High density power conversion

Optimized for 48V power delivery



VICOR

High performance power modules

Innovating power

Modular power delivery demolishes traditional discrete solution

Compact, lightweight and power dense

Vicor power modules are up to 5x the density of other solutions and weigh as little as 674mg.

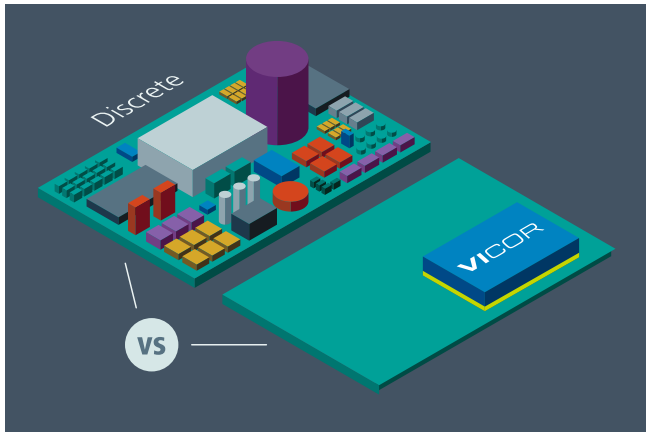
Efficient with simplified thermal management

The profile of Vicor modules allows for uniform and predictable heat dissipation that is isolated to one spot, rather than scattered throughout the design.

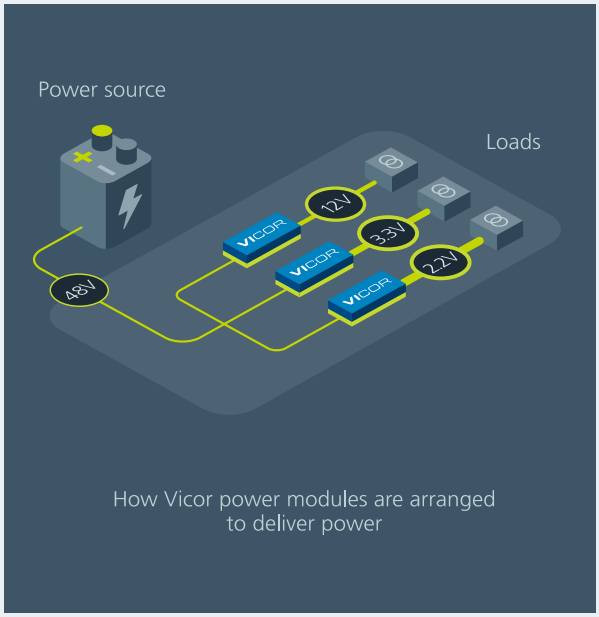
Tested and ready to implement

The design process advances much quicker when it isn't necessary to repeatedly test and qualify the design.

vicorpower.com/vicor-power-modules



Vicor power modules are used to create effective power architecture: power delivery networks



How Vicor power modules are arranged to deliver power

Easier and simpler than other solutions

Unlike complex discrete solutions and inflexible "silver box" power systems, a power delivery network using power modules is quick and easy to design and implement.

Easily adapt to changing requirements

Accommodating new loads — or changes in power needs in a design — is easily accomplished by replacing or adding modules.

