Conversion Using BCMs**

Enable dense IBA Power Systems

- High density bus converter > 1,000 W/in³
- Efficiency: Up to 96.5%
- Minimize total system capacitance

1/4 the capacitance volume here...

...little or no capacitance needed here.
The BCM is a member of the new family of V\textsuperscript{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\textsuperscript{3}
- Isolation to 4,242 Vdc
- Efficiency: Up to 96.5%
- Output power: Up to 330 W
- Small footprint: 1.1 in\textsuperscript{2} (7.1 cm\textsuperscript{2})
- Pick & place / SMD compatible
- Through-hole pin option
- 125°C operation (Tj)
- >3.5 million hours MTBF

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

### Input Voltage

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>K Factor</th>
<th>@ 48 Vin</th>
<th>Range</th>
<th>Vout</th>
<th>Max Power</th>
<th>Pack Size</th>
<th>BCM Model No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>38 – 55 Vdc</td>
<td>1/32</td>
<td>1.5 Vdc</td>
<td>1.19 – 1.71 Vdc</td>
<td>135 W</td>
<td>Full</td>
<td>B048F01ST14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/16</td>
<td>3.0 Vdc</td>
<td>2.38 – 3.43 Vdc</td>
<td>210 W</td>
<td>Full</td>
<td>B048F030T21</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/12</td>
<td>4.0 Vdc</td>
<td>3.17 – 4.58 Vdc</td>
<td>200 W</td>
<td>Full</td>
<td>B048F040T20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/8</td>
<td>6.0 Vdc</td>
<td>4.75 – 6.87 Vdc</td>
<td>240 W</td>
<td>Full</td>
<td>B048F060T24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/6</td>
<td>8.0 Vdc</td>
<td>6.34 – 9.16 Vdc</td>
<td>240 W</td>
<td>Full</td>
<td>B048F080T24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/5</td>
<td>9.6 Vdc</td>
<td>7.60 – 11.00 Vdc</td>
<td>240 W</td>
<td>Full</td>
<td>B048F096T24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/4</td>
<td>12.0 Vdc</td>
<td>9.50 – 13.75 Vdc</td>
<td>120 W</td>
<td>Half</td>
<td>B048F101THJ</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/3</td>
<td>16.0 Vdc</td>
<td>12.70 – 18.30 Vdc</td>
<td>240 W</td>
<td>Full</td>
<td>B048F160T24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/2</td>
<td>24.0 Vdc</td>
<td>19.00 – 26.50 Vdc</td>
<td>300 W</td>
<td>Full</td>
<td>B048F240T30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2/3</td>
<td>32.0 Vdc</td>
<td>25.30 – 36.70 Vdc</td>
<td>300 W</td>
<td>Full</td>
<td>B048F320T30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>48.0 Vdc</td>
<td>38.00 – 55.00 Vdc</td>
<td>300 W</td>
<td>Full</td>
<td>B048F480T30</td>
<td></td>
</tr>
</tbody>
</table>

\( \text{Vin} = 38 – 55 \text{ Vdc} \)

### Input Voltage

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

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/in³
- Small footprint: 1.1in² (7.1 cm²)
- 125°C operation (Tj)
- J-Lead package
- Through-hole pin option
- Pick & place / SMD compatible

Part Numbering
For a complete listing of our PRM model numbers, go to vicorpower.com/vichip

<table>
<thead>
<tr>
<th>Pre-Regulator Module</th>
<th>Input Voltage Designator</th>
<th>Configuration</th>
<th>Nominal Factorized Bus Voltage</th>
<th>Product Grade Storage</th>
<th>Temperatures Operating (Tj)</th>
<th>Output Power Designator ( = Pf/10)</th>
<th>Adaptive Loop</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>F = J-Lead T = Through Hole</td>
<td>T = Through Hole</td>
<td></td>
<td>T –40 to 125°C M –65 to 125°C</td>
<td>T –40 to 125°C M –65 to 125°C</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>Max Output</th>
<th>PRM Model No.</th>
<th>Trim / Vf Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>36 – 75 Vdc</td>
<td>240 W 5.0 A</td>
<td>P048F048T24AL</td>
<td>26 – 55 V</td>
</tr>
<tr>
<td></td>
<td>120 W 2.5 A</td>
<td>P048F048T12AL</td>
<td></td>
</tr>
<tr>
<td>38 – 55 Vdc</td>
<td>320 W 6.6 A</td>
<td>P045F048T32AL</td>
<td>Meets MIL-STD-883</td>
</tr>
<tr>
<td></td>
<td>170 W 3.5 A</td>
<td>P045F048T17AL</td>
<td></td>
</tr>
<tr>
<td>18 – 36 Vdc</td>
<td>120 W 2.5 A</td>
<td>P024F048T12AL</td>
<td></td>
</tr>
<tr>
<td>18 – 60 Vdc</td>
<td>120 W 2.5 A</td>
<td>P036F048T12AL</td>
<td></td>
</tr>
</tbody>
</table>

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

Application Examples

DC-DC Converter and Regulator

VI BRICK
PRM model Page 8
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. VTM addresses 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. VTM 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/in³
- Small footprint: 1.1 in² (7.1 cm²)
- Low weight: 0.5 oz (15 g)
- Pick & place / SMD compatible
- Efficiency: Up to 97%
- 125°C operation (Tj)
- 1 µs transient response
- >3.5 million hours MTBF
- J-Lead package
- Through-hole pin option
- Isolation to 2,250 Vdc

**Part Numbering**

For a complete listing of our VTM model numbers, go to vicorpower.com/vichip

<table>
<thead>
<tr>
<th>Voltage Transformation Module</th>
<th>Input Voltage Designator</th>
<th>Configuration</th>
<th>Output Voltage Designator ( = Vout X10 )</th>
<th>Product Grade</th>
<th>Product Grade Temperatures Operating (Tj)</th>
<th>Output Current</th>
<th>VTM Model No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>F = J-Lead</td>
<td>T = Through Hole</td>
<td></td>
<td>T – 40 to 125°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M –65 to 125°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>K Factor</td>
<td>Input Voltage</td>
<td>Range</td>
<td>Output Current @ 48 Vin</td>
<td>Temperature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26 – 55 Vdc</td>
<td></td>
<td></td>
<td></td>
<td>Vout</td>
<td>@ 48 Vin</td>
<td>Range</td>
<td>Output Current</td>
</tr>
<tr>
<td></td>
<td>1/32</td>
<td>1.5 Vdc</td>
<td>0.82 – 1.71 Vdc</td>
<td>100 A</td>
<td>V048F015T100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/24</td>
<td>2.0 Vdc</td>
<td>1.09 – 2.29 Vdc</td>
<td>80 A</td>
<td>V048F020T080</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/16</td>
<td>3.0 Vdc</td>
<td>1.63 – 3.43 Vdc</td>
<td>70 A</td>
<td>V048F030T070</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/12</td>
<td>4.0 Vdc</td>
<td>2.17 – 4.58 Vdc</td>
<td>50 A</td>
<td>V048F040T050</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/8</td>
<td>6.0 Vdc</td>
<td>3.25 – 6.87 Vdc</td>
<td>40 A</td>
<td>V048F060T040</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/6</td>
<td>8.0 Vdc</td>
<td>4.34 – 9.16 Vdc</td>
<td>30 A</td>
<td>V048F080T030</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/5</td>
<td>9.6 Vdc</td>
<td>6.40 – 11.00 Vdc</td>
<td>25 A</td>
<td>V048F096T025</td>
<td>[a]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/4</td>
<td>12.0 Vdc</td>
<td>6.50 – 13.80 Vdc</td>
<td>25 A</td>
<td>V048F120T025</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/3</td>
<td>16.0 Vdc</td>
<td>8.67 – 18.30 Vdc</td>
<td>15 A</td>
<td>V048F160T015</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/2</td>
<td>24.0 Vdc</td>
<td>13.80 – 26.50 Vdc</td>
<td>12 A</td>
<td>V048F240T012</td>
<td>[b]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2/3</td>
<td>32.0 Vdc</td>
<td>17.30 – 36.70 Vdc</td>
<td>9 A</td>
<td>V048F320T009</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>48.0 Vdc</td>
<td>26.00 – 55.00 Vdc</td>
<td>6 A</td>
<td>V048F480T006</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[a] Vout = 6.4 Vdc @ 32 Vin  
[b] Vout = 14.0 Vdc @ 28 Vin
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 VI Chip Voltage Transformation Modules. In combination, VI BRICK PRMs and VTM's 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
- Efficiency: Up to 97%
- Input voltages: 24, 36, 45 and 48 Vdc
- Fast transient response
- Low profile: 0.37 in. (9.5 mm)
- Low noise operation
- Low weight: 1.07 oz (30.3 g)
- Rugged robust package
- Small footprint: 2.08 in²
- Lead free wave solder compatible
- ZVS buck-boost regulator
- Agency approvals

**Part Numbering**

<table>
<thead>
<tr>
<th>Pre-Regulator Module</th>
<th>Input Voltage Designator</th>
<th>Package Size</th>
<th>Output Voltage Designator ( = Vout X 10 )</th>
<th>Product Grade</th>
<th>Temperatures Operating</th>
<th>Output Power Designator ( = Pout/10 )</th>
<th>Baseplate</th>
<th>Pin Style</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR</td>
<td>048 A</td>
<td>F = Slotted flange</td>
<td>T = Through hole</td>
<td>M = Pin-fin heat sink[a]</td>
<td>PR048A480T024FP</td>
<td>240 W 5.0 A</td>
<td>PR048A480T012FP</td>
<td>P = Through hole</td>
<td>Contact factory</td>
</tr>
<tr>
<td>DC Source</td>
<td>PRM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Input Voltage**

- 36 – 75 Vdc
- 38 – 55 Vdc
- 18 – 36 Vdc
- 18 – 60 Vdc

**Max Output**

- Power
- Current

**PRM Model No.**

- PR048A480T024FP
- PR048A480T012FP
- PR045A480T032FP
- PR045A480T017FP
- PR024A480T012FP
- PR036A480T012FP

**Trim / Vf Range**

- 26 – 55 V

Note: See individual data sheets for additional model specifications and configurations.
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/in³
- Small footprint: 2.08 in²
- 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

**Part Numbering**

<table>
<thead>
<tr>
<th>Voltage Transformation Module</th>
<th>Input Voltage Designator</th>
<th>Package Size</th>
<th>Output Voltage Designator (Vout = Vout X 10)</th>
<th>Product Grade</th>
<th>Operating Temperatures</th>
<th>Output Current (lout)</th>
<th>Baseplate</th>
<th>Pin Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>VT 48 A 120 T 025 F</td>
<td>0</td>
<td>P</td>
<td>F = Slotted flange</td>
<td>M</td>
<td>–40 to 100°C</td>
<td>100 A</td>
<td>F</td>
<td>P</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P = Pin-fin heat sink[a]</td>
<td>T</td>
<td>–55 to 100°C</td>
<td>80 A</td>
<td>P</td>
<td></td>
</tr>
</tbody>
</table>

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

[a] Contact factory

**Input Voltage**

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>K Factor</th>
<th>Vout</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 – 55 Vdc</td>
<td>@ 48 Vin</td>
<td>Range</td>
</tr>
<tr>
<td>1/32</td>
<td>1.5 Vdc</td>
<td>0.82 – 1.71 Vdc</td>
</tr>
<tr>
<td>1/24</td>
<td>2.0 Vdc</td>
<td>1.09 – 2.29 Vdc</td>
</tr>
<tr>
<td>1/16</td>
<td>3.0 Vdc</td>
<td>1.63 – 3.43 Vdc</td>
</tr>
<tr>
<td>1/12</td>
<td>4.0 Vdc</td>
<td>2.17 – 4.58 Vdc</td>
</tr>
<tr>
<td>1/8</td>
<td>6.0 Vdc</td>
<td>3.25 – 6.87 Vdc</td>
</tr>
<tr>
<td>1/6</td>
<td>8.0 Vdc</td>
<td>4.34 – 9.16 Vdc</td>
</tr>
<tr>
<td>1/5</td>
<td>9.6 Vdc</td>
<td>6.40 – 11.00 Vdc</td>
</tr>
<tr>
<td>1/4</td>
<td>12.0 Vdc</td>
<td>6.50 – 13.80 Vdc</td>
</tr>
<tr>
<td>1/3</td>
<td>16.0 Vdc</td>
<td>8.67 – 18.30 Vdc</td>
</tr>
<tr>
<td>1/2</td>
<td>24.0 Vdc</td>
<td>13.80 – 26.50 Vdc</td>
</tr>
<tr>
<td>2/3</td>
<td>32.0 Vdc</td>
<td>17.30 – 36.70 Vdc</td>
</tr>
<tr>
<td>1</td>
<td>48.0 Vdc</td>
<td>26.00 – 55.00 Vdc</td>
</tr>
</tbody>
</table>

**Output Current**

<table>
<thead>
<tr>
<th>Output Current</th>
<th>VT Model No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 A</td>
<td>VT04B8A015T100FP</td>
</tr>
<tr>
<td>80 A</td>
<td>VT04B8A020T080FP</td>
</tr>
<tr>
<td>70 A</td>
<td>VT04B8A030T070FP</td>
</tr>
<tr>
<td>50 A</td>
<td>VT04B8A040T050FP</td>
</tr>
<tr>
<td>40 A</td>
<td>VT04B8A060T040FP</td>
</tr>
<tr>
<td>30 A</td>
<td>VT04B8A080T030FP</td>
</tr>
<tr>
<td>25 A</td>
<td>VT04B8A096T025FP[b]</td>
</tr>
<tr>
<td>25 A</td>
<td>VT04B8A120T025FP</td>
</tr>
<tr>
<td>15 A</td>
<td>VT04B8A160T015FP</td>
</tr>
<tr>
<td>12 A</td>
<td>VT04B8A240T012FP[c]</td>
</tr>
<tr>
<td>9 A</td>
<td>VT04B8A320T009FP</td>
</tr>
<tr>
<td>6 A</td>
<td>VT04B8A480T006FP</td>
</tr>
</tbody>
</table>

[b] Vout = 6.4 Vdc @ 32 Vin  
[c] Vout = 14.0 Vdc @ 28 Vin
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/in³
- Small footprint: 2.08 in²
- 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**

### Features

- **Input Voltage**
  - 38 – 55 Vdc
  - 330 – 365 Vdc
  - 360 – 400 Vdc

- **K Factor**
  - 1/32
  - 1/16
  - 1/12
  - 1/8
  - 1/6
  - 1/5
  - 1/4
  - 1/3
  - 1/2
  - 2/3
  - 1

- **Vout**
  - @ 48 Vin
  - Range
  - Max Power
  - BCM Model No.

- **Product Grade**
  - Storage T –40 to 125°C
  - Operating M –65 to 125°C

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

**Contact factory**
**VI BRICK** DC-DC Converter

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/in³
- Lead free wave solder compatible
- Agency approvals

**Part Numbering**

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

*Contact factory*
VI-200 and VI-J00 Series Converter Modules

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
- Parallel 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

General Performance

Refer to data sheet for detailed specifications

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

[a] 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.

