Issue Number | 001
March 2012

New Product Announcement

ZXBM2004

ZXBM2004 Two Phase BLDC Motor Pre-driver with Speed Control and Minimum Speed Setting

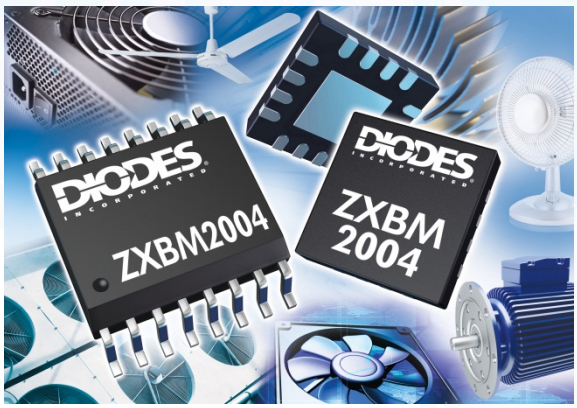
The ZXBM2004 is a two phase, Brushless Direct Current (BLDC) motor control pre-driver with speed control and minimum speed setting suitable for fans, blowers and motors.

For system flexibility the motor speed can be controlled by a voltage signal from either a Thermistor network, external control voltage or a PWM signal. The ZXBM2004 minimizes electromagnetic interference (EMI) by allowing the user to adjust the switch-on speed of the external power switches via a single resistor.

To help protect the motor coils, the ZXBM2004 provides rotor lock protection and auto re-start.

The open-drain Frequency Generator (FG) pin allows an external interface to monitor motor rotation and speed while the open-drain Rotation Detect (Rd) pin allows to monitor rotor status.

The ZXBM2004 is now available in space saving low profile U-QFN3030-16 in addition to QSOP16 package.



The Diodes Advantage

A reliable high performance pre-driver with an extended feature set for a simple and cost effective solution for two phase fans and motor control applications

- **High source and sink output drive**
  High source/sink capability of 80mA/16mA allows external Bipolar or MOSFET switches to be scaled in power for wide range of fan and motor applications
- **Adjustable switch-on speed**
  With a single resistor the power switch turn-on speed can be adjusted to help provide the optimum EMI noise performance
- **PWM, DC or Thermistor speed control pin**
  Flexible speed control by either an external PWM signal, variable supply voltage or by a resistor-thermistor network
- **Lock detect, shutdown and automatic restart**
  Protects coils from over-heating or burning out
- **Wide operating temperature range -40°C to 110°C**
  Suitable for thermally demanding applications
- **Small packaging**
  U-QFN3030-16 provides a very small low profile solution, over 3.5 times smaller than the QSOP16

Applications

- **Cooling fans for desktops PC's and servers**
- **Fans and motors for home appliances**
- **Extractor fans**
- **Pumps and motors**

