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DIG-11-15-30-DD MOSFET Driver With Dynamic Discharge*

*US Patent 4,931,656

Features:

- Fast Turn Off, Active Gate Discharge
- Dielectrically Isolated
- Logic Circuit Compatibility
- High Open Circuit Voltage Up To 15V
- High Operating Temperature
- Fast Response Time
- High Isolation Resistance
- Excellent Input/Output Linearity
- Self Limiting Gate Voltage

Applications:

- Gate Drive For MOS devices
- Gate Drive For SCR
- Solid-State Relays
- Interface Between Logic Circuits & External Loads
- A.T.E. (Automatic Test Equipment)
- Switching Equipment
- Isolation Amplifiers
- Load Control From Microprocessor I/O Ports
- Thermocouple Open Detectors

Description:

The photovoltaic MOSFET driver is a State-of-the-Art, optically coupled floating power source used primarily to control MOSFETs when electrical isolation between input and output is required.

In addition to the infrared LED and photovoltaic diode array, each of the DD (Dynamic Discharge) products contains circuitry that rapidly discharges the power MOSFET gate when the LED is deactivated. The unique rapid discharge features of the photovoltaic MOSFET drivers make them particularly useful for high side switching of N-channel MOSFETs in solid-state relays, DC motor control and switching regulator applications.

The typical input circuit to the LED is a limiting resistor connected in series with the LED. When activated, the LED emits infrared light towards the photovoltaic diode array, which then responds by generating an open circuit voltage (V_{oc}) and disabling the turn off circuitry. The self-limiting photovoltaic output of the diode array is floating and therefore, can be safely applied directly to the gate and source of a MOSFET, regardless of the source potential of the MOSFET. When the LED is deactivated, the active turn off circuit discharges the capacitive input of the MOSFET. The active turn off circuitry is designed such that the turn off time of the MOSFET is relatively independent of the input capacitance of the MOSFET over a range of 300 to 5000 pF. Standard packages include low cost plastic mini-dips and hermetic 8-pin DIP ceramic side brazed. Surface mount gull wing packages are also available.

<i>Pin Designation</i>	
Pin Number	DIG-11-15-30-DD
1	Input +
2	Input -
3	N.C
4	N.C
5	N.C
6	Output +
7	N.C
8	Output -

Equivalent Circuit:



