VICOR

Solutions from AC to Point of Load

Solutions from AC to Point of Load

Vicor provides power solutions from AC wall plug to point of load. Our family of products provide a broad breadth of choices from semiconductor power solutions to complete power modules. This brochure shows features of our newer products. For a full line of our product solutions from AC to point of load, visit our website at vicorpower.com.

Search

Products in this Brochure

1 Select Category

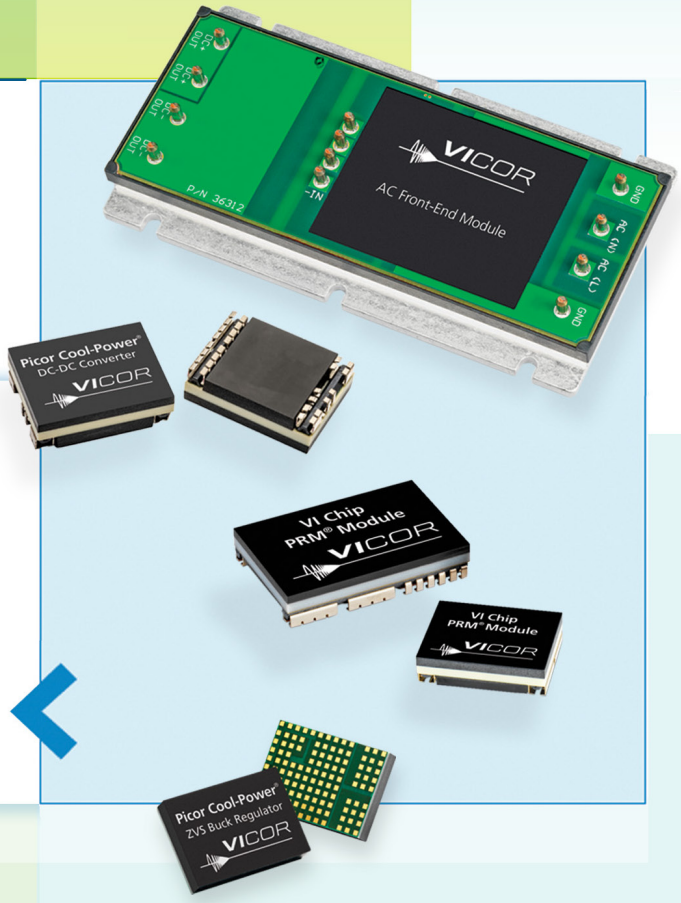
- **AC-DC**
  - Board Mount >
  - Power Systems
- **DC-DC**
  - Board Mount >
  - Filters
  - Power Systems
- **Power Path Management**
  - Protection, Distribution, Monitoring
- **Defense & Aerospace**
  - AC-DC
  - DC-DC
- **Custom**
  - AC-DC and DC-DC Turnkey Solutions

2 Select AC-DC Board Mount

- **Power Factor Corrected**
  - Universal Input
    - AC Front End Module >
    - HAM
    - PFM
  - Autoranging Input
    - ENMods
- **Non Power Factor Corrected**
  - Universal Input
    - AIM
  - Autoranging Input
    - ARM
    - FARM

2 Select DC-DC Board Mount

- **Isolated Regulated**
  - Cool Power PI31xx >
  - PRM + VTM
  - Maxi, Mini, Micro
  - VI-200 / VI-J00
  - BatMod
- **Isolated Non-regulated**
  - BCM
  - IBC
  - VTM
- **Non-Isolated regulated**
  - **Buck**
    - Cool-Power PI33xx, PI34xx >
  - **Buck-Boost**
    - PRM >



Power Component Design Methodology

With Vicor converter and regulator modules enabling a flexible power system methodology, designers can deliver high performance, cost-effective power systems from AC or DC sources to the point of load quickly and predictably. Proven building blocks provide efficient power conversion stages supporting power distribution architectures tailored to the application's requirements. Integrated, high density, thermally-adept power components enable power system architects to attain new levels of design versatility and overcome the power density constraints imposed by conventional power solutions. Power Components maximize performance while minimizing development cost and time to market, yielding superior solutions with building block ease, flexibility and scalability.

