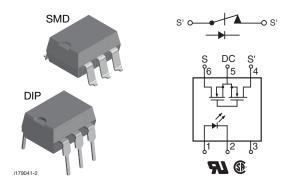




Vishay Semiconductors

1 Form B Solid State Relay



DESCRIPTION

The LH1511 relays are SPST normally closed switches (1 form B) that can replace electromechanical relays in many applications. The relays are constructed as a multi-chip hybrid device. Actuation control is via an infrared LED. The output switch is a combination of a photodiode array with MOSFET switches and control circuity. The relays can be configured for AC/DC or DC only operation.

FEATURES

- Isolation test voltage 3750 V_{RMS}
- Typical R_{ON} 10 Ω
- Load voltage 200 V
- Clean bounce free switching
- Low power consumption
- · SMD lead available on tape and reel
- Compliant ot RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



APPLICATIONS

- General telecom switching
- Security equipment
- Instrumentation
- · Industrial controls

AGENCY APPROVALS

UL1577: file no. E52744 CSA: certification 093751

ORDERING INFORMATION				
L H 1 5 1 1 B PART NUMBER ELECTR. VARIATION	# # T R PACKAGE TAPE AND REEL 7.62 mm 7.62 mm			
PACKAGE	UL, CSA			
SMD-6, gullwing, tubes	LH1511BAB			
SMD-6, gullwing, tape and reel	LH1511BABTR			
DIP-6, tubes	LH1511BT			

ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT		
INPUT						
LED continuous forward current		I _F	50	mA		
LED reverse voltage	I _R ≤ 10 μA	V_R	8	V		
OUTPUT		•				
DC or peak AC load voltage	$I_L \le 50 \ \mu A$	V_{L}	200	V		
Continuous DC load current - bidirectional		ΙL	200	mA		
Continuous DC load current - unidirectional		ΙL	300	mA		
Peak load current (single shot)	t = 100 ms	lр	400	mA		
SSR						
Ambient temperature range		T _{amb}	- 40 to + 85	°C		
Storage temperature range		T _{stg}	- 40 to + 125	°C		
Pin soldering temperature (1)	t = 10 s max.	T _{sld}	260	°C		
Input to output isolation voltage	$t = 1 \text{ s, } I_{ISO} = 10 \mu\text{A max.}$	V _{ISO}	3750	V_{RMS}		
Output power dissipation (continuous)		P _{diss}	550	mW		

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.

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

LH1511BAB, LH1511BABTR, LH1511BT

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ELECTRICAL CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
INPUT						
LED forward current, switch turn-on	$I_L = \pm 200 \text{ mA}, t = 10 \text{ ms}$	I _{Fon}	0.2	0.9		mA
LED forward current, switch turn-off	$V_{L} = \pm 150 \text{ V}$	I _{Foff}		1	2	mA
LED forward voltage	$I_F = 10 \text{ mA}$	V _F	1.15	1.26	1.45	V
OUTPUT						
On-resistance, AC/DC: pin 4, 6 (+) to 5 (-)	$I_F = 0 \text{ mA}, I_L = 50 \text{ mA}$	R _{ON}		10	15	Ω
On-resistance, DC: pin 4, 6 (+) to 5 (-)	$I_F = 0 \text{ mA}, I_L = 100 \text{ mA}$	R _{ON}		2.5	3.75	Ω
Off-resistance	$I_F = 5 \text{ mA}, V_L = \pm 100 \text{ V}$	R _{OFF}	0.1	1.4		GΩ
Off-state leakage current	$I_F = 5 \text{ mA}, V_L = \pm 200 \text{ V}$	Ιο		0.07	1	μA
Output capacitance	$I_F = 5 \text{ mA}, V_L = 50 \text{ V}$	Co		50		pF
TRANSFER						
Capacitance (input to output)	$V_{ISO} = 1 V$	C _{IO}		3		pF

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	$I_F = 10 \text{ mA}, I_L = 50 \text{ mA}$	t _{on}		1.2	3	ms
Turn-off time	$I_F = 10 \text{ mA}, I_L = 50 \text{ mA}$	t _{off}		1	3	ms

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

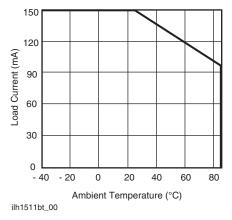


Fig. 1 - Recommended Operating Conditions

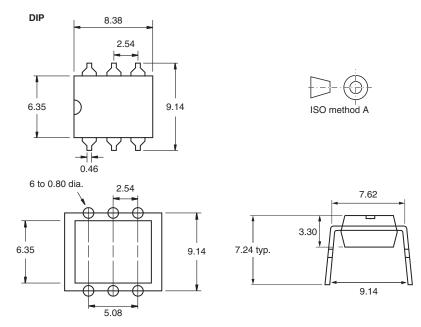




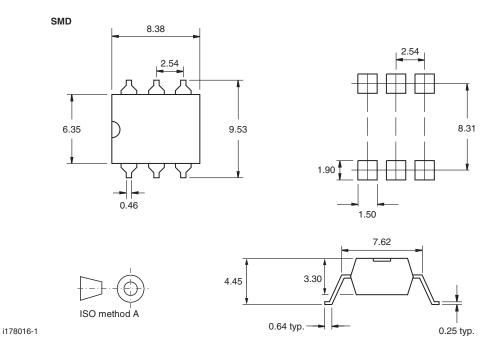
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PACKAGE DIMENSIONS in millimeters



i178015-1



PACKAGE MARKING (example)



Note

• Tape and reel suffix (TR) is not part of the package marking.





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