

LH1262BB/BAC

Dual Photovoltaic MOSFET Driver

Features

- High open-circuit voltage
- High short-circuit current
- High I/O isolation voltage
- Logic compatible input
- High reliability

Applications

- High side driver
- Solid-state relays
- Floating power supply
- Power control
- Data acquisition
- ATE
- Isolated switching

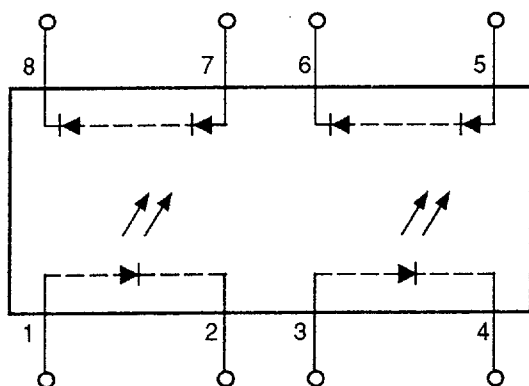


Figure 1. Functional Diagram

Description

The LH1262BB/BAC 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.

The device is packaged in an 8-pin, plastic DIP (LH1262BB) or in a surface-mount gull wing (LH1262BAC).

Pin Information

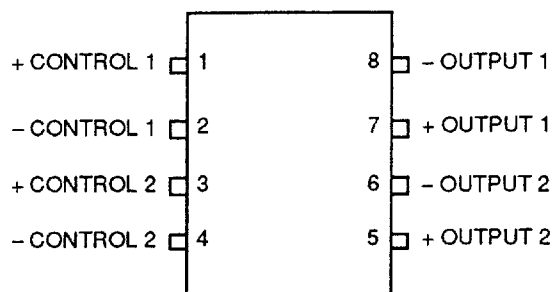


Figure 2. Pin Diagram

Functional Description

Figure 3 outlines the IV characteristics of the illuminated photodiode array (PDA). For operation at voltages below open-circuit voltage (V_{oc}), the PDA acts as a nearly constant current source. For operation at currents below short-circuit current (I_{sc}), the PDA acts as a nearly constant voltage 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.

Please refer to the *Build Your Own Solid-State Relay Using The LH1262 Dual Photovoltaic MOSFET Driver* Application Note (AP91-013HVIC) for more information on driving MOSFETS with the LH1262.

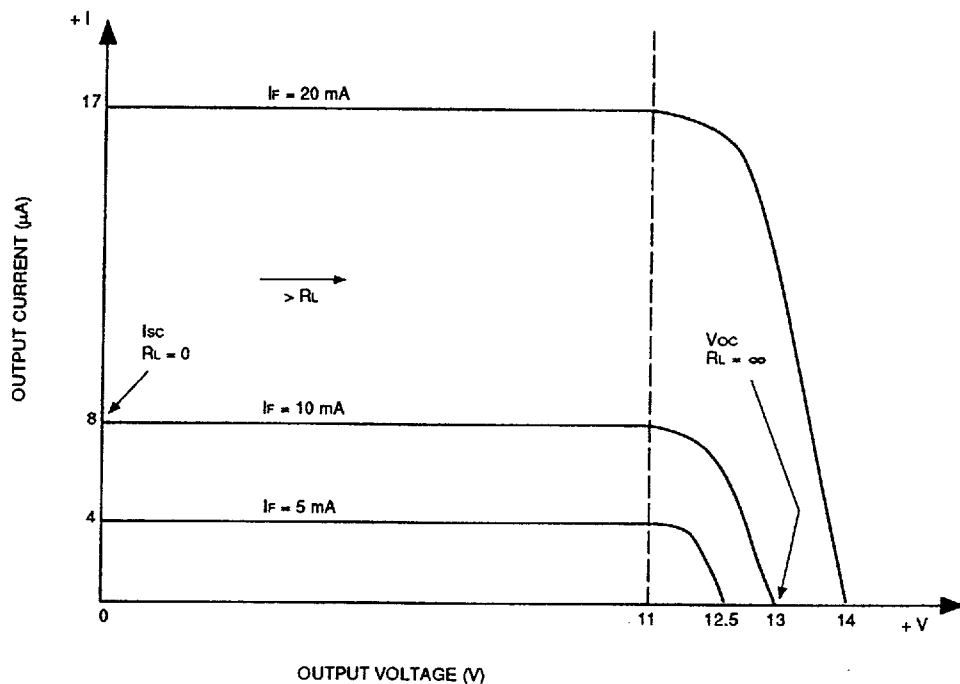


Figure 3. Current-Voltage Characteristics of a Typical PDA Under Illumination

Absolute Maximum Ratings

At 25 °C

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 the data sheet. Exposure to maximum rating conditions for extended periods can adversely affect device reliability.