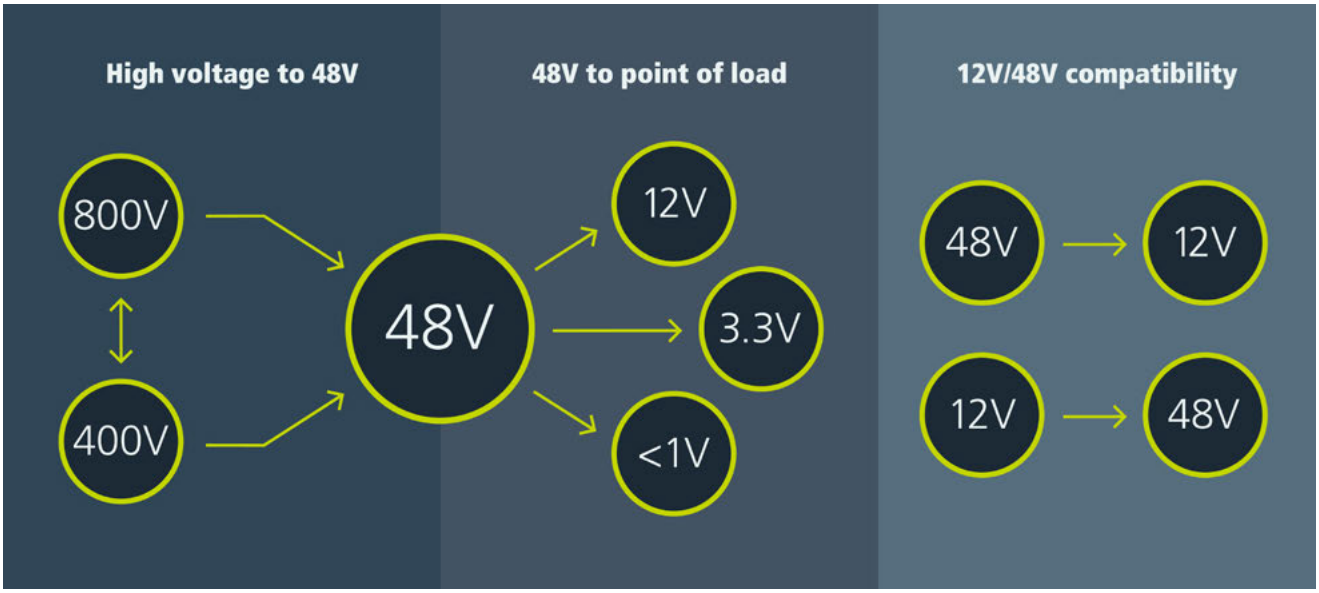
Significantly shorter time-to-market

Our customers have told us the modular approach can take less than half the time than designing and testing a discrete solution.

vicorpower.com/power-delivery-networks

High performance power modules optimized for 48V power delivery

Solutions for the entire power delivery network



Converting high voltage to 48V

Industry-leading power density and innovative architectures of Vicor power modules equip power designers with either isolated or non-isolated solutions that reduce the size and weight of power systems and enable the advantages of a 48V bus.

Powering the point-of-load from a 48V bus

Our DC-DC converters and regulators enable efficiencies and superior size/weight performance, while also providing the flexibility and scalability the modular approach to power is known for.

