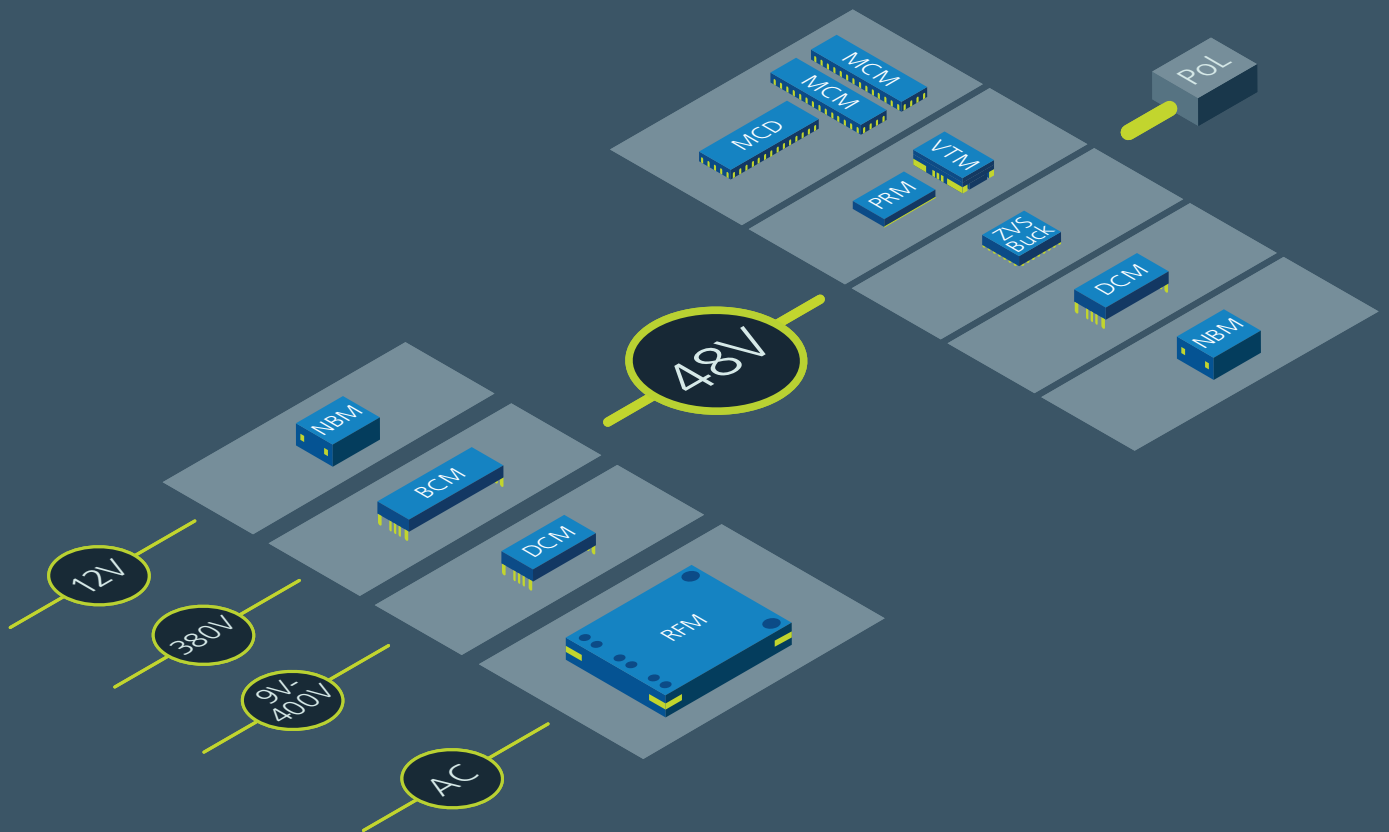


**A better way to deliver power  
from source to point-of-load**

# Modular solutions for your power system



**VICOR**

High-performance power modules

## Powering innovation

# Our customers are changing the world with their technologies



Modular ROVs quickly adapt to today's most risky underwater missions

[vicorpower.com/videoray](https://vicorpower.com/videoray)



