

## Excellent Integrated System Limited

Stocking Distributor

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[Vishay Semiconductor/Opto Division](#)  
[LH1502BAC](#)

For any questions, you can email us directly:

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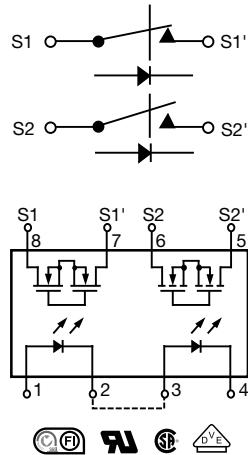
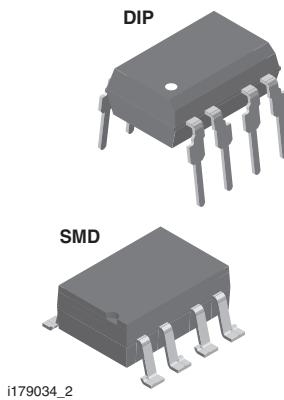


[www.vishay.com](http://www.vishay.com)

## LH1502BAC, LH1502BACTR, LH1502BB

Vishay Semiconductors

### Dual 1 Form A/B, C Solid State Relay



**RoHS**  
COMPLIANT

#### FEATURES

- Current limit protection
- Isolation test voltage 3750 V<sub>RMS</sub>
- Typical R<sub>ON</sub> 20 Ω
- Load voltage 350 V
- Load current 150 mA
- High surge capability
- Clean bounce free switching
- Low power consumption
- SMD lead available on tape and reel
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

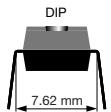
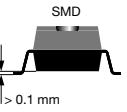
#### APPLICATIONS

- General telecom switching
  - On/off hook control
  - Ring delay
  - Dial pulse
  - Ground start
  - Ground fault protection
- Instrumentation
- Industrial controls

#### AGENCY APPROVALS

UL1577: file no. E52744 system code H, double protection  
 CSA: certification 093751  
 DIN EN: 60747-5-2 (VDE 0884)/60747-5-5 (pending), available with option 1  
 FIMKO: 25419

#### ORDERING INFORMATION

<b>PART NUMBER</b>	<b>ELECTR. VARIATION</b>	<b>PACKAGE CONFIG.</b>	<b>TAPE AND REEL</b>		
<b>PACKAGE</b>		<b>UL, CSA, FIMKO</b>			
SMD-8, tubes		LH1502BAC			
SMD-8, tape and reel		LH1502BACTR			
DIP-8, tubes		LH1502BB			



## LH1502BAC, LH1502BACTR, LH1502BB

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<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{amb} = 25^\circ C$ , unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
<b>INPUT</b>				
LED continuous forward current		$I_F$	50	mA
LED reverse voltage	$I_R \leq 10 \mu A$	$V_R$	8	V
<b>OUTPUT</b>				
DC or peak AC load voltage	$I_L \leq 50 \mu A$	$V_L$	350	V
Continuous DC load current (form C operation)		$I_L$	150	mA
Peak load current, form A	$t = 100 \text{ ms}$	$I_P$	(3)	
Peak load current (single shot), form B		$I_P$	350	mA
<b>SSR</b>				
Ambient operating temperature range		$T_{amb}$	- 40 to + 85	°C
Storage temperature range		$T_{stg}$	- 40 to + 125	°C
Pin soldering temperature (1)	$t = 10 \text{ s max.}$	$T_{sld}$	260	°C
Input to output isolation test voltage	$t = 1 \text{ s, } I_{ISO} = 10 \mu A \text{ max.}$	$V_{ISO}$	3750	$V_{RMS}$
Pole-to-pole isolation voltage (S1 to S2) (2), (dry air, dust free, at sea level)			1600	V
Output power dissipation (continuous)		$P_{diss}$	600	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).
- (2) Breakdown occurs between the output pins external to the package.
- (3) Refer to current limit performance application note for a discussion on relay operation during transient currents.

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25^\circ C$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>INPUT</b>						
LED forward current, switch turn-on (NO)	$I_L = 100 \text{ mA, } t = 10 \text{ ms}$	$I_{Fon}$		0.6	2	mA
LED forward current, switch turn-off (NO)	$V_L = \pm 300 \text{ V}$	$I_{Foff}$	0.4	0.5		mA
LED forward current, switch turn-on (NC)	$I_L = 300 \text{ mA, } t = 10 \text{ ms}$	$I_{Fon}$	0.2	0.9		mA
LED forward current, switch turn-off (NC)	$V_L = \pm 300 \text{ V}$	$I_{Foff}$		1	2	mA
LED forward voltage	$I_F = 10 \text{ mA}$	$V_F$	1.15	1.26	1.45	V
<b>OUTPUT</b>						
On-resistance (NO, NC)	$I_F = 5 \text{ mA (NO), } I_F = 0 \text{ mA (NC), } I_L = 50 \text{ mA (NC)}$	$R_{ON}$	12	20	25	Ω
Off-resistance (NO)	$I_F = 0 \text{ mA, } V_L = \pm 100 \text{ V}$	$R_{OFF}$	0.35	5000		GΩ
Off-resistance (NC)	$I_F = 5 \text{ mA, } V_L = \pm 100 \text{ V}$	$R_{OFF}$	0.1	1.4		GΩ
Current limit (NO)	$I_F = 5 \text{ mA, } t = 5 \text{ ms, } V_L = \pm 5 \text{ V}$	$I_{LMT}$	270	290	380	mA
Off-state leakage current (NO)	$I_F = 0 \text{ mA, } V_L = \pm 100 \text{ V}$	$I_O$		0.02	1000	nA
Off-state leakage current (NC)	$I_F = 5 \text{ mA, } V_L = \pm 100 \text{ V}$	$I_O$		0.07	1	μA
Off-state leakage current (NO, NC)	$I_F = 0 \text{ mA (NO), } I_F = 5 \text{ mA (NC), } V_L = \pm 200 \text{ V}$	$I_O$			1	μA
Output capacitance (NO)	$I_F = 0 \text{ mA, } V_L = 50 \text{ V}$	$C_O$		50		pF
Output capacitance (NC)	$I_F = 5 \text{ mA, } V_L = 50 \text{ V}$	$C_O$		50		pF
<b>TRANSFER</b>						
Capacitance (input to output)	$V_{ISO} = 1 \text{ V}$	$C_{IO}$		3		pF