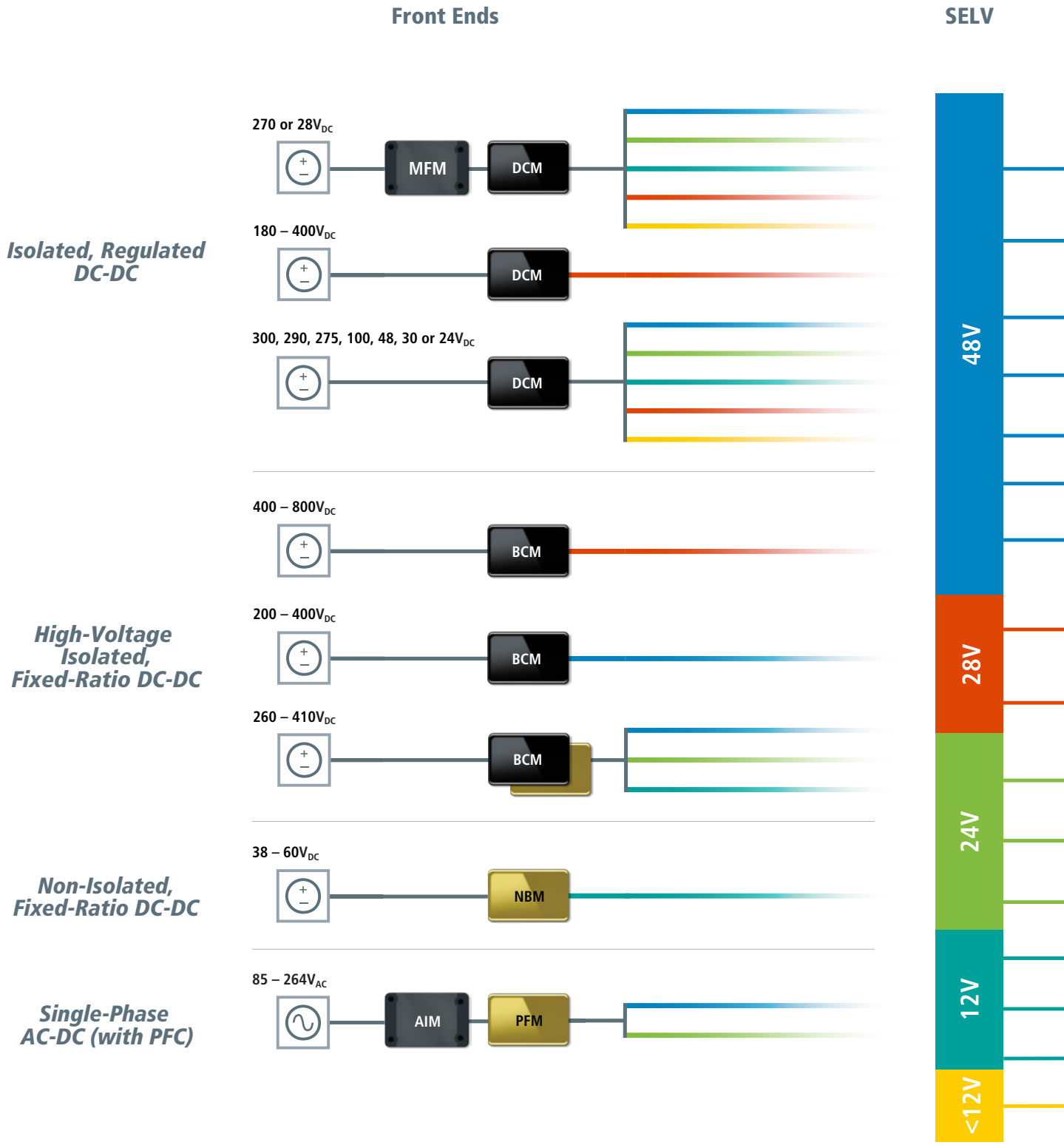
Bridging between 48V and legacy 12V systems

Our regulated and fixed-ratio converters are easing the transition to inherent efficient 48V power delivery while alleviating the burden of re-designing systems that for decades have been optimized around 12V architectures.