Powering air travel with eco-friendly, high-efficiency electric systems

[vicorpower.com/ampaire](https://vicorpower.com/ampaire)



World's first major touring car championship goes hybrid

[vicorpower.com/delta-motorsport](https://vicorpower.com/delta-motorsport)



New class of tethered drones revolutionizes remote communications

[vicorpower.com/dragonfly-uav](https://vicorpower.com/dragonfly-uav)



Combating coastal erosion by restoring and growing new coral reefs rapidly

[vicorpower.com/ccell](https://vicorpower.com/ccell)



Achieving breakthrough wireless broadband speeds and connectivity

[vicorpower.com/phasor](https://vicorpower.com/phasor)



Driving the next generation of robotic autonomy

[vicorpower.com/wibotic](https://vicorpower.com/wibotic)



First commercialized hydrogen fuel cell power pack for UAVs

[vicorpower.com/doosan](https://vicorpower.com/doosan)

# Power delivery networks for forward thinking industries



Redefining automotive power delivery

[vicorpower.com/auto](http://vicorpower.com/auto)



Power solutions that maximize AI, HPC and data center computing performance

[vicorpower.com/computing](http://vicorpower.com/computing)



Increasing payload capability and flight times of commercial UAVs

[vicorpower.com/uav](http://vicorpower.com/uav)



High speed, low latency network coverage for the world

[vicorpower.com/leo-satellite](http://vicorpower.com/leo-satellite)



Solving SWaP-C power challenges for MIL-COTS

[vicorpower.com/defense-aero](http://vicorpower.com/defense-aero)



The most efficient power delivery for robots

[vicorpower.com/robotics](http://vicorpower.com/robotics)



Powering modern rail systems

[vicorpower.com/rail](http://vicorpower.com/rail)



Delivering lighter, brighter LED panels with 48V

[vicorpower.com/led](http://vicorpower.com/led)