Parameter	Symbol	Value	Unit
Ambient Operating Temperature Range	T _A	-40 to +100	°C
Storage Temperature Range	T _{stg}	-40 to +100	°C
Pin Soldering Temperature (t = 7 s max.)	T _s	270	°C
Input/Output Isolation Voltage (t = 60 s min)	V _{iso}	1500	V _{rms}
LED Input Ratings:			
Continuous Forward Current	I _F	50	mA
Reverse Voltage (I _R ≤ 10 µA)	V _R	8	V
Photodiode Array Reverse Voltage (I _R ≤ 2 µA)	V _R	500	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 purposes only and are not part of the testing requirements.

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
LED Forward Voltage	V _F	I _F = 10 mA	1.15	1.26	1.45	V
Detector Forward Voltage	V _F (PDA)	I _F = 10 µA	—	14	—	V
Detector Reverse Voltage	V _R (PDA)	I _R = 2 µA	—	700	—	V
Open-circuit Voltage	V _{oc}	I _F = 5 mA (pins 5—6 or 7—8)	10	13.5	15	V
		I _F = 10 mA (pins 5—6 or 7—8)	—	14	—	V
		I _F = 20 mA (pins 5—6 or 7—8)	—	14.5	—	V
Short-circuit Current	I _{sc}	I _F = 5 mA (pins 5—6 or 7—8)	1.5	4	6.5	µA
		I _F = 10 mA (pins 5—6 or 7—8)	4	8	14	µA
		I _F = 20 mA (pins 5—6 or 7—8)	—	17	—	µA
Turn-on Time	t _{on}	I _F = 20 mA*	—	35	—	µs
Turn-off Time	t _{off}	I _F = 20 mA*	—	90	—	µs

* f = 1 kHz, pulse width = 100 µs, load (R_L) = 1 MΩ, 15 pF; measured at 90% rated voltage (t_{on}), 10% rated voltage (t_{off}). Actuation speed is highly dependent upon the external t_{on} and t_{off} circuitry and the gate capacitance of the MOSFET. Please refer to the *Build Your Own Solid-State Relay Using The LH1262 Dual Photovoltaic MOSFET Driver* Application Note (AP91-013HVIC) for high-speed application circuits.

