

High Voltage Product Guide

- Analog Switches
- EL Lamp Drivers
- LED Drivers
- Gate Drivers
- High Side Driver

Electroluminescent Lamps, Ultrasound Imaging, Inkjet Printers, Plasma and Flat Panel Displays, Large Matrix LCDs, and Industrial Measurement Equipment

IXYS/Clare's family of High Voltage ICs supports them all.

Switch up to 550 Volts or load currents up to 1 Amp!

The design and silicon fabrication expertise of IXYS and Clare combine to make innovative high voltage IC solutions for applications that require integration, microprocessor control, ease of use, and reliability.

Industry standard packages

- 44-Pin J-Lead Plastic Chip Carriers
- 28-Pin PLCCs (Plastic Leadless Chip Carrier)
- 8-Pin MSOP (Miniature Small Outline Package)
- 8- and 16-Pin SOICs (Small Outline IC)

Processes Include:

- Trench-Isolated BiCMOS Process
- Dielectrically Isolated Processes
- BCDMOS on SOI (Silicon On Insulator) Technology

Applications:

- LED Drivers for:
 - Solid State Lighting
 - LCD Backlight
 - LED Signage
- Xenon Lamp Gate Drivers
- AC-Electroluminescent Display Drivers
- EL Lamp Drivers for:
 - Mobile Cellular Phones
 - Pagers
 - Portable Transceivers
 - Remote Control Units
 - Calculators
- Ultrasound Imaging
- Printers
- Industrial Controls and Measurement



CPC7220/CPC7221

Low Charge Injection, 8-Channel High-Voltage Analog Switch

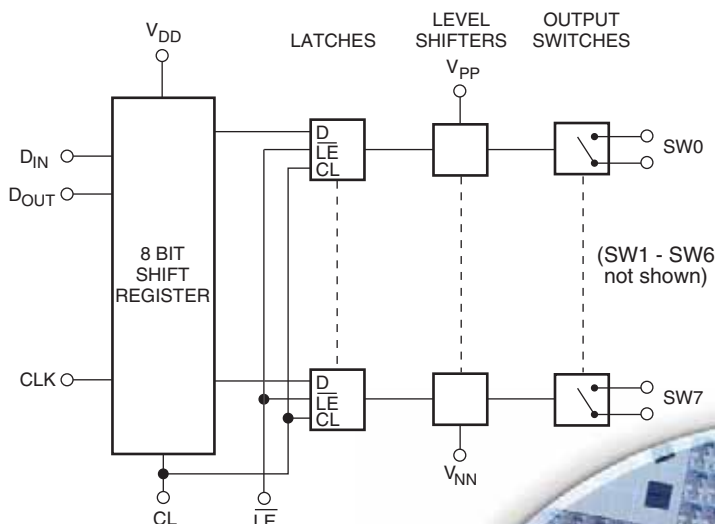
The CPC7220 and CPC7221, with alternate pinout, are low charge injection, 8-channel high-voltage analog switch integrated circuits (IC) for use in applications requiring high-voltage switching.

Control of the high voltage switching is via low voltage TTL logic level compatible inputs for direct connectivity to the system controller.

Because the CPC7220 and CPC7221 are capable of switching large load voltages and have a flexible load voltage range (e.g. V_{PP}/V_{NN} : +40V/-160V or +100V/-100V), they are well suited for many medical and industrial applications such as medical ultrasound imaging, printers, and industrial measurement equipment.

Construction of the high voltage switches, using Clare's reliable BCDMOS process technology on SOI (Silicon On Insulator), allows the switches to be organized as solid state switches with direct gate drive.

