

MB39C031-EVBSK-01

2ch Buck DC/DC + LDO Evaluation Board Operation Guide

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Preface



This manual explains how to use the evaluation board. Be sure to read this manual before using the product. For this product, please consult with sales representatives or support representatives.

Handling and use

Handling and use of this product and notes regarding its safe use are described in the manuals.

Follow the instructions in the manuals to use this product.

Keep this manual at hand so that you can refer to it anytime during use of this product.

Notice on this document

All information included in this document is current as of the date it is issued. Such information is subject to change without any prior notice.

Please confirm the latest relevant information with the sales representatives.

Cautions



Caution of the products described in this document

The following precautions apply to the product described in this manual.

Marning Indicates a potentially hazardous situation whi fault in the user's system if the product is not used.	ich could result in death or serious injury and/or a used correctly.
--	--

Electric shock,	Before performing any operation described in this manual, turn off all the power supplies to the system.
Damage	Performing such an operation with the power on may cause an electric shock or device fault.
Electric shock,	Once the product has been turned on, do not touch any metal part of it.
Damage	Doing so may cause an electric shock or device fault.

	Indicates the presence of a hazard that may cause a minor or moderate injury, damages to this product or devices connected to it, or may cause to lose software resources and other properties such as data, if the device is not used appropriately.
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Cuts, Damage	Before moving the product, be sure to turn off all the power supplies and unplug the cables. Watch your step when carrying the product. Do not use the product in an unstable location such as a place exposed to strong vibration or a sloping surface. Doing so may cause the product to fall, resulting in an injury or fault.		
Cuts The product contains sharp edges that are left unavoidably exposed, such as jumped Handle the product with due care not to get injured with such pointed parts.			
Damage	Do not place anything on the product or expose the product to physical shocks. Do not carry the product after the power has been turned on. Doing so may cause a malfunction due to overloading or shock.		
Damage	Since the product contains many electronic components, keep it away from direct sunlight, high temperature, and high humidity to prevent condensation. Do not use or store the product where it is exposed to much dust or a strong magnetic or electric field for an extended period of time. Inappropriate operating or storage environments may cause a fault.		
Damage	Use the product within the ranges given in the specifications. Operation over the specified ranges may cause a fault.		
Damage	To prevent electrostatic breakdown, do not let your finger or other object come into contact with the metal parts of any of the connectors. Before handling the product, touch a metal object (such as a door knob) to discharge any static electricity from your body.		



Damage	When turning the power on or off, follow the relevant procedure as described in this document. Before turning the power on, in particular, be sure to finish making all the required connections. Furthermore, be sure to configure and use the product by following the instructions given in this document. Using the product incorrectly or inappropriately may cause a fault.
Damage	Always turn the power off before connecting or disconnecting any cables from the product. When unplugging a cable, unplug the cable by holding the connector part without pulling on the cable itself. Pulling the cable itself or bending it may expose or disconnect the cable core, resulting in a fault.
Damage	Because the product has no casing, it is recommended that it be stored in the original packaging. Transporting the product may cause a damage or fault. Therefore, keep the packaging materials and use them when re-shipping the product.

Contents



1.	Description	7
2.	Evaluation Board Specification	8
3.	Pin Description	9
	3.1 Jumper, Switch Descriptions	9
4.	Setup and Checkup	10
5.	Component Layout	11
6.	Wiring Layout	12
7.	Circuit Diagram	13
8.	Parts List	14
9.	Evaluation Board Picture	16
10.	Ordering Information	18
Revi	sion History	19

1. Description



The MB39C031-EVB-01 is the evaluation board for 2ch Buck DC/DC + 1ch LDO, MB39C031. This board implements MB39C031: Option-code 142, and output preset voltage DD1:1.2V, DD2:1.8V, LDO:3.3V or selectable voltage controlled by I²C communication. This board implements our MCU : FM3(MB9AF312K) and can select the soft-start time, ON/OFF sequence, PFM/PWM mode easily with I²C communication using windows PC and prepared software.

Figure 1-1. Board Outline



2. Evaluation Board Specification



Item	Symbol	Min.	Тур.	Max.	Unit
Input voltage	VIN	2.5	3.6	5.5	V
Output voltage	Vo1	0.99	1.00	1.01	V
Output current	lo1	-	-	1400	mA
Output voltage	Vo2	1.78	1.80	1.82	V
Output current	lo2	-	-	600	mA
Output voltage	LDO	3.24	3.30	3.36	V
Output current	lo3	-	-	250	mA

Table 2-1. Evaluation Board Specification

Board size: 27.94mm × 27.94mm

3. Pin Description



Block	Pin symbol	I/O	Function Description	
DD1	Vo1	0	DD1 output terminal	
ועט	PG1	0	DD1 POWERGOOD output monitor terminal	
000	Vo2	0	DD2 output terminal	
002	PG2	0	DD2 POWERGOOD output monitor terminal	
100	LDO	0	LDO output terminal	
LDO	PGL	0	LDO POWERGOOD output monitor terminal	
	CTL1	I	DD1 control terminal	
	CTL2	I	DD2 control terminal	
CIL	CTLL	I	LDO control terminal	
	CTLMAIN	I	Control terminal for common block and MCU block	
ERR	ERR	0	ERR signal output terminal	
	VCCI2C	I	Power supply terminal for I ² C.	
1 ² 0	SCL	I	I ² C clock terminal	
TC	SDA	I/O	I ² C data I/O terminal	
	ADDSEL	I	Switch terminal for slave address	
	VIN	I	Control circuit block power supply terminal	
COMMON	GND	-	Control circuit block ground terminal	
	GND3	-	Control circuit block ground terminal	

Table 3-1. Pin Description

3.1 Jumper, Switch Descriptions

Table 3-2. Jumper, Switch Descriptions

Jumper, Switch	Description	Initial Setting	
JP1	Short VIN terminal and VBUS pin (2 pin)	Open	

4. Setup and Checkup



MB39C031 preset value can be evaluated with stabilized power supply.

