

Instruction Manual for Evaluation Board of The TB67H301FTG

July 22, 2016

Re v.1.0

【Outline】

The TB67H301FTG is a brushed DC motor driver corresponding to the constant current PWM control system and the direct PWM control system.

BiCD process is adopted. Ratings of 40V and 3.0A are realized.

This evaluation board mounts necessary components to evaluate the IC.

Brushed DC motor can be controlled by the direct PWM drive.

In case of controlling the brushed DC motor by the constant current PWM drive, please remove the short resistor (0Ω), which is mounted to R2. Then, replace the current detection resistor that is appropriate for the constant current PWM control.

Please sense controllability of a brushed DC motor by applying the TB67H301FTG.

【Note】

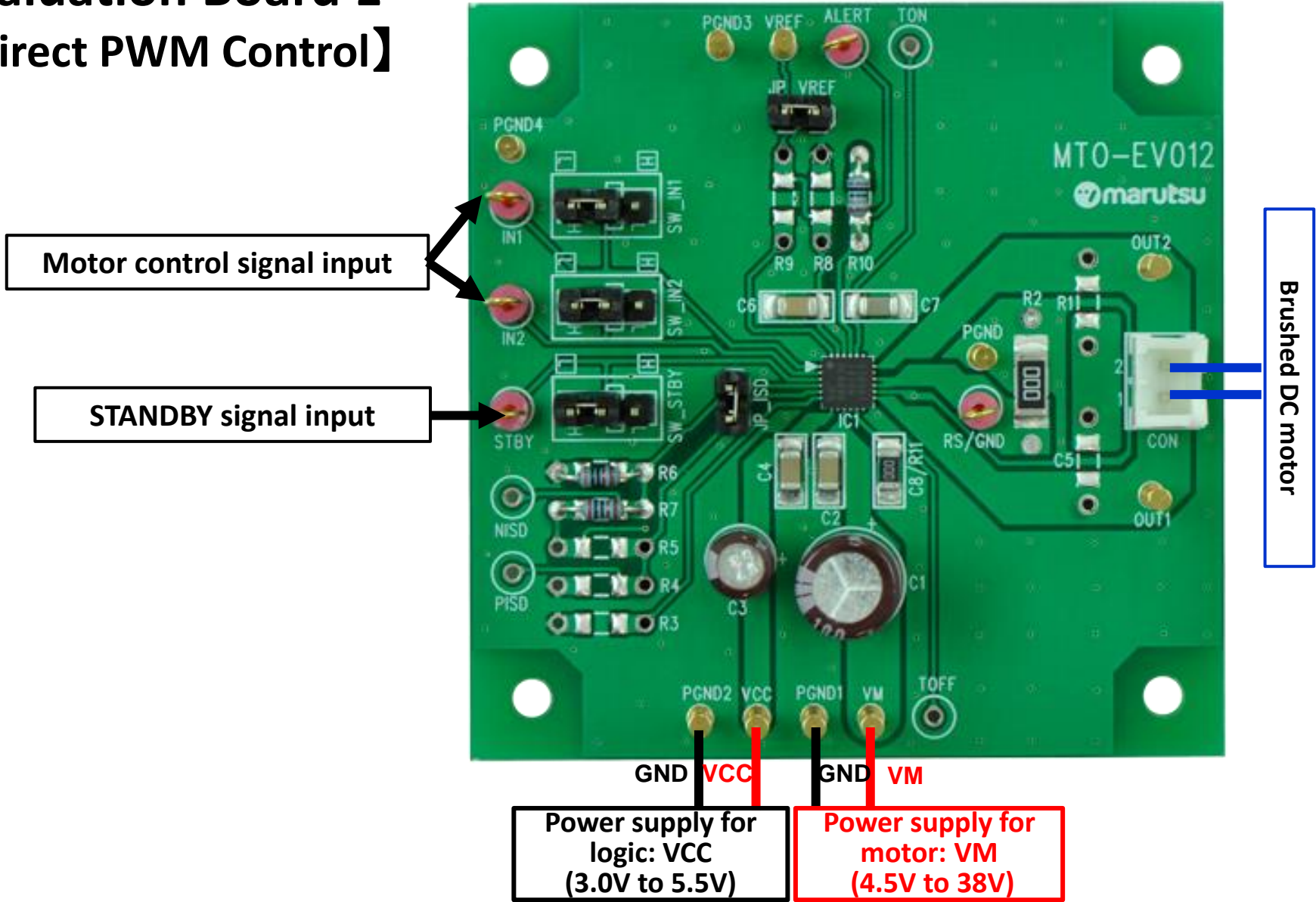
In using, please be careful about the thermal condition sufficiently.