Power Factor Corrected, Universal Input, AC-DC Converter

AC Front End Module

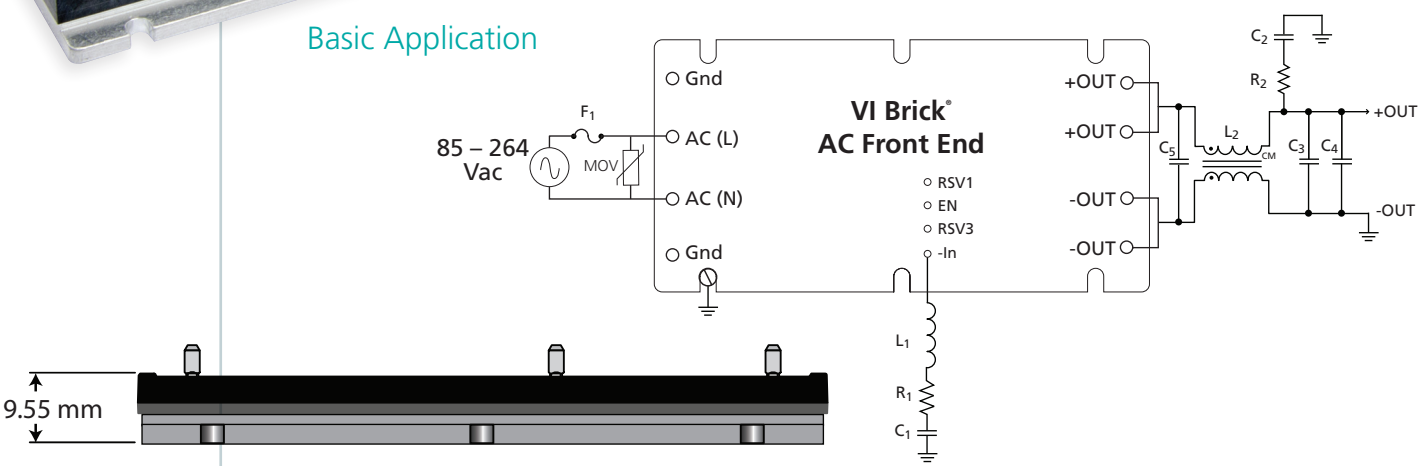
Overview

- Universal Input: 85 – 264 Vac
- Output: 48 Vdc - isolated, regulated (SELV)
- Power: 330 W - over entire input voltage range
- Isolated AC-DC converter with active Power Factor Correction (PFC)
- Integrated rectification, filtering and transient protection
- Peak efficiency: >92%
- EN55022, Class B EMI conducted emissions with a few components
- EN61000-3-2 harmonic limits
- -55 to 100°C baseplate operation

Features

- Compact and robust package
  - Low profile, 9.55 mm height above board
  - Small footprint, size of a business card
  - Flanged aluminum package for secure mounting and thermal management
- Efficiency
  - Consistent high efficiency across the worldwide mains (flat efficiency curve)
  - Reduced power loss and cooling requirements
- Integrated solution streamlines design, reduces time to market
  - Module includes PFC, regulation, isolated 48 V output (SELV), filtering, rectification, transient protection, agency approvals, simplified thermal management
  - Simple design, requires few external components
- Full feature module with high power density
  - Module power density, 121 W/in³
  - Complete solution including hold-up capacitors, 54 W/in³

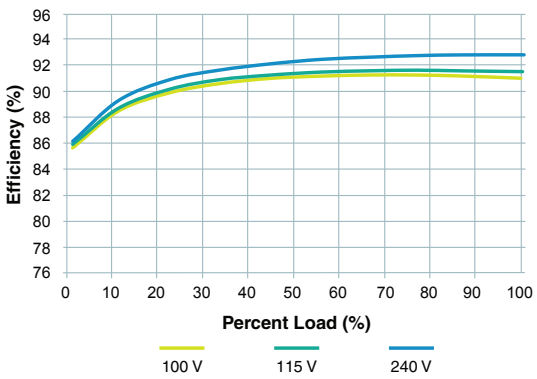
Basic Application



Part Number	Input Voltage	Output Voltage	Output Power	Operating Temperature
FE175D480C033FP-00	85 – 264 Vac	48 Vdc	330 W	-20 to 100°C
FE175D480T033FP-00	85 – 264 Vac	48 Vdc	330 W	-40 to 100°C
FE175D480M033FP-00	85 – 264 Vac	48 Vdc	330 W	-55 to 100°C

Replace the "–00" suffix in the part number with "–CB" to order an evaluation board.

