#### **Switching Regulator Series**

# 1ch Buck-Boost DC/DC Converter BD8306MUV EVK

# BD8306MUV-EVK-001 (3.7V-3.3V, 1A)

#### Introduction

This user's guide will provide the steps necessary to operate and evaluate the BD8306MUV Buck-Boost DC/DC Converter. Component selection, operating procedures and application data are included in this document.

#### Description

BD8306MUV-EVK-001 uses ROHM's highly-efficient Buck-Boost DC/DC Converter IC BD8306MUV and outputs 3.3V from 2.8V to 5.5V input voltage with one coil. This IC adopts the original Buck-Boost drive system and creates a more efficient power supply than the conventional SEPIC-system or H-bridge system switching regulators. A fixed Soft Start circuit prevents inrush current during startup along with UVLO (Under Voltage Lock Out) and TSD (Thermal Shutdown Detection), OCP (Over Current Protection) protection circuits. The Under Voltage Lock Out and hysteresis can be set by external resistor using STB pin. STB pin allows for simple ON/OFF control of the IC to reduce standby current consumption.

#### Application

General Portable Equipment
DSC
DVC
Cellular Phone
PDA
LED

#### **Operating Limits**

Parameter	Min	Тур	Max	Units	Conditions
Input Voltage	2.8	3.7	5.5	V	
Output Voltage		3.3		V	
Output Current Range			1.0	А	VCC>2.8V
Operating Frequency		1.0		MHz	
UVLO Detect Voltage		1.6		V	VCC sweep down
UVLO Release Voltage		1.7		V	VCC sweep up

#### EVK



Figure 1. BD8306MUV-EVK-001

# **EVK Schematic**



Figure 2. BD8306MUV-EVK-001 Schematic

#### **Operating Procedure**

- 1. Turn off the power supply and connect power supply's GND pin to the GND3 pin of the EVK.
- 2. Connect the power supply's VCC pin to the VBAT pin of the EVK.
- 3. Connect the jumper of SW1 to the left short position. (The VBAT pin input voltage is input to the STB pin.)
- 4. Check if the electronic load is turned off and connect the electronic load to the VOUT pin and the GND2 pin of the EVK.
- 5. Connect the voltmeter to the VOUT pin and the GND2 pin of the EVK.
- 6. Turn on the power supply and check if the measured value of the voltmeter is 3.3V.
- 7. Turn on the electronic load.

Notes: The board does not support hot plugging protection. Do not perform hot plugging on this board.

# SW Condition Table

Table	1	SW1	Condition	Table
Table	۰.	0001	Condition	Table

Condution	Content
Left short	VBAT pin and STB pin are short-circuited
Right short	GND and STB pin are short-circuited

# BOM

#### Table 2. Bill of Materials

No.	Value	Description	Part No.	Manufactuer	
IC		·			
U1	-	Buck-Boost DC/DC	BD8306MUV	ROHM	
Capacitor					
CBAT1	10µF	Capacitor, Chip, 10V, B	-	-	
CBAT2	-	Not installed	-	-	
COUT1	10µF	Capacitor, Chip, 10V, B	-	-	
COUT2	-	Not installed	-	-	
CC	120pF	Capacitor, Chip, 50V, CH	-	-	
CFB	2200pF	Capacitor, Chip, 50V, B	-	-	
CVCC	1µF	Capacitor, Chip, 50V, B	-	-	
Resistor					
RC	4.7kΩ	Resistor, Chip, 50V, 0.063W, ±1%	-	-	
RFB	4.7kΩ	Resistor, Chip, 50V, 0.063W, ±1%	-	-	
RINV1	56kΩ	Resistor, Chip, 50V, 0.063W, ±1%	-	-	
RINV2	10kΩ	Resistor, Chip, 50V, 0.063W, ±1%	-	-	
RT	39kΩ	Resistor, Chip, 50V, 0.063W, ±1%	-	-	
RVBAT	Short	-	-	-	
Inductor					
L1	4.7µH	Inductor, 1.35A	1231AS-H-4R7M	Murata	
Switch					
SW1	-	Pin header, 2.54mm x3contacts	61300311121	Wurth Elektronik	

# **Board Layout**

EVK PCB information

Number of Layers	Material	Board Size	Copper Thickness
4	FR-4	40mm x 40mm x 1.6mmt	1oz (35µm)

Followings are the layout of BD8306MUV-EVK-001.



Figure 3. Top Layer Layout (Top View)



Figure 5. Middle2 Layer Layout (Top View)



Figure 4. Middle1 Layer Layout (Top View)



Figure 6. Bottom Layer Layout (Top View)

# **Reference Application Data**





Figure 10. Output Current Response (Output Current = 100mA ⇔ 500mA 5msec/div)

# **Revision History**

Date	Revision Number	Description
22. Jun. 2020	001	Initial release

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