

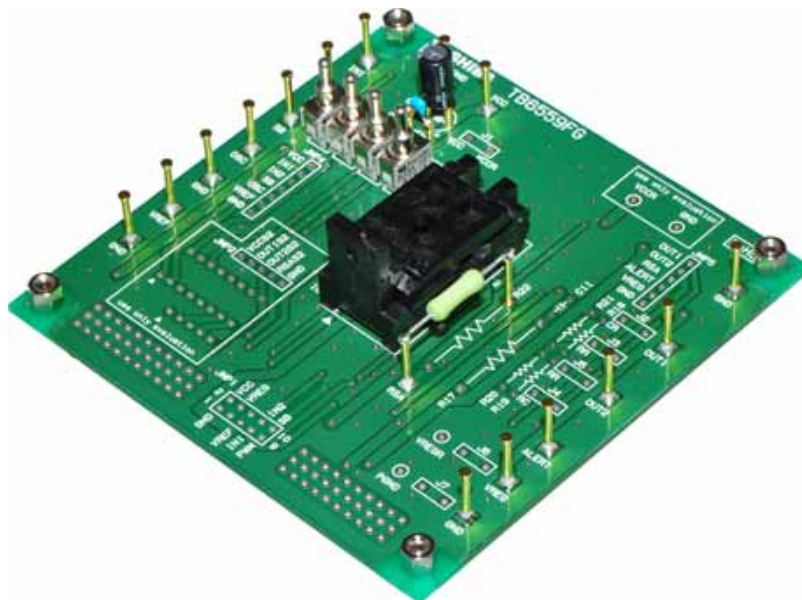
# TB6559FG Evaluation Board

## Introduction

TB6559FG is a full-bridge driver IC for DC motor with low ON-resistance and allows for Constant current or Direct PWM control. TB6559FG evaluation board containing a TB6559FG sample and four SPTT switches helps you to evaluate TB6559FG features. Giving power supply, the evaluation board can drive a motor immediately, and the four SPTT switches can be used to select the various operating modes of the IC.

## Features

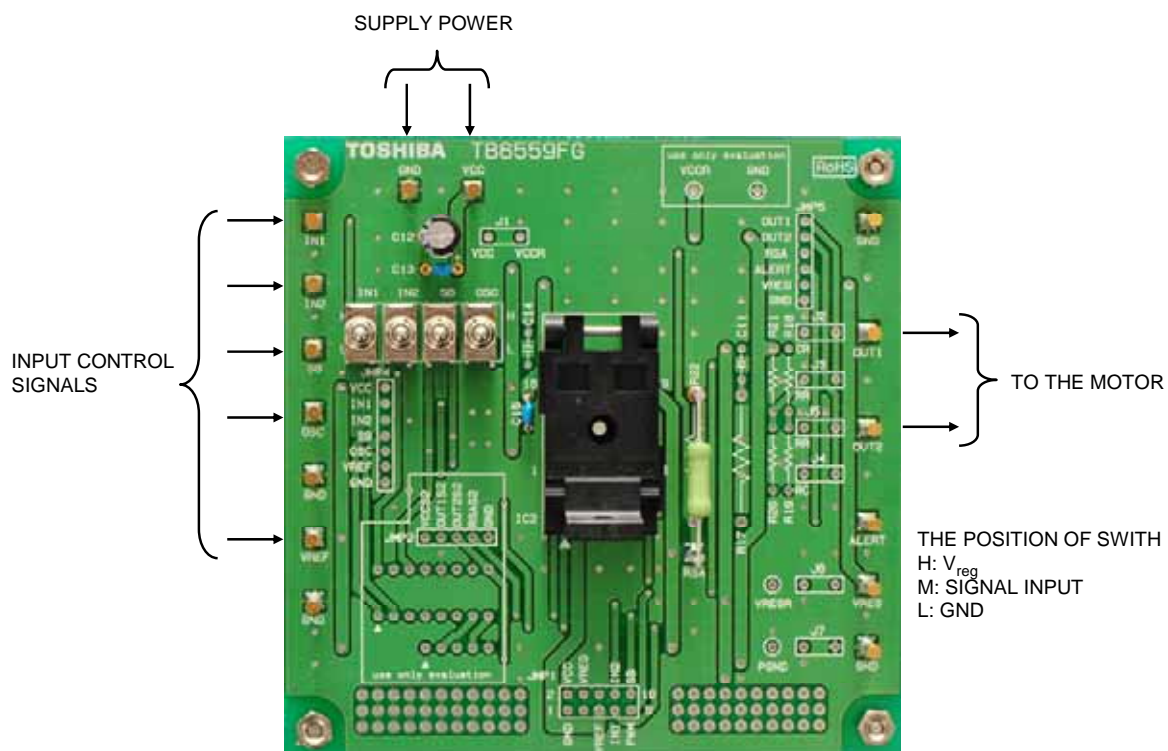
- TB6559FG motor driver IC
- Power supply ranged from 10V to 27V
- Max 2.5A(Peak), 1A(Ave) current output
- SPTT switch IN1, IN2, SB, and PWM/OSC



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# 1 How to use



## 1.1 Power supply

### 1.1.1 Vcc

Please supply voltage to TB6559FG through Vcc pin.  
 The operating supply voltage of Vcc must be within the range between 10 V and 27 V.

