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Test Procedure for the LB11868V Evaluation Board

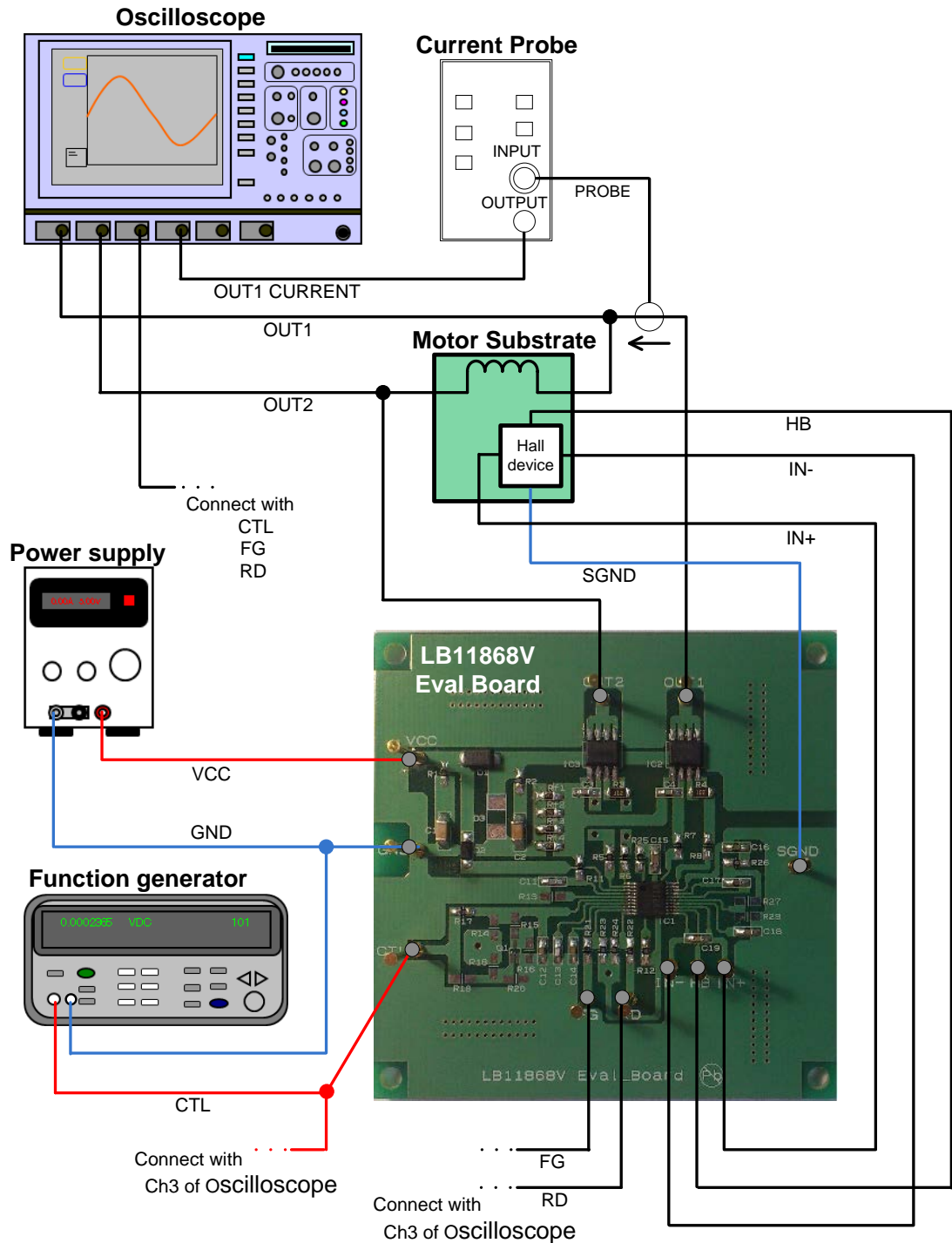

Oscilloscope

Current Probe

INPUT

OUTPUT

PROBE

OUT1 CURRENT

OUT1

Motor Substrate

OUT2

HB

IN-

Hall device

IN+

SGND

. . .
Connect with
CTL
FG
RD

Power supply

LB11868V Eval Board

VCC

VCC

GND

Function generator

CTL

Connect with
Ch3 of oscilloscope

. . . FG

. . . RD

Connect with
Ch3 of oscilloscope

Table: Required Equipment

Equipment	Efficiency
Power supply	12V-3A
Function generator	DC 0V to VREG
Oscilloscope	4 channel
Current probe	
LB11868V Evaluation Board	
Motor	12V type

## Test Procedure:

1. Connect the test setup as shown above.
2. Initial check
    Start up the motor at VCC = 12V.
    CTL=0V (full speed)
    Confirm that the motor rotates smoothly.
3. Startup check
    Check whether the motor has started up with stability.
    Start up the motor at VCC = 4V and 12V.
    When the CTL voltage is lower than VCPWH (typ = 2.5V), the motor starts up.
    And then check whether the motor starts up at each VCC voltage

    Check some waveforms. (Startup waveforms)
    Check the OUT1, OUT2 and VTH voltage waveform with the scopes of CH1, CH2 and CH3, and the output
    current waveform of OUT1 with the scope of CH4 by the oscilloscope.

    ex) The waveforms vary by individual motors.

