Automotive Power and Motor Drive

Evaluation Kit for Stepping Motor Driver

BD63800MUF-EVK-002

The ROHM BD63800MUF-C is an AEC-Q100 automotive qualified bipolar low-consumption stepping motor driver that is driven by PWM current. It is suitable for Automotive applications such as Head-up Display, LED Headlight, Heat pump and Intake Air Control Valve. This EVK enables the performance evaluation of this IC in research and development laboratories.

● Description

BD63800MUF-EVK-002 is an evaluation board for the Automotive Stepping Motor Driver IC. Also, a GUI can be provided by ROHM for easy SPI register configuration.

The key component of the evaluation board is the ROHM BD63800MUF-C which have the following specifications and features:

● BD63800MUF-C Key Specifications:
  ➤ Supply voltage range…………………….…6.0 to 28 V
  ➤ Output Current Rating (peak) …..………………1.35 A
  ➤ Output Current Rating (DC) …..………….........1.20 A
  ➤ Output On Resistance (up and down) ....0.75 Ω
  ➤ VCC quiescent supply current (max) …………..10 µA

BD63800MUF-C operates with single power supply which can simplify the set design.

● BD63800MUF-C Features:
  ➤ CLK-IN and SPI-IN Drive mode
  ➤ Supported Modes:
     Full step, 1/2, 1/4, 1/8, 1/16 and 1/32 step
  ➤ Current Decay Mode Switch Function
     - Mix Decay: Linear Adjustment of
          Slow Decay / Fast Decay Ratio
     - Auto Decay: Automatic Switch of
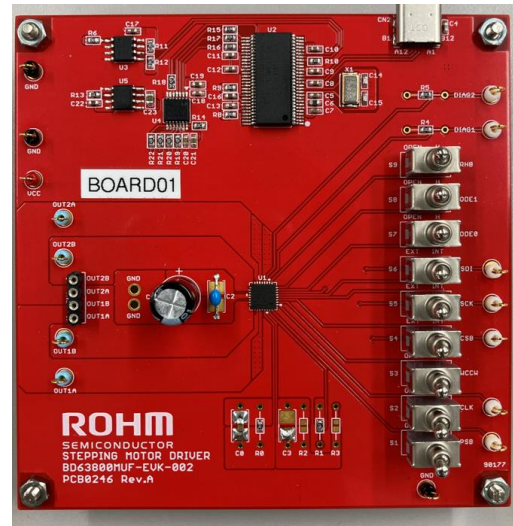   Slow Decay / Fast Decay

Further features and protections are referred to the datasheet.

Figure 1: BD63800MUF-EVK-002

● EVK Features
  ➤ Plug & Play Stepping Motor Evaluation Kit
  ➤ Graphical User Interface application software
     Easy to set/read register.
     [Operating System: Windows10]
  ➤ External Switches for pin setting.
      Open or High settings
  ➤ Test pins for easy signal monitoring

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Contents

1   Introduction

This evaluation kit (EVK) manual describes the usage of ROHM's BD63800MUF-EVK-002. The purpose of the EVK is to allow the test and evaluation of the stepping motor driver IC BD63800MUF-C in professional research and development environments. This document provides guidelines to quickly setup the hardware and software for fast and easy stepping motor driver IC performance evaluation.

- BD63800MUF-C evaluation board [BD63800MUF-EVK-002]
- USB cable (USB2.0 A Plug to C Plug)
- BD63800MUF-C GUI control software (MS Windows)
- USB Driver

USB Cable
A Plug to C Plug

For operation of the EVK the following additional items will be required:

- PC with operating system Windows 10 or higher
- Laboratory DC power supplies: 12 V(typ.)/1.5 A(min.) and 5 V/100 mA(min.)
- Load (e.g. Bipolar DC step motor)
- Connecting cables between DC power supply and boards
- Clock generator: Input 5 V to 0 V clock signal for CLK pin

Figure 2 shows the setup boards and instruments as mentioned above. Detailed information for connection is described on section 4.1[Hardware]. For receiving the BD63800MUF-C GUI control software please get in touch with your local ROHM sales office or use the general ROHM customer support system.
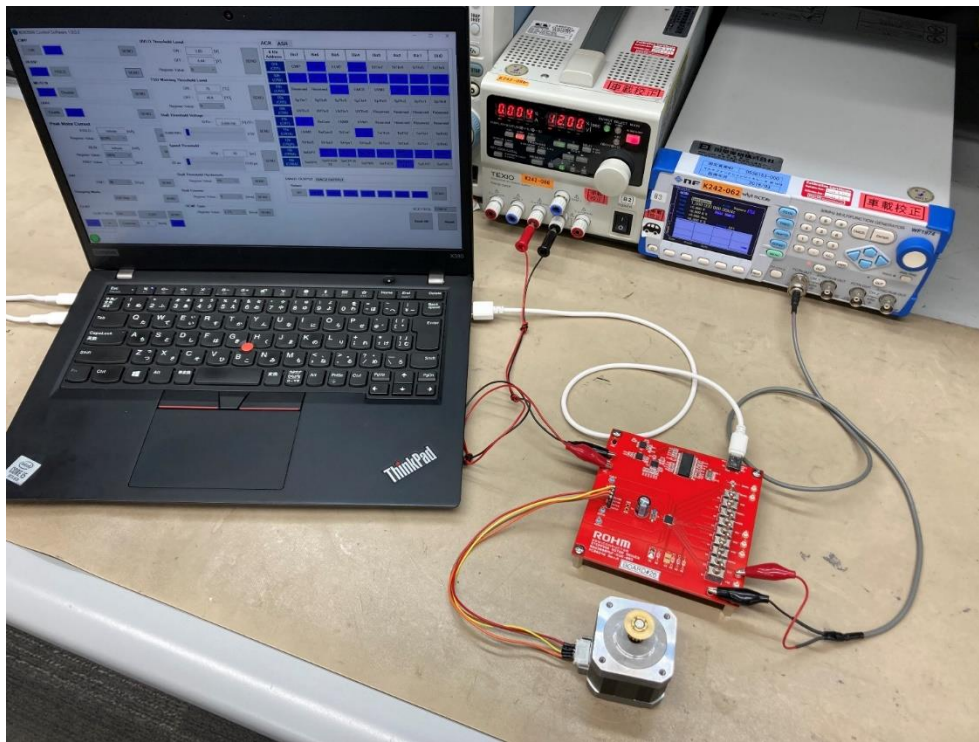