CPC7220 / CPC7221



Features:

- Processed with BCDMOS on SOI (Silicon On Insulator) Technology
- DC to 10MHz Analog Signal Frequency
- 28-Pin Surface Mount Package
- Low Quiescent Power Dissipation ($1\mu A$ Typical)
- Output On-Resistance Typically 20Ω
- TTL I/Os for 3.3V Interface
- Adjustable High Voltage Supplies

Applications:

- Ultrasound Imaging
- Printers
- Industrial Controls and Measurement



CPC6826

High Voltage EL Lamp Driver

Clare's CPC6826 is an electroluminescent (EL) lamp driver designed for applications operating from an input supply voltage range of 1.8V to 3.5V. Typically, an EL lamp driver circuit converts a lower voltage supply into a voltage high enough to activate the electroluminescent material. The CPC6826 accomplishes this by integrating two oscillators and a low-component-count boost switching supply with an H-Bridge driver circuit to illuminate the EL lamp. The internal high voltage H-Bridge provides a nominal $\pm 75V$ output between pins V_A and V_B .

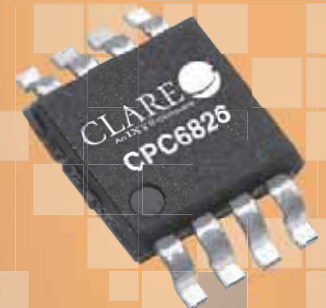
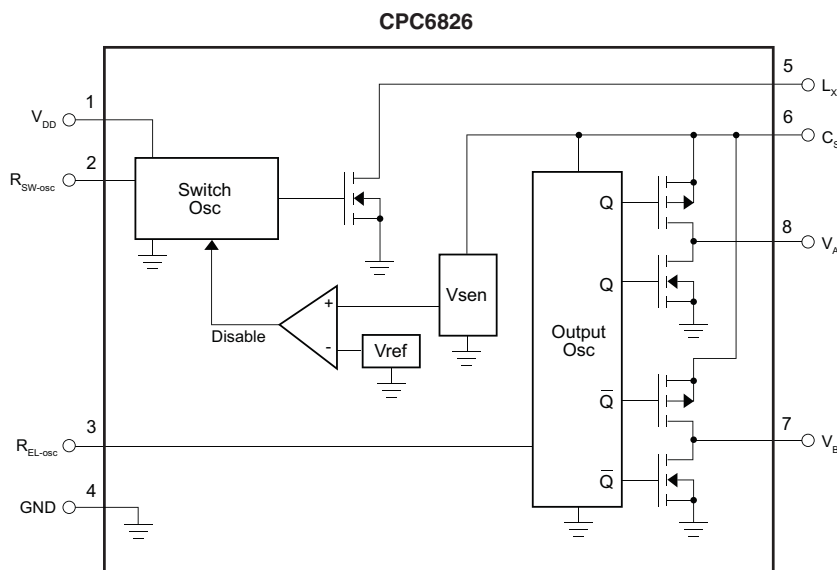
To conserve supply power and extend battery life, the CPC6826 automatically shuts down the switcher circuit whenever switcher output power exceeds load requirements. Supply power can also be conserved manually by disabling the switching circuit.

Features:

- 1.8V to 3.5V Supply Voltage
- DC to AC Conversion
- Electroluminescent Lamp Driver
- Adjustable EL Driver Frequency
- Adjustable Switch Frequency
- Output Voltage Regulation
- Enable / Disable Function

Applications:

- Mobile Cellular Phones
- Pagers
- Portable Transceivers
- Remote Control Units
- Calculators



MXHV9910

Off-Line High Brightness LED Driver

Manufactured using a dielectrically isolated process, the MXHV9910 can operate from 8V to 450V. This highly versatile input operating voltage enables a broad range of High Brightness (HB) LED applications.