Visit vicorpower.com & get your Design Guide
## Part Number Configuration Chart

### 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](https://vicorpower.com) at vicorpower.com.

### DC-DC BRICKs

**Web ExpressCode:** prodselect

Configure Your BRICK Online

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

### Designators

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

### Maximum Power available for VI-2(B)xx-xx

**Output Voltages**

<table>
<thead>
<tr>
<th>Vin Designator</th>
<th>Input Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>12 (10-20)</td>
</tr>
<tr>
<td>1</td>
<td>24 (10-36)</td>
</tr>
<tr>
<td>2</td>
<td>24 (21-32)</td>
</tr>
<tr>
<td>3</td>
<td>48 (42-60)</td>
</tr>
<tr>
<td>4</td>
<td>48 (36-76)</td>
</tr>
<tr>
<td>5</td>
<td>72 (55-100)</td>
</tr>
<tr>
<td>6</td>
<td>110 (166-160)</td>
</tr>
<tr>
<td>7</td>
<td>150 (100-200)</td>
</tr>
<tr>
<td>8</td>
<td>150 (100-375)</td>
</tr>
<tr>
<td>9</td>
<td>300 (200-400)</td>
</tr>
</tbody>
</table>

### Maximum Power available for VI-Jxx-xx

**Output Voltages**

<table>
<thead>
<tr>
<th>Vin Designator</th>
<th>Input Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>12 (10-20)</td>
</tr>
<tr>
<td>1</td>
<td>24 (10-36)</td>
</tr>
<tr>
<td>2</td>
<td>24 (21-32)</td>
</tr>
<tr>
<td>3</td>
<td>48 (42-60)</td>
</tr>
<tr>
<td>4</td>
<td>48 (36-76)</td>
</tr>
<tr>
<td>5</td>
<td>72 (55-100)</td>
</tr>
<tr>
<td>6</td>
<td>110 (166-160)</td>
</tr>
<tr>
<td>7</td>
<td>150 (100-200)</td>
</tr>
<tr>
<td>8</td>
<td>150 (100-375)</td>
</tr>
<tr>
<td>9</td>
<td>300 (200-400)</td>
</tr>
</tbody>
</table>

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

Consult back cover for a complete list of contacts.
Maxi, Mini, Micro Series  Converter Modules

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/in³
- 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

General Performance
Refer to data sheet for detailed specifications

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


- 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

Visit vicorpower.com & get your Design Guide
### 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

### Designators
Maxi, Mini, Micro Family

<table>
<thead>
<tr>
<th>Input Voltage[a]</th>
<th>Package</th>
<th>Output Voltage[a]</th>
<th>Product Grade</th>
<th>Output Power</th>
<th>Baseplate</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>A</td>
<td>48</td>
<td>500</td>
<td>B</td>
<td>L</td>
</tr>
</tbody>
</table>

- **V** Input Voltage
- **A** Package: A = Maxi, B = Mini, C = Micro
- **48** Output Voltage
- **500** Product Grade: E = –10 to +100°C, C = –20 to +100°C, T = –40 to +100°C, M = –55 to +100°C
- **B** Output Power
- **L** Pin Style: Blank = Short tin / lead, L = Long tin / lead, S = Short ModuMate, N = Long ModuMate, F = Short gold (RoHS), G = Long gold (RoHS)

### Maximum Power available for Maxi (Full Brick)

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>Output Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 V</td>
<td>3.3 V</td>
</tr>
<tr>
<td>5 V</td>
<td>6.5 V</td>
</tr>
<tr>
<td>8 V</td>
<td>12 V</td>
</tr>
<tr>
<td>15 V</td>
<td>18 V</td>
</tr>
<tr>
<td>24 V</td>
<td>28 V</td>
</tr>
<tr>
<td>32 V</td>
<td>36 V</td>
</tr>
<tr>
<td>48 V</td>
<td>54 V</td>
</tr>
</tbody>
</table>

### Maximum Power available for Mini (Half Brick)

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>Output Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 V</td>
<td>3.3 V</td>
</tr>
<tr>
<td>5 V</td>
<td>6.5 V</td>
</tr>
<tr>
<td>8 V</td>
<td>12 V</td>
</tr>
<tr>
<td>15 V</td>
<td>18 V</td>
</tr>
<tr>
<td>24 V</td>
<td>28 V</td>
</tr>
<tr>
<td>32 V</td>
<td>36 V</td>
</tr>
<tr>
<td>48 V</td>
<td>54 V</td>
</tr>
</tbody>
</table>

### Maximum Power available for Micro (Quarter Brick)

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>Output Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 V</td>
<td>3.3 V</td>
</tr>
<tr>
<td>5 V</td>
<td>6.5 V</td>
</tr>
<tr>
<td>8 V</td>
<td>12 V</td>
</tr>
<tr>
<td>15 V</td>
<td>18 V</td>
</tr>
<tr>
<td>24 V</td>
<td>28 V</td>
</tr>
<tr>
<td>32 V</td>
<td>36 V</td>
</tr>
<tr>
<td>48 V</td>
<td>54 V</td>
</tr>
</tbody>
</table>

See Vicor PowerBench Online for intermediate power modules and to customize a solution.
See Data Sheet for detailed electrical specifications and intermediate power modules.

Consult back cover for a complete list of contacts.
**Cool-ORing™ Series** Universal Active ORing Controllers

### PI2001 / PI2002 / PI2003

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

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
<th>Target Application</th>
<th>Bias Supply</th>
<th>MOSFET Gate Drive Voltage</th>
<th>MOSFET Gate Discharge Current</th>
<th>Turn-off Delay Time</th>
<th>Shipment Packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI2001-00-QEIG</td>
<td>3 x 3 mm</td>
<td>Universal Low Voltage Active ORing</td>
<td></td>
<td>4.5 V – 13.2 V</td>
<td>8.5 V – 10.5 V</td>
<td>160 ns (typ.)</td>
<td>Tape and Reel</td>
</tr>
<tr>
<td></td>
<td>10 Lead TDFN</td>
<td>Active ORing w/ Load Disconnect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI2002-00-QEIG</td>
<td>8 Lead SOIC</td>
<td>Universal Low Voltage Active ORing</td>
<td></td>
<td>4.5 V – 13.2 V</td>
<td>8.5 V – 10.5 V</td>
<td>160 ns (typ.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>48 V Optimized</td>
<td>Active ORing w/ Load Disconnect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI2003-00-QEIG</td>
<td>5 mm x 6 mm</td>
<td>48 V Optimized Low Side Active ORing</td>
<td></td>
<td>4.5 V – 13.2 V</td>
<td>8.5 V – 10.5 V</td>
<td>160 ns (typ.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8-Lead SOIC</td>
<td>Internal VC Clamp 10 V – 12 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI2001-00-SOIG</td>
<td>3 x 3 mm</td>
<td>Universal Low Voltage Active ORing</td>
<td></td>
<td>4.5 V – 13.2 V</td>
<td>8.5 V – 10.5 V</td>
<td>160 ns (typ.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 Lead TDFN</td>
<td>Active ORing w/ Load Disconnect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI2002-00-SOIG</td>
<td>8 Lead SOIC</td>
<td>Universal Low Voltage Active ORing</td>
<td></td>
<td>4.5 V – 13.2 V</td>
<td>8.5 V – 10.5 V</td>
<td>160 ns (typ.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>48 V Optimized</td>
<td>Active ORing w/ Load Disconnect</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI2003-00-SOIG</td>
<td>5 mm x 6 mm</td>
<td>48 V Optimized Low Side Active ORing</td>
<td></td>
<td>4.5 V – 13.2 V</td>
<td>8.5 V – 10.5 V</td>
<td>160 ns (typ.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8-Lead SOIC</td>
<td>Internal VC Clamp 10 V – 12 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 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

![Typical Application Diagram]

**PI2001 performance**

![PI2001 performance Diagram]

Typical dynamic response of the PI2001 to an input power source short circuit fault condition.
Cool-ORing™ Series  Full-Function Active ORing Solutions

PI2121 / PI2122 / PI2123 / PI2125

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 (≤5 V bus, ≤9.6 V bus and ≤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 ≤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.

Part Numbering

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
<th>Voltage Rating</th>
<th>Current Handling</th>
<th>Target Application</th>
<th>Internal MOSFET On-State Resistance</th>
<th>Bias Supply</th>
<th>Turn-off Delay Time</th>
<th>Shipment Packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI2121-00-LGIZ</td>
<td>5 x 7 mm LGA</td>
<td>8 V (max)</td>
<td>24 A (max)</td>
<td>≤5 V Bus</td>
<td>1.5 mΩ (typ)</td>
<td>4.5 V – 13.2 V</td>
<td>160 ns (typ.)</td>
<td>Tape and Reel</td>
</tr>
<tr>
<td>PI2122-00-LGIZ</td>
<td>5 x 7 mm LGA</td>
<td>7 V (max)</td>
<td>12 A (max)</td>
<td>≤5 V Bus</td>
<td>6.0 mΩ (typ)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI2123-00-LGIZ</td>
<td>15 V (max)</td>
<td>15 A (max)</td>
<td>≤9.6 V Bus</td>
<td>3.0 mΩ (typ)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI2125-00-LGIZ</td>
<td>30 V (max)</td>
<td>12 A (max)</td>
<td>≤12 V Bus</td>
<td>5.5 mΩ (typ)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Evaluation Boards

PI2121-EVAL1: PI2121 Evaluation Board configured for a high-side ground referenced application. (pg. 47)
PI2122-EVAL1: PI2122 Evaluation Board configured for a high-side application. (pg. 47)
PI2125-EVAL2: PI2125 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

Part Numbering

PI2121: High-side Active ORing
PI2122: High-side Active ORing with Load Disconnect
PI2123: High-side Active ORing
PI2125: High-side Active ORing

Power dissipation comparison between Picor’s Cool-ORing solutions versus industry standard Schottky diode solutions.
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, cTÜVus, CE Marked

Part Numbering

VI - HAM - C L

Output Power
M = 600 W
L = 675 W

Notes: 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 P/N 30205. Also, use a 10 A, 3AG fast-blow fuse ahead of the line filter.

General Performance
Refer to data sheet for detailed specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC line input</td>
<td>85 – 264 Vac</td>
</tr>
<tr>
<td></td>
<td>47 – 63 Hz</td>
</tr>
<tr>
<td>Output power</td>
<td>Up to 675 W</td>
</tr>
<tr>
<td>Efficiency</td>
<td>92%</td>
</tr>
<tr>
<td>Power factor</td>
<td>0.99</td>
</tr>
<tr>
<td>Total harmonic distortion [b]</td>
<td>&lt;8.5%</td>
</tr>
<tr>
<td>Output ripple</td>
<td>7 Vp-p</td>
</tr>
<tr>
<td>Inrush current</td>
<td>20 A peak</td>
</tr>
<tr>
<td>Hold-up capacitance</td>
<td>500 – 3,000 µF</td>
</tr>
<tr>
<td>Isolation voltage</td>
<td>None</td>
</tr>
<tr>
<td>Input / output to baseplate</td>
<td>1,500 Vrms</td>
</tr>
<tr>
<td>Auxiliary output</td>
<td>19 – 23 Vdc @ ≤3 mA</td>
</tr>
<tr>
<td>Thermal shut down</td>
<td>90 to 100°C baseplate</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>Yes</td>
</tr>
<tr>
<td>Weight</td>
<td>6 oz (170 g)</td>
</tr>
</tbody>
</table>

[b] With sinusoidal input voltage ITTHD – VTHD = THD

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

U.S. & CANADA: 800-735-6200 VICORPOWER.COM
Consult back cover for a complete list of contacts.
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/in³.

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.

**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

<table>
<thead>
<tr>
<th>Product</th>
<th>Dimensions</th>
<th>Input Voltage</th>
<th>Output Power</th>
<th>Number of Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFC FrontEnd</td>
<td>1.72&quot; x 6.4&quot; x 7&quot; (43.6 x 162.6 x 177.8 mm)</td>
<td>85 – 264 Vac</td>
<td>2,200 W @ 230 Vac</td>
<td>4 (non-isolated)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>47 – 800 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 – 380 Vdc</td>
<td>1,100 W @ 115 Vac</td>
<td></td>
</tr>
</tbody>
</table>

**Typical Configuration**  
With VIPAC Array; see data sheet for more information
The AIM (Alternating Input Module) is an AC front-end module which interfaces directly with worldwide AC mains. The AIM provides line rectification, EMI/RFI filtering, transient protection, and inrush limiting in a half-brick package measuring 2.28” x 2.4” x 0.5” (57.9 x 61.0 x 12.7 mm).

The AIM is used in conjunction with Vicor VI-200 or VI-J00 DC-DC converters to realize a universal AC input, high-density, low-profile switching power supply with outputs from 1 – 95 Vdc and a total power rating up to 200 W. An external capacitor is used to satisfy system hold-up requirements. Internal EMI filtering meets EN55022 and FCC Part 15, Class A emissions limits.

**Features**
- Universal input: 85 – 264 Vac
- Output power: 250 W
- Operating temperature up to 100°C baseplate (no derating)
- Efficiency: 97%
- Integral EMI filtering
- Input transient protection
- Inrush limiting
- cULus, cTÜVus, CE Marked

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specifications</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC line input</td>
<td>85 – 264 Vac</td>
<td>No strapping</td>
</tr>
<tr>
<td></td>
<td>47 – 440 Hz</td>
<td>No damage below low line</td>
</tr>
<tr>
<td>Output power</td>
<td>Up to 250 W</td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td>97%</td>
<td></td>
</tr>
<tr>
<td>Power factor</td>
<td>0.62</td>
<td></td>
</tr>
<tr>
<td>Inrush current</td>
<td>&lt;40 A peak</td>
<td>No external circuitry</td>
</tr>
<tr>
<td>Hold-up capacitance</td>
<td>270 – 1,200 µF</td>
<td>Power dependent</td>
</tr>
<tr>
<td>Isolation voltage</td>
<td>Input to output: None</td>
<td>Provided by DC-DC converters</td>
</tr>
<tr>
<td></td>
<td>Input / output to baseplate: 1,500 Vrms</td>
<td></td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>3 oz (85 g)</td>
<td></td>
</tr>
</tbody>
</table>

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

---

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

<table>
<thead>
<tr>
<th>Family</th>
<th>Product</th>
<th>Product Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>VI = Non-RoHS</td>
<td>VE = RoHS</td>
<td>E = −10°C to +85°C C = −25°C to +85°C I = −40°C to +85°C M = −55°C to +85°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AC Input Module</td>
</tr>
</tbody>
</table>

---
Autoranging Rectifier Module

The Autoranging Rectifier Module (ARM) is the front end of a switching power supply and uses a microprocessor to control strapping of the voltage doubler. The user only needs to add an input filter, hold-up capacitor and appropriate DC-DC converters to realize an autoranging, high-density, low-profile switching power supply.