Figure 2:   BD63800MUF-EVK-002 Evaluation Setup.

2   Safety Instructions

2.1 Warnings

- This evaluation kit must only be operated by trained professionals.
- This evaluation kit should be operated in a well ventilated environment and, if used inside a case, the case should not be covered.
- This evaluation kit should be placed on a stable, flat, non-conductive surface in use and should not be contacted by conductive items.
- All peripherals used with the evaluation kit should comply with relevant standards for the country of use and be marked accordingly to ensure that safety and performance requirements are met.
- Where peripherals are connected that do not include the cable or connector, the cable or connector used must offer adequate insulation and operation in order that the requirements of the relevant performance and safety are met.
- The connection of incompatible devices to the evaluation kit may affect compliance or result in damage to the unit and invalidate the warranty.

2.2 Instructions for Safe Use

- Do not expose the evaluation kit to water, moisture or place on a conductive surface whilst in operation.
- Take care whilst handling to avoid mechanical or electrical damage to the printed circuit board and components.
- Avoid handling the printed circuit board while it is powered. Only handle by the edges to minimize the risk of electrostatic discharge damage.
- Do not short any outputs to each other, to the supply or to GND.
- Do not operate the evaluation kit outside its specified ratings.
- Take care to monitor the PCB and IC temperatures in particular when operating with high power loads and do not exceed the absolute maximum ratings of all components.
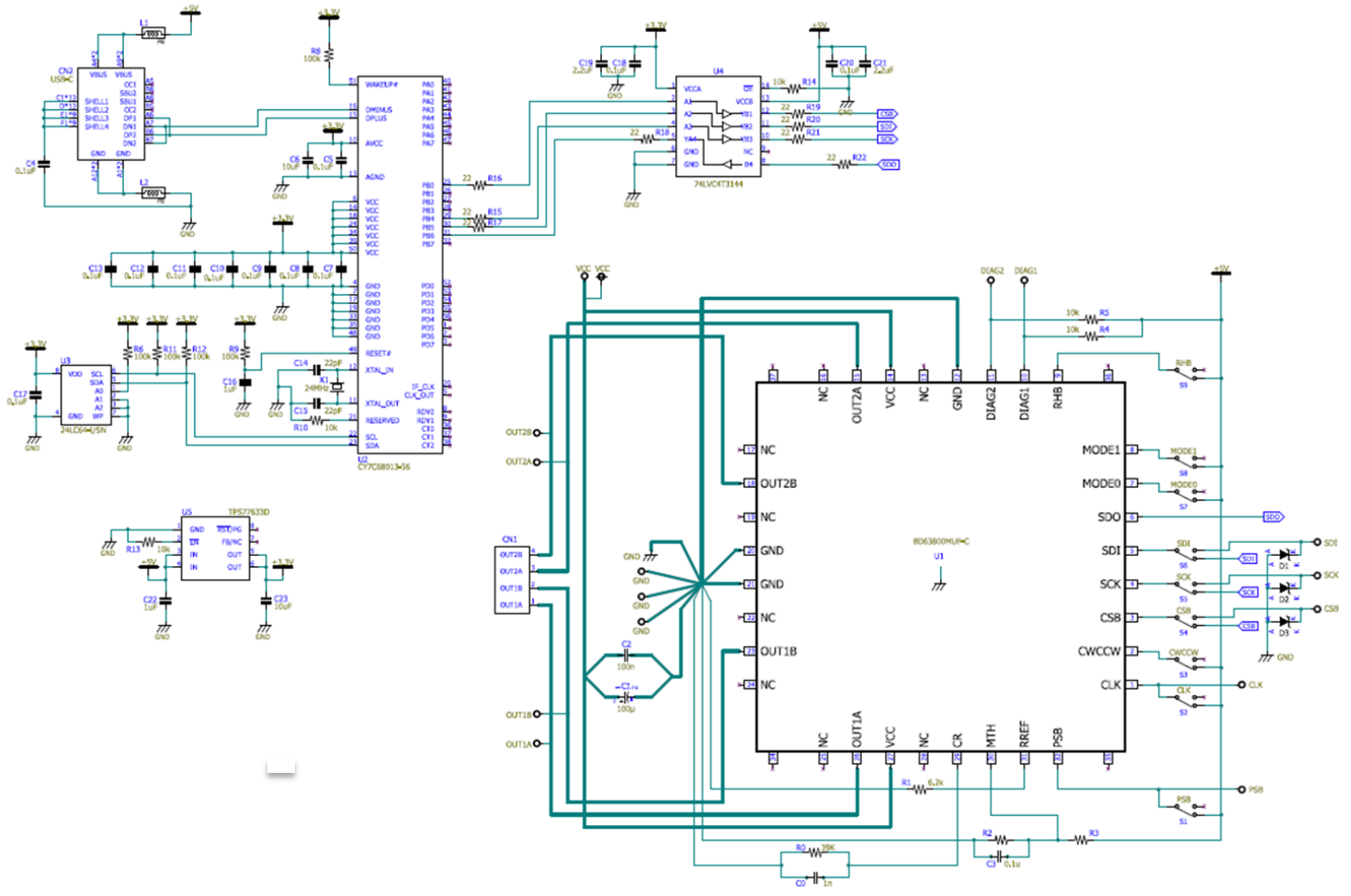
3 Hardware Description