Typical Performance Characteristics

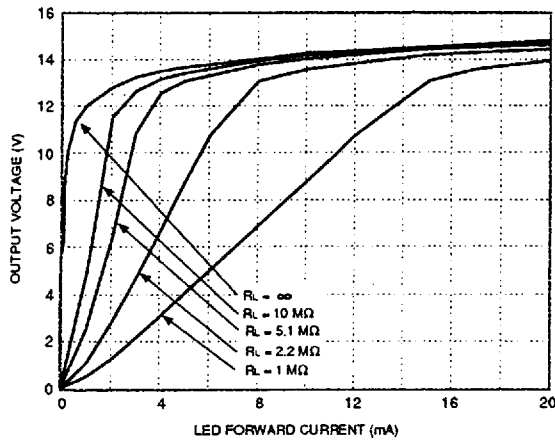


Figure 4. Output Voltage vs. LED Forward Current

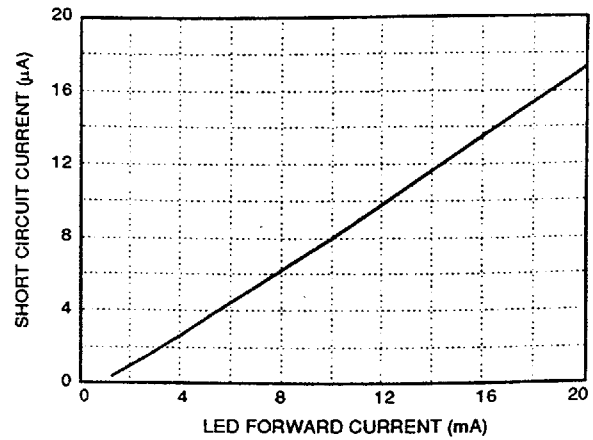


Figure 5. Short-Circuit Current vs. LED Forward Current

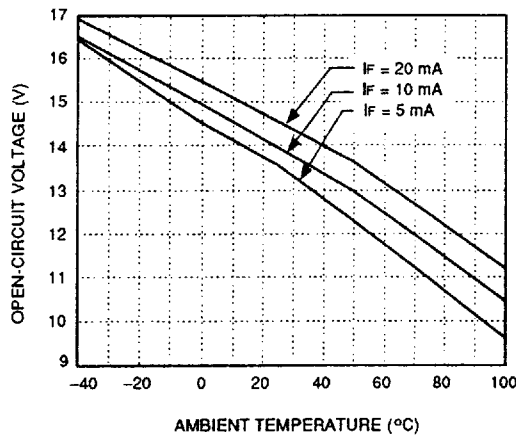


Figure 6. Open-Circuit Voltage vs. Temperature

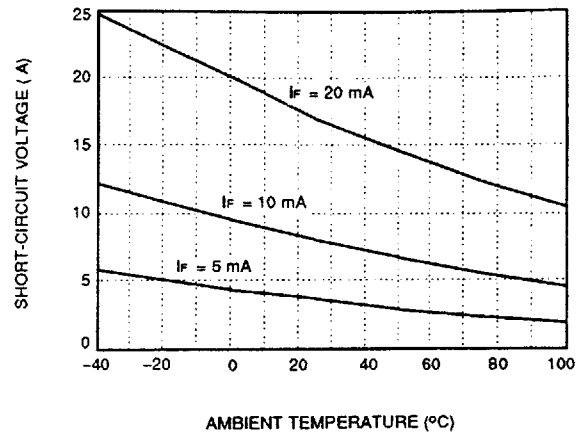


Figure 7. Short-Circuit Current vs. Temperature

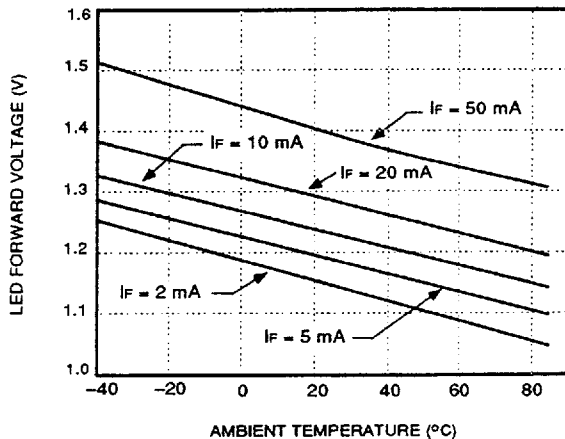


Figure 8. LED Forward Voltage vs. Temperature

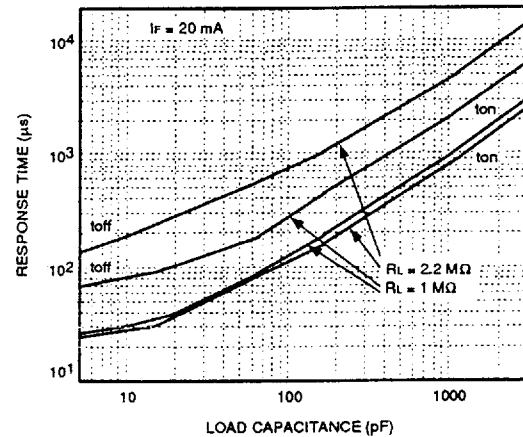


Figure 9. t_{on}/t_{off} vs. Load Capacitance

Application

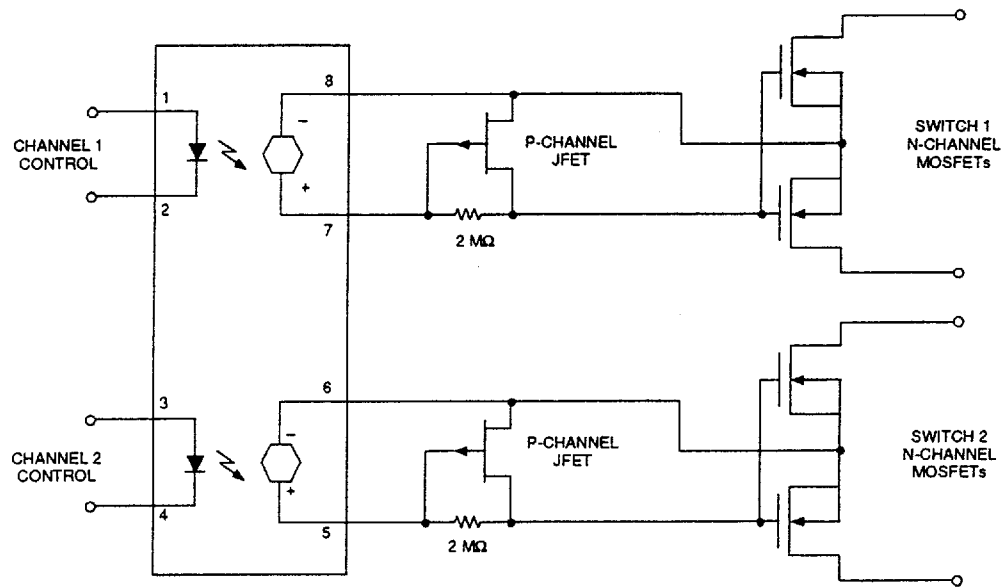
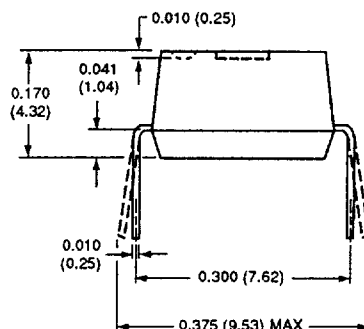
