

# PI31xx Series

## High Density Isolated DC-DC Converters

### Description

The PI31xx is a family of high density, isolated DC-DC Zero-Voltage Switching (ZVS) converter modules integrating controller, power switches, planar magnetics, and support components all within a high density surface-mount package. This complete solution utilizes a high performance ZVS topology enabling high switching frequencies and providing best in class power density. The high switching frequency reduces input and output filtering requirements, further decreasing size and cost of the overall solution.

These high density converter modules are offered in three input voltage operating ranges; 48 Vin nominal for communication applications, 28 Vin nominal for rugged high temperature or M-Grade applications, and 24 Vin nominal for industrial applications. All PI31xx converters offer a similar function and feature set.

Fully equipped with a variety of programmable features, the PI31xx includes output voltage trimming, programmable soft-start capability, and remote on /off ENABLE. There is also a temperature monitor function providing an analog output voltage proportional to the internal module temperature.

The PI31xx is self-protected against fault conditions including: input over-voltage, under-voltage lockout, over-temperature, and output over-voltage protection. A constant current limit threshold is employed to protect against short circuit and overload conditions. All fault conditions have an auto-restart function.

### Features

- Complete isolated DC-DC with Zero Voltage Switching Module
- 50 W / 60 W output power (dependent upon converter model)
- Efficiency up to 89% (dependent upon converter model)
- Output voltage sensing without opto coupler use for higher reliability
- Three input voltage ranges for Communication, Industrial, Rugged/M-Grade Applications
- Communication Converters have Max peak input voltage of 100V/100ms (non-operating)
- Surface Mount 0.87" x 0.65" x 0.265" high density package
- 900kHz switching frequency, minimizes input filtering and reduces output capacitance
- On/Off Control, positive logic ENABLE
- Wide trim range +10/-20% Trim
- Temperature Monitor (TM) & Over-Temperature Protection (OTP)
- Input UVLO & OVLO and output OVP
- Over current protection with auto restart
- Adjustable soft-start
- 2,250 V input to output isolation

| Cool-Power                      | Input       | Output Set | Output Range   | I <sub>OUT</sub> 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                |

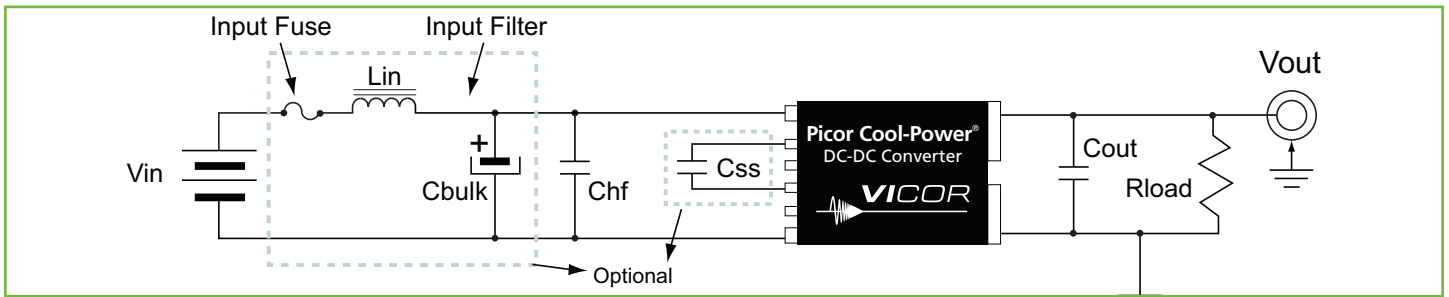
### Applications

Networking  
Industrial  
Rugged Defense Applications  
Space Constrained System  
Isolated, Board-level Power

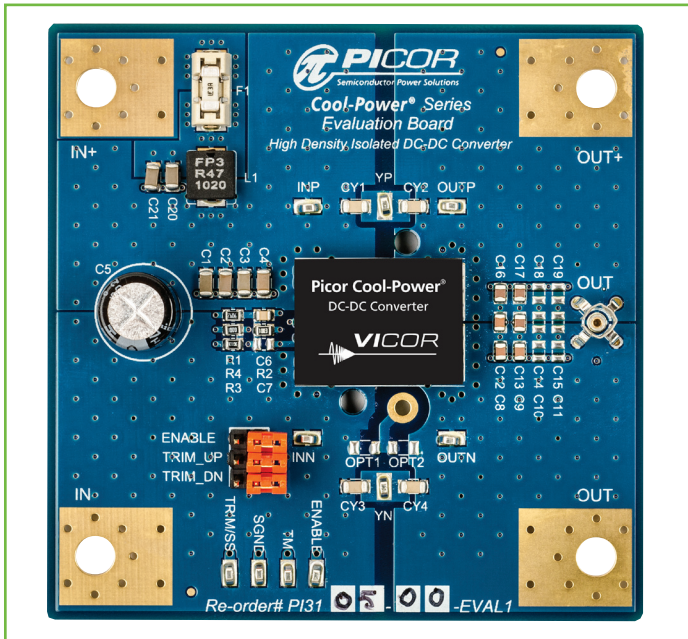


Thermally Enhanced, Surface-Mount  
Power-System-in-Package (PSiP)  
0.87" x 0.65" x 0.265"  
22 mm x 16.5 mm x 6.7 mm

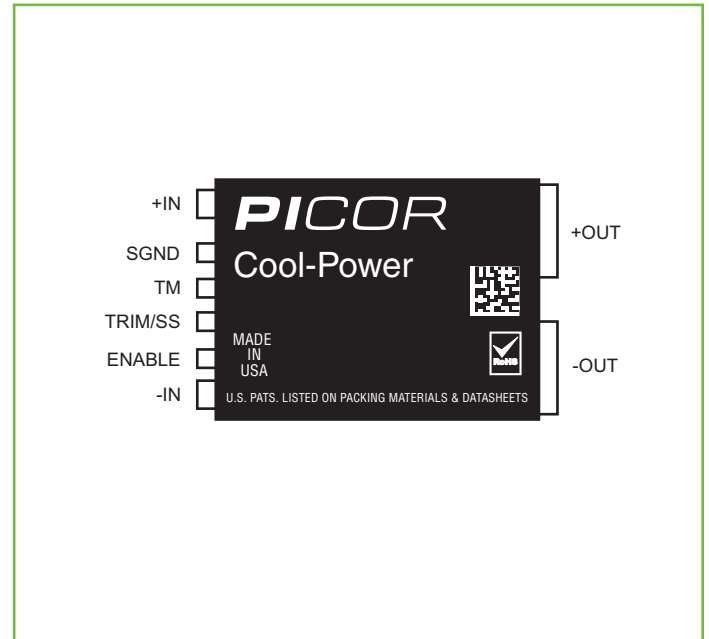
## Typical Application



## Evaluation Board, PI31xx-xx-EVAL1



## Package Pinout



## Product Outline Drawing