3.1 Schematic
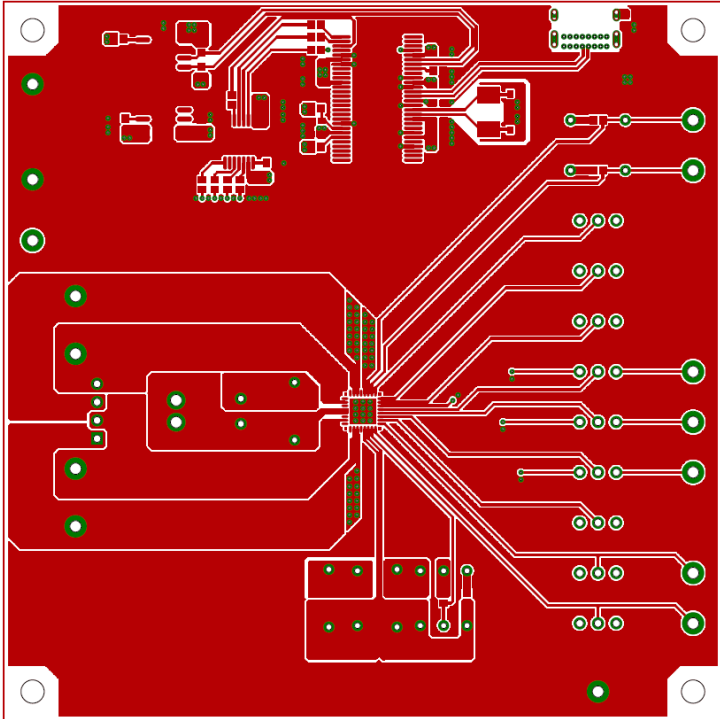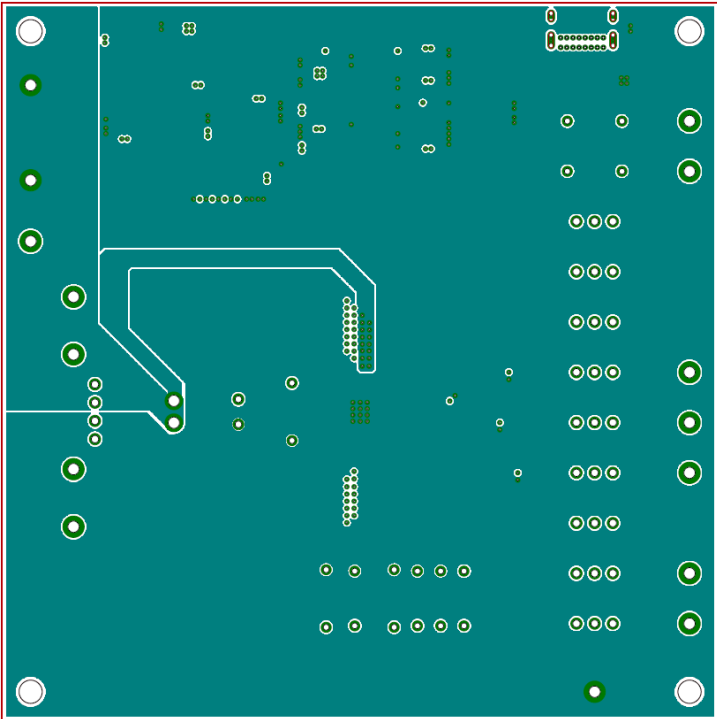

Figure 3: Evaluation Board Schematic

3.2 PCB Layout and Component Placement

Please note that the layout of this EVK is not optimized in terms of thermal performance or signal routing.

The focus is more on enabling easy test by adding test points to each signal. All pictures are viewed as seen from TOP side.

