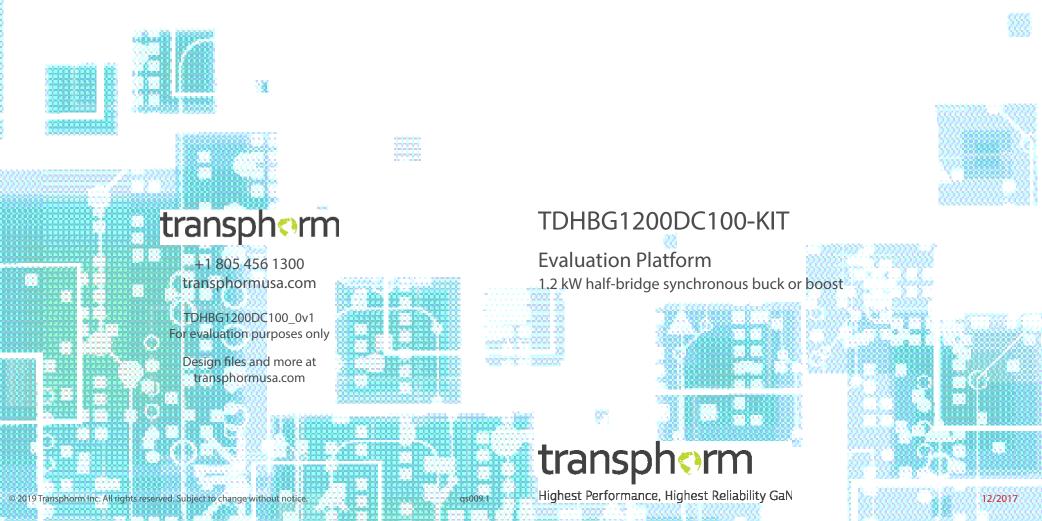
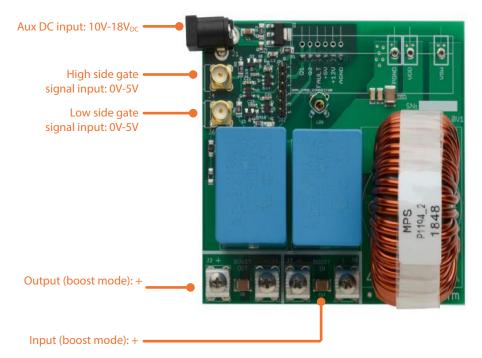
Quick Start Guide



Equipment Needed

- TDHBG1200DC100_0v1 board
- TDHB-65H070L-DC daughter card
- High-voltage DC power supply for input/output
 - 400V_{DC} maximum
 - 1.2kW maximum
- Low-voltage DC power supply for auxiliary voltage
 - 10V min, 18V max
- Pulse generator or direct gate driver for logic inputs
 - Nominal 0V to 5V
 - Typical frequency is 100kHz; other frequencies may require a different inductor
 - SMA coaxial connectors

Step 1: Connect the Board



Step 4: Power-up the Board

- The TDHBG1200DC100 board can deliver 1200W with forced air cooling when configured as
 - 200V to 400V boost, 100kHz, or
 - 400V to 200V buck, 100kHz
- Different input/output voltage and power can be chosen, however
 - Input/output voltage should not exceed 400V
 - In each GaN FET, the rms current should not exceed 7A
 - Users should monitor the device temperature to make sure they are not being overheated by excessive power during the test
- Driver deadtime is preset to 120ns for typical operation and can be adjusted for different operating conditions; please refer to the TDHBG1200DC100 User Guide for a detailed description

Typical Efficiency for a Boost 200V:400V Converter

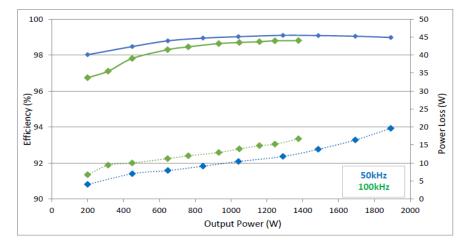
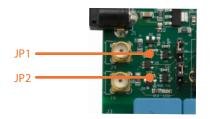


Figure 11. Efficiency for a boost 200V:400V converter

Warning:

Inductor is designed for 100kHz operation; a different inductor may be needed for a different frequency. Please refer to the TDHBG1200DC100 User Guide.

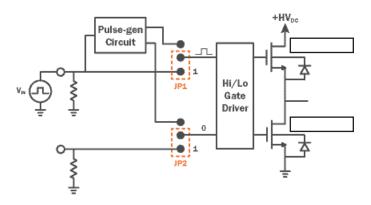
Step 2: Set the Jumpers



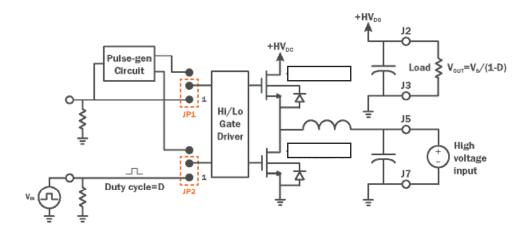
Warning:

During non-synchronous operation, the freewheeling diode will get hot resulting in decreased efficiency.

3. Buck mode without synchronous rectification (not recommended)

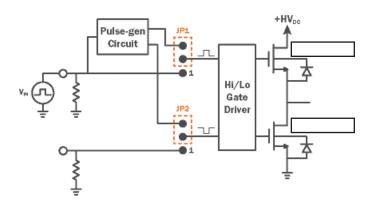


4. Boost mode without synchronous rectification (not recommended)

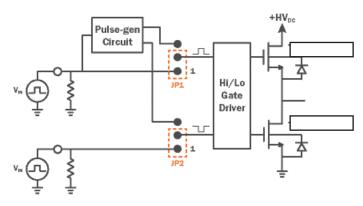


Jumper Positions

1. Using single source for either buck or boost mode using synchronous rectification



2. Using two single sources with synchronous rectification



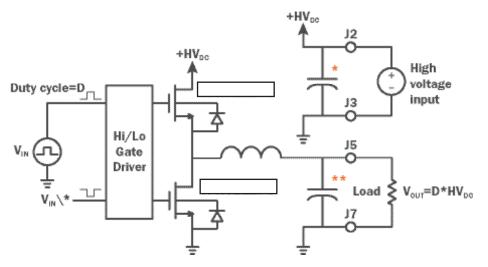
Step 3: Attach Probes

Connect in Buck and Boost Modes

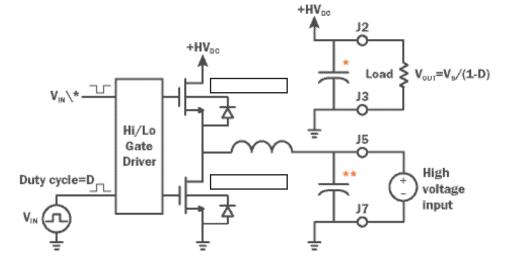
Warning:

Driver deadtime is preset to 120ns for typical operation and can be adjusted for different operating conditions. Please refer to the TDHBG2500P100 User Guide.

Low side V_{DS} test point 0 0 11 J3 Input (buck mode): a J2 Output (boost mode): + J7 J5 Output (buck mode): -Input (boost mode): + Buck Mode



Boost Mode



* 450V low ESR electrolytic capacitor capable of 7Arms ripple current

** 450V low ESR electrolytic capacitor capable of 2Arms ripple current