



LH1521BB/BAC/BACTR

Dual 1 Form B
State Relay

FEATURES

- Dual Channel (LH1501)
- I/O Isolation, 3750 V_{RMS}
- Typical R_{ON} 20 Ω
- Load Voltage 350 V
- Load Current 150 mA
- High Surge Capability
- Linear, AC/DC Operation
- Clean Bounce Free Switching
- Low Power Consumption
- SMD Lead Available on Tape and Reel

AGENCY APPROVALS

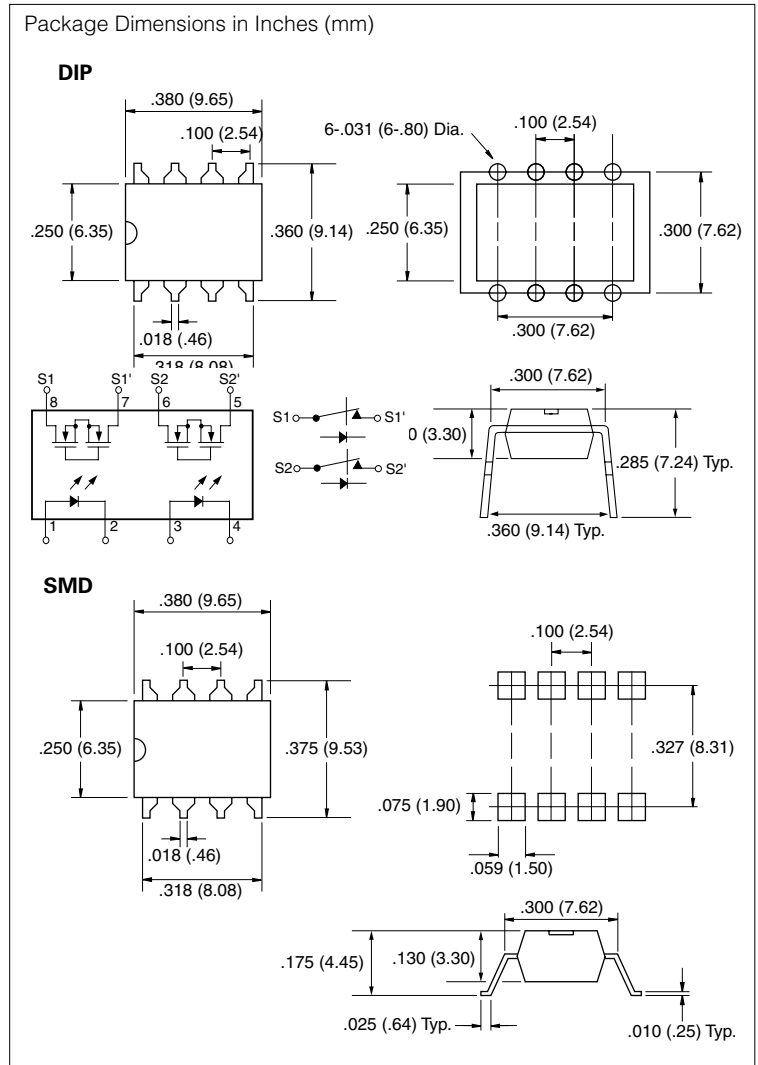
- UL—File No. E52744
- CSA—Certification 093751
- BSI

APPLICATIONS

- General Telecom Switching
 - On/off Hook Control
 - Ring Delay
 - Dial Pulse
 - Ground Start
 - Ground Fault Protection
- Instrumentation
- Industrial Controls

DESCRIPTION

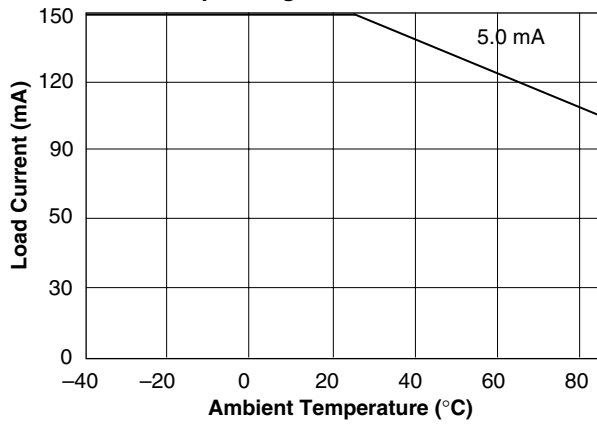
The LH1521 dual 1 Form B relays are SPST normally closed switches that can replace electromechanical relays in many applications. The relays are constructed as a mult.-chip hybrid device. Actuation control is via an Infrared LED. The output switch is a combination of a photodiode array with MOSFET switches and control circuitry.



Part Identification

| Part Number | Description |
|-------------|------------------------------------|
| LH1521BB | 8-pin DIP, Tubes |
| LH1521BAC | 8-pin SMD, Gullwing, Tubes |
| LH1521BACTR | 8-pin SMD, Gullwing, Tape and Reel |

Recommended Operating Conditions



Both relays on with equal load currents.
For a single relay operation, refer to LH1501 Recommended Operating Conditions graph.

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 this document. Exposure to absolute Maximum Ratings for extended periods of time can adversely affect 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 (t=1.0 s, $I_{SO}=10 \mu\text{A}$ max) (V_{ISO}) | ..... | 3750 V_{RMS} |
| Pole-to-Pole Isolation Voltage (S1 to S2)* (dry air, dust free, at sea level) | ..... | 1600 V |
| 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) | | |
| One Pole Operating | ..... | 150 mA |
| Two Poles Operating | ..... | 110 mA |
| Peak Load Current (t=100 ms) (single shot) (I_P) | ..... | 400 mA |
| Output Power Dissipation (continuous) (P_{DISS}) | ..... | 600 mW |

* Breakdown occurs between the output pins external to the package.

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 | 1.22 | 1.45 | V | $I_F = 10 \text{ mA}$ |
| Output | | | | | | |
| ON-resistance | R_{ON} | — | 20 | 25 | Ω | $I_F = 0 \text{ mA}$, $I_L = 50 \text{ mA}$ |
| OFF-resistance | R_{OFF} | 0.1 | 1.4 | — | $G\Omega$ | $I_F = 5.00 \text{ mA}$, $V_L = \pm 100 \text{ V}$ |
| Off-state Leakage Current | | — | 0.08 | 1.0 | μA | $I_F = 5.0 \text{ mA}$, $V_L = \pm 350 \text{ V}$ |
| Output Capacitance | | — | 50 | — | | $I_F = 5.0 \text{ mA}$, $V_L = 50 \text{ V}$ |
| 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 | $I_F = 5.0 \text{ mA}$, $I_L = 50 \text{ mA}$ |