Features
- Efficiency: 96 – 98%
- Operating temperature: Up to 100˚C baseplate (no derating)
- Agency approvals: cTÜVus, cULus, CE Marked
- AC Bus OK, module enable
- Inrush limiting (no external circuitry)

Part Numbering

Filter / Autoranging Rectifier Module

The FARM (Filter / Autoranging Rectifier Module) is an AC front-end module which provides EMI filtering, autoranging line rectification, transient protection, and inrush current limiting.

Part Numbering

General Performance for ARM & FARM

Refer to data sheet for detailed specifications.
The ENMod system is an AC front-end solution providing compliance to electromagnetic compatibility (EMC) standards. It consists of the MiniHAM passive harmonic attenuation module and the FARM3 autoranging AC-DC front-end module. Combined with filtering and hold-up capacitors, the ENMod system provides full compliance to EN61000-3-2 Harmonic Current, EN55022, Level B Conducted Emissions, EN61000-4-5 Surge Immunity, EN61000-4-11 Line Disturbances, and EN61000-3-3 Inrush Current. Unlike active PFC solutions, the MiniHAM generates no EMI, greatly simplifying and reducing system noise filtering requirements. It is also smaller and more efficient than active alternatives. Optimized for operation on the DC bus (provided by the FARM3) rather than directly on the AC line, it will provide harmonic current compliance at up to 600 W of input power at 230 Vac.

The FARM3 is a filter and autoranging module that has been optimized for use as the front end for the MiniHAM. Both modules are in Vicor's standard Mini half-brick package.

### Features
- Passive harmonic current attenuation to EN61000-3-2
- 575 W rated power output
- Autoranging 115/230 Vac Input
- Inrush current limiting

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating input voltage</td>
<td>90 – 132 Vac</td>
<td>Autoranging (doubler-mode)</td>
</tr>
<tr>
<td>Output power (max)</td>
<td>180 – 264 Vac</td>
<td>Autoranging (bridge-mode)</td>
</tr>
<tr>
<td>Harmonic currents</td>
<td>EN61000-3-2</td>
<td>50 – 600 W, 230 Vac input</td>
</tr>
<tr>
<td>Transient surge immunity</td>
<td>EN61000-4-5</td>
<td>2 kV – 50 µs line to earth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 kV – 50 µs line to line</td>
</tr>
<tr>
<td>Conducted emissions</td>
<td>EN55022, Class B</td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td>EN60950</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MiniHAM</td>
<td>2.28&quot; x 2.2&quot; x 0.5&quot; (57.9 x 55.9 x 12.7 mm)</td>
<td></td>
</tr>
<tr>
<td>FARM3</td>
<td>2.28&quot; x 2.2&quot; x 0.5&quot; (57.9 x 55.9 x 12.7 mm)</td>
<td></td>
</tr>
</tbody>
</table>

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

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BatMod  Battery Charger

The fully-programmable BatMod current source module is based on the VI-200 Series of DC-DC converters. It accepts 48, 150, or 300 V inputs, provides programmable output current, and is well-suited for such applications as battery chargers, metal platers, and laser diodes. The BatMod is compatible with all major battery types, and is available in booster versions for higher output current applications.

Features

- Input voltages: 48, 150 or 300 V
- Programmable output current
- Booster versions for higher output current applications
- Agency approvals: cULus, cTÜVus, CE Marked
- Dimensions: 4.6" x 2.4" x 0.5" (116.9 x 61.0 x 12.7 mm)

Features

Input Voltage
Nominal Range
3 = 48 V 42 – 60 V
5 = 150 V 100 – 200 V
6 = 300 V 200 – 400 V

Module
2 = Driver
B = Booster

Family
VI = Non-RoHS
VE = RoHS

Part Numbering

<table>
<thead>
<tr>
<th>Family</th>
<th>Module</th>
<th>Input Voltage Range</th>
<th>Output Voltage Range</th>
<th>Product Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>VI</td>
<td>2</td>
<td>48 V – 150 V</td>
<td>12 V – 24 V</td>
<td>E = –10 to +85°C</td>
</tr>
<tr>
<td>VE</td>
<td>2</td>
<td>300 V</td>
<td>22.5 – 33.0 V</td>
<td>C = –25 to +85°C</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>48 V – 300 V</td>
<td>45.0 – 66.0 V</td>
<td>I = –40 to +85°C</td>
</tr>
</tbody>
</table>

Part Numbering

BatMod, Battery Charger

Packaging Options

SlimMod
Flangeless package

2.28"L x 1.80"W x 0.50"H (57.9 x 45.7 x 12.7 mm)

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 as shown on Page 13.

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 as shown on Page 13.

BusMod
Chassis mount housing with screw / lug wiring interface

2.28"L x 2.40"W x 1.08"H (57.9 x 61.0 x 27.4 mm)

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 as shown on Page 13.

To order the BusMod separately:
Half-sized BusMod — P/N 18952
Full-sized BusMod — P/N 06322
DC-DC Filters

FIAM  Filter Input Attenuator Module

A DC input, front-end module providing transient protection, inrush current limiting and EMI filtering. The FIAM enables designers using Vicor Maxi, Mini, and Micro 48 Vin DC-DC converters to meet the transient immunity and EMI requirements of Telcordia, FCC, ETSI and European Norms.

Features
- EMI filtering - Class A
- Inrush current limiting
- Transient protection
- Input: 36 – 76 Vdc
- 10 and 20 Amp versions
- Agency approvals: cULus, cTÜVus, CE Marked

General Performance
Not for design use; see data sheet

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>36 – 76 Vdc</td>
</tr>
<tr>
<td>Output current</td>
<td>FIAM1xxx / FIAM2xxx 10 A / 20 A</td>
</tr>
<tr>
<td>Inrush limiting</td>
<td>0.014 Amp/µF</td>
</tr>
<tr>
<td>EMI / RFI</td>
<td>Telcordia GR-1089-Core Issue 2, EN55022, Class A, FCC Part 15, Class B</td>
</tr>
<tr>
<td>Transient immunity</td>
<td>Telcordia GR-499-Core, Section 13-2, ETS 300 386-1, Class 2</td>
</tr>
<tr>
<td>Mini package dimensions</td>
<td>2.28” x 2.2” x 0.5” (57.9 x 55.9 x 12.7 mm)</td>
</tr>
</tbody>
</table>

Input Attenuator Module IAM

The IAM provides EMI filtering and transient protection for industrial and communications applications, using VI-200 and VI-J00 Series modules.

Features
- Meets Telcordia & British Telecom standards for EMI/RFI
- Meets Telcordia, IEC and British Telecom standards for transients
- Agency approvals: cULus, cTÜVus, CE Marked
- Efficiency: 97%
- Input reverse polarity protection
- Dimensions: 2.28” x 2.4” x 0.5” (57.9 x 61.0 x 12.7 mm)

IAM Models & General Performance

<table>
<thead>
<tr>
<th>Model</th>
<th>Input Voltage</th>
<th>Output Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>VI-A11-CU</td>
<td>21 Vdc</td>
<td>200 W</td>
</tr>
<tr>
<td>VI-AWW-CU</td>
<td>18 Vdc</td>
<td>200 W</td>
</tr>
<tr>
<td>VI-A33-CQ</td>
<td>42 Vdc</td>
<td>400 W</td>
</tr>
<tr>
<td>VI-ANN-CQ</td>
<td>36 Vdc</td>
<td>400 W</td>
</tr>
<tr>
<td>VI-A66-CQ</td>
<td>200 Vdc</td>
<td>400 W</td>
</tr>
</tbody>
</table>

RoHS compliant versions begin with “VE-”. For example: VE-A33-CQ
**DC-DC Filters**

**RAM Ripple Attenuator Module**

Combining active and passive filtering, the RAM attenuates both low-frequency input power source fundamental and harmonics, and high-frequency switching components in the frequency range of DC to 20 MHz, while exhibiting efficiencies of 93 – 99%. No adjustments are required, and remote sense and output voltage trim features are retained.

**Features**
- Reduces output ripple to <3 mV pp (VI-200)
- Compatible with VI-200 / VI-J00 based products: 5 – 50 Vdc output
- Full attenuation up to 20 A
- No adjustments required
- Efficiency: 93 – 99%
- Converter sense, trim, overvoltage, and overcurrent retained
- Dimensions: 2.28” x 2.4” x 0.5” (57,9 x 61,0 x 12,7 mm)
- CE Marked

**Typical Configuration**

![Typical Configuration](image)

**Part Numbering**

<table>
<thead>
<tr>
<th>V</th>
<th>I</th>
<th>RAM</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Up to 10 Amps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Up to 20 Amps</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Output Ripple Attenuator Module MicroRAM**

Combines both active and passive filtering to achieve greater than 40 dB of noise attenuation from 60 Hz to 1 MHz.

**Features**
- Integrated ORing diode supports N+1 redundancy
- >40 dB ripple attenuation from 60 Hz to 1 MHz
- Significantly improves load transient response
- Reduces ripple to less than 10 mV peak to peak
- Efficiency: Up to 98%
- 20 and 30 Amp ratings
- 3 – 30 Vdc input range
- Dimensions: 2.28” x 1.45” x 0.5” (57,9 x 36,8 x 12,7 mm)
- Compatible with Vicor’s DC-DC converters

**Typical Configuration**

![Typical Configuration](image)

**Part Numbering**

<table>
<thead>
<tr>
<th>µ</th>
<th>R</th>
<th>A</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Slotted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Threaded</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes**
- [a] Storage temp. is –40°C; H-Grade storage temp. is –55°C

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Consult back cover for a complete list of contacts.

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Page 36
Active Filters  QPI Family

QPI-3LZ through QPI-12LZ  Active EMI Filters

The QPI family of active EMI filters provides conducted common-mode (CM) and differential-mode (DM) attenuation from 150 kHz to 30 MHz (CISPR22 range). The proprietary active filtering circuit provides superior attenuation at low frequencies intended to support EN Class B limits, including PicMG® 3.0 for ATCA.

Models QPI-3LZ through QPI-8LZ are designed to work with most switch-mode power supplies. The QPI-9LZ through QPI-12LZ products are designed specifically for use with Vicor’s V+I Chip power conversion products.

The QPI series are SiP (System-in-Package) solutions with Land Grid Array (LGA) mounting. The QPI-3LZ through QPI-10LZ are full size 25 x 25 x 4.5 mm packages and the QPI-11LZ and QPI-12LZ are half-size 12.5 x 25 x 4.5 mm packages. The QPI series is also available in an open frame SiP platform by ordering with the “-01” suffix.

Features
- 24/28 V and 48/60 V models
- Efficiency: >99% at full load
- High density, low profile surface mount LGA package
- Integrated Hot-Swap in selected models
- Supports PicMG® 3.0 ATCA requirements
- Compatible with most DC-DC converters
- –40°C to +100°C PCB temperature
- TÜV approved

Part Numbering

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Input Voltage</th>
<th>Nominal Range</th>
<th>Current Rating</th>
<th>CM Attenuation @ 250 kHz</th>
<th>DM Attenuation @ 250 kHz</th>
<th>Hipot</th>
<th>Hot-Swap</th>
</tr>
</thead>
<tbody>
<tr>
<td>QPI-3LZ</td>
<td>24/28 Vdc</td>
<td>10 – 40 Vdc</td>
<td>7 A</td>
<td>60 dB</td>
<td>80 dB</td>
<td>707 Vdc</td>
<td>N/A</td>
</tr>
<tr>
<td>QPI-3LZ-01</td>
<td>24/28 Vdc</td>
<td>10 – 40 Vdc</td>
<td>7 A</td>
<td>60 dB</td>
<td>80 dB</td>
<td>707 Vdc</td>
<td>N/A</td>
</tr>
<tr>
<td>QPI-4LZ</td>
<td>48/60 Vdc</td>
<td>30 – 80 Vdc</td>
<td>7 A</td>
<td>40 dB</td>
<td>80 dB</td>
<td>707 Vdc</td>
<td>N/A</td>
</tr>
<tr>
<td>QPI-5LZ</td>
<td>48/60 Vdc</td>
<td>30 – 80 Vdc</td>
<td>14 A</td>
<td>60 dB</td>
<td>1,500 Vdc</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>QPI-6LZ</td>
<td>48/60 Vdc</td>
<td>30 – 80 Vdc</td>
<td>14 A</td>
<td>60 dB</td>
<td>1,500 Vdc</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>QPI-7LZ</td>
<td>24/28 Vdc</td>
<td>18 – 38 Vdc</td>
<td>6 A</td>
<td>50 dB</td>
<td>707 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>QPI-8LZ</td>
<td>24/28 Vdc</td>
<td>18 – 38 Vdc</td>
<td>6 A</td>
<td>50 dB</td>
<td>707 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>QPI-9LZ</td>
<td>48/60 Vdc</td>
<td>32 – 76 Vdc</td>
<td>6 A</td>
<td>60 dB</td>
<td>1,500 Vdc</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>QPI-10LZ</td>
<td>48/60 Vdc</td>
<td>32 – 76 Vdc</td>
<td>6 A</td>
<td>40 dB</td>
<td>1,500 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>QPI-11LZ</td>
<td>24/28 Vdc</td>
<td>5 – 50 Vdc</td>
<td>7 A</td>
<td>65 dB</td>
<td>707 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>QPI-12LZ</td>
<td>24/28 Vdc</td>
<td>5 – 50 Vdc</td>
<td>7 A</td>
<td>65 dB</td>
<td>707 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>QPI-13LZ</td>
<td>48/60 Vdc</td>
<td>10 – 80 Vdc</td>
<td>7 A</td>
<td>45 dB</td>
<td>707 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>QPI-14LZ</td>
<td>48/60 Vdc</td>
<td>10 – 80 Vdc</td>
<td>7 A</td>
<td>45 dB</td>
<td>707 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

V+I Chip Specific Models

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Input Voltage</th>
<th>Nominal Range</th>
<th>Current Rating</th>
<th>CM Attenuation @ 1 MHz</th>
<th>DM Attenuation @ 1 MHz</th>
<th>Hipot</th>
<th>Hot-Swap</th>
</tr>
</thead>
<tbody>
<tr>
<td>QPI-9LZ</td>
<td>24/28 Vdc</td>
<td>18 – 38 Vdc</td>
<td>6 A</td>
<td>65 dB</td>
<td>707 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>QPI-9LZ-01</td>
<td>24/28 Vdc</td>
<td>18 – 38 Vdc</td>
<td>6 A</td>
<td>65 dB</td>
<td>707 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>QPI-10LZ</td>
<td>48/60 Vdc</td>
<td>32 – 76 Vdc</td>
<td>6 A</td>
<td>45 dB</td>
<td>1,500 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>QPI-10LZ-01</td>
<td>48/60 Vdc</td>
<td>32 – 76 Vdc</td>
<td>6 A</td>
<td>45 dB</td>
<td>1,500 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>QPI-11LZ</td>
<td>24/28 Vdc</td>
<td>5 – 50 Vdc</td>
<td>7 A</td>
<td>65 dB</td>
<td>707 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>QPI-11LZ-01</td>
<td>24/28 Vdc</td>
<td>5 – 50 Vdc</td>
<td>7 A</td>
<td>65 dB</td>
<td>707 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>QPI-12LZ</td>
<td>48/60 Vdc</td>
<td>10 – 80 Vdc</td>
<td>7 A</td>
<td>45 dB</td>
<td>1,500 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>QPI-12LZ-01</td>
<td>48/60 Vdc</td>
<td>10 – 80 Vdc</td>
<td>7 A</td>
<td>45 dB</td>
<td>1,500 Vdc</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

QPI-3LZ through QPI-8LZ

For more information, go to picorpower.com

Typical Configuration

Patents Pending

Performance

Conducted EMI scans showing QPI performance.
Blue trace = no QPI; Red trace = with QPI.
Active Filters  QPO Family

**QPO-1LZ / QPO-2LZ**  Output Ripple Attenuator

The QPO output ripple attenuator products use proprietary active filtering to reduce power supply output ripple and noise (PARD) over 30 dB from 1 kHz to 500 kHz. QPOs improve transient response and ensure quiet point-of-load regulation. They also reduce the number of output capacitors to support dynamic loads. QPOs work with most DC-DC converters and switching power supplies. Output regulation is maintained using remote sensing or the trim input of the power supply.

