

Quick Start Guide

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TDINV1000P100_0v1
For evaluation purposes only

Design files and more at
transphormusa.com/pv1kit

TDINV1000P100_0v1

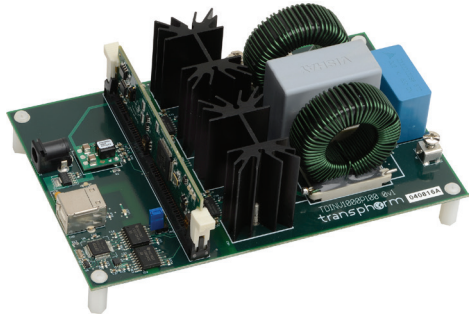
Evaluation Platform
1kW inverter

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Highest Performance, Highest Reliability GaN

Equipment Needed

- ➔ The TDINV1000P100_Ov1 board
- ➔ Texas Instruments F28035 control card (included)
- ➔ Low-voltage DC power supply for auxiliary voltage
 - 9V power supply (included)
 - PN: VEL05US090-US-JA
- ➔ High-voltage DC power supply
 - 400V maximum
 - 1kW capable
- ➔ Resistor or e-load good for 240V_{AC}/1kW
 - Must be isolated from high voltage DC power supply
- ➔ Firmware for programming and advanced configuration (included)



Cautions and Warnings

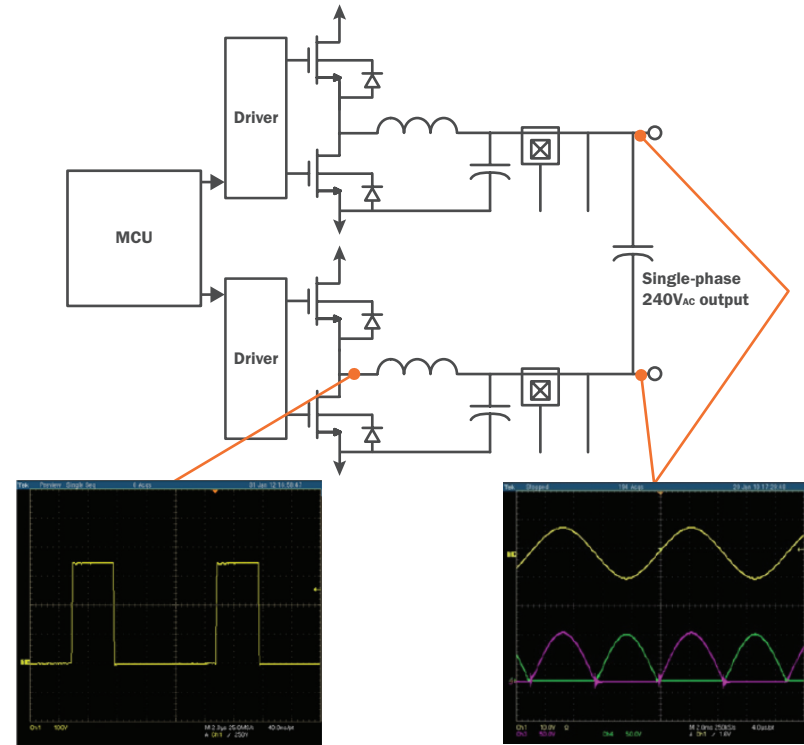


This evaluation board is intended to demonstrate GaN FET technology and is for demonstration purposes only and no guarantees are made for standards compliance.

There are areas of this evaluation board that have exposed access to hazardous high voltage levels. Exercise caution to avoid contact with those voltages. Also note that the evaluation board may retain high voltage temporarily after input power has been removed. Exercise caution when handling.

When testing converters on an evaluation board, ensure adequate cooling. Apply cooling air with a fan blowing across the converter or across a heatsink attached to the converter. Monitor the converter temperature to ensure it does not exceed the maximum rated per the datasheet specification.

