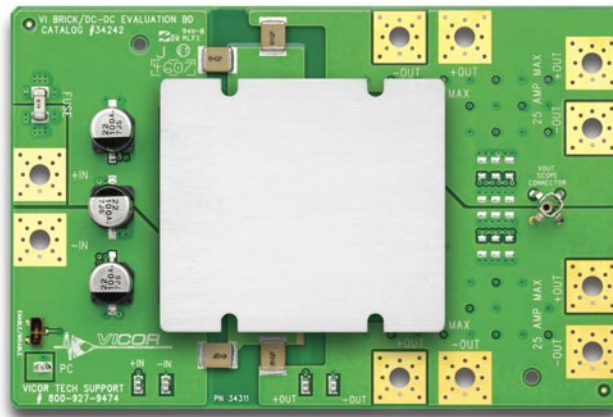


VI BRICK DC-DC™ Converter Evaluation Board

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Features

- Oscilloscope probe jack for output voltage and ripple measurements
- Simple to use
- Ring lug or solder connections



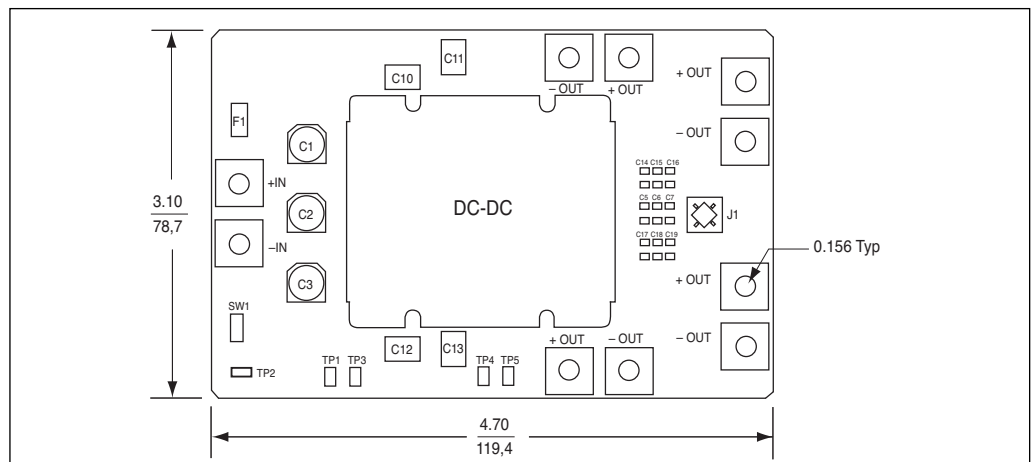
Introduction

The VI BRICK Evaluation Board offers a convenient means to evaluate the performance of Vicor’s VI BRICK DC-DC Converter and has been optimized for user convenience. Refer to the appropriate DC-DC Converter data sheet for performance and operating limits. The data sheets are available for downloading at [vicorpower.com/documents/datasheets/vibrick/VI BRICK DC-DC.pdf](http://vicorpower.com/documents/datasheets/vibrick/VI_BRICK_DC-DC.pdf).

It is important to remember the fast response of most DC-DC Converters can readily show the limitations of the source, load, and associated wiring connected to the evaluation board. Care should be exercised to minimize stray source and load impedances in order to fully exercise the converter.

Please refer to *Figure 1* for locations of the input and output connections as viewed from the component side. Wires may be soldered directly to the pads instead of ring lugs if desired to minimize circuit impedances.

Figure 1
VI BRICK DC-DC Converter
Evaluation Board layout
and dimensional drawing,
component side.



Set Up

The Customer Evaluation Board should be set up as follows:

Note: Care should be taken to avoid reversing polarities if connecting to the opposite (solder) side of the board.

+ IN, – IN

Connect a high-quality, low-noise power supply to the +IN and –IN terminals of the evaluation board. The interconnect leads should be heavy gauge and as short as possible. The evaluation board comes with three 22 μF input capacitors. Additional capacitance may have to be added to make up for impedances in the interconnect leads as well as deficiencies in the source. Test points 3 (–IN) and 1 (+IN) can be used to monitor the input and are located on the PCB adjacent to the input terminals.