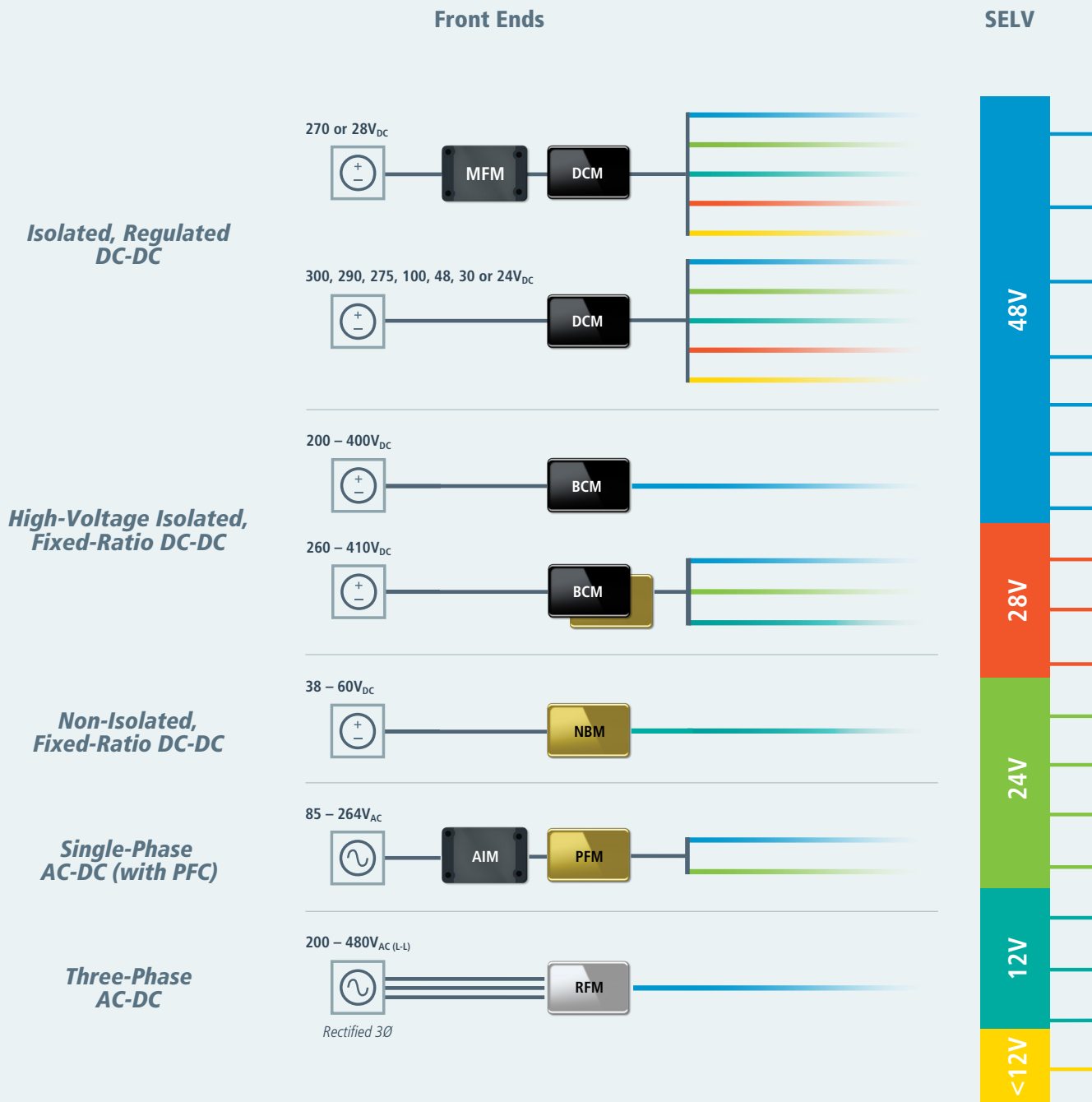


Communication applications

[vicorpower.com/communications](http://vicorpower.com/communications)

