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Vishay Semiconductor/Opto Division
LH1511BAB

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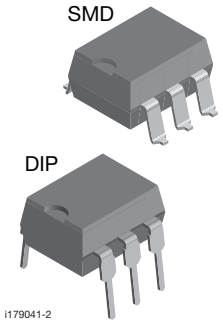
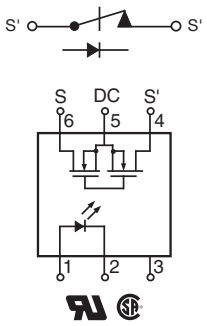
LH1511BAB, LH1511BABTR, LH1511BT

Vishay Semiconductors

1 Form B Solid State Relay





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

Pb-free

e3

RoHS COMPLIANT

APPLICATIONS

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

AGENCY APPROVALS

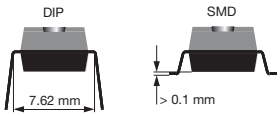
UL1577: file no. E52744
CSA: certification 093751

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.

ORDERING INFORMATION

L	H	1	5	1	1	B	#	#	T	R
PART NUMBER						ELECTR. VARIATION	PACKAGE CONFIG.		TAPE AND REEL	



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	$I_R \leq 10$ µA	V_R	8	V
OUTPUT				
DC or peak AC load voltage	$I_L \leq 50$ µA	V_L	200	V
Continuous DC load current - bidirectional		I_L	200	mA
Continuous DC load current - unidirectional		I_L	300	mA
Peak load current (single shot)	t = 100 ms	I_P	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 s, I_{ISO} = 10 µA 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.

(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**
INPUT						
LED forward current, switch turn-on	I_L = ± 200 mA, t = 10 ms	I_{Fon}	0.2	0.9		mA
LED forward current, switch turn-off	V_L = ± 150 V	I_{Foff}		1	2	mA
LED forward voltage	I_F = 10 mA	V_F	1.15	1.26	1.45	V
OUTPUT						
On-resistance, AC/DC: pin 4, 6 (+) to 5 (-)	I_F = 0 mA, I_L = 50 mA	R_{ON}		10	15	Ω
On-resistance, DC: pin 4, 6 (+) to 5 (-)	I_F = 0 mA, I_L = 100 mA	R_{ON}		2.5	3.75	Ω
Off-resistance	I_F = 5 mA, V_L = ± 100 V	R_{OFF}	0.1	1.4		GΩ
Off-state leakage current	I_F = 5 mA, V_L = ± 200 V	I_O		0.07	1	µA
Output capacitance	I_F = 5 mA, V_L = 50 V	C_O		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 mA, I_L = 50 mA	t_{on}		1.2	3	ms
Turn-off time	I_F = 10 mA, I_L = 50 mA	t_{off}		1	3	ms

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

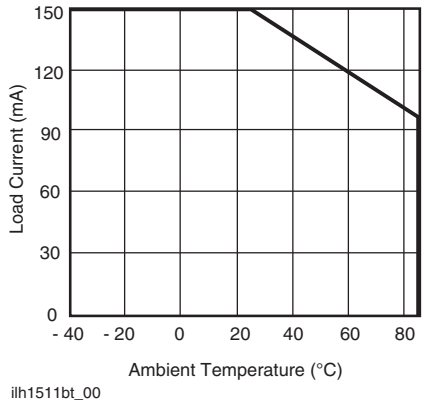
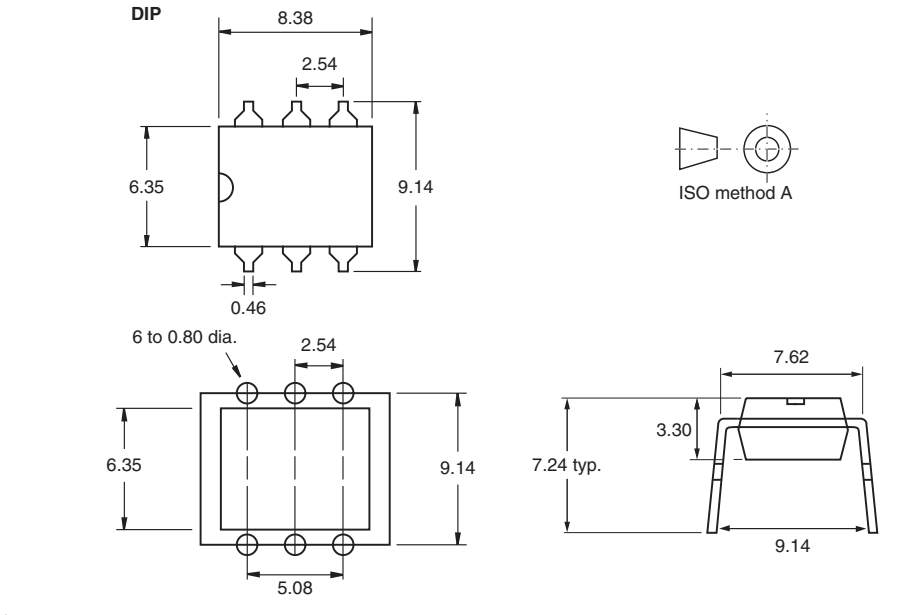
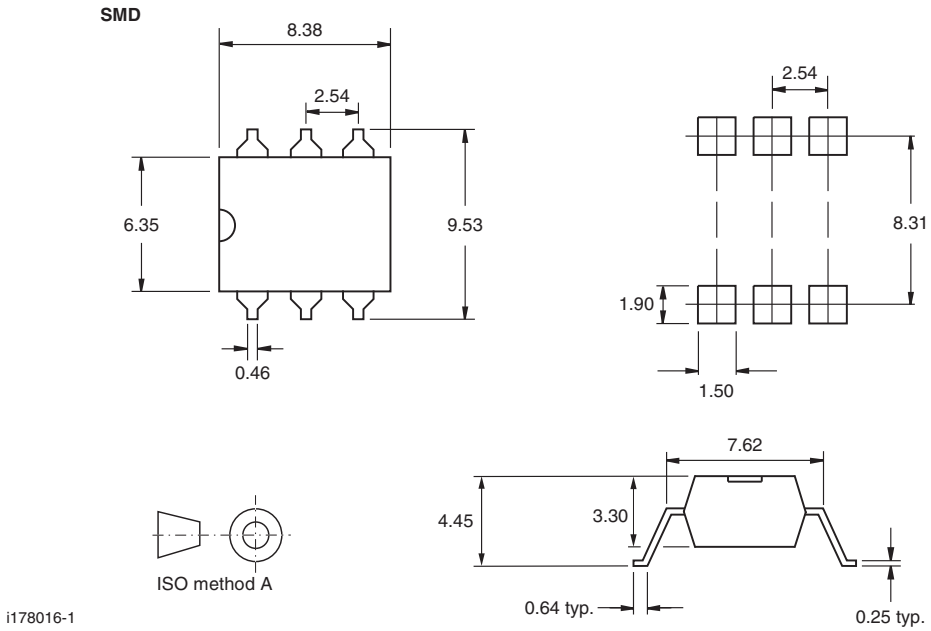


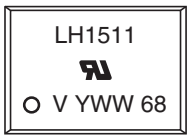
Fig. 1 - Recommended Operating Conditions

PACKAGE DIMENSIONS in millimeters





PACKAGE MARKING (example)



Note

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

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