



LH1501BT/BAB/BABTR

1 Form B
Solid State Relay

FEATURES

- I/O Isolation, 3750 V_{RMS}
- Typical R_{ON} 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

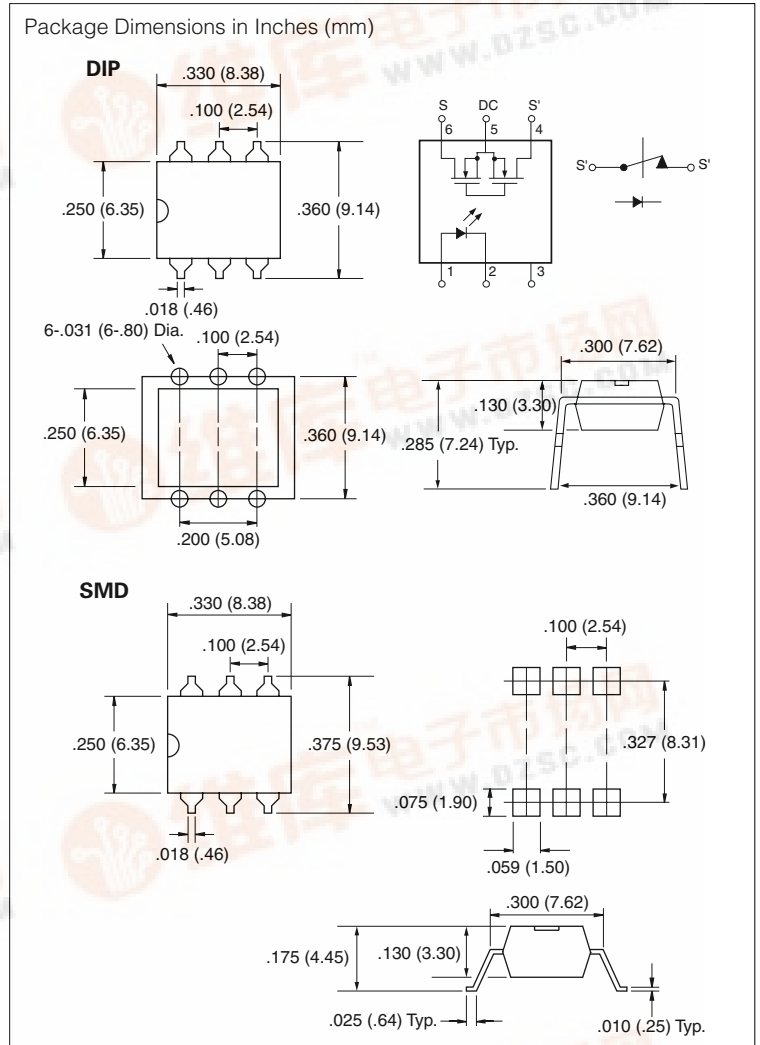
- UL – File No. E52744
- CSA – Certification 093751
- BSI

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..

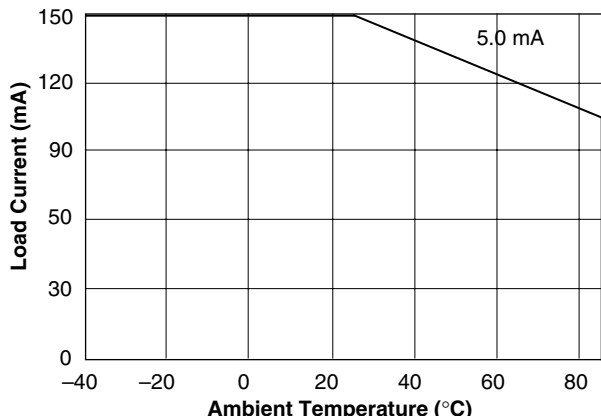


Part Identification

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