For each control signal, please refer to the IC specifications by accessing to the following URL:

<http://toshiba.semicon-storage.com/ap-en/product/linear/motordriver/detail.TB67H301FTG.html>

Further, the application of this evaluation board is limited to the purpose of evaluating and learning the motor control. Please do not ship them to a market.

Connection to Evaluation Board 1 【Direct PWM Control】



Connection to Evaluation Board 2 【Constant Current PWM Control】

Reference voltage for
motor current set
Vref (0V to 0.5V)

In case of supplying Vref by
divided voltage from the voltage
of PSW, mount a voltage-divider
resistor.

Remove the jumper.

Motor control signal input

STANDBY signal input

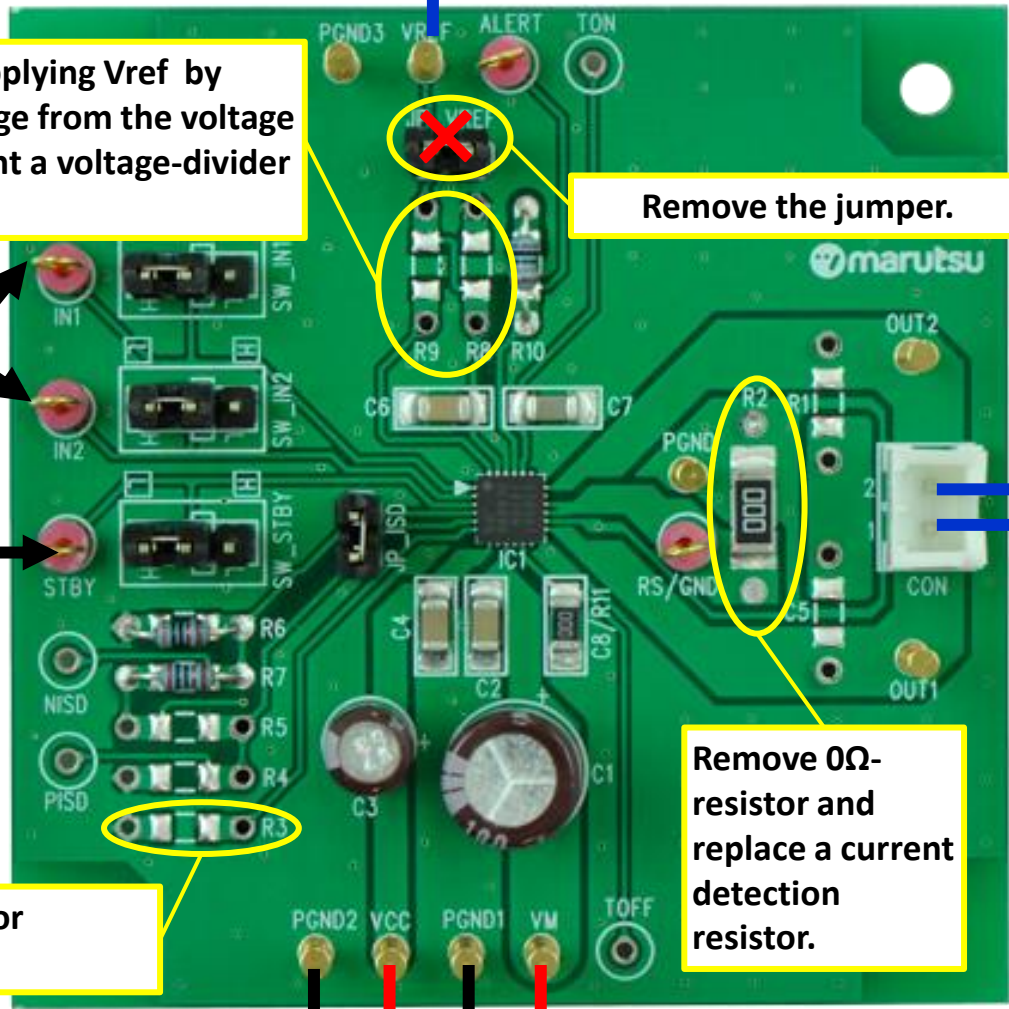
Brushed DC motor

Mount a resistor for
