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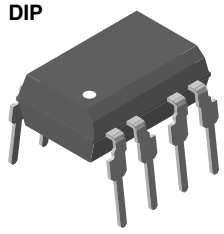
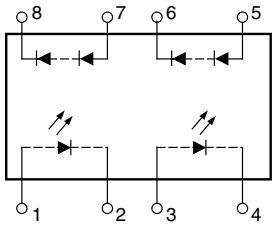
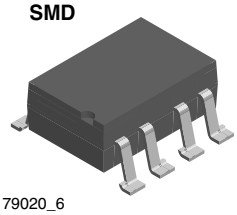
Dual Photovoltaic MOSFET Driver Solid-State Relay

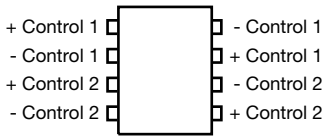
DIP





SMD





i179020_6

FEATURES

- High open circuit voltage
- High short circuit current
- Isolation test voltage 5300 V_{RMS}
- Logic compatible input
- High reliability
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Pb-free

e3

RoHS COMPLIANT

APPLICATIONS

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

Note

- See “Solid-State Relays” (application note 56)

DESCRIPTION

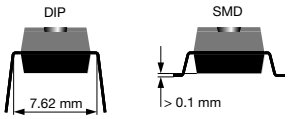
The LH1262CB, LH1262CAC photovoltaic MOSFET driver consists of two LEDs optically coupled to two photodiode arrays. The photodiode array provides a floating source with adequate voltage and current to drive high-power MOSFET transistors. Optical coupling provides a high I/O isolation voltage. In order to turn the MOSFET off, an external resistance (gate-to-source) is required for gate discharge.

AGENCY APPROVALS

UL1577: pending
BSI/BABT: pending
DIN EN: pending
FIMKO: pending

ORDERING INFORMATION

L	H	1	2	6	2	#	#	#	T	R
PART NUMBER						ELECTR. VARIATION	PACKAGE CONFIG.		TAPE AND REEL	



PACKAGE	UL, BSI, VDE, FIMKO
SMD-8	LH1262CAC
SMD-8, tape and reel	LH1262CACTR
DIP-8	LH1262CB

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	$I_R \leq 10$ µA	V_R	5.0	V
Photodiode array reverse voltage	$I_R \leq 2.0$ µA	V_R	100	V
Ambient operating temperature range		T_{amb}	- 40 to + 85	°C
Storage temperature range		T_{stg}	- 40 to + 150	°C
Pin soldering time (1)	t = 7.0 s max.	T_S	270	°C
Input to output isolation voltage	t = 60 s min.	V_{ISO}	5300	V_{RMS}

Notes

- 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.

(1) Refer to reflow profile for soldering conditions for surface mounted devices (SMD). Refer to wave profile for soldering conditions for through hole devices (DIP).

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 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.

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.

