User's Guide
Three-phase Brushless DC Motor Gate Driver
BD6787xMWV-Z-EVK

＜High Voltage Safety Precautions＞

◇ Read all safety precautions before use

Please note that this document covers only the BD6787xMWV-Z evaluation board (BD6787xMWV-EVK) and its functions. For additional information, please refer to the datasheet.

To ensure safe operation, please carefully read all precautions before handling the evaluation board

Depending on the configuration of the board and voltages used,

Potentially lethal voltages may be generated.

Therefore, please make sure to read and observe all safety precautions described in the red box below.

Before Use

[1] Verify that the parts/components are not damaged or missing (i.e. due to the drops).
[2] Check that there are no conductive foreign objects on the board.
[3] Be careful when performing soldering on the module and/or evaluation board to ensure that solder splash does not occur.
[4] Check that there is no condensation or water droplets on the circuit board.

During Use

[5] Be careful to not allow conductive objects to come into contact with the board.
[6] **Brief accidental contact or even bringing your hand close to the board may result in discharge and lead to severe injury or death.**

Therefore, DO NOT touch the board with your bare hands or bring them too close to the board.
In addition, as mentioned above please exercise extreme caution when using conductive tools such as tweezers and screwdrivers.

[7] If used under conditions beyond its rated voltage, it may cause defects such as short-circuit or, depending on the circumstances, explosion or other permanent damages.
[8] Be sure to wear insulated gloves when handling is required during operation.

After Use

[9] The ROHM Evaluation Board contains the circuits which store the high voltage. Since it stores the charges even after the connected power circuits are cut, please discharge the electricity after using it, and please deal with it after confirming such electric discharge.
[10] Protect against electric shocks by wearing insulated gloves when handling.

This evaluation board is intended for use only in research and development facilities and should by handled **only by qualified personnel familiar with all safety and operating procedures.**
We recommend carrying out operation in a safe environment that includes the use of high voltage signage at all entrances, safety interlocks, and protective glasses.

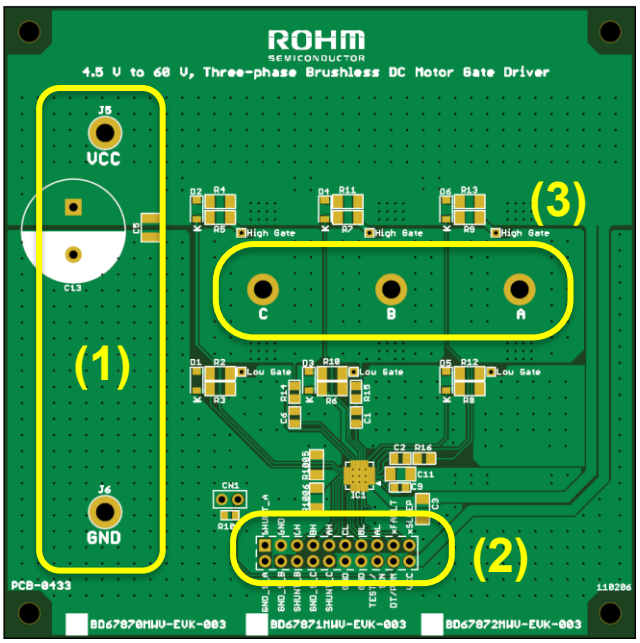
Three-phase Brushless DC Motor Gate Driver

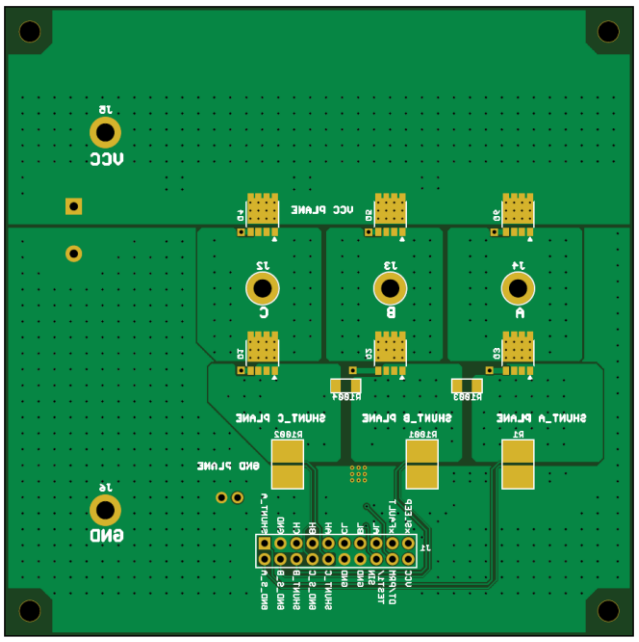
How to Use BD6787xMWV-Z for your design

In this User's Guide, we provide setup and useful information by using with our Evaluation Board "BD6787xMWV-EVK". This board covers our few types of gate driver line up. BD67870MWV, BD67872MWV (Voltage Type) and TriC3™ integrated BD67871MWV. For more detailed information, please see these links. (DataSheet BD67870MWV-Z, DataSheet BD67871MWV-Z, DataSheet BD67872MWV-Z, Gate Resistor Calculation Table)

Board Image

Below are the TOP and BOTTOM picture of EVK.