**Features**
- >30 dB PARD attenuation, 1 kHz to 500 kHz
- Supports precise point-of-load regulation
- Efficiency: Up to 99%
- High density, low profile LGA package
- Reduces required number of output capacitors to support dynamic loads
- User selectable optimization of attenuation, power dissipation, and transient load response
- Compatible with most DC-DC converters

**Part Numbering**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Input Voltage</th>
<th>Current Rating</th>
<th>Attenuation</th>
</tr>
</thead>
<tbody>
<tr>
<td>QPO-1LZ</td>
<td>3 – 30 Vdc</td>
<td>10 A</td>
<td>&gt; 30 dB PARD attenuation, 1 kHz to 500 kHz</td>
</tr>
<tr>
<td>QPO-1LZ-01</td>
<td>3 – 30 Vdc</td>
<td>10 A</td>
<td>&gt; 30 dB PARD attenuation, 1 kHz to 500 kHz</td>
</tr>
<tr>
<td>QPO-2LZ</td>
<td>0.3 – 5.5 Vdc</td>
<td>20 A</td>
<td>&gt; 20 dB PARD attenuation, 1 kHz to 500 kHz, Aux. Bus biased</td>
</tr>
<tr>
<td>QPO-2LZ-01</td>
<td>0.3 – 5.5 Vdc</td>
<td>20 A</td>
<td>&gt; 20 dB PARD attenuation, 1 kHz to 500 kHz, Aux. Bus biased</td>
</tr>
</tbody>
</table>

(a) Open-frame units are compatible with aqueous cleaning processes.

**Typical Application**

**Performance**

For more information, go to picorpower.com
The FlatPAC is a complete, low-profile, agency-approved switching power supply. It combines Vicor's VI-200 Series of DC-DC converters and front-end subassemblies to provide from 50 – 600 W of output power from one to three outputs.

The FlatPAC design provides rapid turnaround on standard models. FlatPAC is available with BatMod current source module, Page 23.

Features
- Microprocessor-controlled front end
- Inputs: 115/230 Vac, autoranging
- FCC Part 15, Class B, EN55022, Class B
- 40 ms hold up
- Agency approvals: cULus, cTÜVus, CE Marked
- Module disable
- BUS OK and AC OK
- Finned or conduction-cooled package
- 22 Standard output voltages from 1 – 95 Vdc
- Low-noise ZCS / ZVS power topology
- Transient surge: EN61000-4-5
- Low profile only 1.37” (34.7 mm)
- Custom output voltages also available
- BatMod current-source option available

General Performance
Refer to data sheet for specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of outputs</td>
<td>1 to 3</td>
</tr>
<tr>
<td>Output power</td>
<td>Up to 600 W</td>
</tr>
<tr>
<td>Input voltage</td>
<td>90 – 132 Vac / 180 – 264 Vac 47 – 63 Hz (400 Hz available; contact factory)</td>
</tr>
<tr>
<td>Conducted EMI</td>
<td>EN/FCC “B”</td>
</tr>
<tr>
<td>Set point</td>
<td>±1% max. (E-Grade 2%)</td>
</tr>
<tr>
<td>Load / line regulation</td>
<td>0.2% max. (E-Grade 0.5%)</td>
</tr>
<tr>
<td>Output ripple (pp)</td>
<td>150 mV or 3% max. (E-Grade 5%)</td>
</tr>
<tr>
<td>Trim range [a]</td>
<td>50 – 110%</td>
</tr>
<tr>
<td>Remote sense range</td>
<td>0.5 Vdc max.</td>
</tr>
<tr>
<td>OVP set point</td>
<td>125% typical</td>
</tr>
<tr>
<td>Current limit</td>
<td>115%</td>
</tr>
<tr>
<td>Maximum temperature</td>
<td>0 to 85°C baseplate</td>
</tr>
</tbody>
</table>

Chassis Configurations
- Single output
  - 50 – 200 Watts
  - 9.25” x 2.5” x 1.37” (234.8 x 63.5 x 34.8 mm)
- Single or dual outputs
  - 100 – 400 Watts
  - 9.25” x 4.9” x 1.37” (234.8 x 124.5 x 34.8 mm)
- Single, dual or triple outputs
  - 150 – 600 Watts
  - 9.25” x 7.3” x 1.37” (234.8 x 185.4 x 34.8 mm)

Part Numbering

For conduction-cooled package add –CC to the part number. For example, VI–LU0–CV–CC.

For RoHS Compliant (VE) = RoHS Compliant

When using dual supplies, use the lower number to identify the power limiting module.

For R and RJ only. Refer to output configuration chart above.

Consult back cover for a complete list of contacts.
The PFC FlatPAC uses Vicor’s field-proven VI-HAM and Maxi DC-DC converters to deliver up to 575 watts of clean, reliable power. The PFC FlatPAC is a single-output power supply available with standard output voltages from 3.3 – 54 Vdc. It operates from an input of 85 – 264 Vac, includes active power factor correction (0.99 power factor), and meets EN61000-3-2 harmonic current limits. Internal filtering provides compliance to EN55022-A conducted EMI. It is available in Vicor’s low profile 1.37” (34.8 mm) FlatPAC chassis, in either finned or conduction-cooled (CC) versions.

**Features**

- Input: 85 – 264 Vac
- Power factor: 0.99
- Single output: Up to 80 A or 575 W, 3.3 – 54 Vdc
- Low profile package: 1.37” x 4.9” x 9.25” (34.8 x 124.4 x 235 mm)
- Safety agency approvals: cULus, cTÜVus, CE Marked
- High efficiency
- Remote sense
- Current limit
- Thermal shut down
- OVP

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Rating</th>
<th>Unit</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>85 – 264</td>
<td>Vac</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>47 – 63</td>
<td>Hz</td>
<td></td>
</tr>
<tr>
<td>Regulation line / load</td>
<td>0.5</td>
<td>%</td>
<td>10 to 100% load</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>44.8 (1,304)</td>
<td>oz (g)</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>1.37 x 4.9 x 9.25</td>
<td>inches</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24.8 x 1,244 x 235</td>
<td>mm</td>
<td></td>
</tr>
<tr>
<td><strong>Operating temperature (case)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-Grade and E-Grade</td>
<td>0 to +85</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>I-Grade</td>
<td>–30 to +85</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td><strong>Storage temperature (case)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-Grade</td>
<td>–10 to +100</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>C-Grade</td>
<td>–30 to +100</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>I-Grade</td>
<td>–55 to +100</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>V I -</th>
<th>C M U</th>
<th>3 -</th>
<th>C</th>
<th>M -</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Universal</td>
<td>85 – 264 Vac</td>
<td>Output Voltage</td>
<td>Y = 3.3 V</td>
<td>3 = 24 V</td>
<td>D = 5.0 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = 12 V</td>
<td>J = 36 V</td>
<td>2 = 15 V</td>
<td>4 = 48 V</td>
</tr>
<tr>
<td>Product Grade (°C)</td>
<td>E = 0 to 85°C case</td>
<td>C = 0 to 85°C case</td>
<td>I = −30 to 85°C case</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output Power</td>
<td>Vout = 85 V</td>
<td>Q = 80 A</td>
<td>M = 575 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Options</td>
<td>–CC = Conduction Cooled</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(VE) = RoHS Compliant
**AC-DC** Configurable Power Supplies

**VIPAC Power System** Choice of Chassis Configurations

The VIPAC is an integrated power system leveraging the latest advances in DC-DC converter technology and modular front ends. VIPAC combines application-specific power processing units (PPU), a choice of chassis styles and remotely located hold-up capacitors to provide fast, flexible, and highly reliable power solutions for a wide range of demanding applications.

The PPU is the core element of the system and incorporates Vicor’s autoranging FARM modular front end to provide transient protection, EMI filtering, and inrush current limiting. The PowerBench VIPAC Design Center enables designers to configure the PPU with up to three independently regulated outputs having power levels from 50 – 500 W and with as much as 900 W total output power.

**Features**

- **AC input:** 115/230 Vac autoranging, 47 – 440 Hz
- **Output voltages:** 2 – 48 Vdc
- **50 – 900 Watts total; 1, 2, or 3 outputs**
- **Protective features:** Inrush current limiting, Input transient protection, EMI filtering
- **Choice of output terminations:** LugMate or PlugMate
- **Local or remote control**
- **Package style:** Low-profile coldplate, Optional finned heat sink
- **Agency approvals:** cULus, cTÜVus, CE Marked

**Chassis Configurations**

Dimensions vary with specific model configurations

- **3 Micros**
  - Dual or triple output
  - Up to 450 W
  - 4.96" x 6.8" x 0.75" [a]
  - (126,0 x 172,7 x 19,0 mm)

- **2 Minis**
  - Single or dual output
  - Up to 500 W
  - 4.96" x 6.8" x 0.75" [a]
  - (126,0 x 172,7 x 19,0 mm)

- **2 Maxis**
  - Single or dual output
  - Up to 900 W
  - 4.96" x 9.15" x 0.75" [a]
  - (126,0 x 232,4 x 19,0 mm)

- **2 Micros**
  - Single or dual output
  - Up to 300 W
  - 3.15" x 6.8" x 0.75" [a]
  - (80,0 x 172,7 x 19,0 mm)

- **1 Mini**
  - Single output
  - Up to 250 W
  - 3.15" x 6.8" x 0.75" [a]
  - (80,0 x 172,7 x 19,0 mm)

- **1 Maxi**
  - Single output
  - Up to 500 W
  - 3.15" x 9.15" x 0.75" [a]
  - (80,0 x 232,4 x 19,0 mm)

- **1 Micro**
  - Single output
  - Up to 150 W
  - 3.15" x 6.8" x 0.75" [a]
  - (80,0 x 172,7 x 19,0 mm)

[a] PlugMate version is 0.81" (20.5 mm) in height

RoHS-compliant versions can be selected with the VIPAC Design Tool.

Configure Your VIPAC Power System Online

vicorpower.com/vcad
The VIPAC Arrays are a highly flexible system of DC input power building blocks which can be configured with as many as four user-definable outputs on a low-profile, coldplate chassis. Using Vicor’s VCAD design tool (vicorpower.com/vcad), designers are able to specify VIPAC Arrays with inputs of 24, 28, 48, 72, 110, 150, 300, 375 Vdc and outputs from 2 to 54 Vdc at power levels up to 600 watts per output. VIPAC Arrays are ideal for use in distributed and modular power systems where power density and reliable operation are critical. A current share option is available on single output models enabling them to be used in applications requiring high power / redundancy. Fully connectorized input and output terminations speed system installation and a versatile coldplate chassis simplifies thermal management.

**Features**
- Input voltage: 24, 28, 48, 72, 110, 150, 300 or 375 V
- Booster versions for higher output current applications
- Agency approvals: cTÜVus, CE Marked
  (300, 375 Vdc inputs only)

**Chassis Configurations** Dimensions vary with specific model configurations

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Dimensions</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2 Minis</strong></td>
<td>3.62&quot; x 6.69&quot; x 0.78&quot;[a] (92,0 x 170,0 x 19,8 mm)</td>
<td>Single or dual outputs, Up to 600 W total</td>
</tr>
<tr>
<td><strong>1 Micro, 2 Minis</strong></td>
<td>3.62&quot; x 7.52&quot; x 0.78&quot;[a] (92,0 x 191,0 x 19,8 mm)</td>
<td>Dual or triple outputs, Up to 750 W total</td>
</tr>
<tr>
<td><strong>1 Mini, 2 Micros</strong></td>
<td>3.62&quot; x 6.69&quot; x 0.78&quot;[a] (92,0 x 170,0 x 19,8 mm)</td>
<td>Single, dual or triple outputs, Up to 600 W total</td>
</tr>
<tr>
<td><strong>4 Micros</strong></td>
<td>3.62&quot; x 7.52&quot; x 0.76&quot;[a] (92,0 x 191,0 x 19,3 mm)</td>
<td>Dual, triple or quad outputs, Up to 600 W total</td>
</tr>
<tr>
<td><strong>3 Micros</strong></td>
<td>3.62&quot; x 6.69&quot; x 0.76&quot;[a] (92,0 x 170,0 x 19,3 mm)</td>
<td>Dual or triple outputs, Up to 450 W total</td>
</tr>
<tr>
<td><strong>1 Maxi</strong></td>
<td>3.62&quot; x 6.69&quot; x 0.78&quot;[a] (92,0 x 170,0 x 19,8 mm)</td>
<td>Single output, Up to 600 W</td>
</tr>
<tr>
<td><strong>2 Micros</strong></td>
<td>3.62&quot; x 4.39&quot; x 0.78&quot;[a] (92,0 x 112,0 x 19,8 mm)</td>
<td>Single or dual outputs, Up to 300 W</td>
</tr>
</tbody>
</table>

[a] PlugMate version is 0.81" (20,5 mm) in height

**RoHS**
RoHS-compliant versions can be selected with the VIPAC Design Tool.

Configure Your VIPAC Array
Power System Online

vicorpower.com/vcad
ComPAC Family  50 – 600 Watt Input Power System

ComPAC delivers up to 600 W from one, two, or three outputs in a package just 0.99” (25.2 mm) in height with the field proven performance, high efficiency and high reliability inherent in Vicor’s component level power converters. ComPAC meets British Telecom and European Norms for input surge withstand and meets conducted emissions of EN55022, Class B. ComPAC is offered with input voltage ranges optimized for industrial and telecommunication applications and provides extended input overvoltage capability, input reverse polarity protection, undervoltage lockout, and master disable. ComPAC is available with BatMod current source module, Page 23.