+ OUT, – OUT

The output terminals of the evaluation board are interleaved to reduce inductance. An electronic or passive load should be connected to +OUT and –OUT terminals of the evaluation board with short heavy-gauge leads. A sufficient number of terminal connections should be used to ensure that no terminal sees more than its maximum rated current (25 A). Most commercially available electronic loads do not have current slew rates capable of fully exercising the converter. The evaluation board can be connected directly to the application for which the DC-DC converter is intended. However the interconnect impedances between the evaluation board and the application can greatly affect the transient response. For applications where transient response is critical, the user should consider mounting the VI BRICK DC-DC Converter directly to the target application PCB. Test points 5 (–OUT) and 4 (+OUT) can be used to monitor the output and are located on the PCB adjacent to the output terminals.

Output Voltage Measurement Jack (J1)

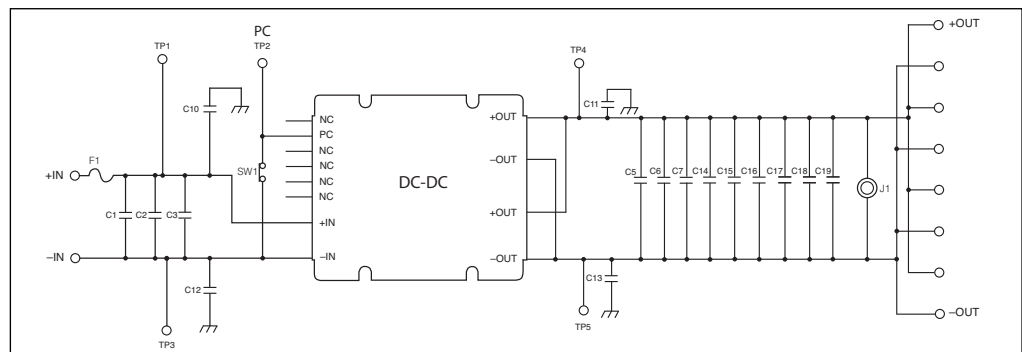
This connector is provided to make accurate measurements of the output ripple voltage of the VI BRICK DC-DC Converter. Many types of scope probes may be directly connected to this point if the probe is equipped with a removable plastic sheath. To avoid creating ground loops when making measurements of the output or input voltage, these measurements should be made separately.

Output capacitors (C5 - C19) are included to reduce voltage ripple. Their values are based on output voltage as shown in Table 1.

	Vout ≥ 24 V	24 V > Vout ≥ 6 V	Vout < 6 V
Total Output Capacitance	8 μF	80 μF	367 μF

Table 1 Evaluation Board Output Capacitor Values

Figure 2
VI BRICK DC-DC Converter
Evaluation Board schematic



Input Current Measurement

A current probe can be passed around the +IN lead connected to the VI BRICK DC-DC. Input capacitors on the evaluation board are downstream of this measurement point.

Primary Control (PC)

The PC pin can be used to disable the VI BRICK DC-DC Converter and monitor status

- a.) Connecting PC to the –IN will disable the DC-DC Converter.
- b.) Connecting a DVM or oscilloscope between PC (positive) and –IN (negative) will indicate the status of the DC-DC Converter. **NOTE:** That the PC pin of the DC-DC Converter does not have active current sinking capability.

Efficiency Measurement

As the VI BRICK DC-DC Converter can deliver and consume large currents, the effect of the PCB must be considered when making an efficiency measurement. Be certain to accurately measure the voltage directly at the DC-DC Converter using the appropriate pair of test points located at the side of the converter.

Recommended Hardware

The hardware kit provided with the evaluation board includes the following:

10	#6 internal tooth lock washers
10	#6 external tooth lock washers
10	Brass #6-32 screws
4	Rubber feet
10	Brass #6-32 hex nuts
4	F-F standoffs
8	M3 x 5 mm screws

Ring lugs are also recommended for making input and output connections.

Thermals

For most lab environments a fan blowing across the evaluation board is recommended.

See VI BRICK Thermal Management Application Note at:

vicorpower.com/documents/application_notes/AN_Vibrick%20%20thermManage.pdf

or contact Vicor Applications Engineering for assistance (800) 927-9474.

Caution

The VI BRICK DC-DC Converter Evaluation Board can comfortably operate at surface temperatures which may pose a thermal hazard to the operator. Be careful not to touch any exposed surface. The evaluation board is not intended for use in end item equipment.

Ordering Information

The evaluation board is specified by suffixing “–CB” to the appropriate VI BRICK DC-DC

Converter model number. See: vicorpower.com/documents/datasheets/vibrick/vi_brick_dc-dc.pdf

for model selection.