Start up waveform

The motor start by CTL L-input.
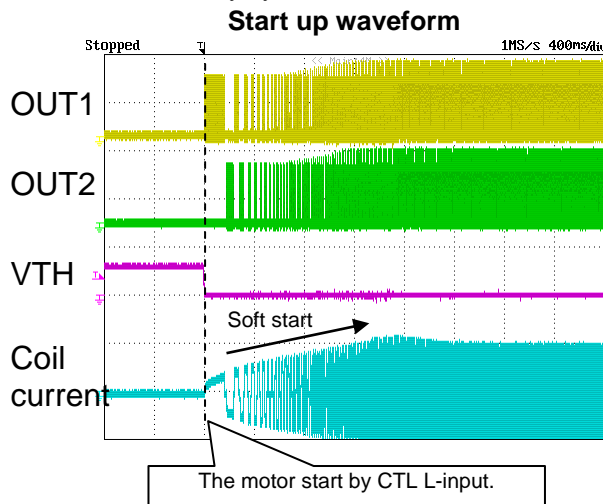
4. Normal rotation check
    Check some waveforms.
    Supply VCC=12V.
      VTH<VCPWL (typical=0.8V); Full Speed mode
      VCPWL< VTH <VCPWL; PWM Speed control mode
    Check the OUT1, OUT2 and FG voltage waveform with the scopes of CH1, CH2 and CH3, and the output
    current waveform of OUT1 with the scopes of CH4 by the oscilloscope.

    ex) The waveforms vary by individual motors.

Full Speed **PWM speed control waveform**
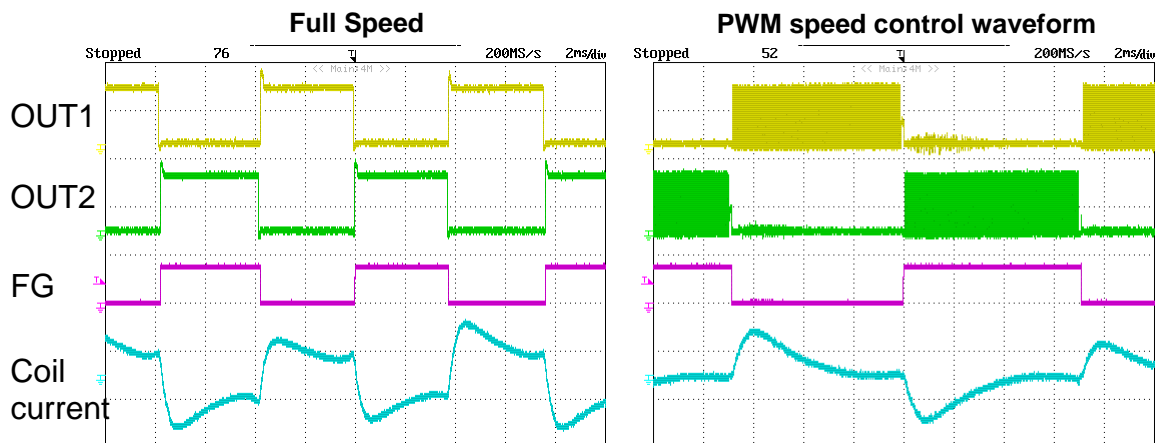
5. Lock detection and automatic reset check

Check the lock detection behavior.

Supply VCC=12V.

Confirm that the signal of OUT1 and OUT2 are off and RD become H-level when the motor is stopped forcibly by hand.

Then, check the waveform of OUT1, OUT2 and RD voltage in the scopes of CH1, CH2 and CH3, and the output current waveform of OUT1 in the scope of CH4 by the oscilloscope.

Then, check the behavior of automatic reset after motor stop.

A motor restarts from the stop state. Then RD voltage becomes L-level when OUT1 and OUT2 switch once.

ex) Waveform varies by individual motor.

Motor lock waveform   **Automatic reset waveform**

OUT1	
OUT2	
RD	
Coil current	

The motor lock.   Lock detection   The motor start again.

RD low