# **TOSHIBA**

© 2020 Toshiba Electronic Devices & Storage Corporation

2020-05-07 Rev.2.0

# RD Number: RD069

RD Title: TB67H410FTG Evaluation Circuit BOM

Item No.	Designator	Quantity	Value	Part Number	Manufacturer	Description	Package	Not Mount
1	C_VCC	1	0.1µF 25V	_	—	Chip capacitor	3.2mm×1.6mm	
2	C_VM2	1	0.1µF 50V	—	—	Chip capacitor	3.2mm×1.6mm	
3	C_VRFA	1	0.1µF 25V	—	—	Chip capacitor	3.2mm×1.6mm	
4	C_VRFB	1	0.1µF 25V	_	—	Chip capacitor	3.2mm×1.6mm	
5	C_VM1	1	100µF 50V	—	—	Electrolytic capacitor		
6	C_VDD	1	10µF 25V	_	—	Electrolytic capacitor		
7	C_OSCM	0	Socket pin	—	—	Socket pin		✓
8	C_OSCM	0	270pF 25V	—	—	Leaded capacitor	2.54mm pitch	✓
9	C_OSCM	1	270pF 25V	—	—	Chip capacitor	3.2mm×1.6mm	
10	C_OAP	0	Not mount	—	—	Chip capacitor	3.2mm×1.6mm	✓
11	C_OAM	0	Not mount	—	—	Chip capacitor	3.2mm×1.6mm	✓
12	C_OBM	0	Not mount	—	—	Chip capacitor	3.2mm×1.6mm	✓
13	C_OBP	0	Not mount	—	—	Chip capacitor	3.2mm×1.6mm	✓
14	CON1	0	Connector	_	—	Connector 4P 2.5		✓
15	CON2	1	Connector	-	—	Connector 2P 2.5		
16	CON3	1	Connector	—	—	Connector 2P 2.5		
17	CON4	0	Connector	_	—	Connector 3P 2.5		✓
18	CON5	0	Connector	—	—	Connector 3P 2.5		✓
19	OUT_A-	1	Check terminal	-	—	Check pin		
20	OUT_A+	1	Check terminal	—	—	Check pin		
21	OUT_B-	1	Check terminal	—	—	Check pin		
22	OUT_B+	1	Check terminal	_	—	Check pin		
23	RSA	1	Check terminal	—	—	Check pin		
24	RSB	1	Check terminal	—	_	Check pin		
25	VCC	1	Check terminal	—	—	Check pin		

26	VDD	1	Check terminal	_	_	Check pin		
27	VM	1	Check terminal	—	_	Check pin		
28	NC	0	Check terminal	—	—	Check pin		$\checkmark$
29	38	0	Check terminal	—	—	Check pin		$\checkmark$
30	39	0	Check terminal	—	—	Check pin		$\checkmark$
31	VREFB	1	Check terminal	—	-	Check pin		
32	42	1	Check terminal	—	-	Check pin		
33	OSCM	1	Check terminal	—	-	Check pin		
34	44	1	Check terminal	—	-	Check pin		
35	45	1	Check terminal	—	-	Check pin		
36	46	1	Check terminal	—	—	Check pin		
37	47	1	Check terminal	—	-	Check pin		
38	2	1	Check terminal	—	-	Check pin		
39	3	1	Check terminal	—	-	Check pin		
40	4	1	Check terminal	—	—	Check pin		
41	GND1	1	Check terminal	—	—	Check pin		
42	GND2	1	Check terminal	—	—	Check pin		
43	GND3	1	Check terminal	—	—	Check pin		
44	GND4	1	Check terminal	—	—	Check pin		
45	GND5	1	Check terminal	—	—	Check pin		
46	GND6	1	Check terminal	—	—	Check pin		
47	GND7	1	Check terminal	—	—	Check pin		
48	JP_VRF1	1	Pin header 2P	—	—	Jumper		
49	JP_VRF1	1	Jump socket	—	_	Short pin		
50	JP_VRF2	1	Pin header 2P	_	_	Jumper		
51	JP_VRF2	1	Jump socket	—	—	Short pin		
52	JP_VCC	1	Pin header 2P	—	—	Jumper		
53	JP_VCC	1	Jump socket	—	_	Short pin		
54	R_ID	0	100kΩ 0.25W	—	_	Leaded resistor	2.54mm pitch	$\checkmark$
55	R_MOUT	0	100kΩ 0.25W	—	_	Leaded resistor	2.54mm pitch	$\checkmark$
56	R_LOUT	0	100kΩ 0.25W	—	_	Leaded resistor	2.54mm pitch	$\checkmark$
57	R_OSCM	0	Socket pin	_	-	Socket pin		$\checkmark$