oscillator

Remove 0Ω-
resistor and
replace a current
detection
resistor.

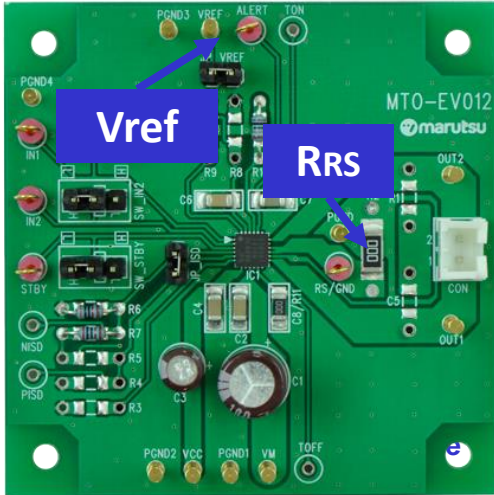
Power supply for
logic: VCC
(4.5V to 5.5V)

Power supply for
motor: VM
(4.5V to 38V)



Setting Evaluation Board 1

Setting motor current

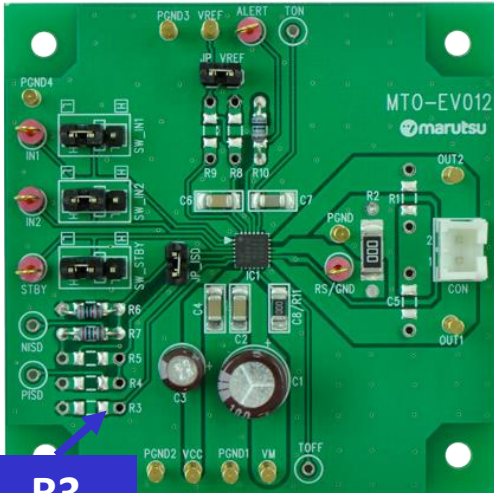


Setting motor current

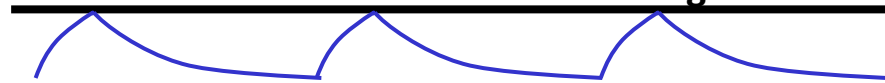
$$I_{out(max)} = \frac{V_{ref}(V)}{R_{RS}(\Omega)}$$

Current detection resistor should be remounted on the board because the resistor of RRS (0Ω) is mounted.

Setting discharge term of constant current control



Setting motor current

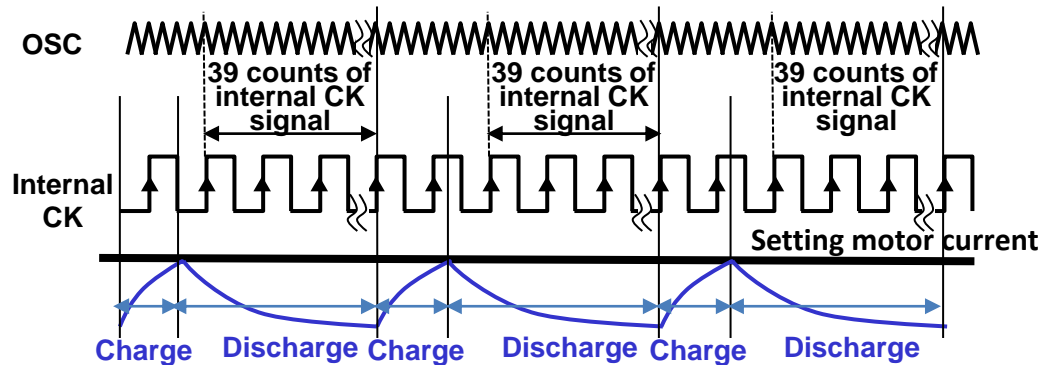


Setting formula of OSC frequency

$$f_{OSC}[\text{Hz}] = 24 \times 10^{10} / R_{OSC}$$

* It is adjusted by the resistor connected to R3.