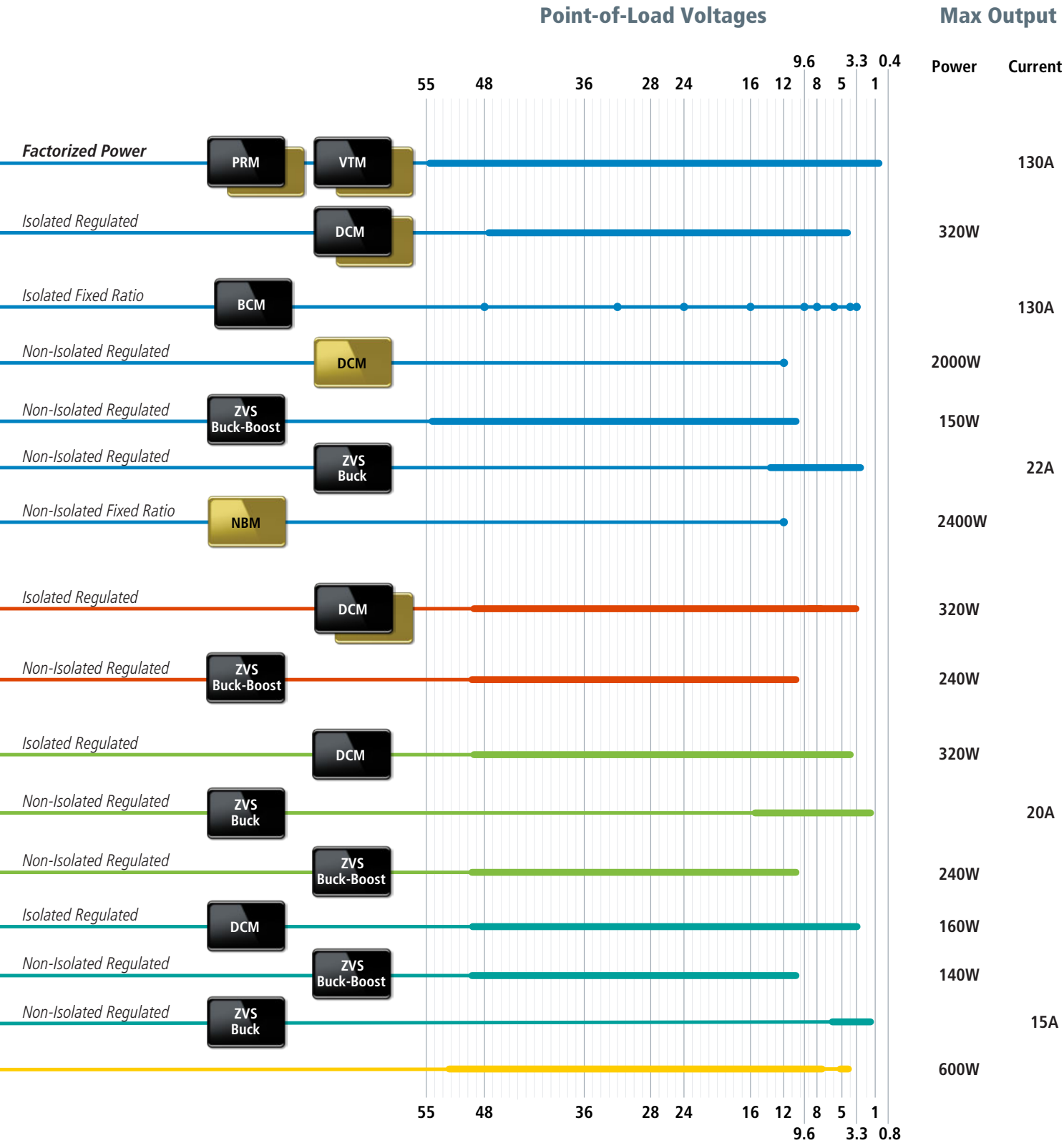
vicorpower.com/48V

Modular solutions for your

from source to point-of-load



power system



DCM™ isolated-regulated DC-DC converter

High power converters for all standard industry input voltages

The DCM ChiP is an isolated, regulated DC-DC converter, operating from an unregulated, wide range input to generate an isolated output. With its high frequency zero-voltage switching (ZVS) topology, DCMs consistently deliver high efficiency across their specified input line range. Modular DCM converters used independently or with downstream point-of-load (PoL) products support efficient power distribution, providing superior power system performance and connectivity from a variety of unregulated power sources to the point of load. Options include a family of DCMs with tighter output voltage regulation of ±1%. The DCM VIA module provides a higher level of functionality with integrated EMI filtering, tight output voltage regulation and a secondary-referenced control interface.



Features and benefits

- Up to 1300W, 46.4A continuous
- Up to 96% peak efficiency
- Up to 1244W/in^3 power density
- OV, OC, UV, short circuit & thermal protection

Input voltage range:		
9.0 – 50.0V	60.0 – 154.0V	
9.0 – 75.0V	160.0 – 420.0V	
14.0 – 72.0V	180.0 – 400.0V	
16.0 – 50.0V	120.0 – 420.0V	
18.0 – 36.0V	200.0 – 378.0V	
36.0 – 75.0V	180.0 – 420.0V	
43.0 – 154.0V	200.0 – 420.0V	

Output voltage range:		
3.5 – 5.5V	9.0 – 16.5V	21.0 – 30.8V
4.0 – 5.5V	11.25 – 16.5V	22.0 – 30.8V
7.2 – 13.2V	14.4 – 26.4V	22.0 – 36.0V
9.0 – 13.2V	18.0 – 26.4V	21.6 – 39.6V
8.3 – 15.2V	21.6 – 26.4V	28.8 – 52.8V
11.5 – 15.5V	16.8 – 30.8V	36.0 – 52.8V