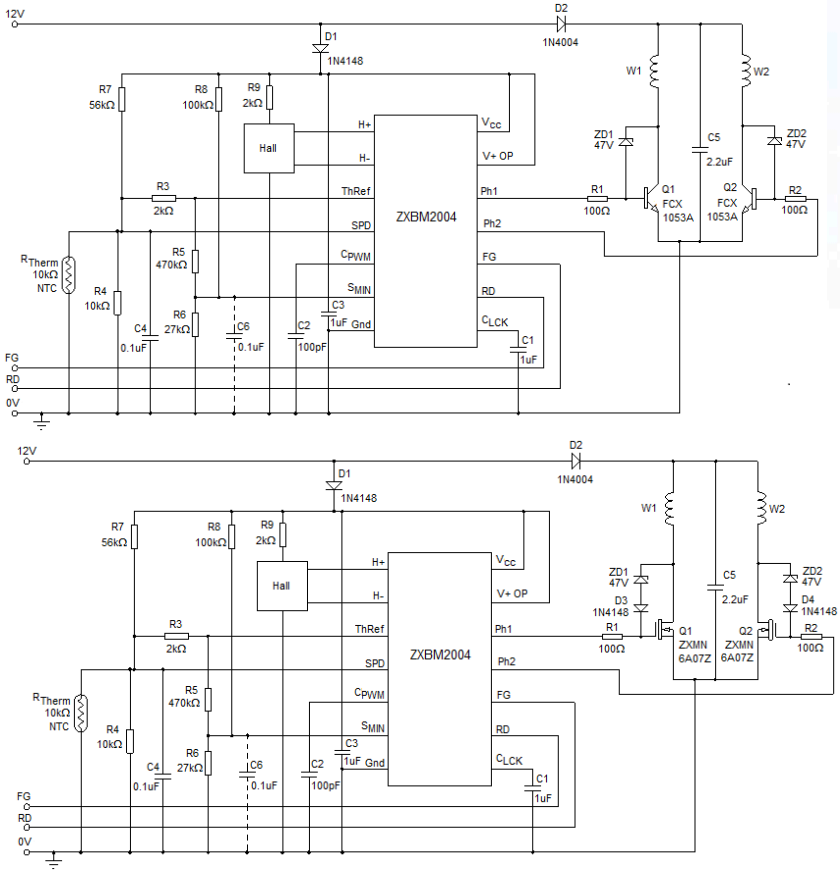
Issue Number | 001
March 2012

New Product Announcement

ZXBM2004

ZXBM2004 Two Phase BLDC Motor Pre-driver with Speed Control and Minimum Speed Setting

Typical Applications Circuits



Bipolar Switches

- **Bipolar switches for a cost effective solution**

MOSFET Switches

- **MOSFET switches for higher power solutions**

Electrical Characteristics

Part Number	Operating Voltage (V)	Typically Supply Current (mA)	Average Output Drive Source/Sink Current (mA)	Rotor Lock Protection	Min. Speed Setting	Operating Temp. (°C)	Package
ZXBM2004Q16TC	4.7 to 18	5.5	80/16	Yes	Yes	-40 to 105	QSOP16
ZXBM2004JA16TC	4.7 to 18	5.5	80/16	Yes	Yes	-40 to 105	U-QFN3030-16

Issue Number | 001
March 2012

New Product Announcement

ZXBM2004

ZXBM2004 Two Phase BLDC Motor Pre-driver with Speed Control and Minimum Speed Setting

Ordering Information

Device	Packaging	Part mark	Reel size	Tape width	Quantity
ZXBM2004Q16TC	QSOP16	ZXBM 2004 YY WW	13”	12mm	2500
ZXBM2004JA16TC	U-QFN3030-16	24 Y W Z	13”	12mm	3000

Notes: 1. Packages are in “Green” and with Lead Free Finish/RoHS Compliant package.
EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. No purposely added lead. Halogen and Antimony free.
Please visit our website at http://www.diodes.com/products/lead_free.html
2. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001,
which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf

Product Portfolio – Two Phase (1) BLDC Fans and Motor Pre-drivers

Part Number	Operating Voltage (V)	Typical IC supply current (mA)	Average Output drive source/sink current (mA)	Rotor Lock Protection	Min. Speed Setting	RD/FG flag	Operating Temp. (˚C)	Package
ZXBM2001	4.5 to 18	2.2	80/-	Yes	-	RD+FG	-40 to 85	MSOP10
ZXBM2002	4.5 to 18	2.2	80/-	Yes	-	RD	-40 to 85	MSOP10
ZXBM2003	4.5 to 18	2.2	80/-	Yes	-	FG	-40 to 85	MSOP10
ZXBM2004	4.7 to 18	5.5	80/16	Yes	Yes	FG, RD	-40 to 110	U-QFN3030-16 QSOP16

(1) For single phase BLDC fans and motor pre-drivers or All-In-One driver ICs please refer to motor drive portfolio page on the web –link provided below

To find out more information:

Motor Driver portfolio page: http://www.diodes.com/products/catalog/list.php?parent-id=122
Product page: http://www.diodes.com/products/catalog/detail.php?item-id=4914
Datasheet: http://www.diodes.com/datasheets/ZXBM2004.pdf