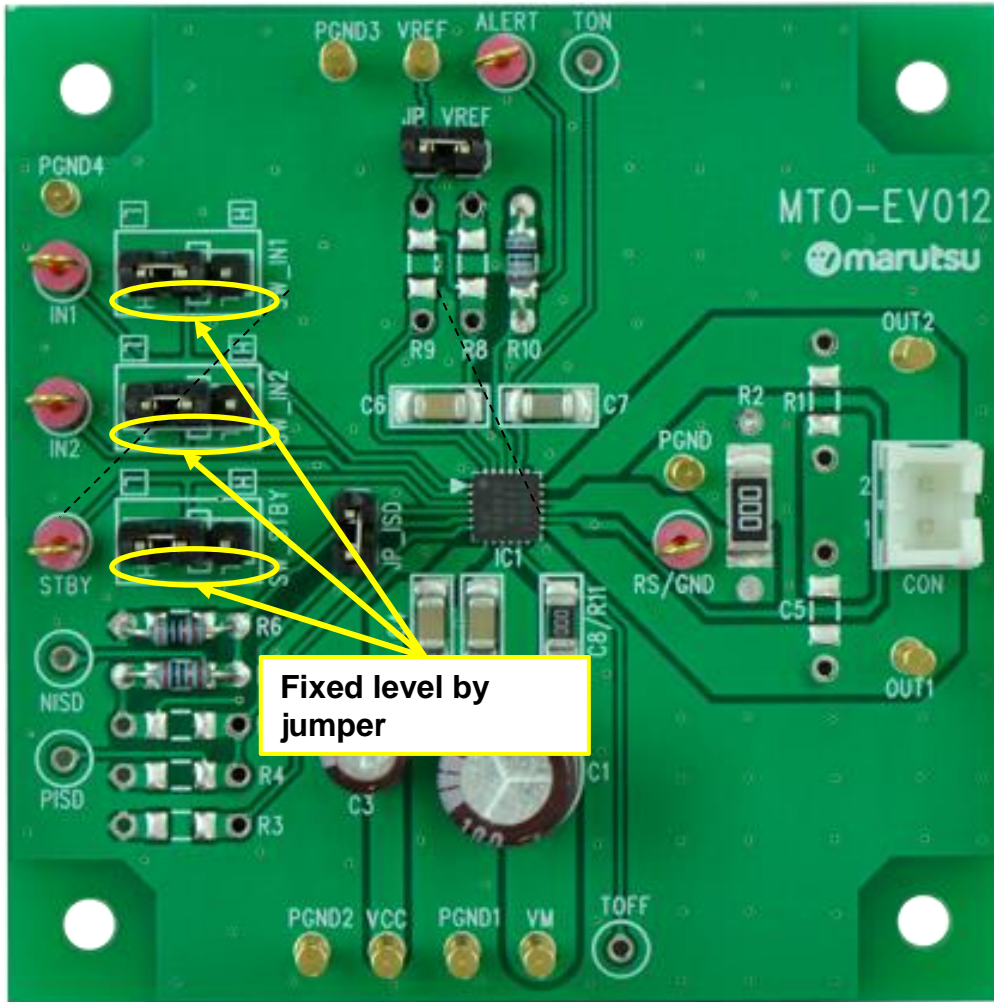
Relation of the motor current waveform and the discharge term.