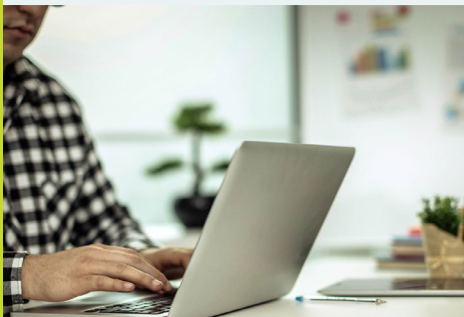
# Modular solutions for your

## from source to point-of-load



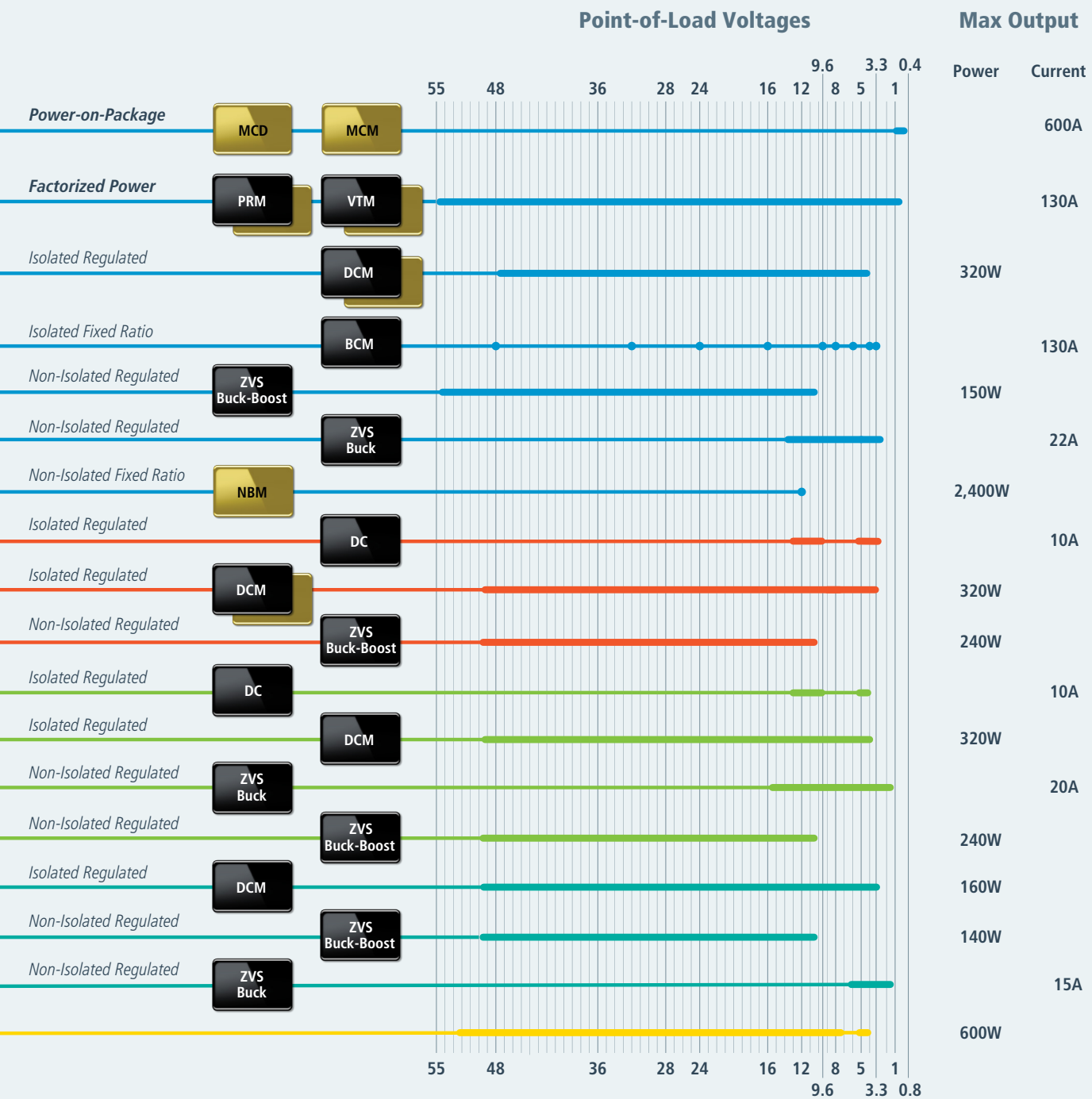
**Power System Designer**

A tool to easily generate complete power systems





# power system



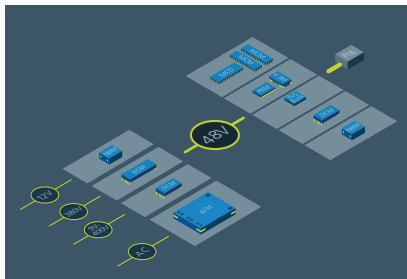
- Get performance analysis and technical specifications
- Evaluate power chains both electrically and mechanically
- Save and export the final BOM

Start your next design at  
[vicorpower.com/psd](http://vicorpower.com/psd)

## Innovating power

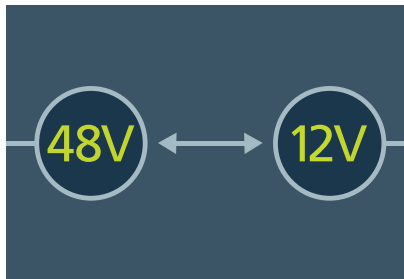
# Meeting modern day challenges with high-density solutions

Vicor provides high-density, high-efficiency conversion enabling state-of-the-art computing designs and redefines the conventional limitations in power conversion. Vicor is an innovator in modular power products that enable 48V distribution architectures from AC/HVDC to point-of-load devices critical for advanced artificial intelligence processors. Vicor has established a new category of processor power designs with its Power-on-Package solutions based on Factorized Power Architecture and SM-ChiP packaging design. These solutions are maximizing processor performance by delivering high currents at sub 1V levels and eliminating traditional board losses.