Consistent High Efficiency Over Line, Load, Temperature



Picor Cool-Power ZVS Buck Regulators

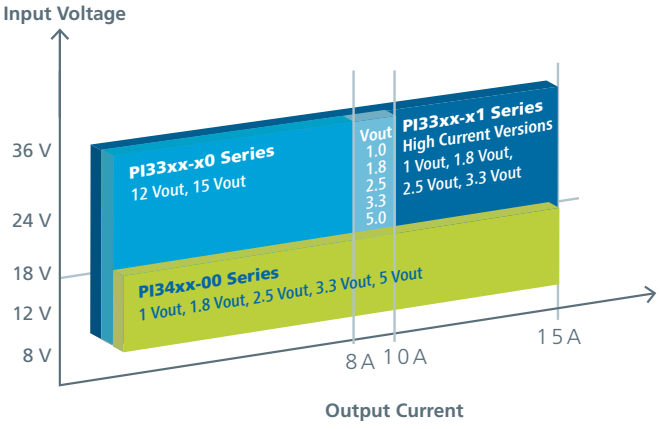
Wide Operating Range
- Wide Vin (8 – 36 V) and wide Vout (1 – 16 V)
- 12 V-optimized performance with PI34xx Series
- -40°C to 125°C operating range

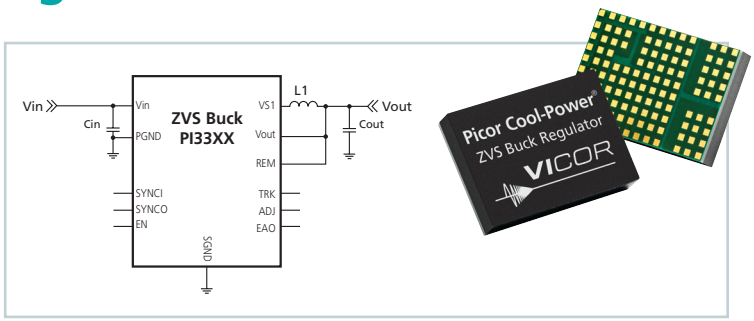
Simple to Use; Fast Development Time
- Internal compensation - few external components
- No additional design or additional settings required

High Efficiency
- >98% peak 19 Vin to 15 Vout
- >95% peak 36 Vin to 12 Vout
- >96% peak 24 Vin to 12 Vout
- >95% peak 12 Vin to 5 Vout
- PI34xx Series optimized for 12 Vin with even higher efficiency
- Light and full load high-efficiency performance

Flexible and Rich Feature Set
- Paralleling and single wire current sharing
- Frequency synchronization
- User adjustable soft-start & tracking
- Power-up into pre-biased load
- Optional I²C functionality & programmability:
  - Vout margining
  - Fault reporting
  - Enable and SYNCI pin polarity
  - Phase delay (for interleaving multiple regulators)

Benefits of Zero-Voltage Switching Topology
- Reduces Q1 turn-on losses
- Reduces gate drive losses
- Reduces body diode conduction





Cool-Power Model Number	Output Range Set	Output Range Trim Range	I_{OUT} Max
PI3311-00-LGIZ	1.0 V	1.0 V to 1.4 V	10 A
PI3318-00-LGIZ	1.8 V	1.4 V to 2.0 V	10 A
PI3312-00-LGIZ	2.5 V	2.0 V to 3.1 V	10 A
PI3301-00-LGIZ	3.3 V	2.3 V to 4.1 V	10 A
PI3302-00-LGIZ	5.0 V	3.3 V to 6.5 V	10 A
PI3303-00-LGIZ	12 V	6.5 V to 13.0 V	8 A
PI3305-00-LGIZ	15 V	10.0 V to 16.0 V	8 A
Higher Current Versions			
PI3311-01-LGIZ	1.0 V	1.0 V to 1.4 V	15 A
PI3318-01-LGIZ	1.8 V	1.4 V to 2.0 V	15 A
PI3312-01-LGIZ	2.5 V	2.0 V to 3.1 V	15 A
PI3301-01-LGIZ	3.3 V	2.3 V to 4.1 V	15 A
I²C Functionality and Programmability			
PI3311-20-LGIZ	1.0 V	1.0 V to 1.4 V	10 A
PI3318-20-LGIZ	1.8 V	1.4 V to 2.0 V	10 A
PI3312-20-LGIZ	2.5 V	2.0 V to 3.1 V	10 A
PI3301-20-LGIZ	3.3 V	2.3 V to 4.1 V	10 A
PI3302-20-LGIZ	5.0 V	3.3 V to 6.5 V	10 A
PI3303-20-LGIZ	12 V	6.5 V to 13.0 V	8 A
PI3305-20-LGIZ	15 V	10.0 V to 16.0 V	8 A
PI3311-21-LGIZ	1.0 V	1.0 V to 1.4 V	15 A
PI3318-21-LGIZ	1.8 V	1.4 V to 2.0 V	15 A
PI3312-21-LGIZ	2.5 V	2.0 V to 3.1 V	15 A
PI3301-21-LGIZ	3.3 V	2.3 V to 4.1 V	15 A
12 V Optimized Option			
PI3420-00-LGIZ	1.0 V	1.0 V to 1.4 V	15 A
PI3421-00-LGIZ	1.8 V	1.4 V to 2.0 V	15 A
PI3422-00-LGIZ	2.5 V	2.0 V to 3.1 V	15 A
PI3423-00-LGIZ	3.3 V	2.3 V to 4.1 V	15 A
PI3424-00-LGIZ	5.0 V	3.3 V to 6.5 V	15 A

