



# LH1501BT/BAB/BABTR

1 Form B  
Solid State Relay

## FEATURES

- I/O Isolation, 3750 V<sub>RMS</sub>
- Typical R<sub>ON</sub> 20 Ω
- Load Voltage 350 V
- Linear, AC/DC Operation
- Clean Bounce Free Switching
- Low Power Consumption
- SMD Lead Available on Tape and Reel

## AGENCY APPROVALS

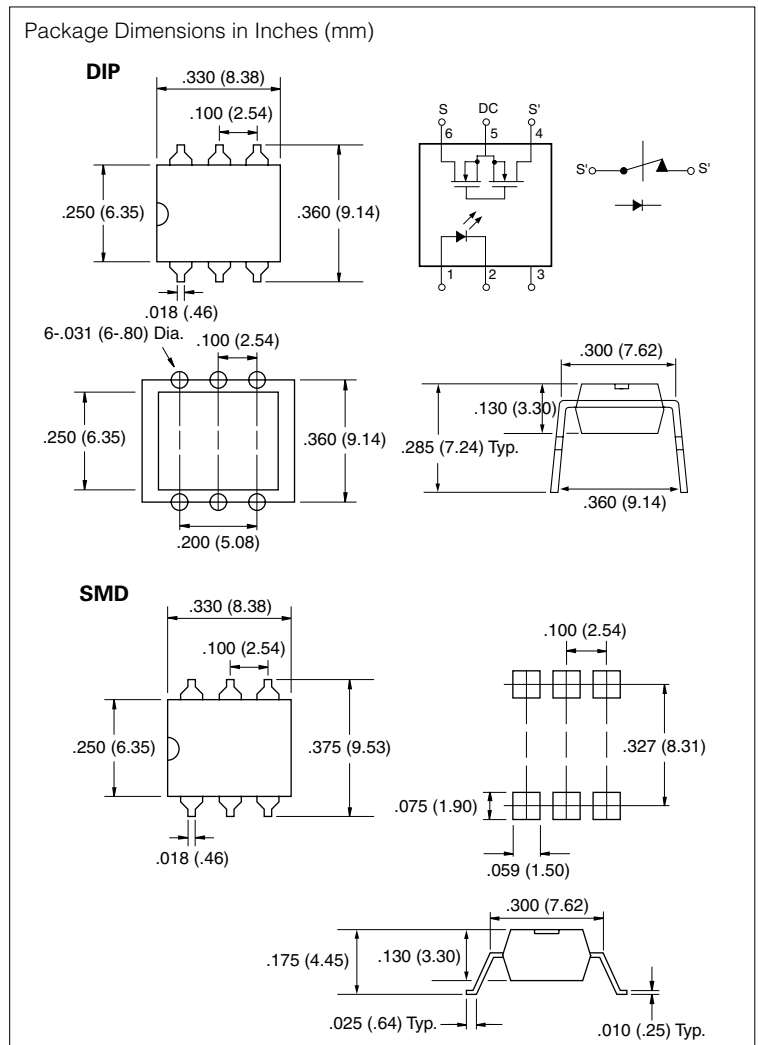
- UL – File No. E52744
- CSA – Certification 093751
- BSI

## APPLICATIONS

- General Telecom Switching
- Security Equipment
- Instrumentation
- Industrial Controls

## DESCRIPTION

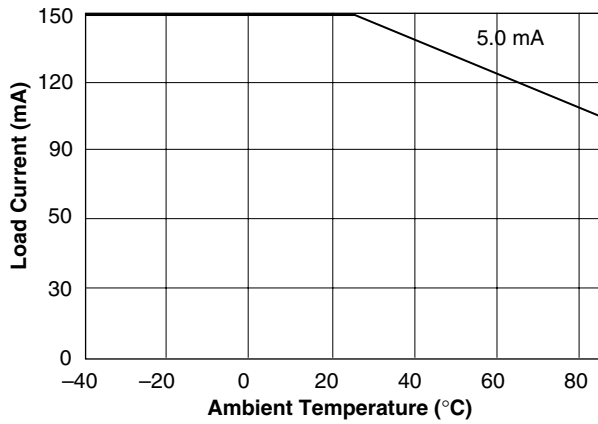
The LH1501 relays are SPST normally closed switches (1 Form B) that can replace electromechanical relays in many applications. The relays are constructed as a mult.-chip hybrid device. Actuation control is via an Infrared LED. The output switch is a combination of a photodiode array with MOSFET switches and control circuitry. The relays can be configured for AC/DC or DC only operation..