- * : CTLM, CTL1, CTL2, CTLL
- 1. 3.3V is applied to VIN terminal.
- 2. CTLM, CTL1, CTL2, CTLL are connected to VIN terminal.
- 3. Vo1:1.0V, Vo2:1.8V, Vo3:3.3V is output.

Figure 4-1. Image of Connection



5. Component Layout



Figure 5-1. Component Layout Top View



6. Wiring Layout



Figure 6-1. Wiring Layout



Inside (Layer 3)

Bottom Side (Layer 4)



7. Circuit Diagram



Figure 7-1. Circuit Diagram



8. Parts List



No.	Component	Item	Parts Number	Vendor	Value	Remarks
1	M1	PMIC	MB39C031WQN-G-142	Cypress	-	-
2	L1	Inductor	DFE252008C-1R5M	ТОКО	1.5µH	-
3	L2	Inductor	DFE252008C-1R5M	ТОКО	1.5µH	-
4	C1	Ceramic Capacitor	C1608X5R1V475K	TDK	4.7µF	35V
5	C2	Ceramic Capacitor	C1608X5R1E106M	TDK	10µF	25V
6	C4	Ceramic Capacitor	C1608X5R1V475K	TDK	4.7µF	35V
7	C5	Ceramic Capacitor	C1608X5R1E106M	TDK	10µF	25V
8	C7	Ceramic Capacitor	C1608X5R1V475K	TDK	4.7µF	35V
9	C8	Ceramic Capacitor	C1608X5R1V475K	TDK	4.7µF	35V
10	C10	Ceramic Capacitor	C1005JB1H104K	TDK	0.1µF	50V,1005
11	C11	Ceramic Capacitor	C1005JB1H104K	TDK	0.1µF	50V,1005
12	C12	Ceramic Capacitor	C1005JB1V474K	TDK	0.47µF	35V,1005
13	C13	Ceramic Capacitor	C1005JB1H104K	TDK	0.1µF	50V,1005
14	R1	Chip Resistor	RR0510P-104-D	SUSUMU	100kΩ	±0.5%, ±50ppm
15	R2	Chip Resistor	RR0510P-104-D	SUSUMU	100kΩ	±0.5%, ±50ppm
16	R3	Chip Resistor	RR0510P-104-D	SUSUMU	100kΩ	±0.5%, ±50ppm
17	R4	Chip Resistor	RR0510P-104-D	SUSUMU	100kΩ	±0.5%, ±25ppm
18	R5	Chip Resistor	RR0510P-103-D	SUSUMU	10kΩ	±0.5%, ±25ppm

Table 8-1. Parts List



No.	Component	Item	Parts Number	Vendor	Value	Remarks
19	R7	Chip Resistor	RR0510P-222-D	SUSUMU	2.2kΩ	±0.5%, ±25ppm
20	R8	Chip Resistor	RR0510P-222-D	SUSUMU	2.2kΩ	±0.5%, ±25ppm
21	R13	Chip Resistor	RR0510P-103-D	SUSUMU	10kΩ	±0.5%, ±25ppm
22	JP1	-	-	-	-	No Mounted
23	CN104	-	-	-	-	No Mounted
	SCL	Terminal				
	SDA	Terminal				
	VCCI2C	Terminal				
	ERR	Terminal				
	Vi	Terminal				
	Vi	Terminal	90131-0770	molex	-	2 × 10pin header
	GND	Terminal				
	GND	Terminal				
	CTL1	Terminal				
04	CTL2	Terminal				
24	CTLL	Terminal				
	CTLM	Terminal				
	Vo1	Terminal				
	Vo2	Terminal				
	LDO	Terminal				
	GND3	Terminal				
	PG1	Terminal				
	PG2	Terminal				
	PGL	Terminal				
	ADDS	Terminal				

9. Evaluation Board Picture



Figure 9-1. Evaluation Board Picture (Top)





Figure 9-2. Evaluation Board Picture (Back)



10. Ordering Information



Table 10-1. Ordering Information

Part Number	EVB Revision	Note
MB39C031-EVBSK-01	Rev 1.0	

Revision History



Document Title: MB39C031-EVBSK-01 2ch Buck DC/DC + LDO Evaluation Board Operation Guide			
Document Number: 002-08724			
Revision	Issue Date	Origin of Change	Description of Change
**	01/16/2015	ATTS	Initial release
*A	02/04/2016	ATTS	Migrated Spansion Guide from MB39C031-EVBSK-01_SS901-00035-1v0-E to Cypress format
*B	12/27/2017	ATTS	Updated template

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