Figure 4: TOP side PCB with Pads and Silkscreen

Figure 5: Bottom side with Pads and Silkscreen

Figure 6: Top layer

Figure 7: 2nd layer
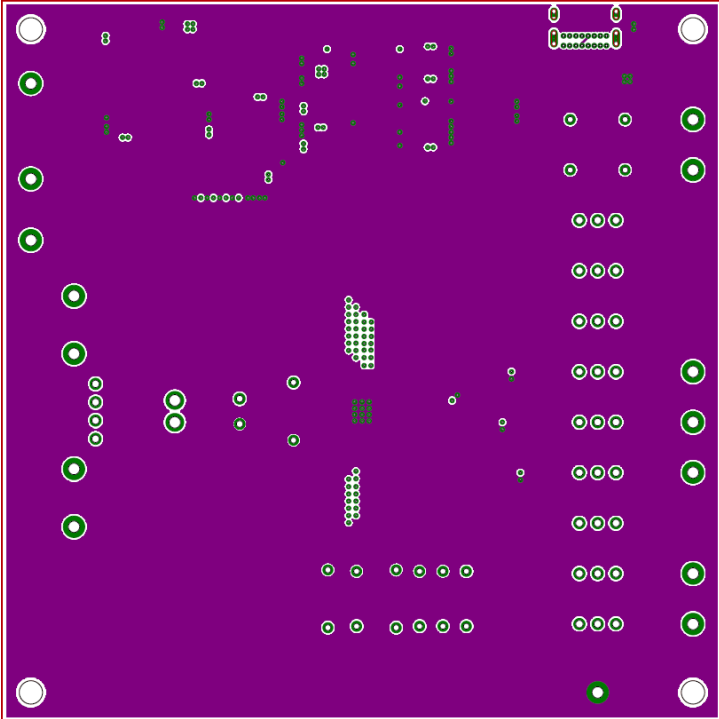
Figure 8: 3rd layer
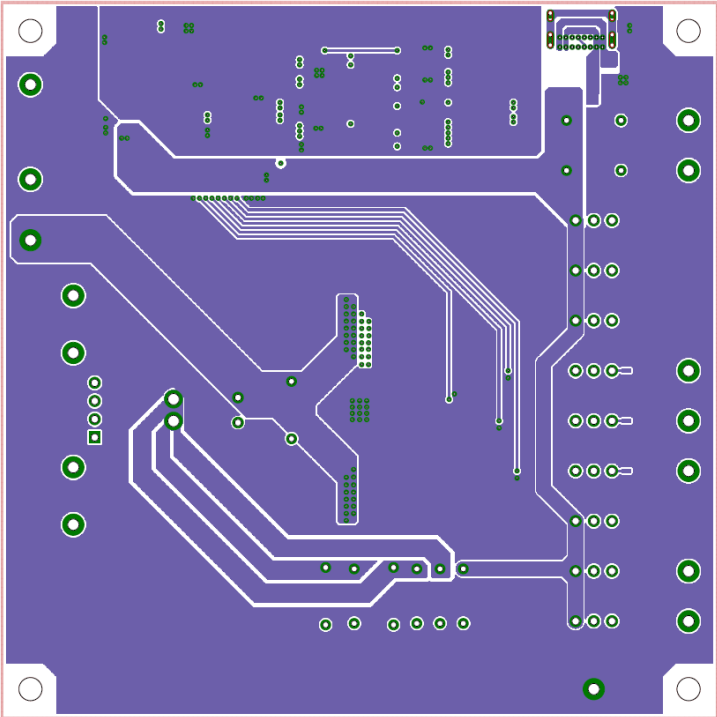
Figure 9: Bottom layer

3.3 Bill of Materials

Comp. Name	Value	Type	Quantity
For BD63800MUF-C			
C0	1 nF	Capacitor, Surface Mount/Through Hole	1
C1	100 µF	Capacitor, Through Hole	1
C2	100 nF	Capacitor, Surface Mount/Through Hole	1
C3	0.1 µF	Capacitor, Surface Mount/Through Hole	1
CN1	1 row x 4 pin Connector	2.54mm pitch, 1.0mm Hole	1
R0	39 kΩ	Resistor, Surface Mount	1
R1	6.2 kΩ	Resistor, Surface Mount	1
R4, R5	10 kΩ	Resistor, Surface Mount/Through Hole	2
R2, R3	Open	Resistor, Surface Mount	2
S1, S2, S3, S4, S5, S6, S7, S8, S9	SPDT switch	2.54mm pitch, 1.0mm Hole	9
U1	BD63800MUF-C	IC for Stepper Motor Driver VQFN32FBV050	1
For Microcontroller			
C4, C5, C7, C8, C9, C10, C11, C12, C13, C17, C18, C20	0.1 µF	Capacitor, Surface Mount	12
C6	10 µF	Capacitor, Surface Mount	1
C14, C15	22 pF	Capacitor, Surface Mount	2
C16, C22	1 µF	Capacitor, Surface Mount	2
C19, C21	2.2 µF	Capacitor, Surface Mount	2
C23	10 µF	Capacitor, Surface Mount	1
CN2	2 row x 10 pin Connector	2.54mm pitch, 1.0mm Hole	1
D1, D2, D3	7.5V	Zener diode, Surface Mount	3
L1, L2	31 Ω	Ferrite bead, Surface Mount	2
R10, R13, R14	10 kΩ	Resistor, Surface Mount	3
R6, R8, R9, R11, R12	100 kΩ	Resistor, Surface Mount	5
R15, R16, R17, R18, R19, R20, R21, R22	22 Ω	Resistor, Surface Mount	8
U2	CY7C68013A-56PVXC	IC MCU USB PERIPH HI SPD 56SSOP	1
U3	24LC64F-I/SN	IC EEPROM 64KBIT I2C 8SOIC	1
U4	74LVC4T3144PW-Q10J	IC BUF NON-INVERT 5.5V 14TSSOPLINEAR 3.3V 500MA 8SOIC	1
U5	TPS77533D	IC REG LINEAR 3.3V 500MA 8SOIC	1
X1	ECS-240-20-23A-EN-TR	CRYSTAL 24.0000MHZ 20PF SMD	1

Table 1: Evaluation Board Bill of Materials

4   Operating Instructions

4.1 Hardware

Before start to connect, make sure to turn off all equipment for your safety.