## Part Identification

Part Number	Description
LH1501BT	6-pin DIP, Tubes
LH1501BAB	6-pin SMD, Gullwing, Tubes
LH1501BABTR	6-pin SMD, Gullwing, Tape and Reel

### Recommended Operating Conditions



### Absolute Maximum Ratings, $T_A=25^\circ\text{C}$

Stresses in excess of the Absolute Maximum Ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to maximum rating conditions for extended periods can adversely affect device reliability.

Ambient Temperature Range ( $T_A$ )	.....	-40 to +85°C
Storage Temperature Range ( $T_{stg}$ )	.....	-40 to +125°C
Pin Soldering Temperature (t=10 s max) ( $T_S$ )	.....	260°C
Input/Output Isolation Voltage ( $V_{RMS}$ t=1.0 s, $I_{ISO}=10 \mu\text{A}$ max) ( $V_{ISO}$ )	.....	3750 $V_{RMS}$
LED Continuous Forward Current ( $I_F$ )	.....	50 mA
LED Reverse Voltage ( $I_F \leq 10 \mu\text{A}$ ) ( $V_R$ )	.....	5.0 V
DC or Peak AC Load Voltage ( $I_L \leq 50 \mu\text{A}$ ) ( $V_L$ )	.....	350 V
Continuous DC Load Current ( $I_L$ )		
Bidirectional Operation	.....	150 mA
Unidirectional Operation	.....	200 mA
Peak Load Current (t=100 ms) (single shot) ( $I_P$ )	.....	350 mA
Output Power Dissipation (continuous) ( $P_{DISS}$ )	.....	550 mW

### Electrical Characteristics, $T_A=25^\circ\text{C}$

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.

Parameter	Sym.	Min.	Typ.	Max.	Units	Test Conditions
<b>Input</b>						
LED Forward Current, Switch Turn-on	$I_{Fon}$	0.2	0.9	—	mA	$I_L = \pm 150$ mA, t=10 ms
LED Forward Current, Switch Turn-off	$I_{Foff}$	—	1.0	2.0	mA	$V_L \pm 300$ V
LED Forward Voltage	$V_F$	1.15	1.26	1.45	V	$I_F = 10$ mA
<b>Output</b>						
ON-resistance ac/dc: Pin 4, 6 (+) to 5 (-) dc: Pin 4, 6 (+) to 5 (-)	$R_{ON}$	—	20	25	$\Omega$	$I_F = 0$ mA, $I_L = 50$ mA
			5.0	6.25		$I_F = 0$ mA, $I_L = 100$ mA
OFF-resistance	$R_{OFF}$	0.1	1.4	—	G $\Omega$	$I_F = 5.0$ mA, $V_L = \pm 100$ V
Off-state Leakage Current	—	—	0.08	1.0	$\mu\text{A}$	$I_F = 5.0$ mA, $V_L = \pm 350$ V
Output Capacitance		—	35	—	pF	$I_F = 5.0$ mA, $V_L = 50$ V
<b>Transfer</b>						
Input/Output Capacitance	$C_{ISO}$	—	3.0	—	pF	$V_{ISO} = 1.0$ V
Turn-on Time	$t_{on}$	—	2.0	3.0	ms	$I_F = 5.0$ mA, $I_L = 50$ mA
Turn-off Time	$t_{off}$	—	1.0	3.0	ms	$I_F = 5.0$ mA, $I_L = 50$ mA