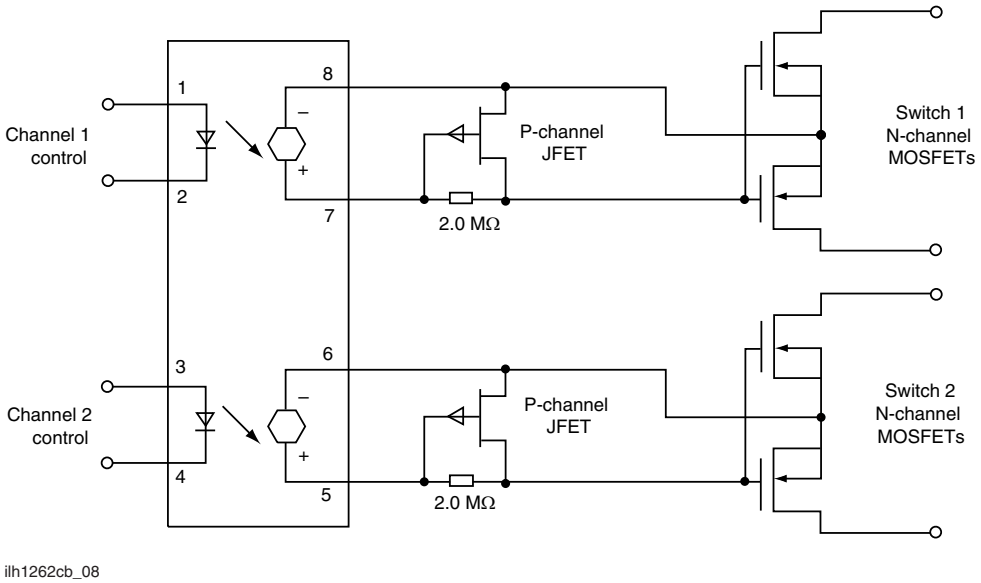
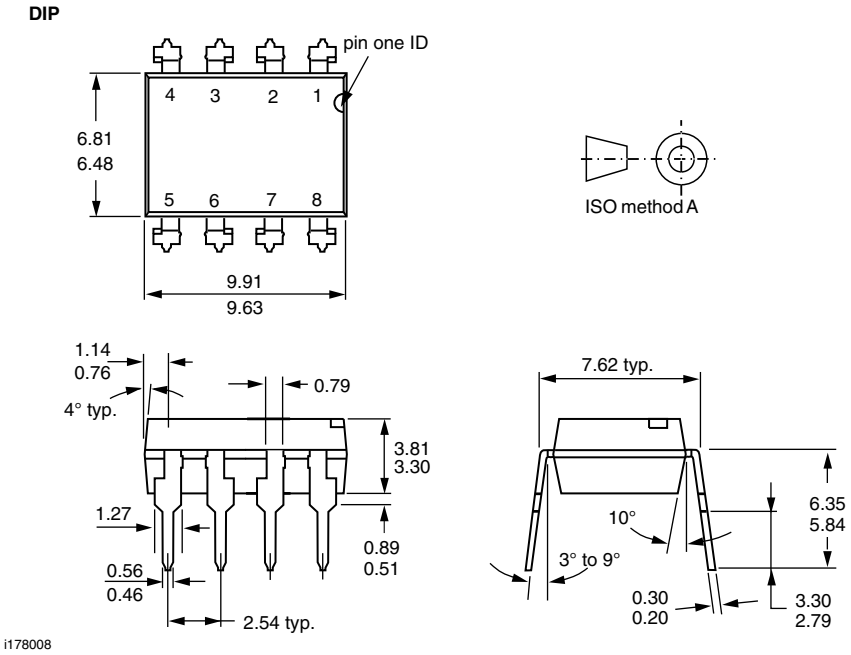
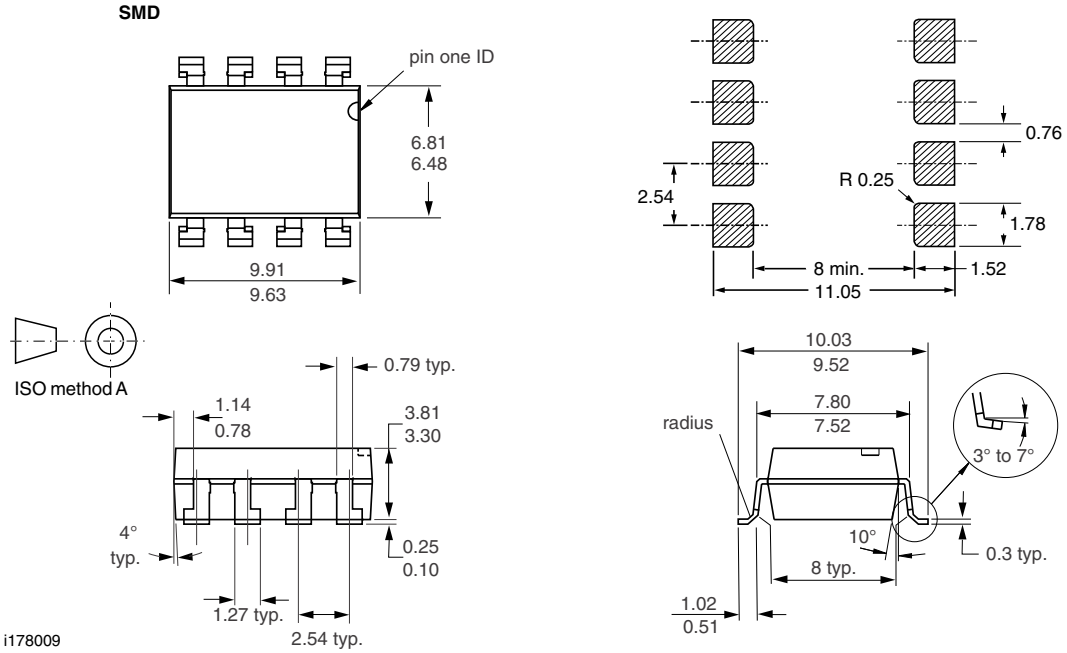


Fig. 1 - Typical Dual Form A Solid-State Relay Application

PACKAGE DIMENSIONS in inches (millimeters)





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