LH1262CB/CAC/CACTR

Dual Photovoltaic MOSFET Driver
Solid State Relay

FEATURES

- **High Open Circuit Voltage**
- **High Short Circuit Current**
- **High I/O Isolation Voltage**
- **Logic Compatible Input**
- **High Reliability**

AGENCY APPROVALS

- **UL – File No. E52744**
- **BSI/BABT Cert. No. 7980**
- **VDE 0884 Approval**
- **FIMKO Approval**

APPLICATIONS

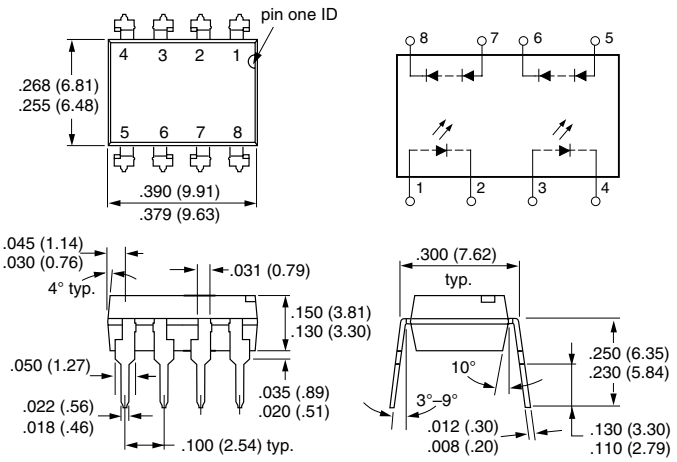
- **High-side Driver**
- **Solid State Relays**
- **Floating Power Supply**
- **Power Control**
- **Data Acquisition**
- **ATE**
- **Isolated Switching**
- **See Appnote 56**

DESCRIPTION

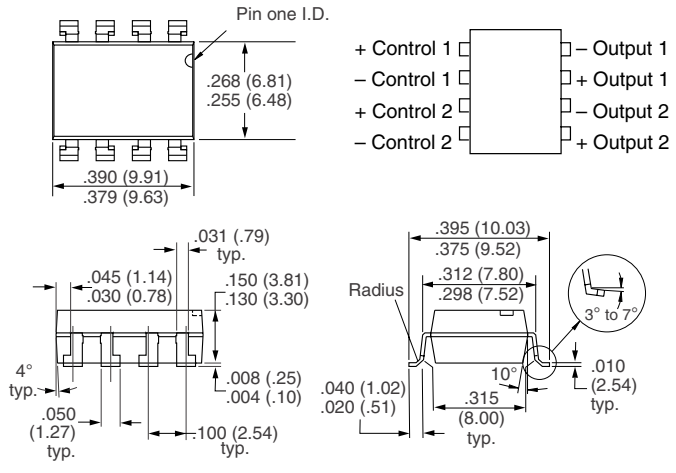
The LH1262CB/CAC Photovoltaic MOSFET Driver consists of two LEDs optically coupled to two photodiode arrays. The photodiode array provides a floating source with adequate voltage and current to drive high-power MOSFET transistors. Optical coupling provides a high I/O Isolation voltage. In order to turn the MOSFET off, an external resistance (gate-to-source) is required for gate discharge.

Package Dimensions in Inches (mm)

DIP



SMD



Part Identification

Part Number	Description
LH1262CB	8-pin DIP, Tubes
LH1262CAC	8-pin SMD, Tubes
LH1262CACTR	8-pin SMD, Tape and Reel

Absolute Maximum Ratings, T_A=25°C (except where noted)

Stresses in excess of the absolute Maximum Ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to absolute Maximum Ratings for extended periods of time can adversely affect reliability.

Ambient OperatingTemperature Range (T_A) .....–40°C to +100°C
Storage Temperature Range (T_{stg}) .....–40°C to +150°C
Pin Soldering Time (t=7.0 s max.) (T_S).....270°C
Input/Output Isolation Voltage
(t=60 s min.) (V_{ISO}) .....5300 V_{RMS}
LED Input Ratings
Continuous Forward Current (I_F).....50 mA
Reverse Voltage (I_R≤10 μA) t(V_R) .....5.0 V
Photodiode Array Reverse Voltage
(I_R≤2.0 μA) t(V_R).....100 V

Electrical Characteristics, T_A=25°C

Minimum and maximum values are testing requirements. Typical values are characteristics of the device and are the result of engineering evaluations. Typical values are for information only and not part of the testing requirements.

