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DIG-11-15-30-SM Photovoltaic MOSFET / IGBT Driver

Features:

- Optically Isolated
- Constructed For Surface Mount Assembly
- Suitable For Manual or Automatic Placement
- Sturdy Construction, Immune To Handling Damage
- Fast Turn On, Turn Off & Active Gate Discharge
- Dielectrically Isolated PV IC Construction
- High Open Circuit Voltage Up To 17.5V
- High Isolation Resistance

Applications:

- MOSFET/IGBT Driver
- Medical Implant Application
- Medical Solid-State Relays
- A.T.E. (Automatic Test Equipment)
- Medical Test Equipment
- Isolation Amplifiers
- Load Control From Microprocessor I/O Ports
- Thermocouple Open Detectors

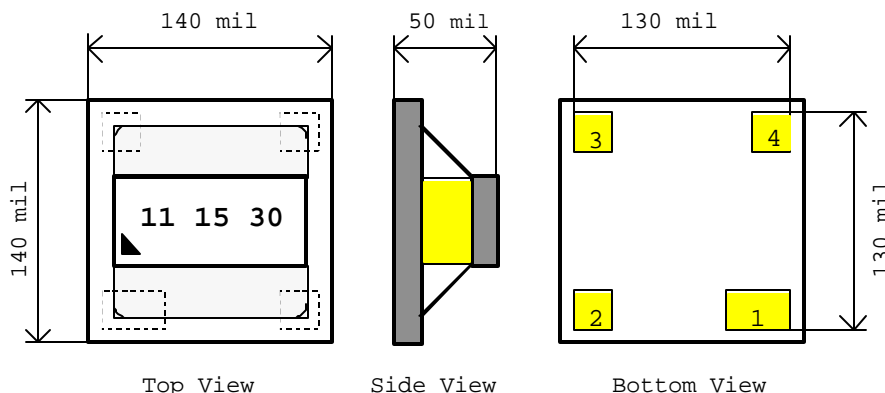
Description:

The DIG-11-15-30-SM Photovoltaic is a State-of-the-Art, optically-coupled floating power source used primarily to control MOSFET/IGBT's when electrical isolation between input and output is required. It is particularly well suited for Medical implant applications.

In addition to the infrared LED and photovoltaic (PV) diode array, each of the DIG-11-15-30-SM devices contains circuitry that rapidly discharges the power MOSFET/IGBT gate when the LED is deactivated. The unique rapid discharge feature of the DIG-11-15-30-SM makes it particularly useful for high side switching of MOSFET/IGBT's in Medical applications, DC motor control and switching regulator applications. The rugged design features a hard ceramic top, 2 hard sides and of course a hard ceramic bottom. Therefore, it is ideal for manual and automatic vacuum pencil assembly methods, with handling damage almost impossible.

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 MOSFET/IGBT, regardless of the source potential of the MOSFET/IGBT. When the LED is deactivated, the active turn-off circuit discharges the capacitive input of the MOSFET/IGBT. The active turn-off circuitry is designed such that the turn-off time of the MOSFET/IGBT is relatively independent of the input capacitance over a range of 300 to 5000 pF.

DIG-11-15-30-SM Layout:



DIG-11-15-30-SM Configuration:

Pad Number	Function	Size (Inches)
1	+ Input	0.030 x 0.050
2	- Input	0.030 x 0.030
3	+ V_o	0.030 x 0.030
4	- V_o	0.030 x 0.030

DIG-11-15-30-SM Photovoltaic MOSFET/IGBT Driver

❖ Absolute Maximum Ratings ($T_a = 25\text{ }^\circ\text{C}$)		
LED Forward Current	Steady State	100 mA
LED Forward Current	Peak 10% Duty Cycle	150 mA
LED Reverse Voltage		10V
Output Discharge Current		15mA
Operating Temperature Range		-55°C to 125°C
Storage Temperature		-55°C to 150°C

Electrical Characteristics ($T_a = 25\text{ }^\circ\text{C}$ Unless otherwise specified)

Parameter & Test Condition	Symbol	Min.	Max.	Unit
Open Circuit Voltage $I_{led} = 30\text{ mA}$	V_{oc}	14.0	17.5	V
Short Circuit Current $I_{led} = 30\text{ mA}$	I_{sc}	40.0	-	mA
LED Forward Voltage $I_f = 20\text{ mA}$	V_{fled}	-	1.7	V
LED Reverse Current $V_r = -5V$	I_{rled}	10.0	-	mA
Off State Voltage $I_{off} = 10\text{ }\mu\text{A}$; $I_{led} = 0\text{ mA}$	V_{off}	-	0.75	V
Isolation Voltage 1 sec; $I_{iso} < 100\text{ }\mu\text{A}$	V_{iso}	1500	-	VDC
Turn-On Time* $I_{led} = 30\text{ mA}$ $C=1500\text{pF}$; V_{oc} up to 50%	T_{on}	-	100	ms
Turn-Off Time* $I_{led} = 30\text{ mA}$ $C=1500\text{ pF}$	T_{off}	-	10	ms

* *Sample Tested*