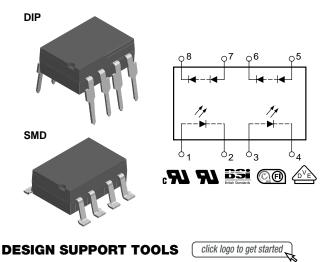


LH1262CAC, LH1262CACTR, LH1262CB

Vishay Semiconductors

Dual Photovoltaic MOSFET Driver Solid-State Relay





DESCRIPTION

The LH1262CB, LH1262CAC 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.

FEATURES

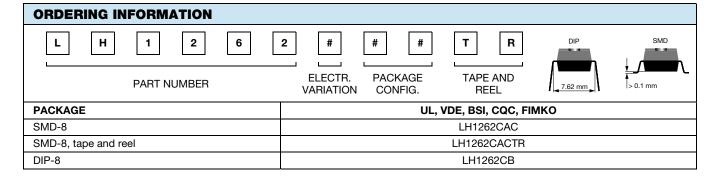
- · High open circuit voltage
- High short circuit current
- Isolation test voltage 5300 V_{RMS}
- Logic compatible input
- High reliability
- Material categorization: for definitions of
 ^{COMPLIANT}
 compliance please see <u>www.vishay.com/doc?99912</u>

APPLICATIONS

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

AGENCY APPROVALS

- <u>UL1577</u>
- <u>DIN EN</u>
- <u>BSI</u>
- <u>CQC</u>
- FIMKO



ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)							
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT			
SSR							
LED input ratings continuous forward current		I _F	50	mA			
LED input ratings reverse voltage	I _R ≤ 10 μA	V _R	5.0	V			
Ambient operating temperature range		T _{amb}	-40 to +85	°C			
Storage temperature range		T _{stg}	-40 to +150	°C			
Pin soldering time	t = 7.0 s max.	Τ _S	270	°C			

Note

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. 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 the time can adversely affect reliability

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ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
LED forward voltage	I _F = 10 mA	V _F	1.15	1.26	1.45	V
Detector forward voltage	I _F = 10 μA	V _{F(PDA)}	-	14	-	V
Detector reverse voltage	I _R = 2.0 μA	V _{R(PDA)}	-	200	-	V
Open circuit voltage (pins 5, 6 or 7, 8)	I _F = 5.0 mA	V _{OC}	10	12.95	15	V
	I _F = 10 mA	V _{OC}	-	13.45	-	V
	I _F = 20 mA	V _{OC}	-	13.92	-	V
Short circuit current (pins 5, 6 or 7, 8)	I _F = 5.0 mA	I _{SC}	1.0	1.6	6.5	μA
	I _F = 10 mA	I _{SC}	2.6	3.4	14	μA
	I _F = 20 mA	I _{SC}	-	6.9	-	μA

Note

• 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 are not part of the testing requirements

SWITCHING CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Turn-on time	I _F = 20 mA ⁽¹⁾	t _{on}	-	35	-	μs
Turn-off time	$I_F = 20 \text{ mA}^{(1)}$	t _{off}	-	90	-	μs

Note

(1) 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 capacitance of the MOSFET

SAFETY AND INSULATION RATINGS					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Climatic classification	According to IEC 68 part 1		40 / 85 / 21		
Pollution degree	According to DIN VDE 0109		2		
Comparative tracking index	Insulation group IIIa	CTI	175		
Maximum rated withstanding isolation voltage	According to UL1577, t = 1 min	V _{ISO}	5300	V _{RMS}	
Tested withstanding isolation voltage	According to UL1577, t = 1 s	V _{ISO}	4420	V _{RMS}	
Maximum transient isolation voltage	According to DIN EN 60747-5-5	V _{IOTM}	8000	V _{peak}	
Maximum repetitive peak isolation voltage	According to DIN EN 60747-5-5	V _{IORM}	890	V _{peak}	
Isolation resistance	$V_{IO} = 500 \text{ V}, \text{ T}_{amb} = 25 ^{\circ}\text{C}$	R _{IO}	≥ 10 ¹²	Ω	
	$V_{IO} = 500 \text{ V}, \text{ T}_{amb} = 100 ^{\circ}\text{C}$	R _{IO}	≥ 10 ¹¹	Ω	
	$V_{IO} = 500 \text{ V}, \text{ T}_{amb} = \text{T}_{S}$	R _{IO}	≥ 10 ⁹	Ω	
Output safety power		P _{SO}	700	mW	
Input safety current		I _{SI}	300	mA	
Safety temperature		T _S	175	°C	
Creepage distance (DIP)	DIP-8		≥ 7	mm	
Clearance distance (DIP)	DIF-6		≥7	mm	
Creepage distance (SMD)	SMD-8		≥ 8	mm	
Clearance distance (SMD)	0-0INIC		≥ 8	mm	
Insulation thickness		DTI	≥ 0.4	mm	