Power:
2322 ChiP: Up to 120W
3623 ChiP: Up to 320W
4623 ChiP: Up to 600W
3414 VIA: Up to 320W
3714 VIA: Up to 600W
5614 VIA: Up to 1300W

Dimensions:
2322 ChiP: 24.8 x 22.8 x 7.2mm
3623 ChiP: 38.7 x 22.8 x 7.2mm
4623 ChiP: 47.9 x 22.8 x 7.2mm
3414 VIA: 85.9 x 35.5 x 9.4mm
3714 VIA: 95.1 x 35.5 x 9.4mm
5614 VIA: 141.4 x 35.5 x 9.4mm

A complete list of DCMs are available at **vicorpower.com/dcm**

BCM® isolated fixed-ratio bus converter

Intermediate bus converters

Bus converters are high-density, high-efficiency DC-DC converter modules available in a ChiP or VIA (Vicor Integrated Adapter) package, which simplifies cooling as well as providing integrated PMBus™ control, EMI filtering and transient protection. 800V to 48V inputs with various K factors suit a wide range of applications and markets. High-voltage BCM ChiPs are able to reach peak efficiencies of 98% and achieve power densities up to 2,400W/in^3. These flexible modules can be easily paralleled into high power arrays and outputs can be put in series to achieve a higher output voltage. BCMs are inherently bidirectional and also allow designers to reduce the amount of bulk capacitance needed at the load by effectively "reflecting" the capacitance across the module based on the specified K factor.



Features and benefits

- High efficiency of up to 98%
- High power density of up to 2,400W/in^3
- Parallel capability for higher power arrays
- Bidirectional capability

Input voltage range:	
36.0 – 60.0V	260.0 – 410.0V
38.0 – 55.0V	330.0 – 365.0V
200.0 – 330.0V	360.0 – 400.0V
200.0 – 400.0V	400.0 – 700.0V
240.0 – 330.0V	500.0 – 800.0V

Output voltage range:		
2.4 – 3.4V	10.3 – 11.4V	30.0 – 41.2V
3.2 – 4.6V	11.2 – 12.5V	31.1 – 51.2V
4.8 – 6.9V	11.8 – 13.0V	31.2 – 50.0V
6.0 – 10.0V	12.7 – 18.3V	32.5 – 51.2V
6.3 – 9.2V	16.3 – 25.6V	32.5 – 51.3V
7.6 – 11.0V	19.0 – 27.5V	33.4 – 55.1V
8.1 – 12.8V	25.0 – 43.7V	38.0 – 55.0V
9.0 – 15.0V	25.0 – 50.0V	41.3 – 45.6V
9.5 – 13.8V	25.3 – 36.7V	45.0 – 50.0V

Current:
Half Chip: Up to 10A
Full Chip: Up to 80A
2361 ChiP: Up to 150A
6123 ChiP: Up to 35A
4414 VIA: Up to 125A
6135 CM-ChiP: Up to 65A

Dimensions:
Half Chip: 22.0 x 16.5 x 6.7mm
Full Chip: 32.5 x 22.0 x 6.7mm
6123 ChiP: 63.3 x 22.8 x 7.2mm
4414 VIA: 110.6 x 35.5 x 9.4mm
6135 ChiP: 61.3 x 35.4 x 7.4mm
2361 ChiP: 61.0 x 25.1 x 7.2mm

A complete list of BCMs are available at **vicorpower.com/bcm**

NBM™ non-isolated fixed-ratio bus converter

Bidirectional power converters

The Vicor NBM™, utilizing a Sine Amplitude Converter (SAC®) ZCS/ZVS topology, provides non-isolated bidirectional voltage conversion in a fixed-ratio manner. The NBM has an associated K factor which determines the transformation voltage. In step-down mode, when a source is applied to the high side, the NBM will provide a voltage to the low side that is equivalent to the high-side voltage scaled down by the K factor. In step-up mode, when a source is applied to the low side, the NBM will deliver a voltage to the high side equivalent to the low-side voltage scaled up by the K factor.