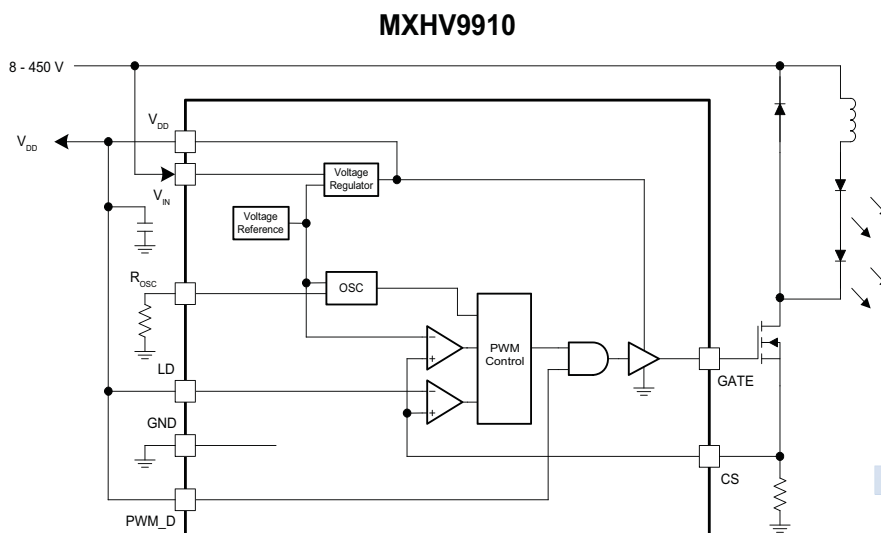
The MXHV9910 drives an external MOSFET at a fixed oscillator frequency set by an external resistor. Peak constant current to an LED string is maintained by modulating the MOSFET GATE signal on and off through the external sense resistor connected to the CS input. Dimming of an LED string is controlled by adjusting the duty cycle of the PWM input, or by applying a control voltage from 0 to 250mV to the LD input.

Features:

- 8V to 450V Input Voltage Range
- >90% Efficiency
- Drives from 1 to >100 LEDs in Series / Parallel Combinations
- Regulated LED Drive Current
- Linear or PWM Brightness Control
- Resistor Programmable Oscillator Frequency
- SOIC-8 EP RoHS Compliant Package

Applications:

- Flat Panel Display RGB Backlighting
- Signage and Architectural Lighting
- Traffic Signals
- Vehicle Interior, Indicator, and Tail Lighting
- DC or AC/DC LED Driver Applications

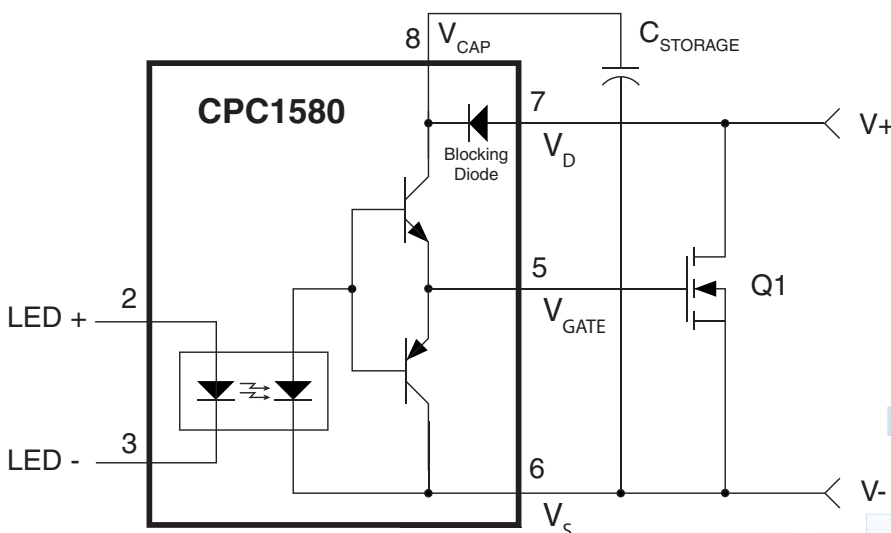


CPC1580

Optically Isolated Gate Driver Circuit

The CPC1580 is an optically isolated MOSFET gate driver that requires no external power supply. This device is specifically designed for low duty cycle switching frequencies that drive 4nF of gate charge to an external MOSFET with a maximum load voltage of 65V.