8 – 36 Vin

8 – 18 Vin

I²C is a trademark of NXP Semiconductors

DC-DC Non-Isolated Regulated Buck-Boost

VI Chip PRM Module

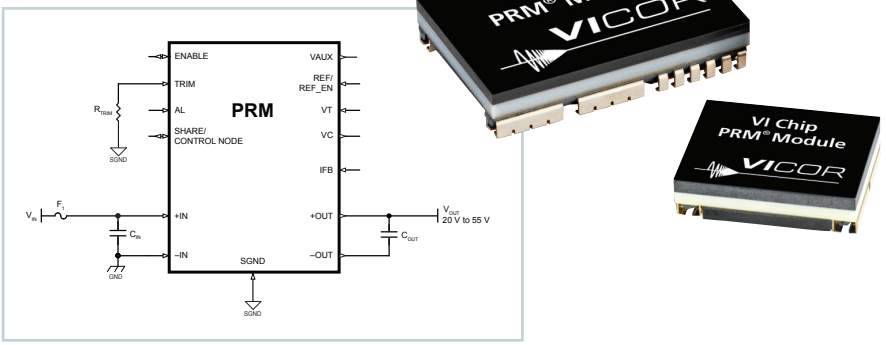
Simple to Use
- Point-of-load, Buck-Boost regulation
- Factorized Power Architecture
- Minimal external components

High Density
- Up to 1,700 W/in³, with 500 W in 1.1in² package

Wide Vin Optimized for 48 Vout
- 24 Vin, 18 – 36 Vin range
- 36 Vin, 18 – 60 Vin range
- 45 Vin, 38 – 55 Vin range
- 48 Vin, 36 – 75 Vin range

High Efficiency
- Full 500 W: 97.8%
- Half 250 W: 96.7%

Flexible
- Regulation: Remote sense, local loop, adaptive loop
- Parallel capabilities



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VIDEO
An Overview of Vicor's VI Chip PRM Module Capabilities
Ian Mazsa
Manager, VI Chip Product Line

PRM Modules Model Number	Input Voltage Nom. (V)	Input Voltage Range (V)	Output Voltage Voltage Range (V)	Output Power Max.	Output Current Max.	Package Size
P024F048T12AL	24 V	18 – 36 V	26 – 55 V	120 W	2.5 A	Full
P036F048T12AL	36 V	18 – 60 V	26 – 55 V	120 W	2.5 A	Full
P045F048T17AL	45 V	38 – 55 V	26 – 55 V	170 W	3.5 A	Full
P045F048T32AL	45 V	38 – 55 V	26 – 55 V	320 W	6.67 A	Full
P048F048T12AL	48 V	36 – 75 V	26 – 55 V	120 W	2.5 A	Full
P048F048T24AL	48 V	36 – 75 V	26 – 55 V	240 W	5.0 A	Full
PRM48BH480T200A00	48 V	38 – 55 V	5 – 55 V	200 W	4.17 A	Half
PRM48BF480T400A00	48 V	38 – 55 V	5 – 55 V	400 W	8.33 A	Full
PRM48AH480T200A00	**48 V**	**36 – 75 V**	**20 – 55 V**	**200 W**	**4.17 A**	**Half**
PRM48AF480T400A00	**48 V**	**36 – 75 V**	**20 – 55 V**	**400 W**	**8.33 A**	**Full**
PRM48BH480T250A00	**48 V**	**38 – 55 V**	**20 – 55 V**	**250 W**	**5.21 A**	**Half**
PRM48BF480T500A00	**48 V**	**38 – 55 V**	**20 – 55 V**	**500 W**	**10.42 A**	**Full**

These PRM modules can be further configured to meet your exact needs.