Note

• As per IEC 60747-5-5, § 7.4.3.8.2, this optocoupler is suitable for "safe electrical insulation" only within the safety ratings. Compliance with the safety ratings shall be ensured by means of protective circuits



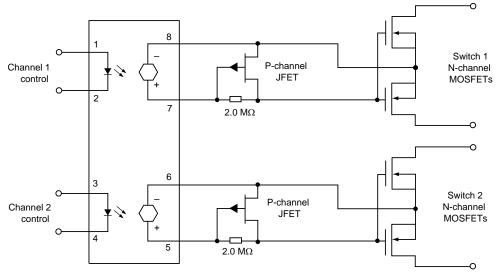


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FUNCTIONAL DESCRIPTION

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.

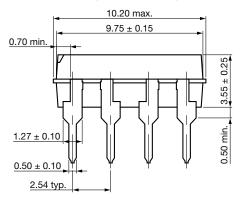
The amount of current applied to the LED (pins 1 and 2 or 3 and 4) determines the amount of light produced for the PDA. For high temperature operation, more LED current may be required.

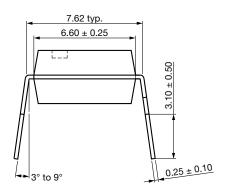


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Fig. 1 - Typical Dual Form A Solid-State Relay Application

PACKAGE DIMENSIONS (in millimeters)





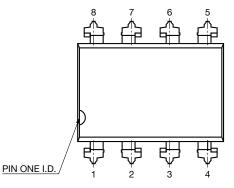


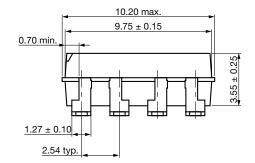
Fig. 2 - DIP-8 Package Drawing

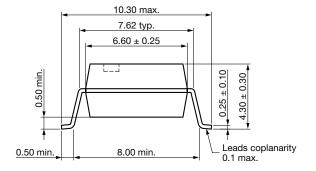
3

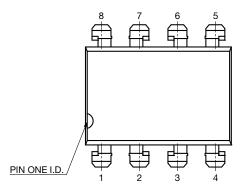


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Vishay Semiconductors







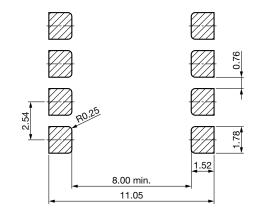
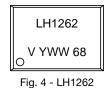


Fig. 3 - SMD-8 Package Drawing

PACKAGE MARKING (example)



Notes

- VDE logo is only marked on option 1 parts
- Tape and reel suffix (T) is not part of the package marking

4



LH1262CAC, LH1262CACTR, LH1262CB

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SOLDER PROFILES

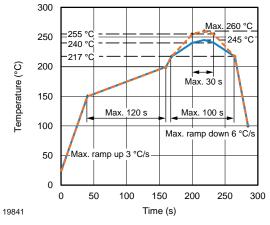
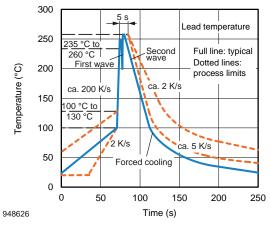


Fig. 5 - Lead (Pb)-free Reflow Solder Profile According to J-STD-020 for SMD Devices







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