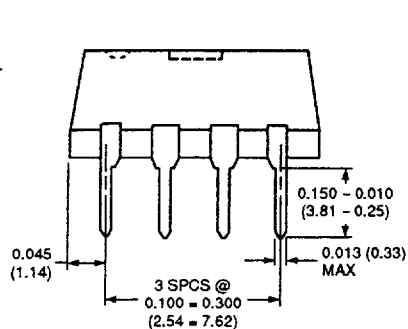
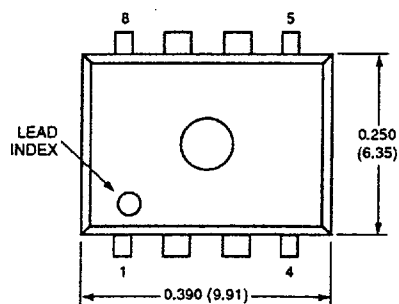


Figure 10. Typical Dual Form A Solid-State Relay Application

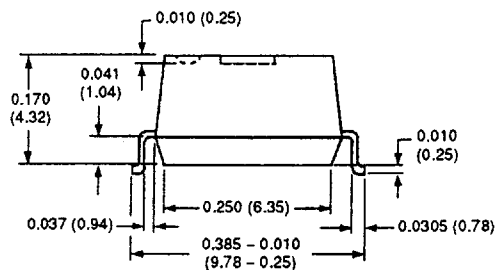
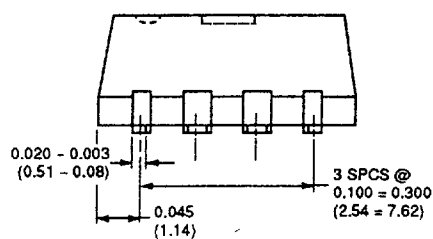
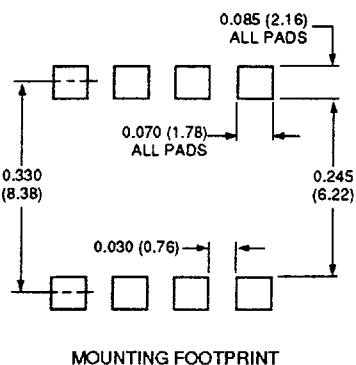
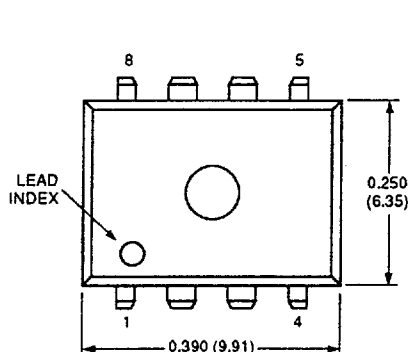
Outline Drawings

8-Pin, Plastic DIP (LH1262BB)

Dimensions are in inches and (millimeters).



8-Pin, Surface-Mount Gull Wing (LH1262BAC)



Ordering Information

Device	Package	Comcode
LH1262BB	8-Pin, Plastic DIP	106287774
LH1262BAC	8-Pin, Surface-Mount Gull-Wing	106288129
LH1262BAC T&R*	8-Pin, Surface-Mount Gull-Wing	106400377

* Devices on tape and reel must be ordered in 1000-piece increments.