Features
- Inputs: 24, 48, and 300 Vdc
- Any output: 1 – 95 Vdc
- Agency approvals: cULus, cTÜVus, CE Marked
- Efficiency: 80 – 90%
- Up to 10 W/in³
- EMI / RFI specifications: Telcordia TR-TSY-000513, British Telecom BTR 2511
- EN55022, Class B: Conducted emissions
- Input surge withstand: British Telecom BTR 2511, EN61000-4-5
- Low-noise ZCS / ZVS power topology
- Optional high-performance heat sink
- Finned or conduction-cooled package

General Performance  Refer to data sheet for specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Designator</th>
<th>Rating</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage range</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>21 – 32</td>
<td>Vdc</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>18 – 36</td>
<td>Vdc</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>42 – 60</td>
<td>Vdc</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>36 – 76</td>
<td>Vdc</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>200 – 400</td>
<td>Vdc</td>
<td></td>
</tr>
<tr>
<td>Outputs</td>
<td>1, 2 or 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>50 – 600</td>
<td>Watts</td>
<td></td>
</tr>
<tr>
<td>Voltage(s)</td>
<td>1 – 95</td>
<td>Vdc</td>
<td></td>
</tr>
<tr>
<td>Operating temperature (case)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-Grade</td>
<td>–10 to +85</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>C-Grade</td>
<td>–25 to +85</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>I-Grade</td>
<td>–40 to +85</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>M-Grade</td>
<td>–55 to +85</td>
<td>°C</td>
<td></td>
</tr>
</tbody>
</table>

Chassis Configurations
- Single output
  - 50 – 200 Watts
  - 9.25” x 2.5” x 0.99” (234,8 x 63,5 x 25,2 mm)
- Single or dual outputs
  - 100 – 400 Watts
  - 9.25” x 4.9” x 0.99” (234,8 x 124,5 x 25,2 mm)
- Single, dual, or triple outputs
  - 150 – 600 Watts
  - 9.25” x 7.3” x 0.99” (234,8 x 185,4 x 25,2 mm)

Part Numbering

<table>
<thead>
<tr>
<th>V I -</th>
<th>N C</th>
<th>3 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(VE) = RoHS Compliant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>Input</td>
<td>Out 1</td>
</tr>
<tr>
<td>L</td>
<td>W = 24 V</td>
<td>2 = 2 V</td>
</tr>
<tr>
<td>M</td>
<td>W = 24 V</td>
<td>3 = 3 V</td>
</tr>
<tr>
<td>N</td>
<td>W = 24 V</td>
<td>0 = 5 V</td>
</tr>
<tr>
<td>P</td>
<td>W = 24 V</td>
<td>2 = 5.2 V</td>
</tr>
<tr>
<td>Q</td>
<td>W = 24 V</td>
<td>5.5 V</td>
</tr>
<tr>
<td>R</td>
<td>W = 24 V</td>
<td>5.5 V</td>
</tr>
<tr>
<td>V</td>
<td>W = 24 V</td>
<td>3 = 24 V</td>
</tr>
</tbody>
</table>

All voltages available for output 1, 2 or 3

Note: For conduction-cooled package add –CC to the part number. For example, VI-LWX-CV-CC.
MegaMod and MegaMod Jr. DC-DC converters incorporate one, two, or three Vicor VI-200 or VI-J00 converters in a modular package to provide a chassis-mounted alternative to board-mounted power supplies. MegaMods offer 50 – 600 W of power from 1 – 3 outputs. MegaMod Jr.s offer a total of 25 – 300 W from 1 – 3 outputs. Each output may be independently sensed, adjusted, and sequenced using the procedures outlined for VI-200 and VI-J00 converters in the Vicor Applications Manual. Download a PDF of the manual from the library section of vicorpower.com.

Features
- Inputs: 10 – 400 Vdc
- Any output: 1 – 95 Vdc
- Agency approvals: cULus, cTÜVus, CE Marked
- Efficiency: 80 – 90% (typical)
- Up to 27 W/in³
- Low profile: 0.62” (15.7 mm) high
- Low noise ZCS / ZVS power topology
- Temperature grades (MegaMod Jr.):
  - E = –10°C to +85°C (+100°C)
  - C = –25°C to +85°C (+100°C)
  - I = –40°C to +85°C (+100°C)
  - M = –55°C to +85°C (+100°C)
- ZCS power architecture
- Booster versions available for expanded output power (MegaMod only)

Chassis Configurations

<table>
<thead>
<tr>
<th>Input Selection</th>
<th>MegaMod</th>
<th>MegaMod Jr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>150/300</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Part Numbering

<table>
<thead>
<tr>
<th>VI</th>
<th>L</th>
<th>1</th>
<th>3</th>
<th>E</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>(VE) = RoHS Compliant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>Input Voltage</td>
<td>Out 1</td>
<td>Out 2</td>
<td>Out 3</td>
<td>Grade</td>
</tr>
<tr>
<td>L = Single</td>
<td>0 – 12 (10-20)</td>
<td>Z = 2 V</td>
<td>M = 10 V</td>
<td>K = 40 V</td>
<td>E = –10°C</td>
</tr>
<tr>
<td>N = Single</td>
<td>24 (21-32)</td>
<td>G = 5 V</td>
<td>O = 15 V</td>
<td>L = 48 V</td>
<td>H = –40°C</td>
</tr>
<tr>
<td>P = Dual</td>
<td>24 (18-36)</td>
<td>X = 5.2 V</td>
<td>F = 72 V</td>
<td>J = 48 V</td>
<td>I = –50°C</td>
</tr>
<tr>
<td>Q = Dual</td>
<td>36 (21-56)</td>
<td>W = 5.5 V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R = Triple</td>
<td>48 (36-76)</td>
<td>V = 5.8 V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L = Single</td>
<td>72 (55-100)</td>
<td>T = 6.5 V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P = Dual</td>
<td>110 (66-160)</td>
<td>R = 7.5 V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R = Triple</td>
<td>150 (100-200)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P = Dual</td>
<td>300 (200-400)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R = Triple</td>
<td>75 (100-375)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All voltages available for output 1, 2, or 3.

MIL-COTS Version Available
Page 37
VTMs put isolated current multiplication and voltage division directly at the point of load (POL), and an upstream PRM (Regulator) controls the factorized bus voltage supplied to the VTM to provide line and load regulation. Together, the PRM and VTM chip set provides the full functionality of a DC-DC converter, but with breakthrough performance and flexibility in a rugged, miniature package. The BCM (Bus Converter Module) functions as a fixed-ratio DC-DC transformer and provides an isolated bus voltage to power the PRM and VTM chip set or other loads.

The MIL-COTS PRM operates from a wide input range of 16 – 50 Vdc, meeting many of the ground vehicle and airborne requirements of MIL-STD-1275 and MIL-STD-704. Rated for 120 W, the 28 V PRM produces a nominal factorized bus voltage of 36 Vdc, controllable over the range of 26 – 50 Vdc. The downstream isolated VTM is available with twelve voltage division ratios from 1:1 to 1:32 and provides the user with flexibility to supply up to 100 A or 120 W at any output voltage from 1 – 50 Vdc in a surface-mount package occupying only 1 in². The MIL-COTS BCM is a high efficiency Sine Amplitude Converter (SAC) operating from a 240 to 330 Vdc primary bus to deliver an isolated 30 – 41.2 V nominal, unregulated secondary.

**Features for PRM**
- Input range: 16 – 50 Vdc
- 1.3 MHz switching frequency
- Efficiency: 95%
- –55°C to +125°C operation (Tj)
- ZVS buck-boost regulator

**Features for VTM**
- Isolated 1–50 Vdc output
- 1 µs transient response
- 3 MHz switching frequency
- Efficiency: Up to 96.5%
- –55 to +125°C operation (Tj)

**Features for BCM**
- Input range: 240 – 330 Vdc
- Output range: 30.0 – 41.2 Vdc
- MIL-STD-704E/F Compliant
- Efficiency: >95%
- –55 to +125°C operation (Tj)

**MIL-COTS VI BRICKs PRM / VTM**

The PRM Regulator Module is a very efficient non-isolated regulator specifically designed to provide a controlled Factorized Bus distribution voltage for powering downstream VI BRICK 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 thermally enhanced package.

**MQPI-18 Input EMI Filter**

The MQPI-18 is a surface mount DC front-end filter that provides EMI filtering for Vicor’s 28 V DC-DC V-I Chip or VI BRICK modules. The MQPI-18 enables designers to meet conducted emission / conducted susceptibility per MIL-STD-461E. The MQPI-18 accepts an input voltage of 10 – 80 Vdc and delivers output current up to 7 A.

**MIL-COTS Product Catalog**

This document provides in-depth information on Vicor’s line of MIL-COTS standard products, including DC-DC converters, custom solutions, and technical support.

- Environmental stress screening and MTBF
- Environmental qualification
- Custom configured modules
- Field tested... proven reliability

Visit vicorpower.com to view the Military Catalog online. This will give you instant access to all technical documentation for a MIL-COTS product.
MIL-COTS BRICKs / Front ends

Maxi, Mini & Micro Series DC-DC Converter Modules

These high-density DC-DC power converters are available in three rugged packages with output power up to 600 W. Standard inputs of 24, 28, 48, 72, 110, 150, 300, and 375 Vdc; and outputs from 1 – 48 Vdc, make these converters extremely flexible for MIL-COTS applications.

Features
- Inputs: 24, 48, 300, and 375 Vdc
  NEW: 72, 110, 150, and wide input 28 Vdc
- Two operating temperature ratings:
  –40 to +100°C and –55 to +100°C
- MIL-STD-810 and MIL-STD-202 qualified
- Environmental stress screening

MI-200 & MI-J00 Series DC-DC Converter Modules

Vicor’s field-proven MIL-COTS power components have gained a reputation for quality and reliability among military power system designers. With thousands of standard models available, designers can rapidly meet performance, schedule, and budget objectives for just about any power solution.

Features
- Inputs per MIL-STD-704D/E/F: 28 and 270 Vdc
- Input per MIL-STD-1399A: 155 Vdc
- Output voltages: 2 – 48 Vdc
- Output power: 10 – 100 W
- MIL-STD-810 and MIL STD-202 qualified
- NAVMAT component derating guidelines
- Power density: Up to 25 W/in³
- 75 and 100 W booster modules available

MI-AIM AC Front-end Module

The MI-AIM works in conjunction with Vicor’s MI-x7x module family and is ideal for systems requiring AC rectification and transient protection.

Features
- 115 Vac nom, 60/400 Hz operation
- MIL-STD-461D EMI (CE102) @ 60 Hz
- MIL-STD-704A transient protection
- MIL-STD-810 and MIL-STD-202 qualified
MIL-COTS Filters

MicroRAM Output Ripple Attenuator Module

Vicor’s MicroRAM output ripple attenuation module combines both active and passive filtering to achieve greater than 40 dB of noise attenuation from 60 Hz to 1 MHz. The MicroRAM operates over a range of 3 – 30 Vdc, is available in either 20 or 30 A models, and is compatible with all Vicor DC-DC converters.

Features

- >40 dB ripple attenuation from 60 Hz to 1 MHz
- 20 and 30 Amp ratings
- Operation: –55°C
- Input: 3 – 30 Vdc

M-FIAM Filter Input Attenuator Module


Features

M-FIAM3, M-FIAM5B & M-FIAM9
- MIL-STD-461E conducted emissions / susceptibility
- MIL-STD-704E/F transient protection
- Compatible with 24, 28 & 300 Vdc input Maxi, Mini & Micro DC-DC converters

M-FIAM7
- MIL-STD-461E conducted emissions / susceptibility
- Compatible with 28 Vdc V¹I Chip modules

MVA-FIAM5B & MVA-FIAM9
- Coldplate connector mounting option for M-FIAM5B and M-FIAM9

MI-IAM Input Attenuator Module

The MI-IAM provides EMI filtering to MIL-STD-461C/D/E and transient protection to the most severe levels of MIL-STD-704A-F, MIL-STD-1275A/B/D and DO-160E using MI-200 or MI-J00 DC-DC converters.

Features

- Input: 28 or 270 Vdc
- MIL-STD-461C/D/E conducted emissions / susceptibility
- MIL-STD-810 and MIL-STD-202 qualified
- Compatible with MI-200 and MI-J00 DC-DC converters
The MI-ComPAC is a complete single, dual, or triple output DC-DC power supply that delivers up to 300 W from inputs of 28 or 270 Vdc.

**Features**
- Complete single, dual, or triple output power supply 50 – 300 W
- MIL-STD-461C/D/E conducted emissions / susceptibility
- Conduction-cooled models available

28 Vdc MIL-COTS VIPAC

The 28 Vdc VIPAC can be specified with up to 3 outputs in a choice of connections with voltages as low as 3.3 Vdc to as high as 48 Vdc and power levels from 50 to 400 watts per output for MIL-COTS applications.

**Features**
- 28 Vdc input
- MIL-STD-461E EMI compliance
- –55°C operation
- Profile as low as 0.75 in. (19.0 mm)
- MIL-STD-810F shock & vibration

VME450™

Powered with Vicor V+ Chips, this single-slot VME power supply is small, light weight and very efficient.

**Features**
- 28 Vdc input
- MIL-STD-461E EMI compliance
- 4 output voltages, 550 W
- –40°C to +85°C
The LoPAC Family consists of three power supplies available as one-, two-, or three-slot packages. For maximum flexibility, they are configured with standard Vicor DC-DC converters. These modules cover the entire range of outputs from 2 – 95 Vdc (higher through series arrays) and 25 – 600 W per output, as well as an array of non-standard voltages. Depending on the configuration, the LoPACs can provide up to six user-specifiable isolated outputs.

**Features**
- Near unity power factor
- Power factor corrected
- Output power: Up to 1,500 W
- Up to 6 user-specifiable outputs
- Power density: Up to 11 W/in³
- Fan cooled
- MIL-STD-810E-Vibration (PFC Mini)
- Agency approvals: UL, cTÜVus, CE Marked
- Choice of full, half, or quarter brick

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

<table>
<thead>
<tr>
<th>Product</th>
<th>Dimensions</th>
<th>Input Voltage</th>
<th>Number of Slots</th>
<th>Number of Outputs</th>
<th>Maximum Output Power @ 230 Vac</th>
<th>Modules per Slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFC Mini</td>
<td>12.2” x 6” x 1.72” (309.9 x 152.4 x 43.6 mm)</td>
<td>85 – 264 Vac 100 – 380 Vdc</td>
<td>3</td>
<td>6</td>
<td>1,500 W</td>
<td>800 W</td>
</tr>
<tr>
<td>PFC Micro</td>
<td>10.4” x 5.06” x 1.86” (264.1 x 128.5 x 47.3 mm)</td>
<td>85 – 264 Vac 100 – 300 Vdc</td>
<td>2</td>
<td>6</td>
<td>800 W</td>
<td>500 W</td>
</tr>
<tr>
<td>PFC MicroS</td>
<td>7.95” x 5.06” x 1.86” (201.9 x 128.5 x 47.3 mm)</td>
<td>85 – 264 Vac 100 – 300 Vdc</td>
<td>1</td>
<td>3</td>
<td>600 W</td>
<td>500 W</td>
</tr>
</tbody>
</table>

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

- **Product Prefix**
  - PM = PFC Mini
  - PC = PFC Micro
  - PS = PFC MicroS

- **Optional Codes**
  - LL = Low Leakage
  - QF = Quiet Fan
  - 2 = FasTrak
  - G = RoHS

**VANTAGE Line** – Westcor’s Affordable Power Supply Option
Get the Westcor “advantage” of complete power supplies at a 15% discount. Westcor’s VANTAGE Line of power supplies was developed with all of the user configurability, field configurability, power density, and high efficiency that Westcor offers and with only minor specification changes. Call a local Vicor Representative, or for your nearest Rep location go to vicorpower.com/company/contact_us

**Configure Your LoPAC Online**
vicorpower.com/vspoc
The FlatPAC-EN is capable of providing up to 500 W (425 W for EN compliance) from up to four isolated outputs. The FlatPAC-EN can be configured with standard Vicor DC-DC converter modules. Like all other configurable power supplies offered by Vicor, the optimum FlatPAC-EN solution can be factory configured based on the exact voltage and power requirements of the customer.