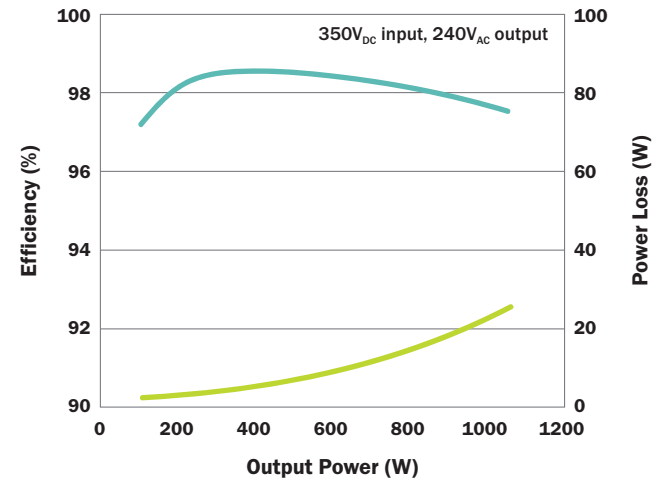
Typical Waveforms with Stock Firmware



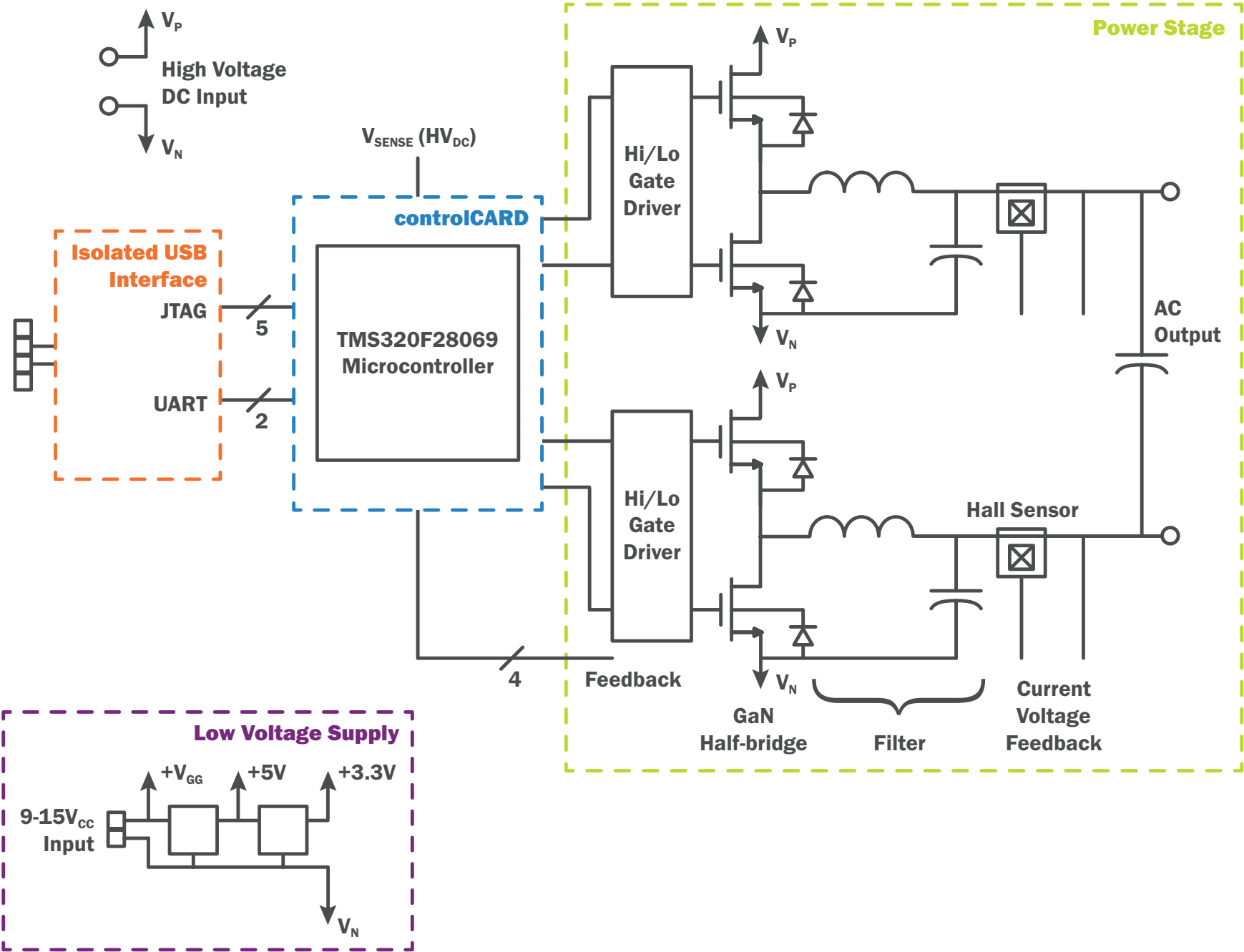
100kHz switching waveform

Yellow: Load current using current probe; Green and Purple: Phase output voltages with respect to higher voltage (-) input