MOSFET turn-on requires significant charge transfer to switch the gate; that charge is supplied by the CPC1580 from an external storage capacitor. The value of the storage capacitor is selected as a function of the load (gate) capacitance. When the gate drive is off, the CPC1580 charges the storage capacitor through an internal blocking diode, thus replacing the charge that was depleted during the last turn-on cycle. While the gate driver is on, the photovoltaic current keeps the gate charged to its output voltage (~9.1V @ 25°C).



Features:

- Requires no External Power Supply
- Load Voltages up to 65V
- Small 8-Pin Surface Mount Package
- Low Drive Power Requirements (TTL/CMOS Compatible)
- High Reliability
- 3750V_{rms} Input/Output Isolation
- Machine Insertable, Wave Solderable
- Tape & Reel Version Available



Applications:

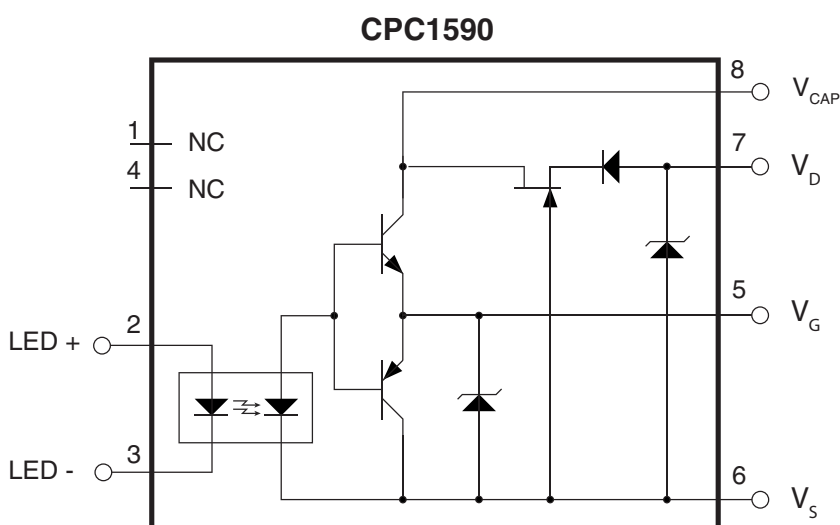
- Instrumentation
- Industrial Controls
- Appliances
- I/O Subsystems
- Medical Equipment- Patient/Equipment Isolation
- Aerospace

CPC1590

Optically Isolated Gate Driver Circuit

The CPC1590 is a self-regulating MOSFET gate driver that requires no independent power supply. The part is specifically designed for low duty cycle switching frequencies that drive 4nF of gate charge to an external MOSFET with a maximum load voltage of 200V.

MOSFET turn-on requires significant charge transfer to switch the gate; that charge is supplied by the CPC1590 from an external storage capacitor. The value of the storage capacitor is selected as a function of the load (gate) capacitance. When the gate drive is off, the internal N-JFET charges the storage capacitor through an internal blocking diode, thus replacing the charge that was depleted during the last turn-on cycle. While the gate driver is on, the photovoltaic current keeps the gate charged to its output voltage (~8.4V @ 25°C).



Features:

- Requires no External Power Supply
- Load Voltages up to 200V
- Small 8-Pin Surface Mount Package
- Low Drive Power Requirements (TTL/CMOS Compatible)
- High Reliability
- 3750V_{rms} Input/Output Isolation
- Machine Insertable, Wave Solderable
- Tape & Reel Version Available



Applications:

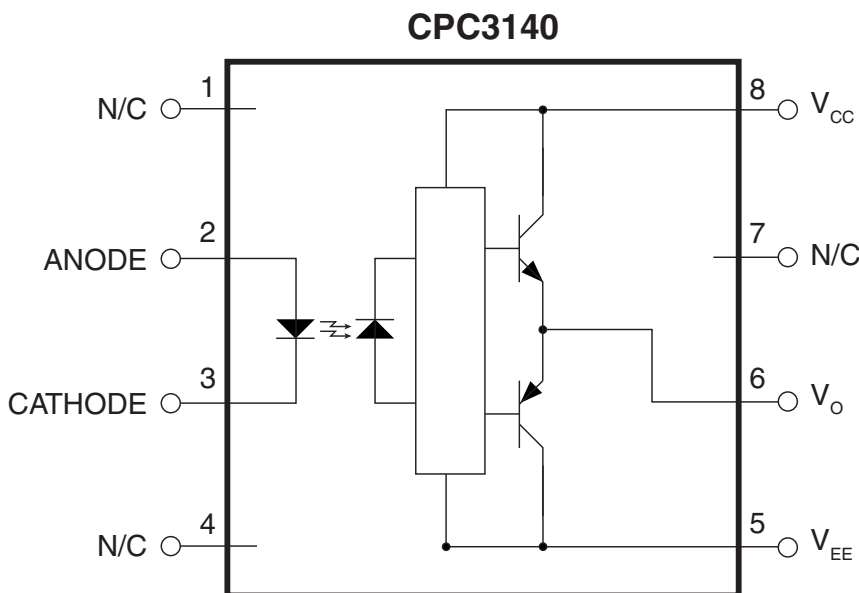
- Instrumentation
- Industrial Controls
- Appliances
- I/O Subsystems
- Medical Equipment-
Patient/Equipment Isolation
- Aerospace

CPC3140

0.4 Amp Output Current IGBT Gate Drive Optocoupler

The CPC3140 consists of a GaAlAs LED optically coupled to an integrated circuit with a power output stage. These optocouplers are ideally suited for driving power IGBTs and MOSFETs used in motor control inverter applications.

The high operating voltage range of the output stage provides the drive voltages required by gate controlled devices. The voltage and current supplied by this optocoupler make it ideally suited for directly driving small or medium power IGBTs.