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
LED Forward Voltage	V_F	1.15	1.26	1.45	V	I_F=10 mA
Detector Forward Voltage	V_F (PDA)	—	14	—	V	I_F=10 μA
Detector Reverse Voltage	V_R (PDA)	—	200	—	V	I_R=2.0 μA
Open circuit Voltage (pins 5,6 or 7,8)	V_{OC}	10	13.5	15	V	I_F=5.0 mA
	V_{OC}	—	14	—	V	I_F=10 mA
	V_{OC}	—	14.5	—	V	I_F=20 mA
Short circuit Current (pins 5,6 or 7,8)	I_{SC}	1.0	4.0	6.5	μA	I_F=5.0 mA
	I_{SC}	2.6	8	14	μA	I_F=10 mA
	I_{SC}	—	17	—	μA	I_F=20 mA
Turn-On Time	t_{on}	—	35	—	μs	I_F=20 mA*
Turn-Off Time	t_{off}	—	90	—	μs	I_F=20 mA*

Notes

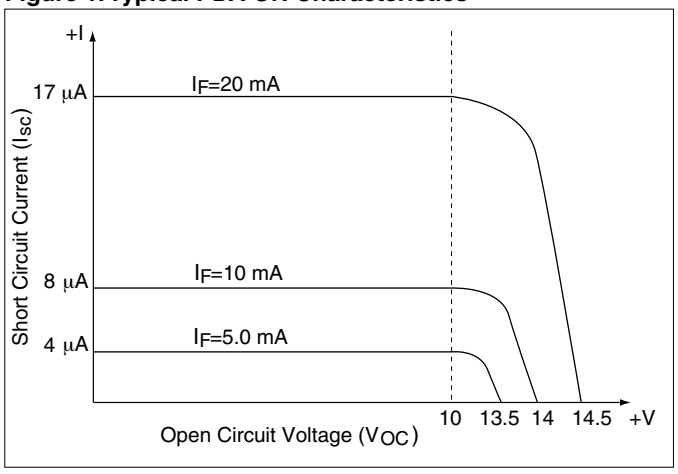
* f=1.0 kHz, pulse width=100 μs, load (R_L)=1.0 MΩ, 15 pF; measured at 90% rated voltage (t_{on}), 10% rated voltage (t_{off}). Actuation speed depends upon the external t_{on} and t_{off} circuitry and the gate capacitance of the MOSFET.

Functional Description

Figure 1 outlines the IV characteristics of the illuminated photodiode array (PDA). For operation at voltages below V_{OC}, the PDA acts as a nearly constant current source. The actual region of operation depends upon the load.

The amount of current applied to the LED (pins 1 and 2 or 3 and 4) determines the amount of light produced for the PDA. For high temperature operation, more LED current may be required.

