

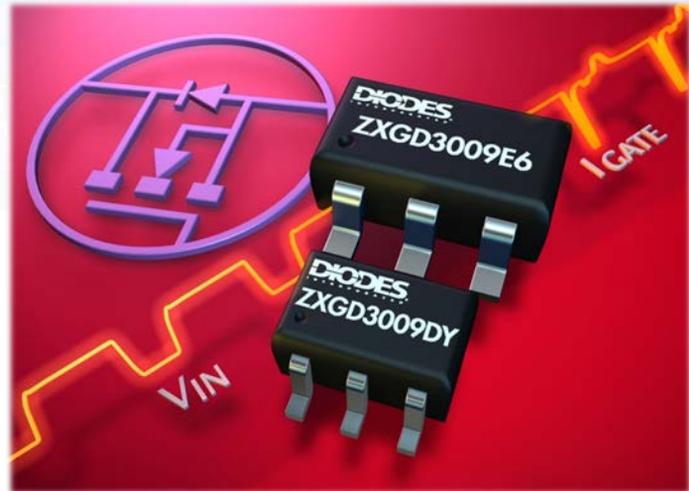


MOSFET Gate Driver Boosts Efficiency

Diodes Incorporated has extended its family of dedicated MOSFET Gate Drivers with the ZXGD3009 designed to control the high current power MOSFETs used in on-board and embedded power supplies and motor drive circuits.

Enabling the MOSFETs to be more rapidly and fully switched on and off, the SOT26 packaged ZXGD3009E6 and SOT363 packaged ZXGD3009DY help to minimize switching losses, improve power density and increase overall conversion efficiency.

Acting as a high-gain buffer stage for low power control ICs, the devices can provide a typical drive current of 500mA from an input current of only 10mA, ensuring the desirable fast charging and discharging of the power MOSFET's capacitive load.



The Diodes Advantage

The ZXGD3009 is 40V MOSFET Gate Driver using emitter-follower NPN+PNP totem pole configuration in SOT26 and SOT363

- **500mA output from 10mA input**

Acts as a high-gain buffer stage between the high output impedance of a controller and the low input impedance of a MOSFET Gate.

- **Controlled MOSFET on/off switching**

Enabling tailored rise and fall charging times with a short propagation delay <5ns allows for controlling the on/off MOSFET switching.

- **Resistant to Latch-Up and Shoot-Through**

Emitter-follower configuration means that the ZXGD3009E6 is inherently resistant to latch-up and shoot-through issues

- **Simplified Layout**

Pinout has been optimised to simplify layout and reduce parasitic trace inductances.

Circuit Function

High current MOSFETs have relatively large gate capacitances which need to be charged and discharged during switching. To increase the operational frequency of the switch, the driving circuit needs to be able to source and sink a large volume of charge into and out of the gate in a controllable method.



Part Number	Vin & Vcc	I _{source} @ I _{in} =10mA	I _{sink} @ I _{in} =-10mA	I _{peak}	T _{d(rise)}	T _{rise}	T _{d(fall)}	T _{fall}	Package
ZXGD3009DY	40V	0.98A	0.78A	2A	3.8ns	15ns	4ns	15ns	SOT363
ZXGD3009E6	40V	0.98A	0.78A	2A	3.8ns	15ns	4ns	15ns	SOT26

Target Applications

Gate driving of high current power MOSFETs in these applications:

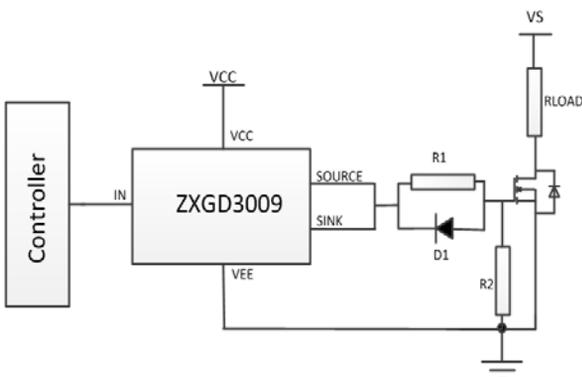
Power Supplies:

- On-board embedded
- DC-DC Converters
- PFC MOSFET

Motor Drive:

- Industrial Motors
- 1,2,3-Phase Driving
- H-Bridges

Typical Application Circuit



R1, D1 combination can be used for variable turn on and turn off times.

Packages

SOT363

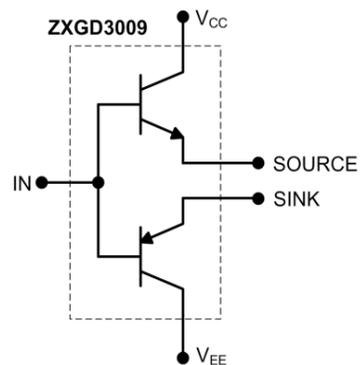


SOT26



SOT363 for smaller footprint.
SOT26 for wider pin spacing conformance.

Emitter-Follower Config



Emitter-follower NPN+PNP totem pole configuration.