**Features**
- EN61000-3-2 harmonic current compliance
- Output power: Up to 500 W (425 W for EN compliance)
- Power density: >7 W/in³
- Ultra low profile: 1.4” (35.6 mm) height
- RS-232 microcontroller interface
- Rugged: Meets MIL-STD-810E, category 10 for vibration
- Agency approvals: UL, cTÜVus, CE Marked
- Choice of full-, half- and quarter-brick modules with outputs from 2 – 95 Vdc and 25 – 500 watts, as well as an array of non-standard output voltages
- Conduction or convection cooled (same model)

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

<table>
<thead>
<tr>
<th>Product</th>
<th>Dimensions</th>
<th>Input Voltage</th>
<th>Output Power</th>
<th>Number of Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>FlatPAC-EN</td>
<td>9.2” x 5.0” x 1.4”</td>
<td>90 – 132 / 180 – 264 Vac</td>
<td>500 W (425 W for EN compliance)</td>
<td>1 – 4</td>
</tr>
<tr>
<td></td>
<td>(233,7 x 127 x 35,6 mm)</td>
<td>250 – 380 Vdc</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Part Numbering**
Ordering, see back for phone numbers

<table>
<thead>
<tr>
<th>Product Prefix</th>
<th>Number of Outputs</th>
<th>Number of VI-200 / VI-J00 Series Modules</th>
<th>Number of Maxi, Mini or Micro Series Modules</th>
<th>Factory Assigned</th>
<th>Optional Factory Assigned</th>
<th>Optional Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL</td>
<td>1 – 4</td>
<td></td>
<td></td>
<td></td>
<td>G = RoHS</td>
<td></td>
</tr>
</tbody>
</table>

**Layout Configurations**

- **Single or Dual Outputs**
  - Assumes either a full brick and/or half brick is used.
  - Stud Connectors
  - For a single output configuration, either M1 or M2 is used.

- **Triple Outputs**
  - Assumes only half bricks are used.
  - Two 18-pin Molex Connectors.

- **Quadruple Outputs**
  - Assumes only half and/or quarter bricks are used.
  - Two 18-pin Molex Connectors.

**Note:** The type of output connector a FlatPAC-EN has depends on which modules are used. For example, if a two output configuration uses two half bricks (instead of a full brick and half brick) this output configuration will have the 18 pin Molex connectors, not stud connectors.

**VANTAGE Line** – Westcor’s Affordable Power Supply Option

Get the Westcor “advantage” of complete power supplies at a **15% discount**. Westcor’s VANTAGE Line of power supplies was developed with all of the user configurability, field configurability, power density, and high efficiency that Westcor offers and with only minor specification changes. **Call a local Vicor Representative, or for your nearest Rep location go to vicorpower.com/company/contact_us**

U.S. & CANADA: 800-735-6200 VICORPOWER.COM
The MegaPAC family consists of eight fan-cooled, configurable power supplies that enable users to factory configure almost any set of output requirements by combining appropriate slide-in output assemblies called ConverterPACs, with the appropriate chassis. The MegaPAC chassis has a standardized feature-laden front end with slots to accept the ConverterPACs. Models are available with single or three-phase AC inputs. MegaPACs will also operate from high-voltage DC input. Features include EMI / RFI filtering, enable / disable, general shut down, output sequencing and AC OK.

**Features**

- Output power: 200 – 4,000 Watts
- User-configurable outputs
- Up to 20 outputs
- DC input capability
- Power factor corrected (some models)
- Low ripple 10 mV p-p or 0.15%, whichever is greater (some models)
- Fan cooled
- Efficiency: >80%
- Agency approvals: UL, cTÜVus, CE Marked
- Low leakage option available (some models)
- Current sharing available

**General Performance**

Refer to data sheet for detailed specifications

<table>
<thead>
<tr>
<th>Product</th>
<th>Dimensions</th>
<th>Input Voltage</th>
<th>Output Power</th>
<th># of Outputs</th>
<th>Slot Configurations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mini</td>
<td>9.5&quot; x 6.0&quot; x 3.4&quot;</td>
<td>90 – 132/180 – 264 Vac; Strappable</td>
<td>1,000 W @ 115 Vac or 230 Vac</td>
<td>1 – 10 (5 slots)</td>
<td>ModuPAC, JrPAC, DualPAC, RAMPAC, BatPAC</td>
</tr>
<tr>
<td>Autoranging</td>
<td>11.9&quot; x 6.0&quot; x 3.4&quot;</td>
<td>90 – 132/180 – 264 Vac</td>
<td>1,200 W @ 115 Vac</td>
<td>1 – 16 (8 slots)</td>
<td>ModuPAC, JrPAC, DualPAC, RAMPAC, BatPAC</td>
</tr>
<tr>
<td>4 kW</td>
<td>17.0&quot; x 7.5&quot; x 4.9&quot;</td>
<td>208 or 240 Vac; 3-Phase</td>
<td>2,000 W – 4,000 W, (30)</td>
<td>1 – 20 (10 slots)</td>
<td>QPAC, DualQPAC, JrQPAC, QPAC (XQ)</td>
</tr>
<tr>
<td>4 kW</td>
<td>12.3&quot; x 6.0&quot; x 3.4&quot;</td>
<td>85 – 264 Vac</td>
<td>1,200 W @ 115 Vac</td>
<td>1 – 13 (8 slots)</td>
<td>BatPAC, ModuPAC, JrPAC, DualPAC, RAMPAC, FinPAC</td>
</tr>
<tr>
<td>4 kW</td>
<td>15.6&quot; x 6.0&quot; x 3.4&quot;</td>
<td>85 – 264 Vac</td>
<td>1,200 W @ 115 Vac</td>
<td>1 – 13 (8 slots)</td>
<td>QPAC, DualQPAC, JrQPAC, FinQPAC</td>
</tr>
<tr>
<td>4 kW</td>
<td>14.0&quot; x 7.5&quot; x 4.9&quot;</td>
<td>208 or 240 Vac; 3-Phase</td>
<td>2,000 W – 4,000 W, (30)</td>
<td>1 – 20 (10 slots)</td>
<td>ModuPAC, JrPAC, DualPAC, RAMPAC, BatPAC, UniPAC</td>
</tr>
</tbody>
</table>

**Note:** For detailed information, review specific product design guides available online at vicorpower.com

**Part Numbering**

Ordering, see back cover for contacts

<table>
<thead>
<tr>
<th>Product Prefix</th>
<th>Number of Outputs</th>
<th>Chassis Type</th>
<th>Number of Modules</th>
<th>Factory Assigned</th>
<th>Optional Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP</td>
<td>1 – 20</td>
<td>115 – 230 Vac</td>
<td>4 – 3-Phase</td>
<td>2 = FasTrak, 4</td>
<td>2 = FastTrak, RoHS</td>
</tr>
<tr>
<td>MX</td>
<td>&amp;</td>
<td>Strappable</td>
<td>3 = PFC, 7 = Autoranging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM</td>
<td>Strappable</td>
<td>9 = PFC</td>
<td>MegaPAC and MegaPAC-EL only</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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AC-DC Westcor Division

ConverterPACs  Output Power Up to 600 Watts

ConverterPACs incorporate VI-200 or VI-J00 and / or Maxi Vicor DC-DC converter bricks. For additional power, ConverterPACs can be paralleled. Some ConverterPACs are available for low-noise applications (VXI options, RamPACs and QPACs) and as current sources (BatPACs). All ConverterPACs can be easily removed in the field by loosening a single screw and sliding the unit out of the chassis.

VI-200 / VI-J00 ConverterPACs [a]  Output Power Up to 200 Watts

For general electrical specifications for VI-200 / VI-J00 ConverterPACs, see module specifications on the VI-200 / VI-J00 data sheets in the library section of our website.

Maxi ConverterPACs [a]  Output Power Up to 600 Watts

For general electrical specifications for Maxi ConverterPACs, see module specifications on the data sheets in the library section of our website.

[a] RoHS compliant ConverterPACs have a “G” added to their prefix (except the PZL where the RoHS version will be GPL).
Vicor CUSTOM

Custom Power Solutions Designed To Fit Your Specific Needs

Small company responsiveness, large company resources

The sole focus of Vicor Custom Power is designing and manufacturing turnkey custom power systems. Our custom power design centers maintain the flexibility of small entrepreneurial companies while taking advantage of Vicors technical and business resources to deal effectively with your most challenging power problems. Our total focus is on the power solution that best satisfies your needs.

Providing custom power solutions for:

- COMMUNICATIONS
- INDUSTRIAL
- DATACOM
- TEST EQUIPMENT
- MEDICAL
- MILITARY / AEROSPACE
- TRANSPORTATION

Custom Power Design Centers:

- Aegis Power Systems
  Tel: 1 828 837 4029
  email: aegis@aegispower.com
  aegispower.com

- ConverTec Corporation
  Tel: 1 651 604 0289
  email: eswanson@vicorpower.com

- Freedom Power Systems
  Tel: 1 512 259 0941
  email: sales@freedompower.com
  freedompower.com

- Granite Power Technologies
  Tel: 1 603 623 3222
  granitepower.com

- Mission Power Solutions
  Tel: 1 760 631 6846
  email: sales@mpwrs.com
  mpwrs.com

- Northwest Power Integrations
  Tel: 1 503 652 6161
  email: info@npi-inc.com
  npi-inc.com

Locations: See our website page for complete details
Vicor CUSTOM

Capabilities Overview

Vicor Custom Power has the capability to design, prototype, mass produce and certify a complete power system.

**Design:** Electrical and mechanical

**Prototype:** By utilizing Vicor’s standard power components, delivery of prototype units can be very fast and in some cases, just a matter of weeks.

**Mass production:** Capacity to manufacture thousands of power systems per year.

**Reliability / Certification:** HALT (Highly Accelerated Life Test)  
Temperature Cycling  
Burn In  
Thermal Shock  
Humidity  
Accelerated Life Test  
Power Cycling  
Vibration  
EMI  
Transient Immunity  
Altitude  
Explosive Atmosphere  
Mechanical Shock  
Acceleration
The single-slot VME450 power supply — filtered 28 Vdc, four output (3.3, 5, ±12 V), 550 W — is a MIL-COTS solution that is compliant to the vibration requirements of MIL-STD-810F and EMI per MIL-STD-461E. When compared to VME power supplies using conventional technology, the one-slot VME450 provides users with higher efficiency (85%), lower weight (2.4 pounds), and higher power (up to 550 W).

**Features**

- 28 Vdc per MIL-STD-704F
- 28 Vdc per MIL-STD-1275D
- Vin max range: 18 – 36 Vdc
- MIL-STD-461E conducted EMI
- Input power: 650 W
- Output power: 550 W
- 4 isolated outputs
- Temperature: −40 to +85°C
- Utilizes Vicor’s V+I Chips
- Single slot VME

The DC MegaPAC allows users to instantly configure highly-efficient DC-DC power supplies. A complete power supply is configured by selecting and inserting up to eight slide-in output assemblies called “ConverterPACs”. ConverterPACs incorporate one or two Vicor DC-DC converters and are available in a wide array of outputs and power levels. If output requirements change, the user can simply unlock a single screw and replace the slide-in ModuPAC assembly with one that has the desired rating.

**Features**

- DC inputs: 12 – 72 V available
- Output power: Up to 16 outputs and 1,600 W total power (depending upon input voltage)
- Temperature rating:
  - Full power to 45°C; half power to 65°C
- Dimensions: 3.4”H x 6.0”W x 12.0”L (86,3 x 152,4 x 304,8 mm)
- 9.25 lbs. fully configured
- Fan cooled
- Soft start for limiting inrush current
- Conducted EMI meets BTR 2511
- Remote sense capability and output overcurrent protection on all outputs
- Output overvoltage protection on most outputs
- Output overtemperature protection on all outputs
- Input over, under and reverse voltage protection
- Box-to-box paralleling capability
- Input temperature monitor, warning and shut down
- CE Marked
**Vicor Custom** Off-the-Shelf Configurable Power Supplies

**Badger™** From Mission Power Solutions

The Badger is a rugged PFC multi-output power supply, capable of withstanding extreme environments and stresses often inherent with military applications.

**General Specifications**

<table>
<thead>
<tr>
<th>Product</th>
<th>Dimensions</th>
<th>Input Voltage</th>
<th>Max # of Outputs</th>
<th>Maximum Power</th>
<th>Cooling</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badger</td>
<td>2.55” x 7.0” x 13.75” (64,8 x 177,8 x 349,3 mm)</td>
<td>85 – 264 Vac</td>
<td>12</td>
<td>1,800 W</td>
<td>Internal fans</td>
<td>OCP, OVP, and OTP on all outputs</td>
</tr>
</tbody>
</table>

**Javelin™** From Mission Power Solutions

The Javelin is an AC input power supply with a single DC output, capable of up to 5,400 W, in a rugged package suitable for industrial and military applications.

**General Performance**

<table>
<thead>
<tr>
<th>Product</th>
<th>Dimensions</th>
<th>Input Voltage</th>
<th>Max # of Outputs</th>
<th>Maximum Power</th>
<th>Cooling</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Javelin I</td>
<td>4.9” x 7.0” x 10.75” (124,5 x 177,8 x 273,05 mm)</td>
<td>85 – 254 Vac</td>
<td>1</td>
<td>600 – 1,800 W</td>
<td>Internal fans</td>
<td></td>
</tr>
<tr>
<td>Javelin II</td>
<td>4.9” x 7.0” x 9.5” (124,5 x 177,8 x 241,3 mm)</td>
<td>85 – 254 Vac</td>
<td>1</td>
<td>600 – 1,800 W</td>
<td>No fan</td>
<td></td>
</tr>
<tr>
<td>Javelin III</td>
<td>7.0” x 16.0” x 13.0” (177,8 x 406,4 x 330,2 mm)</td>
<td>85 – 254 Vac</td>
<td>3-Phase</td>
<td>1,800 – 5,400 W</td>
<td>Internal fans</td>
<td></td>
</tr>
</tbody>
</table>

**PowerBank™** From Northwest Power Integrations

The PowerBank is a low-profile AC-DC switching power supply that offers up to six configurable outputs at up to 1,500 Watts.

