

Motor Drive System Reference series

48V power supply, 3 hall sensor support, Three-phase brushless DC motor drive reference design.

REFMOT107

General Description

Evaluation board to drive a 3 Hall sensor three phase brushless DC motor with supply voltage of 48V (typ) and motor current of 8A (max).

It consists of a 3 hall sensor three phase brushless DC motor pre-driver and 6 Nch MOSFETs.

The rotor position is detected by 3 hall sensors, and the sin wave drive realizes silent and low vibration, and the automatic advance angle control enables highly efficient motor drive.

The output MOSFET can be mounted in the TO252 package or the HSOP8 package. In this board, the TO252 package product is mounted.

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Features

- 3 Hall Sensor Three Phase Brushless DC Motor Pre-Driver and Output MOS N+N Configuration
- Supply voltage 48V(typ)
- Output current 8A(max)
- Sine-wave commutation PWM drive, automatic advance angle control
- Number of motor poles setting function
- Soft start function
- Dead time setting function
- Power save input/ Rotation direction setting input/ Short brake input

Applications

- Fan motors, other general consumer equipment

Web page

<https://www.rohm.com/reference-designs/refmot107>

Key Specifications

- Name of board: BM64300MUV-EVK-001
- Input voltage: 28V to 63V
- Nb of outputs: 8A(Max)(depending on driving capability of MOSFET)
- Output voltage: 3 Hall sensor sine-wave commutation drive, automatic advance angle control
- EMC performance:
 - Input: Control input (PWM), power save, rotation direction setting, short brake.
 - Output: FG output..

Board Image

Board No.	W (Typ) x D (Typ)
BM64300MUV-EVK-001	60mm×68mm



Figure 1. BM64300MUV-EVK-001 Board

System block diagram

Figure 2. shows typical application diagram of REFMOT107 usage.

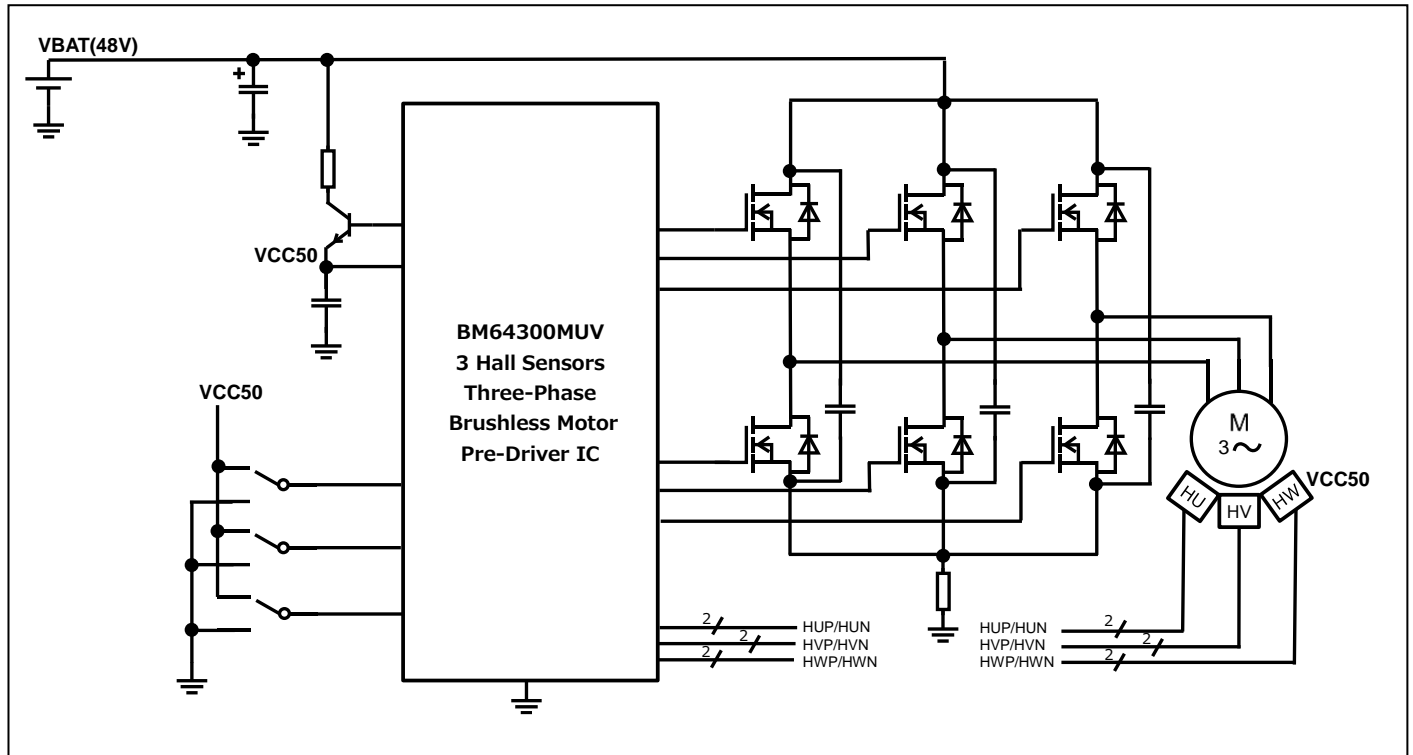


Figure 2. REFMOT107 block diagram

Electrical Characteristic

Table 1 Electrical Characteristics of REFMOT107

Parameter	Min	Typ	Max	Unit	Conditions
Power supply voltage (VCC)	28	48	63	V	
internal regulator output (V _{CC50})	4.5	5.0	5.5	V	
Control input voltage	0	-	V _{CC50} *1	V	
Gate Drive Voltage (VG)	-	VCC+9.5	-	V	
Output current	-	-	8	A	
PWM Frequency	-	40	-	kHz	

Key components in the design

Table 2 Key parts list of REFMOT107

Key components	Product type
BM64300MUJ	3 Hall Sensors Three-Phase Brushless Motor Pre-Driver
RD3P175SN	Nch 100V 17.5A Power MOSFET
LTR18EZPF	High Power Chip Resistor

Design support contents

In the ROHM official web site, various design support contents are available to download.

<https://www.rohm.com/reference-designs/refmot107>

It is possible to start your pcb design based on design resources such as

- Schematic
- PCB layout (gerber data)
- Parts list

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