

Motor Drive System Reference series

Sensor-less, Three-phase brushless DC motor drive with AC powered reference design.

REFMOT201

General Description

An evaluation board that enables direct input of AC power to a BLDC motor unit by installing an ACDC converter circuit in the drive circuit for a three phase brushless DC motor (hereafter BLDC motor). This is an evaluation board that enables direct input of AC power to the BLDC motor unit.

Targeting small motors up to 10W class, this evaluation board has a three phase motor driver + ACDC converter (12V output) on one small board.

It is possible to drive a three phase BLDC motor with an AC motor interface.

Key Specifications

- Name of board: REF MOT201 RMS308NA-008
- Input voltage: Input AC power supply voltage 90~264V, motor DC voltage 10.4~13.2V
- Nb of outputs: 1A(Max)(depends on current capability of motor driver LSI)
- Output voltage: Sensorless sine-wave commutation drive (Three-phase brushless DC motor)
- EMC performance: Input: Control input (DC or PWM), Rotation direction switching. Output: FG output.

Features

- Input AC power supply voltage 90~264V
- Motor DC voltage 10.4~13.2V
- Output current 1.0A(max)
- Sensorless 12V three phase brushless DC motor drive
- Motor driver: Motor driver LSI
- Sine wave commutation PWM drive
- Speed control by DC/PWM input
- Rotation direction setting
- Rotation speed pulse signal output (FG, 1/2FG)

Applications

Fan motor products for small ventilation fans, air purifiers, fans, refrigerators and freezers, industrial air cooling equipment, etc.

Board Image

Board No.
RMS332SD-011

W (Typ) x D (Typ)
55mm x 55mm



Figure 1. RMS308NA-008 Board

Web page

<https://www.rohm.com/reference-designs/refmot201>

System block diagram

Figure 2. shows typical application diagram of REFMOT201 usage.

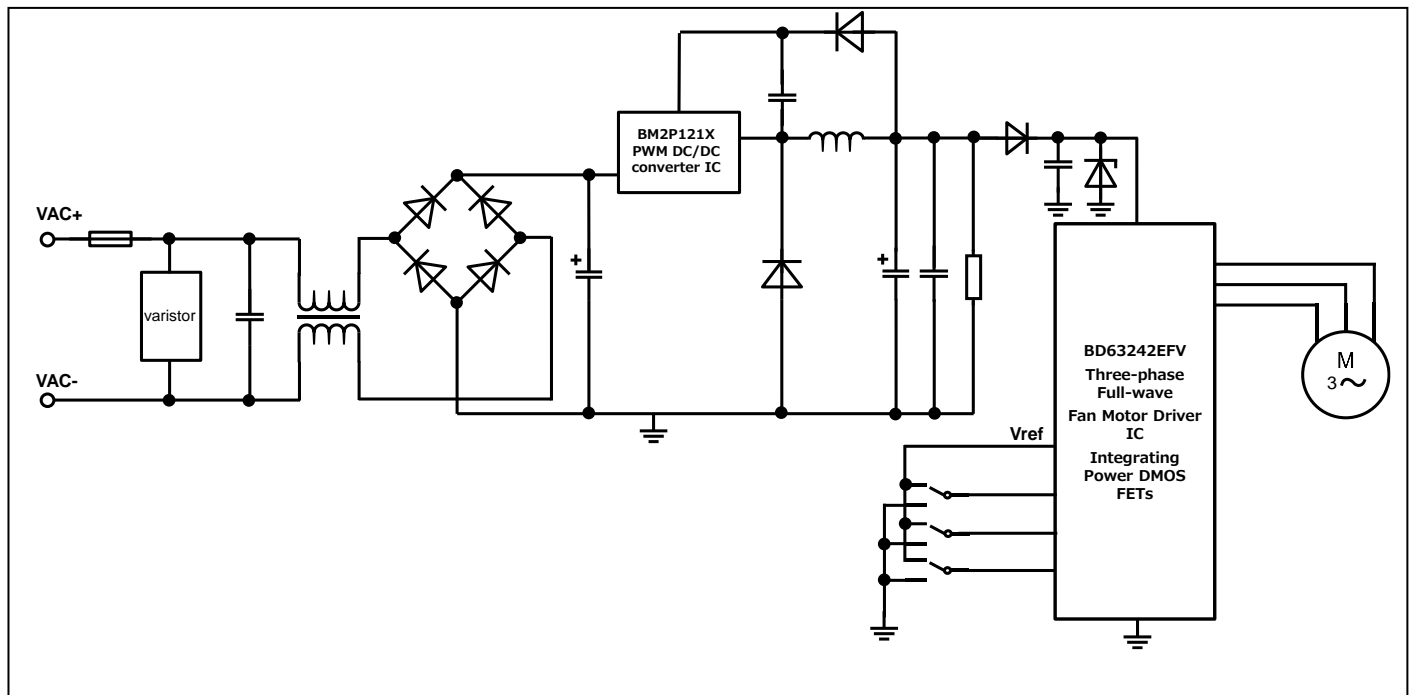


Figure 2. REFMOT201 block diagram

Electrical Characteristic

Table 1 Electrical Characteristics of REFMOT201

Parameter	Min	Typ	Max	Unit	Conditions
Power supply voltage (VAC)	90	-	264	V	
Output voltage of ACDC	9.5	-	12.96	V	
Output voltage of Motor drive DC	10.4	12.0	13.2	V	
Output current	-	-	1.0	A	

Key components in the design

Table 2 Key parts list of REFMOT201

Key components	Product type
BM2P121X	Non-isolated Type PWM DC/DC Converter IC Built-in Switching MOSFET
BD63242EFV	Three-phase Full-wave Fan Motor Driver

Design support contents

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

<https://www.rohm.com/reference-designs/refmot201>

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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