**General Performance**

<table>
<thead>
<tr>
<th>Product</th>
<th>Dimensions</th>
<th>Input Voltage</th>
<th>Max # of Outputs</th>
<th>Maximum Power</th>
<th>Cooling</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB1004PFC</td>
<td>1.74” x 8.08” x 10.28” (44,2 x 205,2 x 261,1 mm)</td>
<td>85 – 264 Vac</td>
<td>4</td>
<td>1,000 W</td>
<td>Internal fans</td>
<td>Low power stand-by output</td>
</tr>
<tr>
<td>PB1005AC</td>
<td>1.68” x 7” x 10.5” (42,7 x 177,8 x 266,7 mm)</td>
<td>115/230 Vac</td>
<td>5</td>
<td>1,000 W</td>
<td>Internal fans</td>
<td>SEMI F47 compatible</td>
</tr>
<tr>
<td>PB1506PFC</td>
<td>1.75” x 12.6” x 16.84” (44,5 x 320,04 x 427,7 mm)</td>
<td>90 – 264 Vac</td>
<td>6</td>
<td>1,500 W</td>
<td>Internal fans</td>
<td>Two aux. low power outputs</td>
</tr>
<tr>
<td>PBC1002AC</td>
<td>2.5” x 7.38” x 9” (63,5 x 187,5 x 228,6 mm)</td>
<td>115/230 Vac</td>
<td>2</td>
<td>1,000 W</td>
<td>Cond., conv., liquid</td>
<td>Customizable baseplate / heat sink</td>
</tr>
<tr>
<td>PBC1002PFC</td>
<td>2” x 6.5” x 13.5” (50,8 x 165,1 x 342,9 mm)</td>
<td>90 – 264 Vac</td>
<td>2</td>
<td>1,000 W</td>
<td>Cond., conv., liquid</td>
<td>Customizable baseplate / heat sink</td>
</tr>
</tbody>
</table>
Evaluation Boards  V•I Chip Products

V•I Chip BCM

The BCM Evaluation Board has been designed to facilitate the verification of the V•I Chips superior performance in the areas of power density, efficiency (over a wide load range), fast response and quiet, low-noise operation. Adding the suffix "EB" to the BCM model number designates the Evaluation Board. For example the B048F120T30-EB specifies a 48 V to 12 V at 300 W BCM mounted to an Evaluation Board.

PRM & VTM

The PRM and VTM Evaluation Boards allow the user to develop an understanding of Factorized Power Architecture (FPA™) using the PRM and VTM chip set. Simply select the PRM Evaluation Board to match your input voltage and VTM Evaluation Board to provide the desired output voltage and current and plug them together.

High Voltage BCM

The HV BCM Evaluation Board is used for powering, testing and evaluating the 380 Vdc input BCMs. The HV BCM Evaluation Board is available as a Parallel Array Board with a 12 Vdc, 100 A output or as a Series Array Board with a 48 Vdc 25 A and / or 12 Vdc, 25 A with up to 1,200 Watts total.

PRM Constant Current Board

The PRM Constant Current (CC) Demonstration Board is suitable for light-emitting diode (LED) applications such as street & stadium lighting, high-end projectors, active outdoor advertising and architectural installations. The board provides a precisely regulated current as required for direct drive multi-LED applications where the intensity and brightness are controlled by regulating the current through the LEDs.

Evaluation Boards  DC-DC VI BRICK Products

VI BRICK evaluation boards are available to verify the performance and simplify testing of VI BRICK modules. There are separate boards for the VI BRICK – PRM, VTM, BCM, and DC-DC converters.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>VI BRICK PRM evaluation board</td>
<td>Add &quot;-CB&quot; suffix to the VI BRICK specific part #</td>
</tr>
<tr>
<td>VI BRICK VTM evaluation board</td>
<td></td>
</tr>
<tr>
<td>VI BRICK BCM evaluation board</td>
<td></td>
</tr>
<tr>
<td>VI BRICK DC-DC evaluation board</td>
<td></td>
</tr>
</tbody>
</table>
Evaluation Boards  DC-DC Brick / EMI Filters / Output Filters & Cool-ORing Products

Maxi, Mini & Micro

- Three styles: Maxi, Mini or Micro
- Inboard and onboard compatible
- Easy I/O and control connections
- Includes fusing and capacitors
- Can be paralleled for higher power arrays

QPI  Active EMI Filters & V-I Chip Optimized Filters

The QPI / QPO filter evaluation boards provide a quick and easy way to evaluate the EMI / EMC performance of the filters with a broad range of DC-DC converters. Available QPI input EMI filter boards include: boards compatible with V-I Chip evaluation boards, DOSA pin-out compatible evaluation boards, and universal style use “EVAL1” evaluation boards. QPO output ripple attenuator boards are available in a universal “EVAL1” configuration or with sockets compatible with Vicor Mini and Micro DC-DC converters.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>QPI-3-CB1[a]</td>
<td>QPI-3LZ for 24 V input DC-DC up to 7 A</td>
</tr>
<tr>
<td>QPI-4-CB1[a]</td>
<td>QPI-4LZ for 48 V input DC-DC up to 7 A</td>
</tr>
<tr>
<td>QPI-5-CB1[a]</td>
<td>QPI-5LZ for 24 V input DC-DC up to 14 A</td>
</tr>
<tr>
<td>QPI-6-CB1[a]</td>
<td>QPI-6LZ for 48 V input DC-DC up to 14 A</td>
</tr>
<tr>
<td>QPI-7-CB1[a]</td>
<td>QPI-7LZ for 24 V input DC-DC up to 6 A, w/ integrated Hot-Swap</td>
</tr>
<tr>
<td>QPI-8-CB1[a]</td>
<td>QPI-8LZ for 48 V input DC-DC up to 6 A, w/ integrated Hot-Swap</td>
</tr>
</tbody>
</table>

[a] The part numbers above are compatible with mounting DOSA compliant DC-DC converters.

QPO  Active Output Filters

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>QPO-1-EVAL1</td>
<td>QPO-1LZ, 3 – 30 V input up to 10 A</td>
</tr>
<tr>
<td>QPO-1-EVAL3</td>
<td>QPO-1LZ, board with sockets for Vicor Mini DC-DC converter</td>
</tr>
<tr>
<td>QPO-1-EVAL5</td>
<td>QPO-1LZ, board with sockets for Vicor Micro DC-DC converter</td>
</tr>
<tr>
<td>QPO-2-EVAL1</td>
<td>QPO-2LZ, 0.5 – 5.5 V input up to 20 A</td>
</tr>
</tbody>
</table>

Cool-ORing  Discrete & Full-Function Active ORing Solutions

The Cool-ORing evaluation boards offer a quick and easy way for the user to complete functional testing of Picor’s Cool-ORing solutions. These evaluation boards demonstrate solutions satisfying a range of Active ORing requirements, covering several typical redundant bus voltages. The user can chose to evaluate a discrete implementation or a high density integrated solution depending on system level requirements. The user can use the evaluation board to measure steady state efficiency as well as test dynamic performance of the Cool-ORing product under system level fault conditions.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI2001-EVAL1</td>
<td>PI2001 using 3 x 3 mm TDFN package &amp; SO-8 MOSFETs in high-side configuration</td>
</tr>
<tr>
<td>PI2002-EVAL1</td>
<td>PI2002 using 3 x 3mm TDFN package and back-to-back SO-8 MOSFETs in high-side configuration</td>
</tr>
<tr>
<td>PI2003-EVAL1</td>
<td>PI2003 using 3 x 3 mm TDFN package and 100V SO-8 MOSFET in low-side configuration</td>
</tr>
<tr>
<td>PI2121-EVAL1</td>
<td>PI2121 configured for a high-side ground referenced application</td>
</tr>
<tr>
<td>PI2122-EVAL1</td>
<td>PI2122 Active ORing with load disconnect</td>
</tr>
<tr>
<td>PI2125-EVAL2</td>
<td>PI2125 configured for a high-side floating application</td>
</tr>
</tbody>
</table>

NOTE: Both PI2121-EVAL1 and PI2125-EVAL2 are compatible with the PI2123 solution.
## ACCESSORIES

### Mounting & Thermal Management

All parts are RoHS compliant unless otherwise noted.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>0.90&quot; Fin</th>
<th>0.70&quot; Fin</th>
<th>1.45&quot; Fin</th>
<th>0.40&quot; Fin</th>
</tr>
</thead>
<tbody>
<tr>
<td>30089</td>
<td>(22,8 mm)</td>
<td>(17,7 mm)</td>
<td>(36,8 mm)</td>
<td>(10,1 mm)</td>
</tr>
<tr>
<td>30090</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30091</td>
<td>0.90&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30181</td>
<td>(22,8 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30188</td>
<td>0.90&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30195</td>
<td>(22,8 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30196</td>
<td>0.90&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30197</td>
<td>(22,8 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30199</td>
<td>0.90&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30200</td>
<td>(22,8 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30140</td>
<td>0.40&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30194</td>
<td>(10,1 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30178</td>
<td>0.40&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30182</td>
<td>(10,1 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30184</td>
<td>0.40&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30190</td>
<td>(10,1 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30186</td>
<td>0.40&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30188</td>
<td>(10,1 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30192</td>
<td>0.40&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30196</td>
<td>(10,1 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30199</td>
<td>0.40&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30200</td>
<td>(10,1 mm)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ACCESSORIES

**Web ExpressCode: mounting1**

### Mounting & Thermal Management

All parts are RoHS compliant unless otherwise noted.

<table>
<thead>
<tr>
<th>Heat Sink</th>
<th>Part Number</th>
<th>Push-Pins</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longitudinal Fins</td>
<td>32438</td>
<td>0.051&quot; – 0.069&quot; PCB</td>
<td>32434</td>
</tr>
<tr>
<td>Transverse Fins</td>
<td>32439</td>
<td>0.070&quot; – 0.104&quot; PCB</td>
<td>32435</td>
</tr>
<tr>
<td>Longitudinal Fins</td>
<td>32440</td>
<td>0.105&quot; – 0.132&quot; PCB</td>
<td>32436</td>
</tr>
<tr>
<td>Longitudinal Fins</td>
<td>32441</td>
<td>0.133&quot; – 0.156&quot; PCB</td>
<td>32437</td>
</tr>
</tbody>
</table>

### V+I Chip Heat Sinks & Push-Pins

For use with PRM, VTM and BCM V+I Chip Power Components.

**Low-profile side-fin heat sinks – Height only 0.125" (3.1 mm) above module baseplate**

- 0.55" (13,9 mm) Side Fins: 30096, 30190, 30095
### ThermMate™ Thermal Pads
For use with Vicor modules, ThermMate thermal pads are a "dry" alternative to thermal compound and are pre-cut to the outline dimensions of the module.

<table>
<thead>
<tr>
<th>Thermal Pad</th>
<th>Part Number</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>VI-200 (10 pc. pkg.)</td>
<td>20266</td>
<td>0.007&quot; (0.17 mm)</td>
</tr>
<tr>
<td>VI-J00 (10 pc. pkg.)</td>
<td>20267</td>
<td>0.007&quot; (0.17 mm)</td>
</tr>
<tr>
<td>Maxi (10 pc. pkg.)</td>
<td>20263</td>
<td>0.007&quot; (0.17 mm)</td>
</tr>
<tr>
<td>Mini (10 pc. pkg.)</td>
<td>20264</td>
<td>0.007&quot; (0.17 mm)</td>
</tr>
<tr>
<td>Micro (10 pc. pkg.)</td>
<td>20265</td>
<td>0.007&quot; (0.17 mm)</td>
</tr>
<tr>
<td>VI BRICK – PRM / VTM / BCM Size &quot;A&quot; (10 pc. pkg.)</td>
<td>34636</td>
<td>0.007&quot; (0.17 mm)</td>
</tr>
<tr>
<td>VI BRICK – DC-DC Converter Size &quot;B&quot; (10 pc. pkg.)</td>
<td>34637</td>
<td>0.007&quot; (0.17 mm)</td>
</tr>
</tbody>
</table>

### Grounding Clips
For use with FinMod and SlimMod packaging options (Page 23). Grounding clips provide a convenient means for making electrical connection between the heat sink assembly and the printed circuit board.

<table>
<thead>
<tr>
<th>Use With...</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 and F2</td>
<td>32185</td>
</tr>
<tr>
<td>F3 and F4</td>
<td>32186</td>
</tr>
<tr>
<td>SlimMods</td>
<td>32187[a]</td>
</tr>
</tbody>
</table>

[a] Not RoHS compliant

### Mounting Standoffs
For mechanical mounting of VI-200 and VI-J00 Series modules. Also provides grounding of the module from the baseplate to the printed circuit board. (Sold individually)

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.525&quot; (13.3 mm) Long</td>
<td>10692-01</td>
</tr>
<tr>
<td>0.25&quot; (6.3 mm) Hex</td>
<td></td>
</tr>
</tbody>
</table>

### Sockets
Sockets are available for all Vicor VI-200 and VI-J00 modules and are intended for applications requiring ease of module installation or removal. Vicor modules have nine pins, seven of which are 0.040" and two are 0.080".

<table>
<thead>
<tr>
<th>Pin Size</th>
<th>Finish</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.040&quot; (1.01 mm)</td>
<td>Electro-tin</td>
<td>30074</td>
</tr>
<tr>
<td>0.080&quot; (2.03 mm)</td>
<td>Electro-tin</td>
<td>30075</td>
</tr>
</tbody>
</table>
## ModuMate Socket
Maxi, Mini & Micro Series

### SurfMate: Surface Mount Sockets \[a\]

<table>
<thead>
<tr>
<th>Board Thickness</th>
<th>Mounting Style</th>
<th>Full brick (Maxi)</th>
<th>Half brick (Mini)</th>
<th>Quarter brick (Micro)</th>
<th>Use module pin style [b]</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>Surface mount</td>
<td>Input 22100</td>
<td>Output 22101</td>
<td>5 Sets 16017</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>Surface mount</td>
<td>Input 22100</td>
<td>Output 22102</td>
<td>5 Sets 16021</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>Surface mount</td>
<td>Input 22103</td>
<td>Output 22104</td>
<td>5 Sets 16025</td>
<td>S, F</td>
</tr>
</tbody>
</table>

### InMate: Through Hole Sockets \[a\]

All sockets are supplied on InMate headers to assure proper alignment during installation.

<table>
<thead>
<tr>
<th>Board Thickness</th>
<th>Mounting Style</th>
<th>Full brick (Maxi)</th>
<th>Half brick (Mini)</th>
<th>Quarter brick (Micro)</th>
<th>Use module pin style [b]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal 0.062&quot;</td>
<td>Inboard</td>
<td>Input 18374</td>
<td>Output 18382</td>
<td>5 Sets 18362</td>
<td>S, F</td>
</tr>
<tr>
<td>Nominal 0.094&quot;</td>
<td>Inboard</td>
<td>Input 18375</td>
<td>Output 18383</td>
<td>5 Sets 18363</td>
<td>S, F</td>
</tr>
<tr>
<td>Nominal 0.125&quot;</td>
<td>Inboard</td>
<td>Input 18379</td>
<td>Output 18389</td>
<td>5 Sets 18365</td>
<td>N, G</td>
</tr>
<tr>
<td>Min / Max 0.055&quot; / 0.071&quot;</td>
<td>Onboard</td>
<td>Input 18378</td>
<td>Output 18388</td>
<td>5 Sets 18364</td>
<td>N, G</td>
</tr>
<tr>
<td>Min / Max 0.084&quot; / 0.104&quot;</td>
<td>Onboard</td>
<td>Input 18379</td>
<td>Output 18391</td>
<td>5 Sets 18369</td>
<td>N, G</td>
</tr>
<tr>
<td>Min / Max 0.1125&quot; / 0.1375&quot;</td>
<td>Onboard</td>
<td>Input 21539</td>
<td>Output 21543</td>
<td>5 Sets 21510</td>
<td>N, G</td>
</tr>
</tbody>
</table>

\[a\] For individual input / output purchases, a 35-piece minimum (and multiples) applies to Maxis / Minis and a 40-piece minimum for Micros.

\[b\] Page 15 for pin styles.