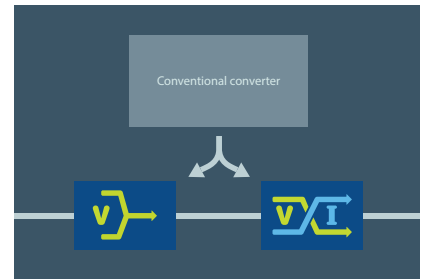
### 48V direct to low voltage conversion

The Vicor 48V ecosystem of modular power components achieve efficient, lightweight, dense, cost-effective and reliable power distribution with a substantial reduction in  $I^2R$  losses compared to conventional 12V distribution. [vicorpower.com/48V](http://vicorpower.com/48V)



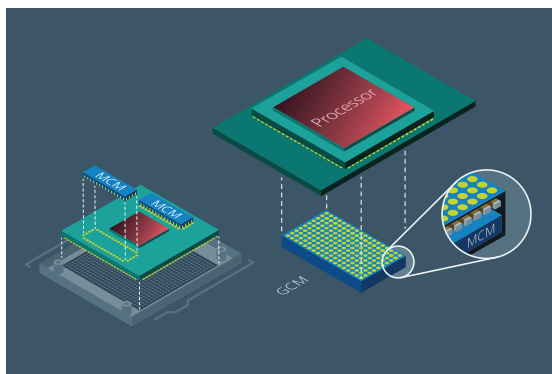
### Bridging 48V and 12V efficiently

The Vicor NBM provides bidirectional 48V to 12V conversion with 98% peak efficiency at 800W continuous and 1kW peak power in a package less than  $3.3\text{cm}^3$  for data center and automotive applications. [vicorpower.com/48and12](http://vicorpower.com/48and12)



### Factorized Power Architecture™ (FPA)

Vicor FPA™ replaces conventional 12V multiphase regulation schemes and achieves higher density and higher efficiency. FPA is deployed in the Power-on-Package product group. [vicorpower.com/fpa](http://vicorpower.com/fpa)



### Power-on-Package: lateral and vertical power delivery (LPD and VPD)

LPD enables processors to achieve lower power distribution losses and higher density solutions compared to conventional 12V multiphase VR power solutions. VPD further eliminates power distribution losses and VR PCB board area consumption. VPD is similar in design to the Vicor LPD solution with the added integration of bypass capacitance for the processor. [vicorpower.com/pop](http://vicorpower.com/pop)

## DCM™ isolated-regulated DC-DC converter modules

# 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  $\pm 1\%$ . 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 600W,  
43.5A continuous



Up to 93%  
peak efficiency



Up to 1244W/in<sup>3</sup>  
power density



OV, OC, UV, short  
circuit & thermal  
protection

#### Input voltage range:

9.0 – 50.0V	43.0 – 154.0V
9.0 – 75.0V	160.0 – 420.0V
14.0 – 72.0V	120.0 – 420.0V
16.0 – 50.0V	200.0 – 378.0V
18.0 – 36.0V	180.0 – 420.0V
36.0 – 75.0V	200.0 – 420.0V

#### Output voltage range:

3.0 – 3.6V	11.5 – 15.5V	16.8 – 30.8V
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	21.6 – 39.6V
9.0 – 13.2V	18.0 – 26.4V	28.8 – 52.8V
8.3 – 15.2V	21.6 – 26.4V	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

#### 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

A complete list of DCMs are available at  
[vicorpower.com/dcm](http://vicorpower.com/dcm)

## BCM® isolated fixed-ratio DC-DC bus converter modules

# 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<sup>3</sup>. 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<sup>3</sup>



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	31.2 – 50.0V
4.8 – 6.9V	11.8 – 13.0V	32.5 – 51.3V
6.0 – 10.0V	12.7 – 18.3V	33.4 – 55.1V
6.3 – 9.2V	16.3 – 25.6V	38.0 – 55.0V
7.6 – 11.0V	19.0 – 27.5V	41.3 – 45.6V
8.1 – 12.8V	25.0 – 43.7V	45.0 – 50.0V
9.0 – 15.0V	25.0 – 50.0V	
9.5 – 13.8V	25.3 – 36.7V	