Connect the cables as followings:

[BD63800MUF-EVK-002]

1. Connect USB Cable(C-Male) to CN2.
2. Connect DC Power Supply [6 to 28 V / 1.5 A (min.)] to VCC(Red) and GND(Black) terminal.
3. Connect Load to Outputs (OUT1A, OUT1B, OUT2A, OUT2B).
   To make sure the correct connection, please check the install manual of the load.
4. Connect Clock Signal Generator to CLK terminal.
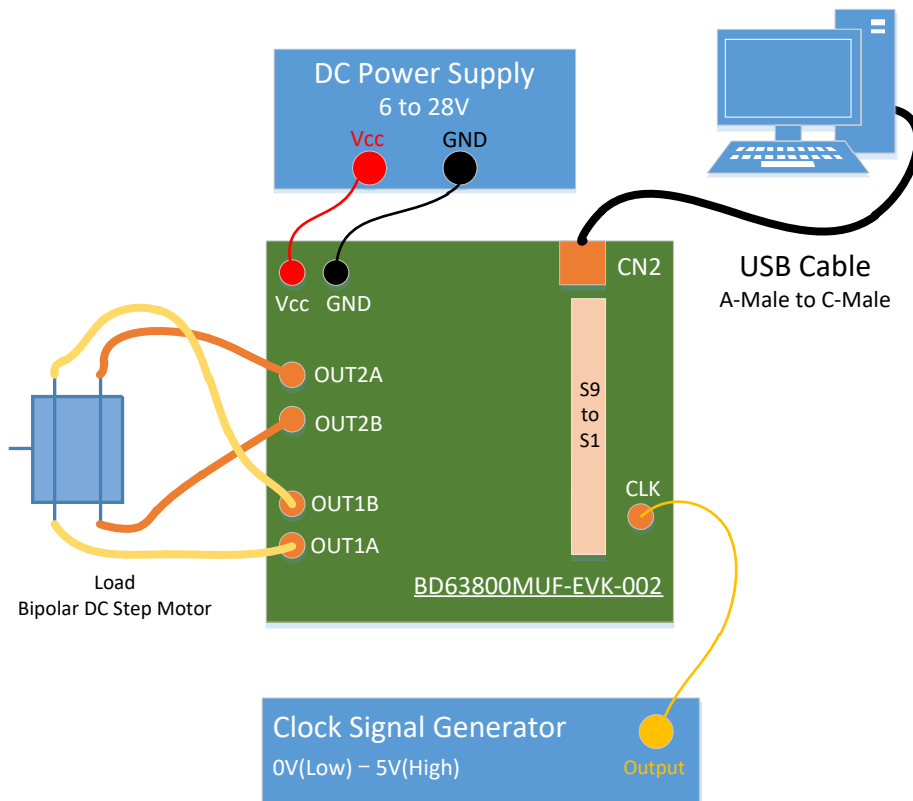
Figure 10: BD63800MUF-EVK-002 Setup

5. Set the All toggle switches (S1 to S9) to "Open" settings.

S1:Open, S2:Open, S3:Open, S4:Open, S5:Open, S6:Open, S7:Open, S8:Open, S9:Open

All toggle switches are able to select "Open" or "H".

Open: Pin status depend on the external test pin and internal pull-up/pull-down resister.

Switch to inner side of the board.

H : Pin status is forced to High (5V).

Please don't connect anything to the external test pin for the switch.

Switch to outer side of the board.

Toggle switch: (S1 for PSB)
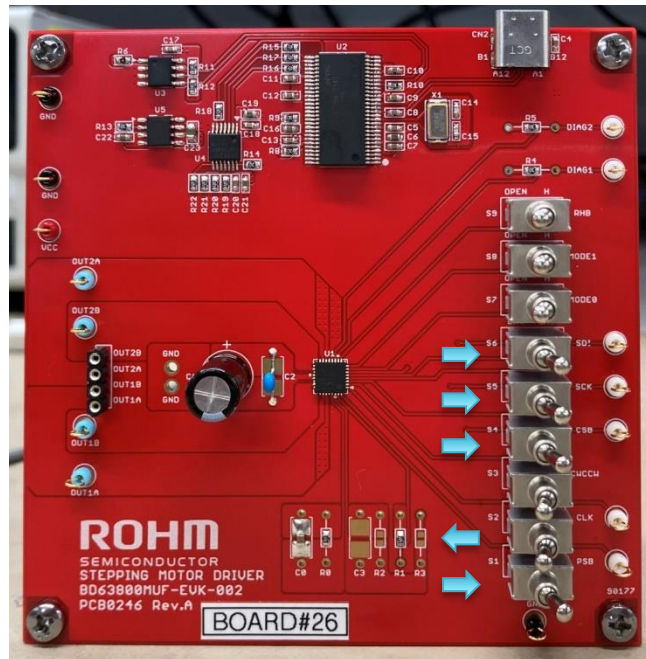
S9: Toggle to "Open" or "H"

S8: Toggle to "Open" or "H"

S7: Toggle to "Open" or "H"

S6: Toggle to "INT"

S5: Toggle to "INT"

S4: Toggle to "INT"

S3: Toggle to "Open" or "H"

S2: Toggle to "Open"

S1: Toggle to "H"

Figure 11: Toggle Switch setting

Although the maximum operating supply voltage of the motor driver IC BD63800MUF-C is 40 V it is also the absolute maximum value of the IC. So, if you use higher supply voltage than typical please make sure to include enough margin for fluctuation or voltage spikes to never exceed the absolute maximum ratings.

Please operate the EVK at room temperature only. The maximum load current should be limited by thermal performance of the components. Please take care to measure the temperature of the EVK components when applying your desired settings and load.

4.2 Software

BD63800MUF-EVK-002 can be controlled by SPI commands and the external setting pins. BD63800MUF-C GUI (Graphical User Interface) software is enabled to set command and read status register easily. Followings are the setting parameter examples on the software. For detail of the software manual, receiving software, please contact to your ROHM sales office or use the general ROHM customer support system.