Typical Performance Curves

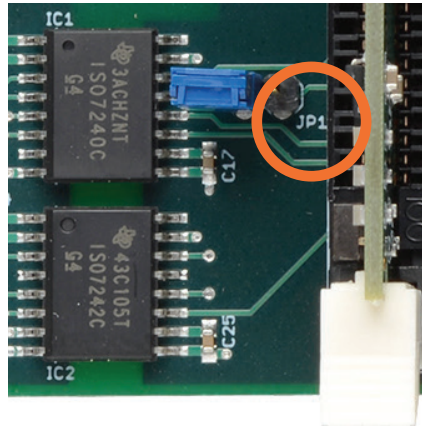


Circuit Diagram

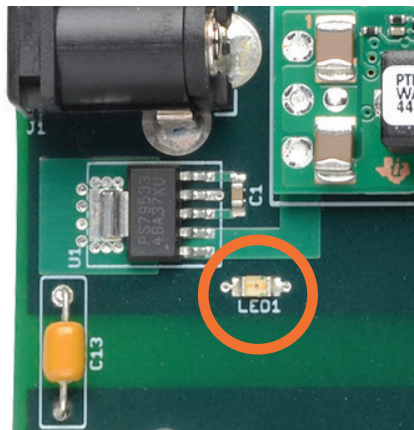


Step 2: Power-up the Board

- 1 Insert the control card and verify that JP1 is removed. This releases the JTAG port and allows the microcontroller to boot from flash. For communication with a host over the JTAG port, JP1 should be installed.
- 2 With the supply turned off, connect the high-voltage power supply to the +/- inputs. If a load is being used, connect it to the output terminals.



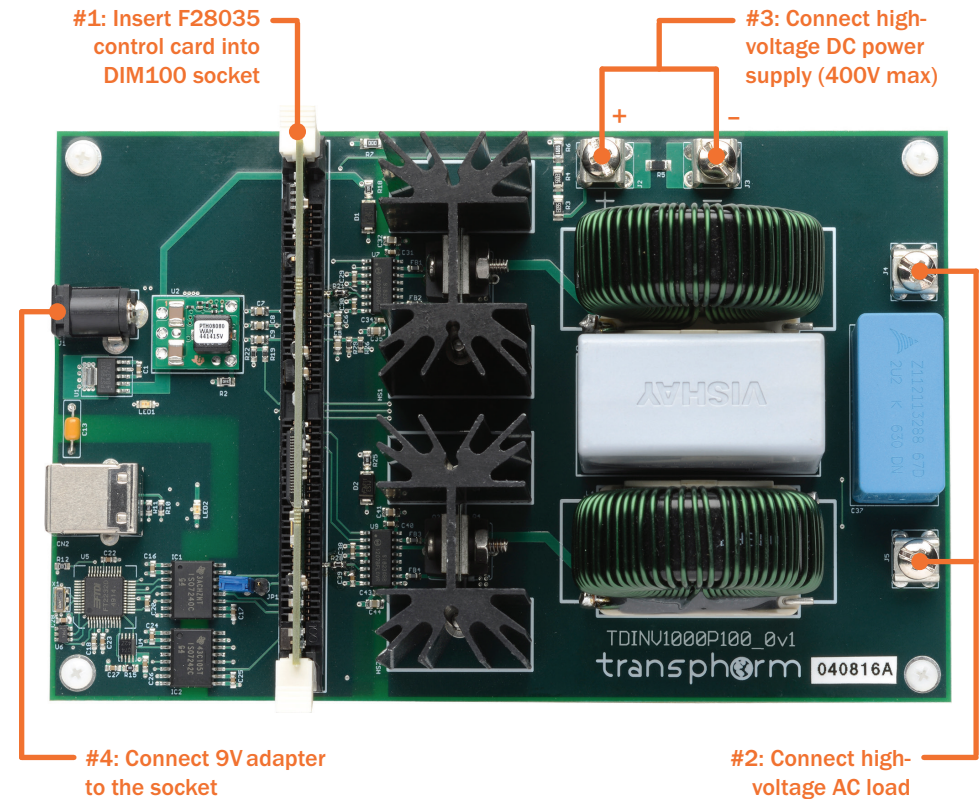
- 3 Insert the 9V plug. LED1 should illuminate, indicating power is applied to the 5V and 3.3V regulators. A flashing LED indicates the firmware is executing.
- 4 Turn on the high-voltage power. The high-voltage supply may be switched on instantly or raised gradually.



Note:

Normal operation is 350V_{DC} (in) and 240V_{AC} (out) at 100kHz. Monitor the output voltage waveforms—see Typical Waveforms with Stock Firmware on page 6.

Step 1: Connect the Board



Note:

DO NOT apply too much force to the J2, J3, J4 and J5 connectors, as excessive force may bend and/or crack the PCB.