Go to vicorpower.com

Configure & Simulate

DC-DC Isolated Regulated Converter

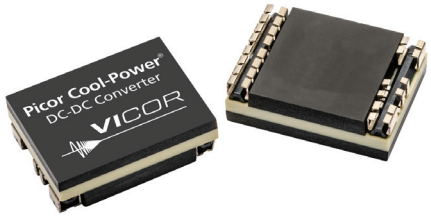
Picor Cool-Power DC Converter

Wide Operating Range
- 12 Vin optimized (8 – 18 V) and wide Vin (8 – 36 V)
- Wide Vout (1 – 16 V)
- -40°C to 125°C operating range

Simple to Use; Fast Development Time
- Internal compensation - few external components
- No additional design or additional settings required

High Efficiency
- >95% peak 36 Vin to 12 Vout
- >96% peak 24 Vin to 12 Vout
- >95% peak 12 Vin to 5 Vout
- Light load and full load high efficiency performance

Flexible and Rich Feature Set
- Paralleling and single wire current sharing
- Frequency synchronization
- User adjustable soft-start & tracking
- Power-up into pre-biased load
- Optional I²C functionality & programmability:
  - Vout margining
  - Fault reporting
  - Enable and SYNCI pin polarity
  - Phase delay (for interleaving multiple regulators)



Cool-Power	Input	Output Set	Output Range	I_{OUT}Max
Communications (-40°C to 125°C)				
PI3101-00-HVIZ	36 – 75 Vin	3.3 V	3.0 to 3.6 V	18 A
PI3105-00-HVIZ		12 V	9.6 to 13.2 V	5 A
PI3110-01-HVIZ	41 – 57 Vin	18 V	16.2 to 19.8 V	3.3 A
Industrial (-40°C to 125°C)				
PI3109-01-HVIZ	18 – 36 Vin	5 V	4.0 to 5.5 V	10 A
PI3106-01-HVIZ		12 V	9.6 to 13.2 V	4.2 A
M-Grade (-55°C to 125°C)				
PI3109-00-HVMZ	16 – 50 Vin	5 V	4.0 to 5.5 V	10 A
PI3106-00-HVMZ		12 V	9.6 to 13.2 V	4.2 A
PI3111-00-HVMZ		15 V	12 to 16.5 V	3.3 A

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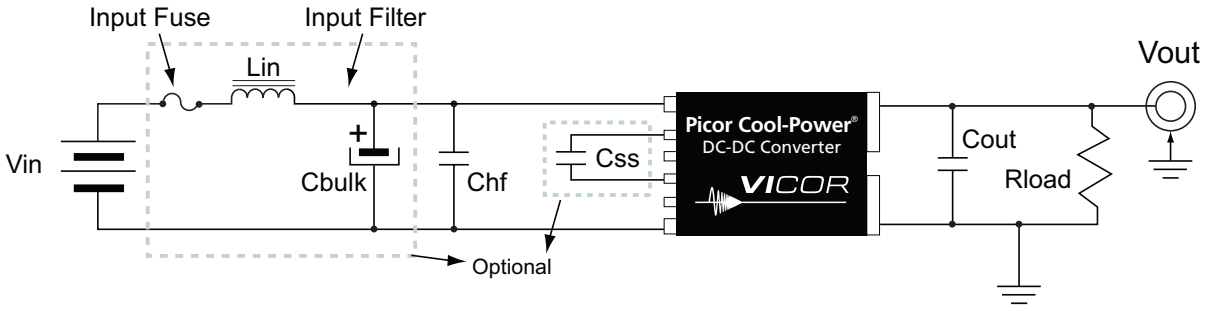
VIDEO
An Introduction to Vicor's Cool-Power ZVS DC-DC Converter
Robert Gendron, Vice President
Picor Semiconductor Power Solutions

Basic Application



Introducing... The Growing ChiP Lineup

"Converter housed in Package" Technology

American Technology Awards • 2013 WINNER • TechAmerica Foundation

23mm

Enabling Our Customers' Competitive Advantage

At Vicor, we enable customers to efficiently convert and manage power from the wall plug to point of load.

We master the entire power chain with the most comprehensive portfolio of high efficiency, high-density, power distribution architectures addressing a broad range performance-critical applications.

Vicor's holistic approach gives power system architects the flexibility to choose from modular, plug-and-play components ranging from bricks to semiconductor-centric solutions.

By integrating our world-class manufacturing and applications development, we can quickly customize our power components to meet your unique power system needs.

Focus Performance-Centric Markets / Applications

Communications

- 400 VDC Power Distribution
- Datacom
- Netcom
- Telecom Infrastructure

Computing

- Data Centers
- High Performance Computing
- Network Servers

Industrial

- ATE
- Lighting
- Process Control
- Transportation

Automotive

- Electric Vehicles
- Hybrid Vehicles

Defense/Aerospace

- Aircraft Test Equipment
- Ground Vehicles
- Radar
- Telemetry
- Unmanned Vehicles

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