Figure 1. Typical PDA ON Characteristics



Typical Performance Characteristics

Figure 2. Output Voltage vs. LED Forward Current

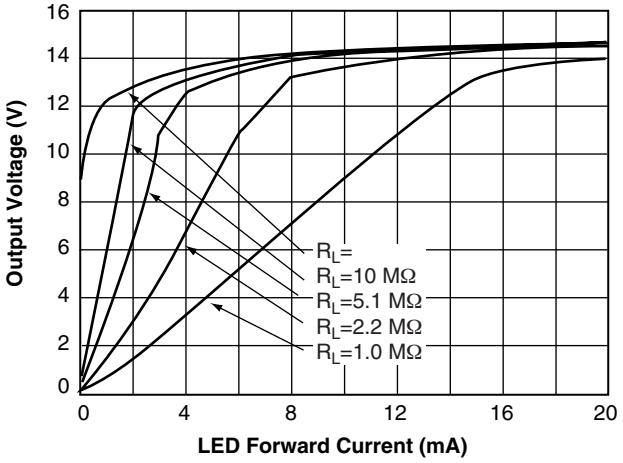


Figure 3. Short Circuit Current vs. LED Forward Current

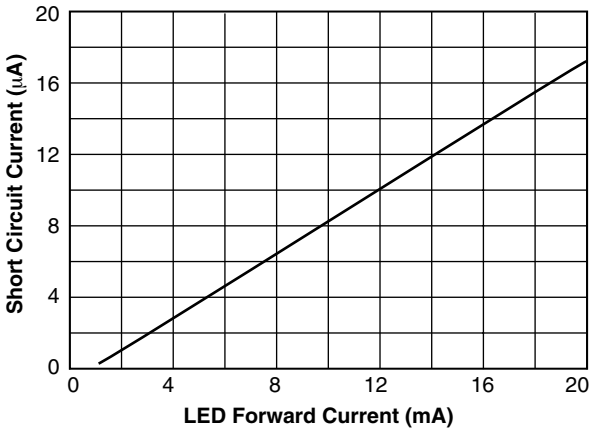


Figure 4. Open Circuit Voltage vs. Temperature

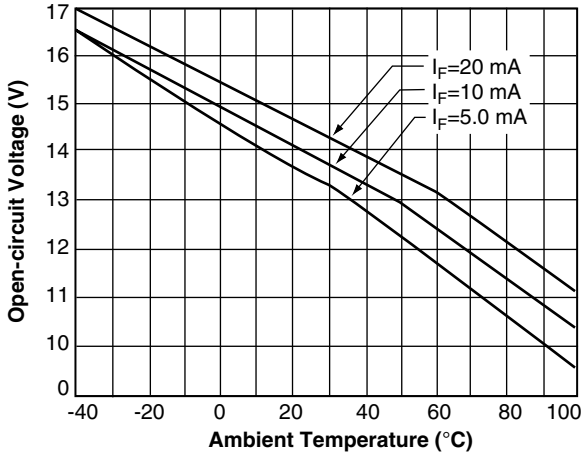


Figure 5. Short Circuit Current vs. Temperature

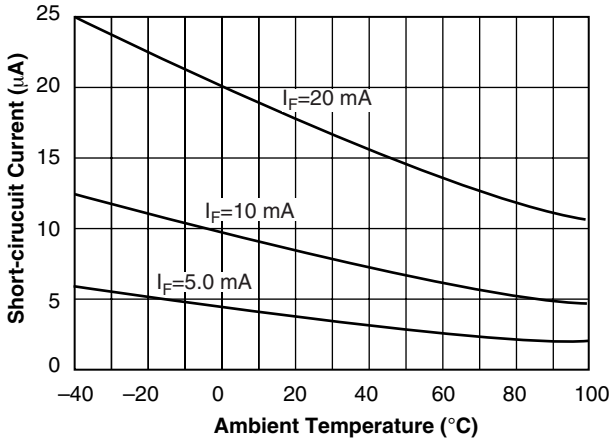


Figure 6. LED Forward Voltage vs. Temperature

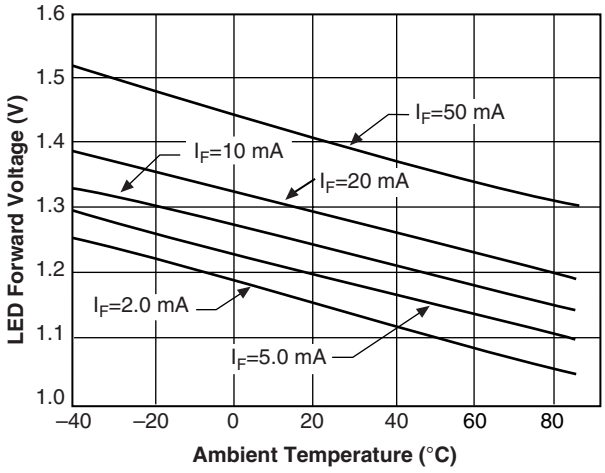


Figure 7. t_{on}/t_{off} vs. Load Capacitance

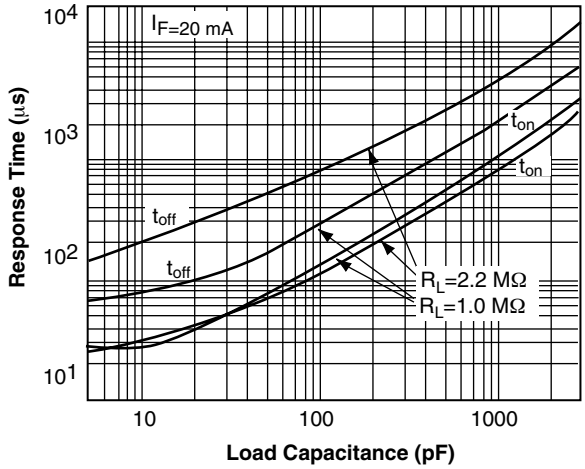


Figure 8. Typical Dual Form A Solid State Relay Application