Features:

- 0.4A Minimum Peak Output Current
- High Speed Response:
0.7 μ s Maximum Propagation Delay
Over Temperature Range
- Ultra-High CMR: Minimum 10kV/ μ s
at $V_{CM} = 1kV$
- Bootstrappable Supply Current:
Maximum 3mA
- Wide Operating Temperature Range:
-40°C to +100°C
- Wide V_{CC} Operating Range:
10V to 30V Over Temperature Range
- Available in DIP8 Package
- Safety Approvals: UL Approval
- 3750V_{rms} Input/Output Isolation (1 Min.)



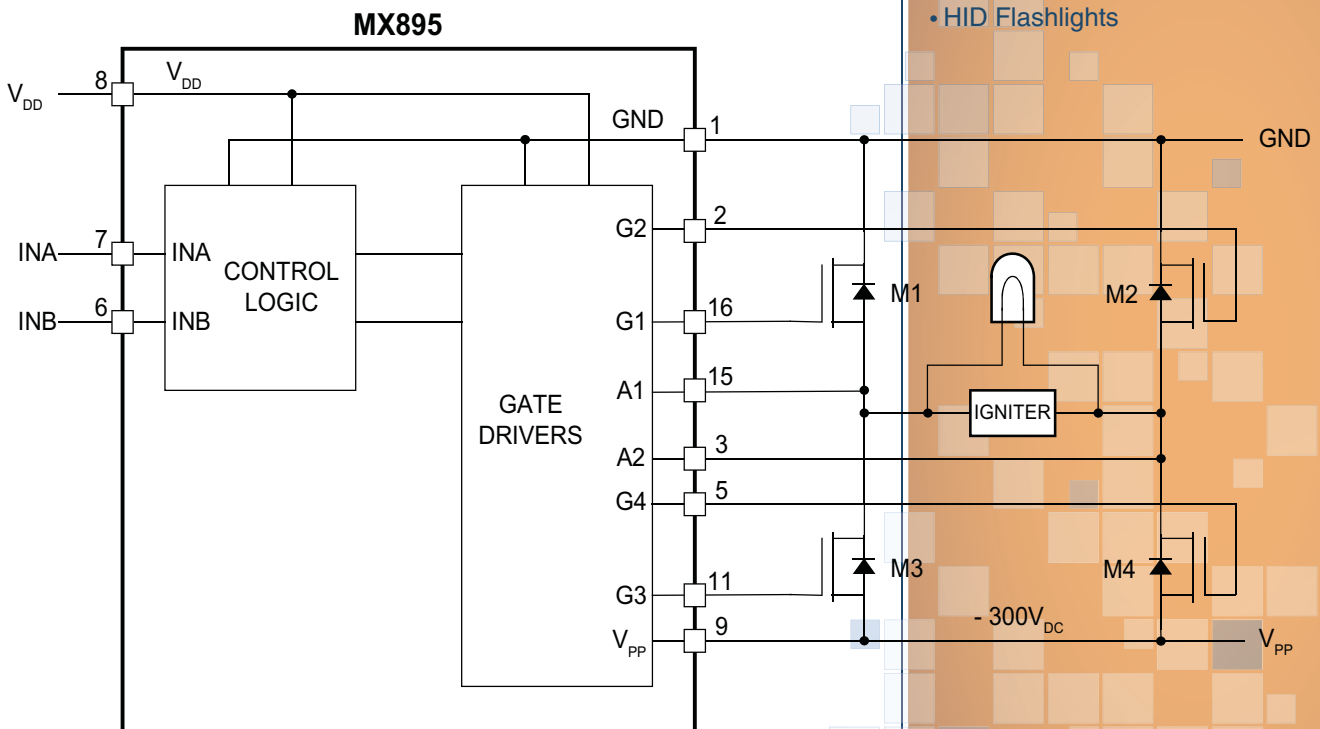
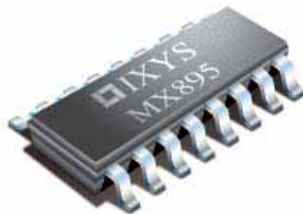
Applications:

- Isolated IGBT/Power MOSFET gate drive
- AC and Brushless DC Motor Drives
- Inverters for Home Appliances
- Industrial Inverters
- Switch Mode Power Supplies (SMPS)

MX895

-300V Full Bridge Gate Driver

The MX895 is a high-voltage integrated circuit that is fabricated using a trench-isolated BiCMOS process. The circuit is designed for driving N-channel power MOSFETs in a full bridge configuration. The circuit is intended for use as a commutator for High Intensity Discharge (HID) lamps.



Features:

- Full Bridge Gate Driver
- Internal High Voltage Level Shift Function
- Negative 300V Lamp Supply Voltage
- 3V to 12V CMOS Logic Compatible
- External Dead Time Control
- No External Bootstrap Capacitors
- 16-Pin SOIC Package

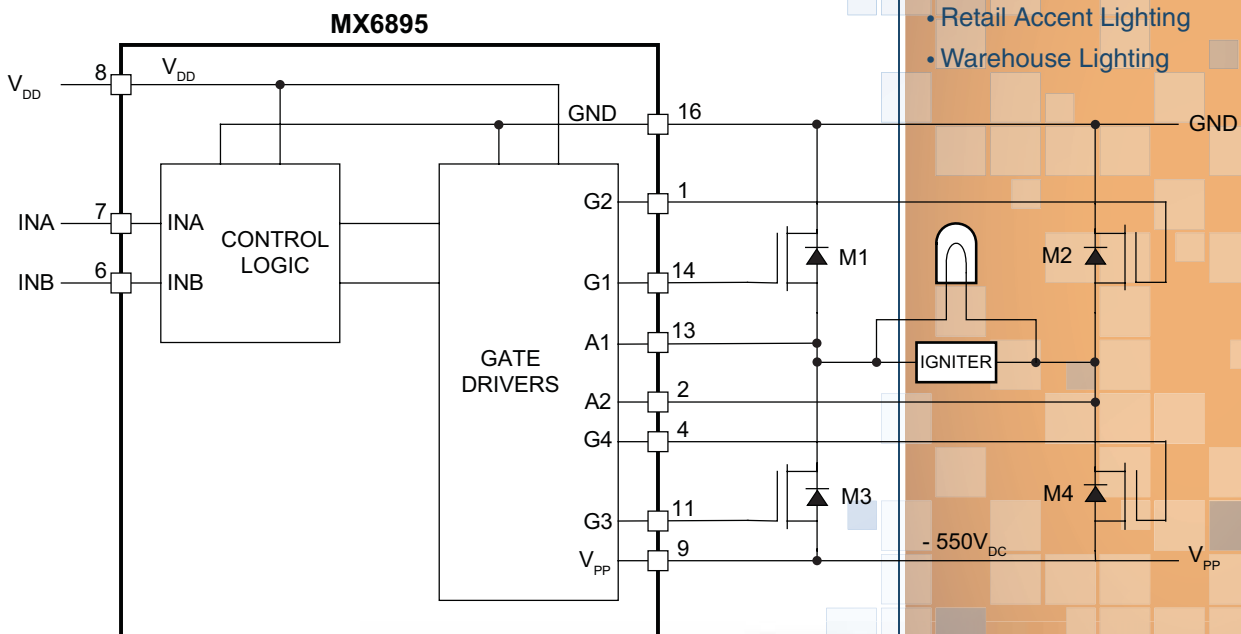
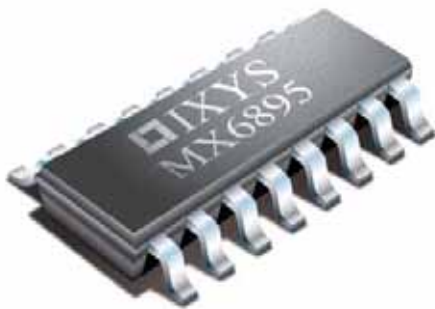
Applications:

- Commutator for High Intensity Discharge Lamps
- HID Flashlights

MX6895

-550V Full Bridge Gate Driver

The MX6895 is a high-voltage integrated circuit that is fabricated using a trench-isolated BiCMOS process. The circuit is designed for driving N-channel power MOSFETs in a full bridge configuration. The circuit is intended for use as a commutator for High Intensity Discharge (HID) lamps.



Features:

- Full Bridge Gate Driver
- Internal High Voltage Level Shift Function
- Negative 550V Lamp Supply Voltage
- 3V to 12V CMOS Logic Compatible
- External Dead Time Control
- No External Bootstrap Capacitors

Applications:

- Commutator for High Intensity Discharge Lamps
- Vehicle Head Lamps
- Outdoor/Street Lighting
- Multimedia Projectors
- Retail Accent Lighting
- Warehouse Lighting

IX2127

Current Sensing Single Channel High Side Driver

The IX2127 is a high-voltage, high-speed power MOSFET and IGBT driver. The logic input is compatible with standard CMOS outputs, down to 3.3V. The protection circuitry detects over-current in the driven power transistor and terminates the gate drive voltage. An open-drain FAULT signal is provided to indicate that an over-current shutdown has occurred.