### 1.1.2 Power On/Off Sequence

In powering on and shutting down, SB should be set to low level (standby mode) to avoid errors in supplying Vcc.

## 1.2 Control inputs

### 1.2.1 $V_{ref}$

Either constant current PWM mode or direct PWM mode can be selected by voltage of the  $V_{ref}$  input as follows

Constant current PWM mode:  $V_{ref}$  must be between 0V and 3V.  
 Direct PWM mode:  $V_{ref}$  must be between 4.5V and  $V_{reg}$ .

### 1.2.2 OSC

In case of PWM mode, a capacitor must be connected between OSC pin and ground and SPTT switch of OSC must be set to middle position.

In case of Direct PWM mode, the OUT1 and OUT2 levels are synchronously controlled with OSC input and no capacitor is needed between OSC pin and ground.



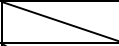
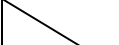
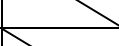
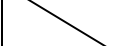
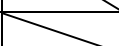
### 1.2.3 IN1 and IN2

IN1 pin and IN2 pin on the evaluation board are connected to IN1 pin and IN2 pin of TB6559FG. The input status of IN1 and IN2 control the output of TB6559FG

### 1.2.4 Standby

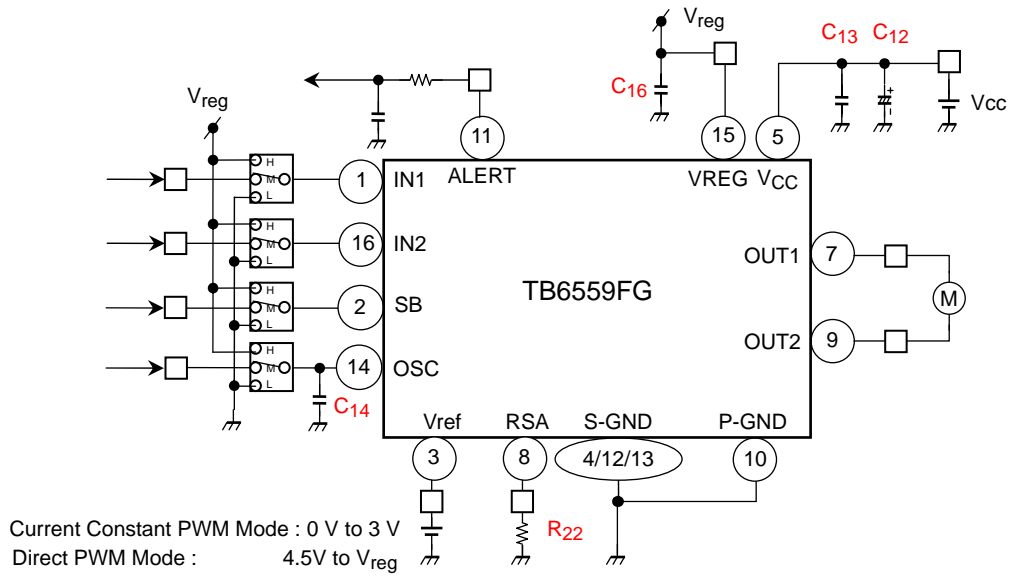
All output transistors are off by setting SB pin to low level (standby mode).

The function table is as follows.

		Input				Output			
	$V_{ref}$	IN1	IN2	SB	OSC	IO (peak)	OUT1	OUT2	Mode
Constant current PWM mode	0 to 3 V	H	H	H	Condenser	—	L	L	Short break
		L	H	H	Condenser	$\frac{V_{ref}}{6 \cdot RS}$	L L	Constant current chopping 	CCW Short break
		H	L	H	Condenser	$\frac{V_{ref}}{6 \cdot RS}$	Constant current chopping 	L L	CW Short break
		L	L	H	Condenser	—	OFF: Hi-Z		Stop
		X	X	L	Condenser	—	OFF: Hi-Z		Standby
Direct PWM mode	4.5 V to $V_{REG}$	H	H	H	X		L	L	Short break
		L	H	H	H L		L L	H L	CCW Short break
		H	L	H	H L		H L	L L	CW Short break
		L	L	H	X		OFF: Hi-Z		Stop
		X	X	L	X		OFF: Hi-Z		Standby