How to set up

1. Connecting to the Power Supply

   VCC is sourced to the Inverter's TOP voltage as well as Gate Driver. So please connect to the Battery or suitable power supply can be driven to the Motor enough. In addition, this voltage is connected to the 20 pins Connector at the bottom of the EVK.

2. Connecting to HOST CONTROLLER (e.g. MCU)

   Bottom side 20 pins connector is for the connection to the MCU, or any controller can output EN/IN or IN/IN type of PWM for 3 channels. Only BD67871MWV has UART type interface for setting the Gate current strength of MOSFET.

3. Connecting to the MOTOR

   A, B and C silks in the middle of PCB, must be connected to MOTOR. The MOSFETs of Inverter mounted on the Bottom Side, please make sure the thermal related topics and please use a heat-sink if you need.

Drive Strength / Dead Time adjustments

Important topics for the Gate Driver are Gate-Driver-Strength settings and Dead Time Control.

1. Gate Drive Strength

BD67870(2)	Can be changed by resistor and Diode.
BD67871	Can be changed by UART control

2. Dead Time

BD67870(2)	Set by MCU side or by the resistor.
BD67871	Must be set as ZERO at MCU side

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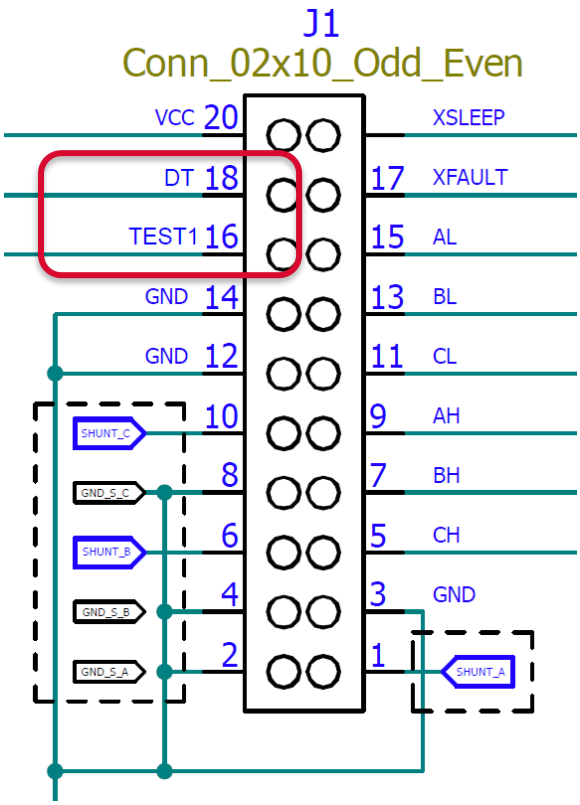
Host Controller connector

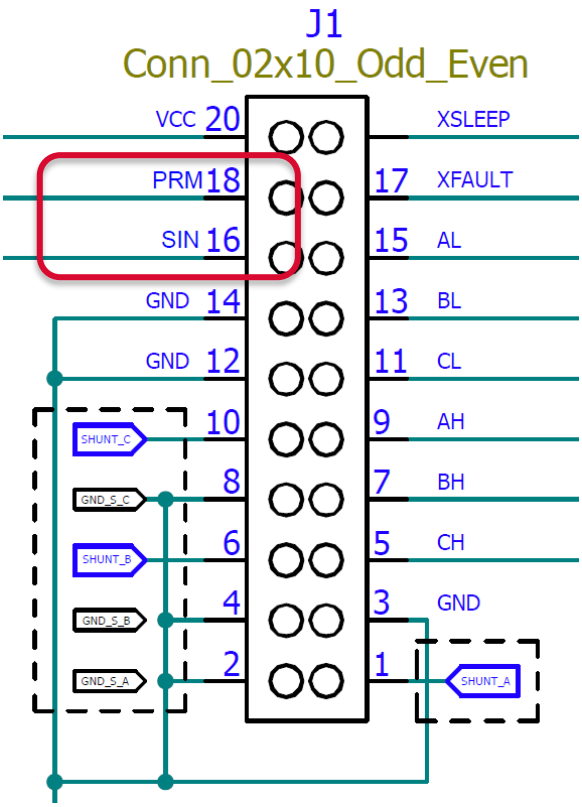
1. For BD67870MWV-Z or BD67872MWV-Z (Voltage Drive)



Please leave TEST1 and DT alone. Not to connect to MCU.

Please do not connect VCC(Pin20) to the MCU board power supply terminal because this is the High voltage for Inverter which is sourced from External power supply.

2. For BD67871MWV-Z (TriC3™ Current Drive)



If you don't use PRM (please refer to the Datasheet for more information), please leave it alone. SIN is the Half Duplex type UART terminal.

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