Software Setting items:

- Drive mode selection
  - ➢ Motor Enable / disable
  - ➢ Motor Rotation Direction [Clockwise / Counterclockwise]
  - ➢ Driving / Hold mode
  - ➢ Operation on under voltage state [Open / Hold]
- Drive and protection parameter
  - ➢ Excitation mode
  - ➢ Peak motor current
  - ➢ Slew rate
  - ➢ Protection parameter (UVLO, TW, Stall)

4.2.1 BD63800MUF-C GUI Overview 1

BD63800 Control Software 1.0.0.2

1. Rotation Direction Setting
CWP: CW, CCW — SEND

2. Run / Hold Setting
RHBP: RUN, HOLD — SEND

3. Motor Enable Setting
MOTEN: Enable, Disable — SEND

4. UV Hold Setting
UVH: Enable, Disable — SEND

Peak Motor Current
IHOLD : Infinite [mA], Register Value : 0%
IRUN : Infinite [mA], Register Value : 9.1%
RREF Value : 0 [kΩ]

5. Output Current Setting

6. Output Slew Rate Setting
S/R: EMC : 96 [V/μs] — SEND

Stepping Mode: Full Step — SEND

7. Excitation Mode Setting

CLKP
CLKP FREQ: 1Hz — CLKP — SEND
Single, ∞, Continue, 0 [time], STOP

8. Don't use

Green : Connected, Yellow : Initializing, Red: Not Connected

9. Low Voltage Protection Setting
UVLO Threshold Level
ON : 3.85 [V]
OFF : 4.44 [V]
Register Value : 0 — SEND

10. Overheat Warning Setting
TSD Warning Threshold Level
ON : 75 [°C]
OFF : 46.8 [°C]
Register Value : 0 — SEND

Stall Threshold Voltage
StThr : 0.009766 [V]±5%
0.009766V — 2.5V — SEND

11. Stall Detect Threshold Setting

Speed Threshold
StSp : 20 [μs]
20 μs — 5120 μs — SEND

12. Stall Detect Speed Setting

Stall Threshold Hysteresis
Register Value : 4% — SEND

13. Stall Detect Hysteresis Setting

Stall Counter
Register Value : 2 [time] — SEND

14. Stall Detect Counter Setting

BEMF Gain
Register Value : x 1.5 [time] — SEND

15. BEMF Gain Setting

16. Control Register Map

4-Bit Address	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
01h (CR1)	CWP	RHBP	CLKP	MOTEN	StThr7	StThr6	StThr5	StThr4
02h (CR2)	IHOLD3	IHOLD2	IHOLD1	IHOLD0	IRUN3	IRUN2	IRUN1	IRUN0
03h (CR3)	Reserved	Reserved	EMC1	EMC0	UVM3	SM2	SM1	SM0
05h (CR5)	SpThr7	SpThr6	SpThr5	SpThr4	SpThr3	SpThr2	SpThr1	SpThr0
06h (CR6)	UVThr3	UVThr2	UVThr1	UVThr0	Reserved	Reserved	Reserved	Reserved
07h (CR7)	AD4	BeGain	UVM2	UVM1	Reserved	Reserved	Reserved	Reserved
11h (CR1A)	UVM0	BeGain2	StCnt1	StCnt0	TwThr3	TwTh2	TwThr1	TwThr0
12h (CR2A)	StHys3	StHys2	StHys1	StHys0	StThr3	StThr2	StThr1	StThr0
15h (CR5A)	SelSPI1	SelSHORT1	SelOPEN1	SelTW1	SelTSD1	SelSTALL1	SelUV1	SelOV1
16h (CR6A)	SelSPI2	SelSHORT2	SelOPEN2	SelTW2	SelTSD2	SelSTALL2	SelUV2	SelOV2

17. DIAG Selection
DIAG1 OUTPUT / DIAG2 OUTPUT
Select: SPI, SHORT, OPEN, TSDW, TSD, STALL, UVLO, OVLO — SEND

SCK FREQ: 1.5MHz
Send All — Reset

4.2.2 BD63800MUF-C GUI Overview 2

BD63800 Control Software 1.0.0.2

CWP: CW, CCW — SEND
RHBP: RUN, HOLD — SEND
MOTEN: Enable, Disable — SEND
UVH: Enable, Disable — SEND

Peak Motor Current
IHOLD : Infinite [mA], Register Value : 0%
IRUN : Infinite [mA], Register Value : 9.1%
RREF Value : 0 [kΩ]

S/R: EMC : 96 [V/μs] — SEND
Stepping Mode: Full Step — SEND
CLKP FREQ: 1Hz — CLKP — SEND
Single, ∞, Continue, 0 [time], STOP

UVLO Threshold Level
ON : 3.85 [V]
OFF : 4.44 [V]
Register Value : 0 — SEND

TSD Warning Threshold Level
ON : 75 [°C]
OFF : 46.8 [°C]
Register Value : 0 — SEND

Stall Threshold Voltage
StThr : 0.009766 [V]±5%
0.009766V — 2.5V — SEND

Speed Threshold
StSp : 20 [μs]
20 μs — 5120 μs — SEND

Stall Threshold Hysteresis
Register Value : 4% — SEND

Stall Counter
Register Value : 2 [time] — SEND

BEMF Gain
Register Value : x 1.5 [time] — SEND

18. Status Register Map

4-Bit Address	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
08h (SR1)	PAR	SPI	SHORT	OPEN	TSD	TW	STALL	Reserved
09h (SR2)	PAR	ORErr	OV	UV	Reserved	Reserved	Reserved	Reserved
0Ah (SR3)	PAR	MSP6	MSP5	MSP4	MSP3	MSP2	MSP1	MSP0
0Ch (SR5)	PAR	Sp7	Sp6	Sp5	Sp4	Sp3	Sp2	Sp1	Sp0
0Dh (SR6)	PAR	SI6	SI5	SI4	SI3	SI2	SI1	SI0
1Eh (SR7A)	PAR	OPEN1	MODE0pin	MODE1pin	SHRT1AB	SHRT1BB	SHRT1AT	SHRT1BT
1Fh (SR8A)	PAR	OPEN2	RHBpin	Cwpin	SHRT2AB	SHRT2BB	SHRT2AT	SHRT2BT