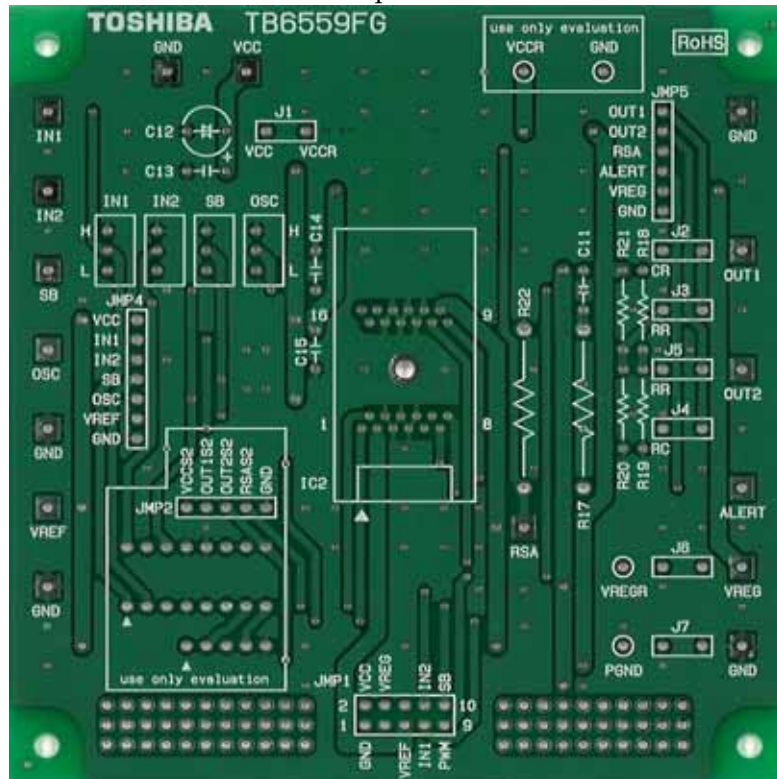
The corresponded SPTT switch should be set to middle position to pass through input signal from IN1 pin, IN2 pin, SB pin or OSC pin on the evaluation board to IC's input pin. Setting SPTT to L position will connect the IC's input pin to GND and setting SPTT to H position will connect IC's input pin to  $V_{reg}$  pin.

## 2 Electrical schematic

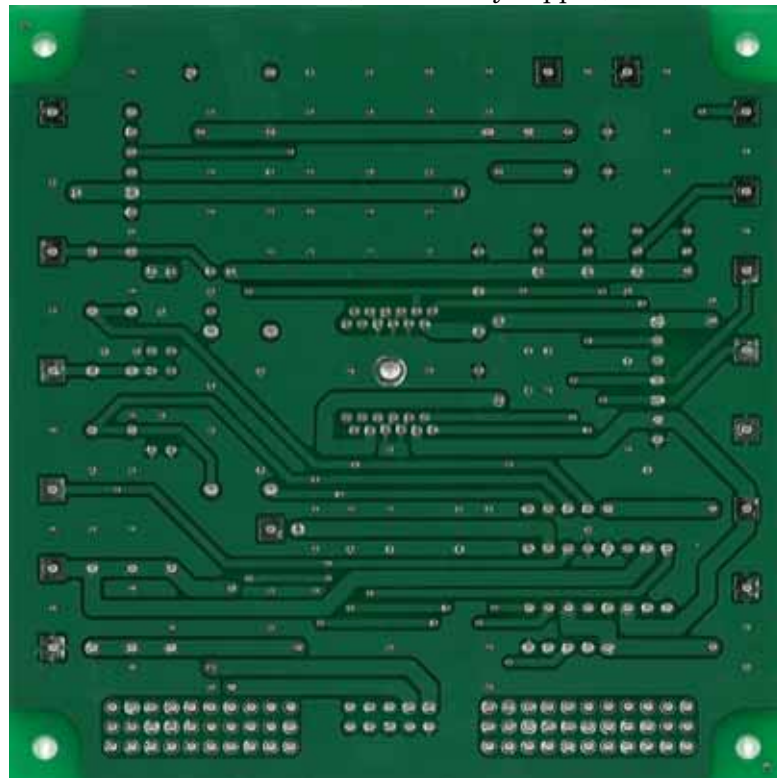


### 3 Hardware layout

Top side



Bottom side (horizontally flipped)



**4 BOM**

Symbol	Remarks	Recommended Value
IN1	SPTT	--
IN2	SPTT	--
SB	SPTT	--
OSC	SPTT	--
C <sub>12</sub>	Electrolytic capacitor	50μF to 100μF
C <sub>13</sub>	Ceramic capacitor	0.001μF to 1μF
C <sub>16</sub>	Ceramic capacitor	0. 1μF to 1μF
C <sub>14</sub>	Ceramic capacitor	-- 820pF to 4700pF
		Direct PWM mode Constant Current PWM mode
R <sub>22</sub>	power shunt resistor	0Ω (short) I <sub>o(peak)</sub> / (6 • V <sub>ref</sub> ) Ω
		Direct PWM mode Constant Current PWM mode

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