R3

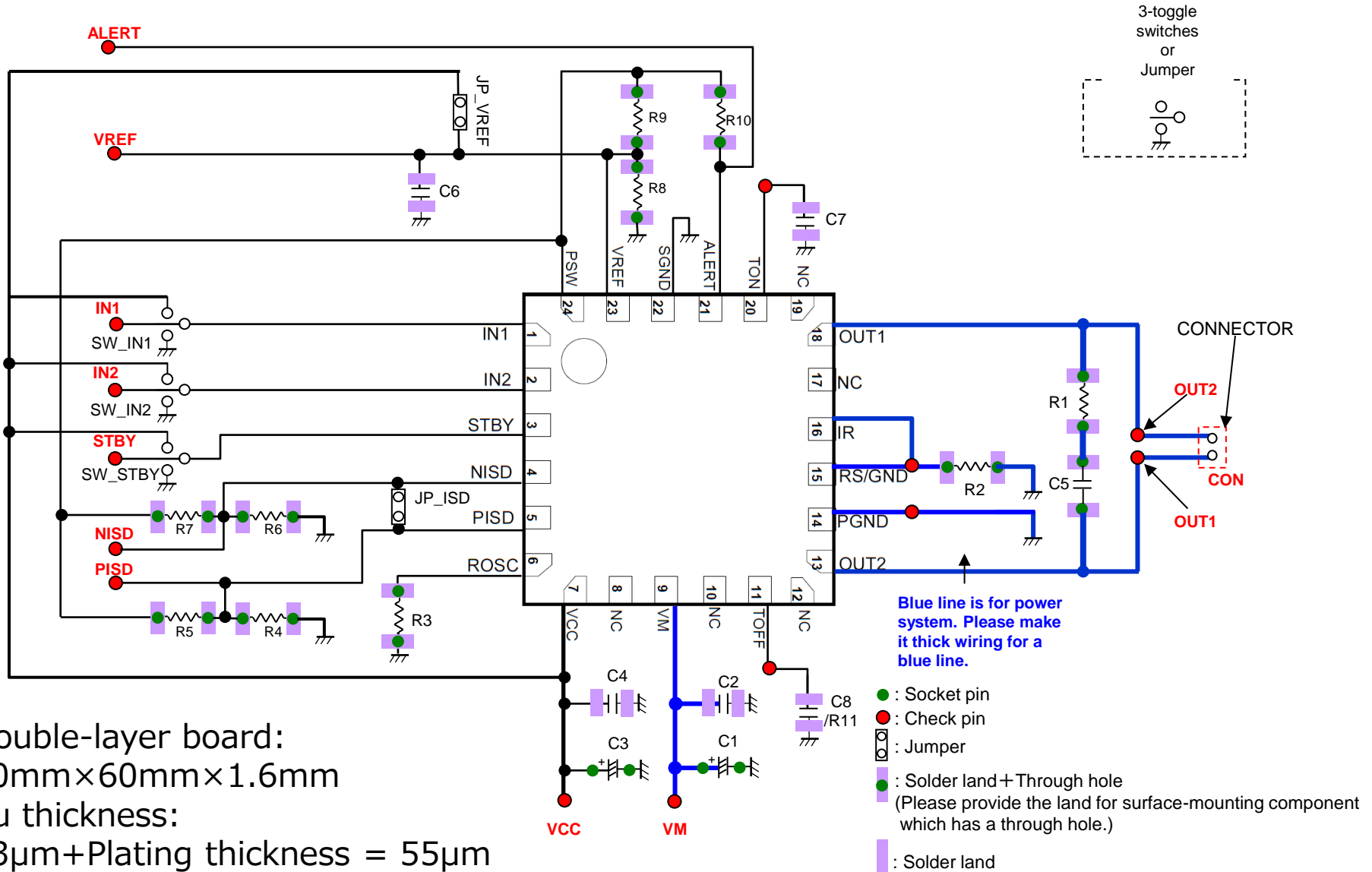
Setting Evaluation Board 2

Setting motor operation



Jumper indicated on the left is adopted on this evaluation board to set operation of the TB67H301FTG. In the left figure, fixed level of the silk near the jumper is indicated inside the white frame. Please change the short position according to the configuration of the usage function. In case of inputting the signal externally, please remove the short pin.

Circuit of Evaluation Board



Double-layer board:
 60mm×60mm×1.6mm
 Cu thickness:
 33μm+Plating thickness = 55μm