08h — READ — READ ALL

DIAG1 OUTPUT / DIAG2 OUTPUT
Select: SPI, SHORT, OPEN, TSDW, TSD, STALL, UVLO, OVLO — SEND
SCK FREQ: 1.5MHz
Send All — Reset

4.2.3 Rotation Direction Setting

Selected setting is reflected when SEND button is pushed.

Setting the direction in which the motor will rotate to is possible by pushing the button.

4.2.4 Run/Hold Setting

Selected setting is reflected when SEND button is pushed.

Setting either Run or Hold Modes is possible by pushing the button.

In Hold Mode, motor position is held constant by setting Hold Mode Electric Current.

4.2.5   Motor Enable Setting

Selected setting is reflected when SEND button is pushed.

Enabling motor movements is possible by pushing the button.
When motor is disabled, the output is Hi-Z.

4.2.6   UV Hold setting

Selected setting is reflected when SEND button is pushed.

UV Hold function can be disabled by pushing the button.

To enable Hold Mode, click UVM3, UVM2 and UVM0 and/or confirm blue highlight when ①,② are pushed.

To disable Hold Mode, click UVM3, UVM2 and UVM0 again and/or confirm s gray highlight when ①,② are pushed.

4.2.7 Output Electric Current Setting(Hold mode)

Selected setting is reflected when SEND button is pushed.

Current value, in percentage of the maximum current, is settable by a pull-down menu.

The output current level is displayed by IHOLD when external resistance value is inputted into RREF Value.

4.2.8 Output Electric Current Setting(Run mode)

Selected setting is reflected when SEND button is pushed.

Current value, in percentage of the maximum current, is settable by a pull-down menu.

The output current level is displayed by IRUN when external resistance value is inputted into RREF Value.

4.2.9 Output Slew Rate Setting

Selected setting is reflected when SEND button is pushed.

Output Slew Rate is settable.

4.2.10 Excitation Mode Setting

Selected setting is reflected when SEND button is pushed.

Excitation mode is selected thru a pull-down menu.

4.2.11   Clock Input Setting

4.2.12   Under Voltage Protection Setting

Selected setting is reflected when SEND button is pushed.

Under Voltage Protection Level is selected thru a pull-down menu.
The ON / OFF values change when a register value is chosen.

4.2.13   Thermal Warning Setting

Selected setting is reflected when SEND button is pushed.

Thermal Warning Level is selected thru a pull-down menu.
The ON / OFF values change when a register value is chosen.

4.2.14   Stall Detect Threshold Setting

Selected setting is reflected when SEND button is pushed.

Stall Detect Threshold Level is selected thru a slide bar.
The Threshold change in response to the slide bar.

4.2.15 Stall Detect Rotation Speed Setting

BD63800 Control Software 1.0.0.2

CWP			
CW	CCW		SEND

RHBP			
RUN	HOLD		SEND

MOTEN			
Enable	Disable		SEND

UVH			
Enable	Disable		SEND

Peak Motor Current
- IHOLD : Infinite [mA] Register Value : 0%
- IRUN : Infinite [mA] Register Value : 9.1%
- RREF Value : 0 [kΩ]

S/R
- EMC : 96 [V/μs] SEND

Stepping Mode
- Full Step SEND

CLKP
- CLKP FREQ : 1Hz CLKP SEND
- Single ∞ Continue 0 [time] STOP

UVLO Threshold Level
- ON : 3.85 [V]
- OFF : 4.44 [V]
- Register Value : 0 SEND

TSD Warning Threshold Level
- ON : 75 [°C]
- OFF : 46.8 [°C]
- Register Value : 0 SEND

Stall Threshold Voltage
- StThr : 0.009766 [V]±5%
- 0.009766V ——— 2.5V SEND

Speed Threshold
- StSp : 20 [μs]
- 20 μs ——— 5120 μs SEND

Stall Threshold Hysteresis
- Register Value : 4% SEND

Stall Counter
- Register Value : 2 [time] SEND

BEMF Gain
- Register Value : x 1.5 [time] SEND

ACR | ASR

4-Bit Address	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
01h (CR1)	CWP	RHBP	CLKP	MOTEN	StThr7	StThr6	StThr5	StThr4
02h (CR2)	IHOLD3	IHOLD2	IHOLD1	IHOLD0	IRUN3	IRUN2	IRUN1	IRUN0
03h (CR3)	Reserved	Reserved	EMC1	EMC0	UVM3	SM2	SM1	SM0
05h (CR5)	SpThr7	SpThr6	SpThr5	SpThr4	SpThr3	SpThr2	SpThr1	SpThr0
06h (CR6)	UVThr3	UVThr2	UVThr1	UVThr0	Reserved	Reserved	Reserved	Reserved
07h (CR7)	AD4	BeGain	UVM2	UVM1	Reserved	Reserved	Reserved	Reserved
11h (CR1A)	UVM0	BeGain2	StCnt1	StCnt0	TwThr3	TwThr2	TwThr1	TwThr0
12h (CR2A)	StHys3	StHys2	StHys1	StHys0	StThr3	StThr2	StThr1	StThr0
15h (CR5A)	SelSPI1	SelSHORT1	SelOPEN1	SelTW1	SelTSD1	SelSTALL1	SelUV1	SelOV1
16h (CR6A)	SelSPI2	SelSHORT2	SelOPEN2	SelTW2	SelTSD2	SelSTALL2	SelUV2	SelOV2

DIAG1 OUTPUT | DIAG2 OUTPUT

Select: SPI | SHORT | OPEN | TSDW | TSD | STALL | UVLO | OVLO SEND

SCK FREQ: 1.5MHz

Send All   Reset

Selected setting is reflected when SEND button is pushed.