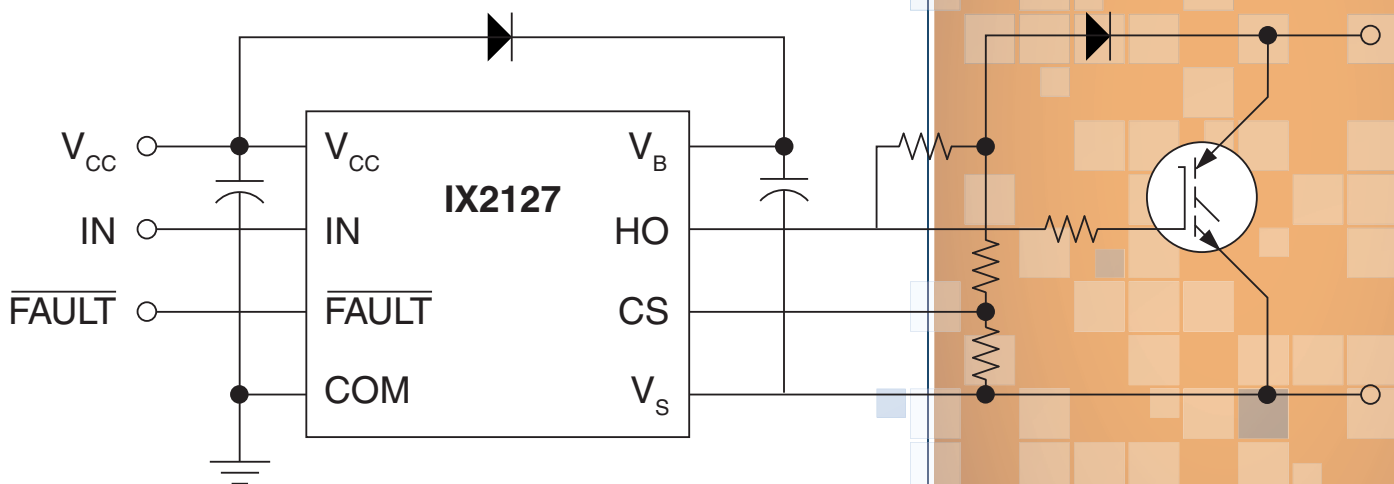
The output driver features a high pulse current buffer stage designed for minimum cross-conduction. The floating channel can be used to drive an N-channel power MOSFET or IGBT in the high-side or low-side configuration, and operates at up to 600 volts.

Features:

- Floating Channel designed for Bootstrap Operation up to +600V
- Tolerant to Negative Transient Voltage; dV/dt Immune
- Application-Specific Gate Drive Range:
Motor Drive: 12V to 15V
Automotive: 9V to 15V
- Undervoltage Lockout
- 3.3V, 5V, and 15V Input Logic Compatible
- FAULT Lead Indicates Shutdown Has Occurred
- Output in Phase with Input
- Available in Lead-Free

Applications:

- Automotive
- Motors



For More Information:

Please Visit:

www.clare.com

www.claremicronix.com

www.ixys.com

Contacts:

Tony Konopka
(akonopka@clare.com)

Bob DeCaro
(rdecaro@claremicronix.com)

John DiCato
(jdicato@claremicronix.com)

Sales Offices: America

Clare, an IXYS Company

Eastern North America, Mexico, South America

78 Cherry Hill Drive
Beverly, MA 01915
Tel: 978-524-6700
Fax: 978-524-4700

IXYS Corporation

3540 Bassett Street
Santa Clara, CA 95054
Tel: 408-982-0700
Fax: 408-496-0670

Micronix, an IXYS Company

145 Columbia
Aliso Viejo, CA 92656
Tel: 949-831-4622
Fax: 949-831-4628

IXYS Corporation

Central North America

Greensburg, PA
Tel: 724-836-8530
Fax: 724-836-8540

IXYS Corporation

Western North America

Solana Beach, CA
Tel: 858-792-1101

Sales Offices: Asia / Pacific

IXYS / Clare

Asian Headquarters

Room N1016, Chia-Hsin, Bldg II
10F, No. 96, Sec. 2
Chung Shan North Road
Taipei, Taiwan ROC
Tel: 886-2-25236368
Fax: 886-2-25236369

Sales Offices: Europe

IXYS Semiconductor GMBH

European Headquarters

Edisonstrasse 15
D-68623 Lampertheim
Germany
Tel: 49-6206-503203
Fax: 49-6206-503286

IXYS Semiconductor Limited

United Kingdom

Langley Park Way
Langley Park
Chippenham
Wiltshire SN 15 1GE - England
Tel: 44 1249 444524
Fax: 44 1249 659448

Eurocomposant (Clare Sales France)

France

144, Avenue Joseph Kessel
Voisins-le-Bretonneux, France F-78960
France
Tel: +33-1 30 64 25 92
Fax: +33-1 03 43 68 27

Comptronic AB (Clare Sales Sweden)

Sweden

Box 167
S-16329 Spånga
Sweden
Tel: 46-856-40672
Fax: 46-703-8449-99