Features and benefits

- High efficiency of over 98%
- High power density of up to 3,600W/in³
- Parallel operation for multi-kW arrays
- Bidirectional capability

Input voltage range:
36.0 – 46.0V
36.0 – 60.0V
40.0 – 60.0V

Output voltage range:
12.0 – 15.3V
7.2 – 12.0V
10.0 – 15.0V

Current:
2317 SM-ChiP: Up to 80A
6123 ChiP: Up to 170A

Dimensions:
2317 SM-ChiP: 22.8 x 17.3 x 5.2mm
6123 ChiP: 61.0 x 25.1 x 7.2mm

A complete list of NBMs are available at **vicorpower.com/nbm**

DCM™ non-isolated regulated DC-DC converter

High-density power modules for bridging 48V and legacy 12V power buses

Vicor non-isolated, regulated DC-DC converter modules operate from a 40 – 60V input, generate a regulated 12V output, and are adjustable from 10V to 12.5V. They support up to 2000W and can be paralleled to attain higher power levels. They are complete converter solutions requiring minimal external components yielding even higher power density for the complete power delivery network. The DCM has established a new benchmark for power density with a low-height, surface mount Converter housed in Package (SM ChiP) resulting in a 6x reduction in size over a conventional converter. With Vicor proprietary high frequency switching technology, these modules deliver high efficiency over all line and load conditions. They can be used to establish a 12V bus or used with legacy, downstream point-of-load (PoL) converters, and are ideally suited for bridging 48V and legacy 12V power buses in industrial, aerospace and defense, and high performance computing applications.



Features and benefits

- High efficiency of up to 96%
- High power density
- Up to 2000W
- PMBus® compatible telemetry

Input voltage range:
40.0 – 60.0V
Output voltage range:
10.0 – 12.5V

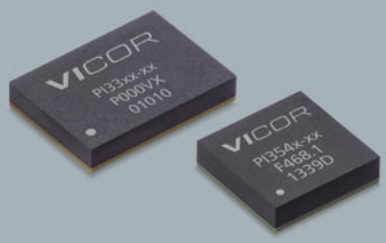
Power:
3717 SM-ChiP: Up to 1000W
Upcoming 3735 SM-ChiP: Up to 2000W
Dimensions:
3717 SM-ChiP: 36.7 x 17.3 x 5.2mm
Upcoming 3735 SM-ChiP: 36.7 x 35.4 x 5.2mm

vicorpower.com/dcm48to12V

ZVS buck non-isolated regulator

12V, 24V or 48V direct to PoL regulators

PI33/PI34/PI35xx regulators offer board-level designers maximum power density and flexibility for high-efficiency point-of-load DC-DC regulation. High performance zero-voltage switching (ZVS) topology increases point-of-load performance, providing best-in-class efficiency up to 98%. They are highly integrated with control circuitry, power semiconductors and support components in a high density System in Package (SiP). It can also be configured to operate in constant-current mode with -55°C to +125°C operation.



Features and benefits

- Wide operating range
- Simple to use; fast development
- High efficiency >96%
- Flexible and rich feature set

Input voltage range:	
8.0 – 18.0V	17.4 – 36.0V
8.0 – 36.0V	20.4 – 36.0V
11.0 – 36.0V	30.0 – 60.0V
14.0 – 42.0V	36.0 – 60.0V

Output voltage range:	
2.2 – 4.0V	4.0 – 6.5V
2.3 – 4.1V	6.5 – 13.0V
3.3 – 6.5V	6.5 – 14.0V
4.0 – 5.5V	10.0 – 16.0V

Current:
10.0 x 10.0mm SiP: Up to 10A
10.0 x 14.0mm SiP: Up to 22A

Dimensions:
LGA SiP: 10.0 x 10.0 x 2.6mm
LGA SiP: 14.0 x 10.0 x 2.6mm

A complete list of buck regulators are available at **vicorpower.com/buck**

ZVS buck-boost non-isolated regulator

Wide range direct to PoL regulators

The PI37xx is a series of high-efficiency regulators integrating controller, power switches and support components which require only an external inductor and a minimal number of capacitors to form a complete DC-DC regulator. The high-switching frequency reduces the size of the external filtering components, improves power density and enables very fast dynamic response to line and load transients. The PI37xx sustains high switching frequency up to the rated input voltage without sacrificing efficiency and supports large DC-DC conversion ratios. The device can also be configured to operate in constant-current mode.