Stall Detect Speed value is selected thru a slide bar.
The Threshold change in response to the slide bar.
When it is shorter than the CLK period set, Stall Detect will be triggered.

4.2.16 Stall Detect Hysteresis Setting

BD63800 Control Software 1.0.0.2

CWP			
CW	CCW		SEND

RHBP			
RUN	HOLD		SEND

MOTEN			
Enable	Disable		SEND

UVH			
Enable	Disable		SEND

Peak Motor Current
- IHOLD : Infinite [mA] Register Value : 0%
- IRUN : Infinite [mA] Register Value : 9.1%
- RREF Value : 0 [kΩ]

S/R
- EMC : 96 [V/μs] SEND

Stepping Mode
- Full Step SEND

CLKP
- CLKP FREQ : 1Hz CLKP SEND
- Single ∞ Continue 0 [time] STOP

UVLO Threshold Level
- ON : 3.85 [V]
- OFF : 4.44 [V]
- Register Value : 0 SEND

TSD Warning Threshold Level
- ON : 75 [°C]
- OFF : 46.8 [°C]
- Register Value : 0 SEND

Stall Threshold Voltage
- StThr : 0.009766 [V]±5%
- 0.009766V ——— 2.5V SEND

Speed Threshold
- StSp : 20 [μs]
- 20 μs ——— 5120 μs SEND

Stall Threshold Hysteresis
- Register Value : 4% SEND
- Pull-down menu: 4%, 8%, 12%, 16%, 20%, 24%, 28%, 32%, 36%, 40%, 44%, 48%, 52%, 56%, 60%, 64%

Stall Counter
- Register Value : [time] SEND

BEMF Gain
- Register Value : [time] SEND

ACR | ASR

4-Bit Address	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
01h (CR1)	CWP	RHBP	CLKP	MOTEN	StThr7	StThr6	StThr5	StThr4
02h (CR2)	IHOLD3	IHOLD2	IHOLD1	IHOLD0	IRUN3	IRUN2	IRUN1	IRUN0
03h (CR3)	Reserved	Reserved	EMC1	EMC0	UVM3	SM2	SM1	SM0
05h (CR5)	SpThr7	SpThr6	SpThr5	SpThr4	SpThr3	SpThr2	SpThr1	SpThr0
06h (CR6)	UVThr3	UVThr2	UVThr1	UVThr0	Reserved	Reserved	Reserved	Reserved
07h (CR7)	AD4	BeGain	UVM2	UVM1	Reserved	Reserved	Reserved	Reserved
11h (CR1A)	UVM0	BeGain2	StCnt1	StCnt0	TwThr3	TwThr2	TwThr1	TwThr0
12h (CR2A)	StHys3	StHys2	StHys1	StHys0	StThr3	StThr2	StThr1	StThr0
15h (CR5A)	SelSPI1	SelSHORT1	SelOPEN1	SelTW1	SelTSD1	SelSTALL1	SelUV1	SelOV1
16h (CR6A)	SelSPI2	SelSHORT2	SelOPEN2	SelTW2	SelTSD2	SelSTALL2	SelUV2	SelOV2

DIAG1 OUTPUT | DIAG2 OUTPUT

Select: SPI | SHORT | OPEN | TSDW | TSD | STALL | UVLO | OVLO SEND

SCK FREQ: 1.5MHz

Send All   Reset

Selected setting is reflected when SEND button is pushed.

Stall Detect Hysteresis Level is selected thru a pull-down menu.

4.2.17 Stall Detect Counter Setting

Selected setting is reflected when SEND button is pushed.

Stall Detect Counter value is selected thru a pull-down menu.

It counts the number of times that Stall Detect was masked to determine if stall occurs every 90°. At 720°, Stall state is continued at 8.

4.2.18 BEMF Gain Setting

Selected setting is reflected when SEND button is pushed.

BEMF Gain value is selected thru a pull-down menu.

4.2.19 Control Register Map

When ACR tab is selected, we can confirm status of each control register. Blue highlight for enabled resisters or register level "1". Register level can be changed by clicking on it directly. Also, "Send All" button sends all commands from all addresses. "Reset" button resets all commands from all addresses.

4.2.20 DIAG Selection(DIAG1)

Selected setting is reflected when SEND button is pushed.

When a selected protect function detected, DIAG1 becomes 'L'.

4.2.21 DIAG Selection(DIAG2)

Selected setting is reflected when SEND button is pushed.

When a selected protect function detected, DIAG2 becomes 'L'.

4.2.22 Status Register

When ASR tab is selected, we can confirm state of each status register. Blue highlight for enabled resisters or register level "1".

Thru a pull-down menu, the selected register address would update the status of each register in it when "READ" button is pushed.

When the "READ ALL" button is pushed, the register of all addresses is updated.

Revision History

Date	Revision Number	Description
Feb. 2021	001	New Release
Feb. 2022	002	Update EVK version
Oct. 2023	003	Add software information

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