58	R_OSCM	0	5.1kΩ	—	_	Leaded resistor	2.54mm pitch	√
59	R_OSCM	1	5.1kΩ	—	—	Chip resistor	3.2mm×1.6mm	
60	R_VRF1	2	Socket pin	—	—	Socket pin		
61	R_VRF1	0	Not mount	—	—	Leaded resistor	2.54mm pitch	$\checkmark$
62	R_VRF2	2	Socket pin	—	_	Socket pin		
63	R_VRF2	0	Not mount	—	_	Leaded resistor	2.54mm pitch	√
64	R_RSA	1	0.22Ω 1W	—	_	Chip resistor	5.0mm×2.5mm	
65	R_RSB	1	0.22Ω 1W	—	—	Chip resistor	5.0mm×2.5mm	
66	SW2	1	Pin header 3P	—	_	Jumper		
67	SW2	1	Jump socket	—	—	Short pin		
68	SW3	1	Pin header 3P	—	—	Jumper		
69	SW3	1	Jump socket	—	—	Short pin		
70	SW4	1	Pin header 3P	—	—	Jumper		
71	SW4	1	Jump socket	—	—	Short pin		
72	SW39	0	Pin header 3P	—	—	Jumper		$\checkmark$
73	SW39	0	Jump socket	—	—	Short pin		$\checkmark$
74	SW42	1	Pin header 3P	—	—	Jumper		
75	SW42	1	Jump socket	—	—	Short pin		
76	SW44	1	Pin header 3P	—	—	Jumper		
77	SW44	1	Jump socket	—	—	Short pin		
78	SW45	1	Pin header 3P	—	—	Jumper		
79	SW45	1	Jump socket	—	—	Short pin		
80	SW46	1	Pin header 3P	—	—	Jumper		
81	SW46	1	Jump socket	—	—	Short pin		
82	SW47	1	Pin header 3P	—	—	Jumper		
83	SW47	1	Jump socket	—	—	Short pin		
84	IC1	1	TB67H410FTG	TB67H410FTG	TOSHIBA	Motor driver IC	QFN48	

### **Terms of Use**

This terms of use is made between Toshiba Electronic Devices and Storage Corporation ("We") and customers who use documents and data that are consulted to design electronics applications on which our semiconductor devices are mounted ("this Reference Design"). Customers shall comply with this terms of use. Please note that it is assumed that customers agree to any and all this terms of use if customers download this Reference Design. We may, at its sole and exclusive discretion, change, alter, modify, add, and/or remove any part of this terms of use at any time without any prior notice. We may terminate this terms of use at any time and for any reason. Upon termination of this terms of use, customers shall destroy this Reference Design. In the event of any breach thereof by customers, customers shall destroy this Reference Design, and furnish us a written confirmation to prove such destruction.

#### 1. Restrictions on usage

1. This Reference Design is provided solely as reference data for designing electronics applications. Customers shall not use this Reference Design for any other purpose, including without limitation, verification of reliability.

2. This Reference Design is for customer's own use and not for sale, lease or other transfer.

3. Customers shall not use this Reference Design for evaluation in high or low temperature, high humidity, or high electromagnetic environments.

4. This Reference Design shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable laws or regulations.

#### 2. Limitations

 We reserve the right to make changes to this Reference Design without notice.
This Reference Design should be treated as a reference only. We are not responsible for any incorrect or incomplete data and information.

3. Semiconductor devices can malfunction or fail. When designing electronics applications by referring to this Reference Design, customers are responsible for complying with safety standards and for providing adequate designs and safeguards for their hardware, software and systems which minimize risk and avoid situations in which a malfunction or failure of semiconductor devices could cause loss of human life, bodily injury or damage to property, including data loss or corruption. Customers must also

refer to and comply with the latest versions of all relevant our information, including without limitation, specifications, data sheets and application notes for semiconductor devices, as well as the precautions and conditions set forth in the "Semiconductor Reliability Handbook".

4. When designing electronics applications by referring to this Reference Design, customers must evaluate the whole system adequately. Customers are solely responsible for all aspects of their own product design or applications. WE ASSUME NO LIABILITY FOR CUSTOMERS' PRODUCT DESIGN OR APPLICATIONS. 5. No responsibility is assumed by us for any infringement of patents or any other intellectual property rights of third parties that may result from the use of this Reference Design. No license to any intellectual property right is granted by this terms of use, whether express or implied, by estoppel or otherwise. 6. THIS REFERENCE DESIGN IS PROVIDED "AS IS". WE (a) ASSUME NO LIABILITY WHATSOEVER, INCLUDING WITHOUT LIMITATION, INDIRECT, CONSEQUENTIAL, SPECIAL, OR INCIDENTAL DAMAGES OR LOSS, INCLUDING WITHOUT LIMITATION, LOSS OF PROFITS, LOSS OF OPPORTUNITIES, BUSINESS INTERRUPTION AND LOSS OF DATA, AND (b) DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES AND CONDITIONS RELATED TO THIS REFERENCE DESIGN, INCLUDING WARRANTIES OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, ACCURACY OF INFORMATION, OR NONINFRINGEMENT.

# 3. Export Control

Customers shall not use or otherwise make available this Reference Design for any military purposes, including without limitation, for the design, development, use, stockpiling or manufacturing of nuclear, chemical, or biological weapons or missile technology products (mass destruction weapons). This Reference Design may be controlled under the applicable export laws and regulations including, without limitation, the Japanese Foreign Exchange and Foreign Trade Law and the U.S. Export Administration Regulations. Export and re-export of this Reference Design are strictly prohibited except in compliance with all applicable export laws and regulations.

# 4. Governing Laws

This terms of use shall be governed and construed by laws of Japan.