#### Current:

Full / Half Chip: Up to 80A
6123 ChiP: Up to 150A
3814 VIA: Up to 150A
4414 VIA: Up to 125A

#### 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
3814 VIA: 95.6 x 35.5 x 9.4mm
4414 VIA: 110.6 x 35.5 x 9.4mm

A complete list of BCMs are available at [vicorpower.com/bcm](http://vicorpower.com/bcm)



## NBM™ non-isolated fixed-ratio bus converter modules

# 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/in<sup>3</sup>



Parallel operation  
for multi-kW  
arrays



Bidirectional  
capability

Input voltage range:

36.0 – 46.0V

38.0 – 60.0V

36.0 – 60.0V

Output voltage range:

12.0 – 15.3V

7.2 – 12.0V

9.5 – 15.0V

Current:

2317 SM-ChiP: Up to 60A

6123 ChiP: Up to 170A

Dimensions:

2317 SM-ChiP: 22.8 x 17.3 x 7.4mm

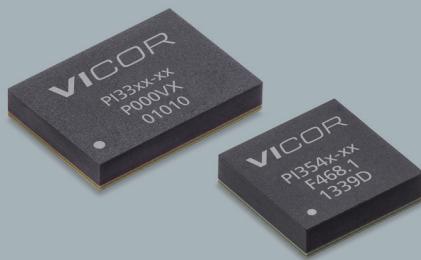
6123 ChiP: 61.0 x 25.1 x 7.2mm

A complete list of NBMs are available at  
[vicorpower.com/nbm](http://vicorpower.com/nbm)

## ZVS buck switching non-isolated DC-DC regulators

# 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 – 3.0V	3.3 – 6.5V	6.5 – 14.0V
------------	------------	-------------

2.2 – 4.0V	4.0 – 5.5V	10.0 – 16.0V
------------	------------	--------------

2.3 – 4.1V	4.0 – 6.5V
------------	------------

2.6 – 3.6V	6.5 – 13.0V
------------	-------------

#### 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 2.5mm
------------------------------

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

A complete list of buck regulators are available at [vicorpower.com/buck](http://vicorpower.com/buck)

## ZVS buck-boost switching non-isolated DC-DC regulators

# 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

Output voltage range:

10.0 – 50.0V

21.0 – 36.0V

36.0 – 54.0V

Power:

Up to 150W

Dimensions:

LGA SiP: 10.0 x 14.0 x 2.5mm

A complete list of buck-boost-regulators are available at [vicorpower.com/buck-boost](http://vicorpower.com/buck-boost)

# An easy solution for generating complete power systems

Power System Designer

Show me pricing for 100 power systems

### Enter your power requirements

Input specifications:

AC DC 400V<sub>dc</sub> min input 400V<sub>dc</sub> nom input 400V<sub>dc</sub> max input

Output specifications:

Output 1

Remove Isolation required Isolation not required Regulated Fixed Ratio

Enter min output voltage 48V nom output Enter max output voltage

100W Power Current

Output return: Output 1

Output 2

Remove Isolation required Isolation not required Regulated Fixed Ratio

Enter min output voltage 24V nom output Enter max output voltage

200W Power Current

Output return: Output 1

ADD ANOTHER OUTPUT UPDATE SOLUTIONS Reset

### Recommended solutions

Show me pricing for 100 power systems

Figure of merit	Component quantity	Total footprint (cm <sup>2</sup> )	Front-end footprint (cm <sup>2</sup> )	Point-of-load footprint (cm <sup>2</sup> )	Total efficiency (%)	Front-end efficiency (%)	Point-of-load efficiency (%)	Price each for 100 power systems
<b>Option 1</b>								
Best Fit	4	11	7	4	93.0	96.1	96.8	\$107 to \$122
Lowest Price								
Smallest Footprint								
<b>Option 2</b>								
Highest Efficiency	4	19	14	4	93.4	96.6	44.5	\$244.04

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](http://www.vicorpower.com/psd)