Features and benefits

- Wide operating range
- Simple to use; fast development
- High efficiency of over 98%
- Flexible and rich feature set

Input voltage range:
8.0 – 60.0V
21.0 – 60.0V
38.0 – 60.0V

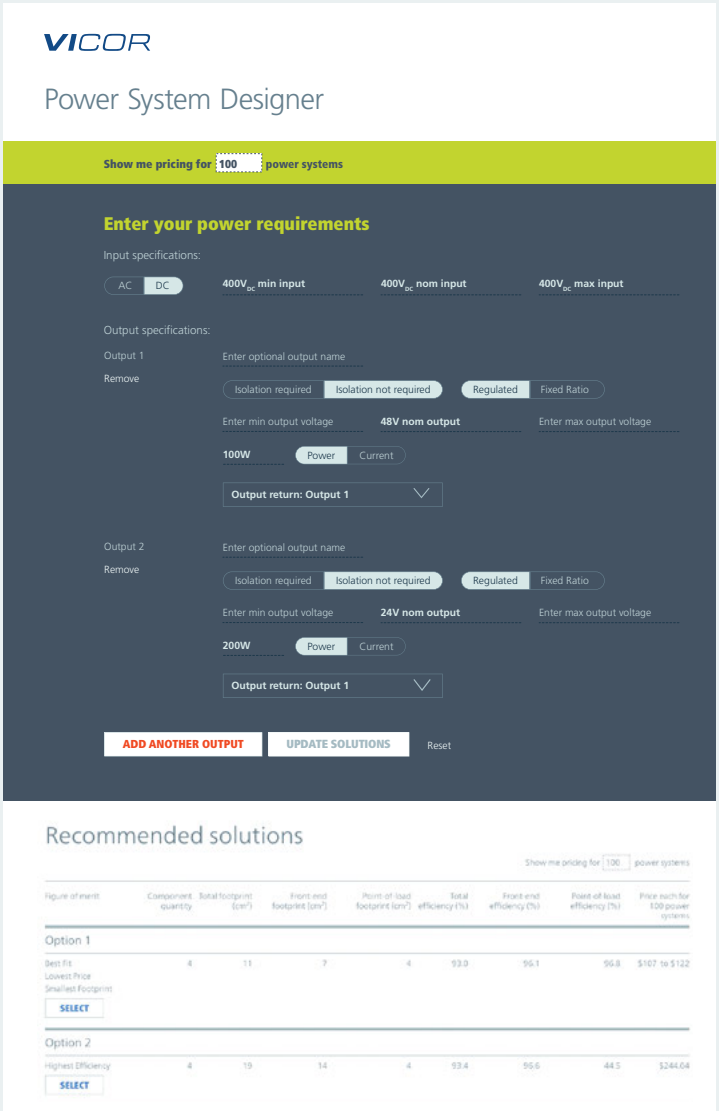
Output voltage range:
10.0 – 50.0V
21.0 – 36.0V
28.0 – 54.0V
36.0 – 54.0V

Power:
Up to 150W

Dimensions:
LGA SiP: 10.0 x 10.0 x 2.5mm
LGA SiP: 10.0 x 14.0 x 2.5mm

A complete list of buck-boost-regulators are available at **vicorpower.com/buck-boost**

An easy solution for generating complete power systems



Just enter a few specs to design your next power system

Designing your power system in a single location — up to 75% faster than traditional methods — is as easy as entering your input and output power as well as your basic system requirements. The Power System Designer is one of the Vicor web-based tools that makes it easy for you to build flexible, efficient and cost-effective power systems that get you to market faster.

- Instant performance analysis for recommended solutions
- Access an infinite number of products and technical specs
- Evaluate power chains electrically and mechanically
- Prioritize solutions by efficiency, component count, cost, footprint and recommended best fit
- Save, export and share a final BOM or power system

Start your next design at
www.vicorpower.com/psd

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