



New Product Announcement

ZXGD3006E6

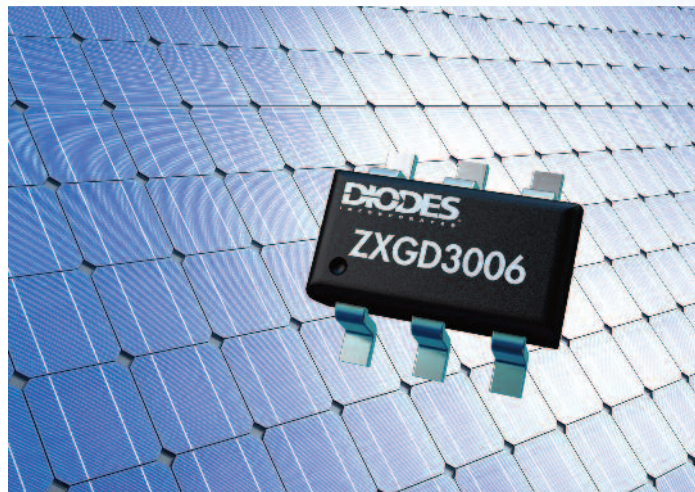
High current 40V Gate Driver reduces IGBT switching losses

Diodes Incorporated has extended its family of dedicated Gate Drivers for the switching of IGBTs and MOSFETs in, solar inverters, power supplies and motor drive circuits.

ZXGD3006E6 is designed for IGBT gate driving with a 40V operating range and delivering upto 10 Amp source/sink currents. The capability of this Gate Driver also means it excellent for driving SiC MOSFETs.

The ZXGD3006E6 can drive typically 4A into the low gate impedance of an IGBT, with just 1mA input from a controller. Also, the turn-on and turn-off switching behavior of the IGBT can be individually tailored to suit an application. In particular, by defining the switching characteristics appropriately, EMI and cross conduction problems can be reduced.

In delivering higher pulse currents than competing devices, this rugged SOT26 packaged Gate Driver ensures heat dissipation is reduced, resulting in an increase in system reliability.



The Diodes' Advantage

ZXGD3006E6 is a Gate Driver capable of driving 10 Amps into an IGBT gate capacitive load from 40V supply.

- **4A output from 1mA input**
Typically provides a drive current of 4A for an input of 1mA, making it a perfect high-gain buffer stage between the high output impedance of a controller and the low input impedance of a IGBT.
- **40V wide operating voltage**
Full enhancement to minimize on-state losses and permits +20V to -18V gate driving to prevent dV/dt induced false triggering of IGBTs.
- **Resistant to latch-up and shoot-through issues**
Emitter-follower configuration means that the ZXGD3006E6 is inherently resistant to latch-up and shoot-through issues
- **Short propagation delay with controlled rise and fall times**
Propagation delay <10ns from the emitter-follower configuration can rapidly track input, whilst separate source and sink outputs allow tailored control of the rise and fall charging times to minimise the risk of EMI and cross conduction issues.
- **Reduced parasitic trace inductances**
SOT26 device pin-out has been optimised enabling a simplification of PCB layouts and a reduction in parasitic trace inductances.
- **AEC-Q101, "Green" and RoHS Compliant**
The ZXGD3006E6 is qualified to AEC-Q101 standard, are RoHS compliant and has insignificant levels of halogens or antimony compounds.

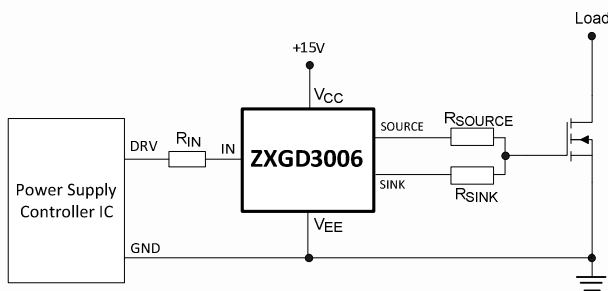
Circuit Function

High current IGBTs and 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.

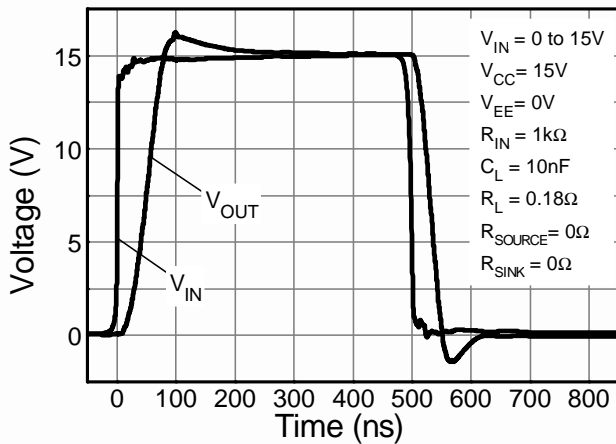
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Circuit example of driving a MOSFET

Application example of the ZXGD3006 driving the gate of a MOSFET from 0 to +15V with $R_{SOURCE} = R_{SINK} = 0\Omega$



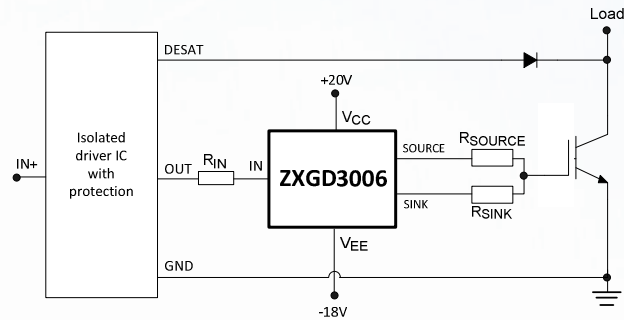
Switching Time Characteristic



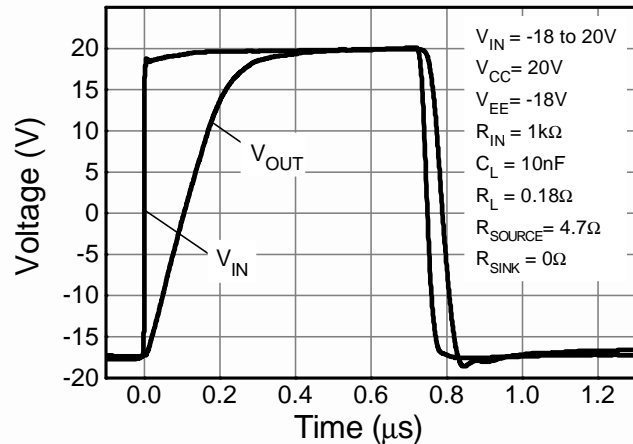
Symmetric Source and Sink Resistors

Circuit example of driving an IGBT

Application example of ZXGD3006 driving the gate of an IGBT with independent t_{on} and t_{off} using asymmetric R_{SOURCE} and R_{SINK} . In addition, the gate is driven negative to -18V to prevent dV/dt induced false triggering.



Switching Time Characteristic



Asymmetric Source and Sink Resistors

Typical Application Areas

DC-AC Inverters

- Solar
- Wind
- Fuel cells

Power Supply Unit

- Switch-Mode (SMPS)
- Power Factor Correction (PFC)
- MOSFET PFC driving
- >500W PSU
- Telecom & Server PSU

Motor Drive

- Industrial motors
- Intelligent Power Module (IPM)
- H-Bridges
- 1,2 & 3 phase

Plasma Display Panel

- Energy Recovery System