### Module Exchange Tool
Used in facilitating the proper extraction of modules from InMate or SurfMate sockets. Removal without using the Exchange Tool may cause damage to the sockets.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxi Exchange Tool</td>
<td>22827</td>
</tr>
<tr>
<td>Mini Exchange Tool</td>
<td>22828</td>
</tr>
<tr>
<td>Micro Exchange Tool</td>
<td>22829</td>
</tr>
</tbody>
</table>
**ACCESSORIES**

**Magnetics**

**PR Bus Isolation Transformer**
Developed for isolation of PR Bus signal when used with Maxi, Mini, Micro parallel configurations. Consult Vicor for applications instructions.

| Part Number | 29768 |

**VI-HAM Line Filter**
The VI-HAM requires an external line filter. When used in conjunction with part number 30205, the VI-HAM / Filter combination will meet the requirements of worldwide EMI standards.

| Part Number | 30205 |

**Inductors, Common Mode**
These inductors provide a high level of attenuation of common-mode currents.

<table>
<thead>
<tr>
<th>Inductance / Winding</th>
<th>DC Current / Resistance</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 µH</td>
<td>12 A / 6.5 mΩ</td>
<td>31743</td>
</tr>
<tr>
<td>3000 µH</td>
<td>7 A / 18 mΩ</td>
<td>31742</td>
</tr>
<tr>
<td>2163 µH</td>
<td>1 A / 42 mΩ (low profile)</td>
<td>31943</td>
</tr>
<tr>
<td>1.3 mH</td>
<td>13 A / 14 mΩ</td>
<td>32006</td>
</tr>
</tbody>
</table>

**Inductor, Output Sense Compensation**

<table>
<thead>
<tr>
<th>Inductance</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mH</td>
<td>36-00030 [a]</td>
</tr>
</tbody>
</table>

[a] Not RoHS compliant

**Inductors, Differential Mode, Input**
Inductance / Winding

<table>
<thead>
<tr>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>33206</td>
</tr>
</tbody>
</table>

**Inductors, Differential Mode**
Output inductors may be used to reduce differential output noise by approximately 20 dB.

<table>
<thead>
<tr>
<th>Inductance</th>
<th>DC Current (max.)</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2 µH</td>
<td>40 A</td>
<td>30268</td>
</tr>
<tr>
<td>27 µH</td>
<td>12 A</td>
<td>32012</td>
</tr>
<tr>
<td>1.8 µH</td>
<td>10 A</td>
<td>32497</td>
</tr>
</tbody>
</table>

**Common Mode Output Inductors**

<table>
<thead>
<tr>
<th>Inductance</th>
<th>DC Current (max.)</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>420 µH</td>
<td>20 A</td>
<td>36-00037</td>
</tr>
<tr>
<td>350 µH</td>
<td>40 A</td>
<td>36-00029-01</td>
</tr>
<tr>
<td>1.27 mH</td>
<td>10 A</td>
<td>36-00029-04</td>
</tr>
<tr>
<td>70 µH</td>
<td>80 A</td>
<td>36-00029-06</td>
</tr>
<tr>
<td>110 µH</td>
<td>60 A</td>
<td>36-00029-07</td>
</tr>
</tbody>
</table>

**Capacitors**

**Capacitors, X-type** For filtering specifications of FCC Level A.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>“X” Cap., 0.68 µF</td>
<td>11217</td>
</tr>
<tr>
<td>“X” Cap., 0.47 µF</td>
<td>03047</td>
</tr>
<tr>
<td>“X” Cap., 0.33 µF</td>
<td>00927</td>
</tr>
<tr>
<td>“X” Cap., 0.22 µF</td>
<td>04068</td>
</tr>
<tr>
<td>“X” Cap., 0.15 µF</td>
<td>03269</td>
</tr>
<tr>
<td>“X” Cap., 1.0 µF</td>
<td>02573</td>
</tr>
</tbody>
</table>

**Capacitors, Y-type** For EMI / RFI considerations.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Y” Cap., 1,500 pF</td>
<td>00770</td>
</tr>
<tr>
<td>“Y” Cap., 4,700 pF</td>
<td>01000</td>
</tr>
<tr>
<td>“Y” Cap., 0.01 µF</td>
<td>01501</td>
</tr>
<tr>
<td>“Y” Cap., 0.022 µF</td>
<td>03093</td>
</tr>
<tr>
<td>“Y” Cap., 4,700 pF SMT version</td>
<td>25283</td>
</tr>
<tr>
<td>“Y” Cap., 1,500 pF SMT version</td>
<td>30802</td>
</tr>
</tbody>
</table>

**Capacitors, Hold up**

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>VI-AIM</td>
<td>270 µF, 200 V</td>
<td>30769</td>
</tr>
<tr>
<td></td>
<td>270 µF, 400 V</td>
<td>30240</td>
</tr>
<tr>
<td>VI-HAM</td>
<td>470 µF, 450 V</td>
<td>30249</td>
</tr>
<tr>
<td>FARM / ARM</td>
<td>1,200 µF, 200 V</td>
<td>30275</td>
</tr>
<tr>
<td></td>
<td>2,200 µF, 200 V</td>
<td>30483</td>
</tr>
</tbody>
</table>

**Components**

**MOVs** For use with front-end modules.

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>275 V MOV, 14 mm Disc</td>
<td>30076</td>
</tr>
<tr>
<td>68 V MOV, 10 mm Disc</td>
<td>30234-068</td>
</tr>
<tr>
<td>120 V MOV, 10 mm Disc</td>
<td>30234-120</td>
</tr>
<tr>
<td>200 V MOV, 10 mm Disc</td>
<td>30234-200</td>
</tr>
<tr>
<td>220 V MOV, 10 mm Disc</td>
<td>30234-220</td>
</tr>
</tbody>
</table>

**Gas Discharge Tube** For use with the ENMods and VI-ARM.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Spark Over (DC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13755</td>
<td>220 V</td>
</tr>
<tr>
<td>26107</td>
<td>75 V</td>
</tr>
</tbody>
</table>

Minimum order quantities may apply.
### ACCESSORIES

#### Connector Kits
FlatPAC, FlatPAC-EN, LoPAC, MegaPAC & PFC FrontEnd products

All parts are RoHS compliant unless otherwise noted.

<table>
<thead>
<tr>
<th>FlatPAC Accessories</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input and Output Retrofit Kits</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input connector</td>
<td>14136[a]</td>
<td></td>
</tr>
<tr>
<td>Output connector</td>
<td>14137[a]</td>
<td></td>
</tr>
<tr>
<td><strong>Input and Output Mating Connectors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input connector, 6 pin[b]</td>
<td>33100</td>
<td></td>
</tr>
<tr>
<td>Output connector, 5 pin[b]</td>
<td>16385[a]</td>
<td></td>
</tr>
</tbody>
</table>

[a] Not RoHS compliant
[b] Insertion tool for use with FlatPAC input / output connectors are available from AMP Inc., part number 58074-1.

Manual hand tool, part number 58246-1, interchangeable head.

<table>
<thead>
<tr>
<th>LoPAC Accessories</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connector Kits</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PFC Mini</td>
<td>19-130047</td>
<td></td>
</tr>
<tr>
<td>PFC Micro, PFC MicroS</td>
<td>19-130044</td>
<td></td>
</tr>
<tr>
<td><strong>Current Share Boards</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LoPACs using VI-200 and VI-J00 Series modules</td>
<td>CSB01</td>
<td></td>
</tr>
<tr>
<td>LoPACs using Maxi, Mini and Micro Series modules</td>
<td>CSB02</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PFC FrontEnd Accessories</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Din Rail Mounting Kit</td>
<td>19-130060</td>
<td></td>
</tr>
<tr>
<td>Connector Kit</td>
<td>19-130059</td>
<td></td>
</tr>
<tr>
<td>VIPAC Array Adapter</td>
<td>19-130064</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MegaPAC Accessories</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connector Kits</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-phase input</td>
<td>19-130040</td>
<td></td>
</tr>
<tr>
<td>Three-phase input</td>
<td>19-130041</td>
<td></td>
</tr>
<tr>
<td>DualPAC / Dual QPAC output ConverterPacs</td>
<td>19-130042</td>
<td></td>
</tr>
<tr>
<td>Air block</td>
<td>96-00032-01</td>
<td></td>
</tr>
<tr>
<td><strong>Current Share Boards</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MegaPACs using VI-200 and VI-J00 Series modules</td>
<td>CSB01</td>
<td></td>
</tr>
<tr>
<td>MegaPAC using Maxi modules</td>
<td>CSB02</td>
<td></td>
</tr>
</tbody>
</table>

*MegaPAC chassis and ConverterPACs can be purchased separately for scalable systems and / or spares.*

<table>
<thead>
<tr>
<th>Bus Bars</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 holes</td>
<td>88-00033-01</td>
<td></td>
</tr>
<tr>
<td>3 holes</td>
<td>88-00033-02</td>
<td></td>
</tr>
<tr>
<td>4 holes</td>
<td>88-00033-03</td>
<td></td>
</tr>
<tr>
<td>5 holes</td>
<td>88-00033-04</td>
<td></td>
</tr>
<tr>
<td>Series bus bar</td>
<td>88-00043</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FlatPAC-EN Accessories</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connector Kit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FlatPAC-EN</td>
<td>19-130044</td>
<td></td>
</tr>
<tr>
<td><strong>Current Share Boards</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FlatPAC-EN using VI-200 and VI-J00 Series modules</td>
<td>CSB01</td>
<td></td>
</tr>
<tr>
<td>FlatPAC-EN using Maxi, Mini and Micro Series modules</td>
<td>CSB02</td>
<td></td>
</tr>
</tbody>
</table>
We use the "Plan-Do-Check-Act" model (PDCA) to foster continuous improvement. We focus on key performance metrics that are continuously measured and reviewed. This enables us to be proactive in improving our technology, our products, our processes, and our service to our customers.

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- White papers on specific quality issues
- ISO 9001:2000 certificates
- RoHS compliant information
- Contact our quality team

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PowerBench’s VCAD™ is a patented system that enables users to specify online, the design of Vicor’s VIPAC family from available input voltages, output configuration, thermal features, mechanical configurations, and an optional power up / power down sequencing feature.

PowerBench’s VSPOC™ enables the registered user to specify and verify complete AC-DC power supplies in real time. The system is fully integrated with Westcor manufacturing operations. Once the user approves the product configuration, a bill of materials is generated and an order can be placed immediately.

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- Support for user needs through visits to your facility or at the FAE’s lab.
- Technical presentations / seminars, both scheduled and on demand, at your site or elsewhere.
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VTMs put isolated current multiplication and voltage division directly at the point of load (POL), and an upstream PRM (Regulator) controls the factorized bus voltage supplied to the VTM to provide line and load regulation. Together, the PRM and VTM chip set provides the full functionality of a DC-DC converter, but with breakthrough performance and flexibility in a rugged, miniature package. The BCM (Bus Converter Module) functions as a fixed-ratio DC-DC transformer and provides an isolated bus voltage to power the PRM and VTM chip set or other loads.

The MIL-COTS PRM operates from a wide input range of 16 – 50 Vdc, meeting many of the ground vehicle and airborne requirements of MIL–STD–1275 and MIL–STD–704. Rated for 120 W, the 28 V PRM produces a nominal factorized bus voltage of 36 Vdc, controllable over the range of 26 – 50 Vdc. The downstream isolated VTM is available with twelve voltage division ratios from 1:1 to 1:32 and provides the user with flexibility to supply up to 100 A or 120 W at any output voltage from 1 – 50 Vdc in a surface-mount package occupying only 1 in². The MIL-COTS BCM is a high efficiency Sine Amplitude Converter (SAC) operating from a 240 to 330 Vdc primary bus to deliver an isolated 30 – 41.2 V nominal, unregulated secondary.

### Features for PRM
- Input range: 16 – 50 Vdc
- 1.3 MHz switching frequency
- Efficiency: 95%
- –55°C to +125°C operation (Tj)
- ZVS buck-boost regulator

### Features for VTM
- Isolated 1–50 Vdc output
- 1 µs transient response
- 3 MHz switching frequency
- Efficiency: Up to 96.5%
- –55 to +125°C operation (Tj)

### Features for BCM
- Input range: 240 – 330 Vdc
- Output range: 30.0 – 41.2 Vdc
- MIL-STD-704E/F Compliant
- Efficiency: >95%
- –55 to +125°C operation (Tj)

The PRM Regulator Module is a very efficient non-isolated regulator specifically designed to provide a controlled Factorized Bus distribution voltage for powering downstream VI BRICK 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 thermally enhanced package.

The thermally enhanced VTM voltage transformer excels at speed, density and efficiency to meet the demands of advanced power applications. Combined with the PRM regulator they create 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.

The MQPI-18 is a surface mount DC front-end filter that provides EMI filtering for Vicor’s 28 V DC-DC V+I Chip or VI BRICK modules. The MQPI-18 enables designers to meet conducted emission / conducted susceptibility per MIL-STD-461E. The MQPI-18 accepts an input voltage of 10 – 80 Vdc and delivers output current up to 7 A.
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Our worldwide staff of customer support representatives and applications engineers is at your service to assist in determining the most appropriate power solutions for your system and to assure the quickest delivery of prototype quantities.

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- Process purchase order requirements
- Provide order status information.

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In Europe call 00-800-8426-7000.
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Andover, MA 01810-5413

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Email: apps@vicorpower.com

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Email: vicorexp@vicorpower.com

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Fax: 630-769-8782

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Fax: 408-774-5555
westcorpower.com

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Email: vicorfrc@vicorpower.com

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Denmark: 08000 8426 7000
Austria: 0800 20 37 27
Fax: +49 89 962 439 39
Email: vicorde@vicorpower.com

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800 899 677
Fax: +39 02 22 47 31 66
Email: vicorit@vicorpower.com

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UK: 0800 980 8427
Sweden: 020 794 143
Fax: +44 1276 681269
Email: vicoruk@vicorpower.com

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Vicor Hong Kong
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Fax: +852-2956-0782
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In Latin America:
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Brazil: 0800-890-0288
Mexico: 011 52 333 647 7881

Ask the operator to connect you to: 800-735-6200.

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