### Note

- Minimum and maximum values are testing requirements. Typical values are characteristics of the device and are the result of engineering evaluation. Typical values are for information only and are not part of the testing requirements.

<b>SWITCHING CHARACTERISTICS</b> ( $T_{amb} = 25^\circ C$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
transfer						
Turn-on time (NO)	$I_F = 10 \text{ mA}, I_L = 37.5 \text{ mA}, V_L = 150 \text{ V}$	$t_{on}$	0.2	3.2	6	ms
Turn-on time (NC)	$I_F = 10 \text{ mA}, I_L = 37.5 \text{ mA}, V_L = 150 \text{ V}$	$t_{on}$	0.2	3.8	6	ms
Turn-off time (NO)	$I_F = 10 \text{ mA}, I_L = 37.5 \text{ mA}, V_L = 150 \text{ V}$	$t_{off}$		1.6	3	ms
Turn-off time (NC)	$I_F = 10 \text{ mA}, I_L = 37.5 \text{ mA}, V_L = 150 \text{ V}$	$t_{off}$		0.8	3	ms

### TYPICAL CHARACTERISTICS ( $T_{amb} = 25^\circ C$ , unless otherwise specified)

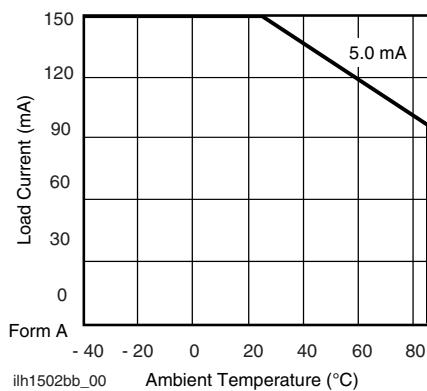


Fig. 1 - Recommended Operating Conditions

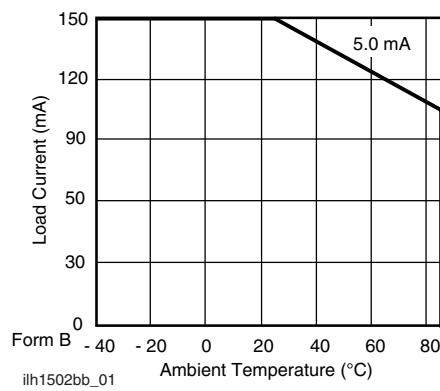


Fig. 2 - Recommended Operating Conditions



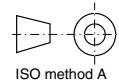
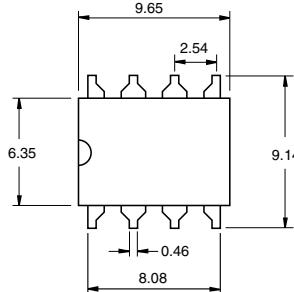
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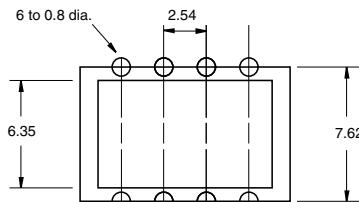
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### PACKAGE DIMENSIONS in millimeters

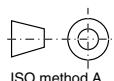
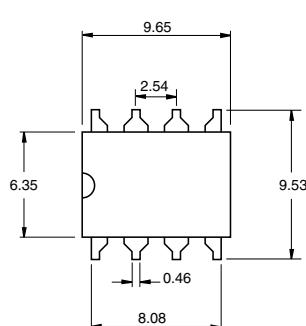
DIP



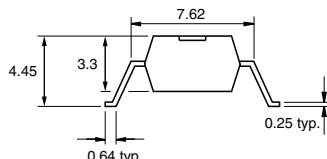
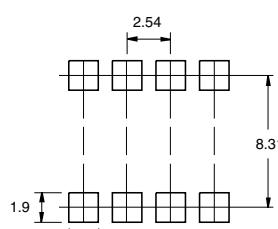
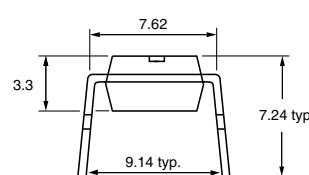
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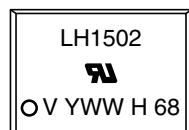
SMD



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### PACKAGE MARKING (example)



#### Note

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

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