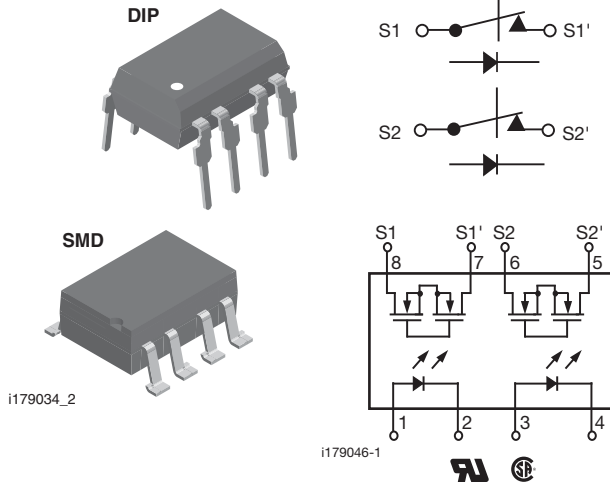


Dual 1 Form B Solid State Relay



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 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 circuitry.

FEATURES

- Dual channel (LH1501)
- Isolation test voltage 3750 V_{RMS}
- Typical R_{ON} 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



RoHS
COMPLIANT

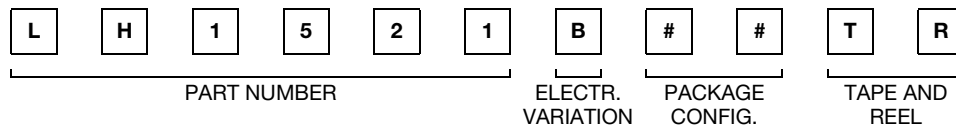
APPLICATIONS

- 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 no. 093751

ORDERING INFORMATION



PACKAGE	UL, CSA
SMD-8, tubes	LH1521BAC
SMD-8, tape and reel	LH1521BACTR
DIP-8, tubes	LH1521BB

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
INPUT				
LED continuous forward current		I_F	50	mA
LED reverse voltage	$I_R \leq 10\text{ }\mu\text{A}$	V_R	5	V
OUTPUT				
DC or peak AC load voltage	$I_L \leq 50\text{ }\mu\text{A}$	V_L	350	V
Continuous DC load current one pole operating		I_L	150	mA
Continuous DC load current two poles operating		I_L	110	mA
Peak load current (single shot)	$t = 100\text{ ms}$	I_P	400	mA
SSR				
Output power dissipation (continuous)		P_{diss}	600	mW
Ambient temperature range		T_{amb}	- 40 to + 85	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	- 40 to + 125	$^{\circ}\text{C}$
Pin soldering temperature ⁽²⁾	$t = 10\text{ s max.}$	T_{sld}	260	$^{\circ}\text{C}$
Input to output isolation voltage	$t = 1\text{ s, } I_{ISO} = 10\text{ }\mu\text{A max.}$	V_{ISO}	3750	V_{RMS}
Pole-to-pole isolation voltage (S1 to S2) ⁽¹⁾ (dry air, dust free, at sea level)			1600	V

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

⁽²⁾ 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 ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
INPUT						
LED forward current switch turn-on	$I_L = \pm 150\text{ mA, } t = 10\text{ ms}$	I_{Fon}	0.2	0.9		mA
LED forward current switch turn-off	$V_L = \pm 300\text{ V}$	I_{Foff}		1	2	mA
LED forward voltage	$I_F = 10\text{ mA}$	V_F	1.15	1.22	1.45	V
OUTPUT						
On-resistance	$I_F = 0\text{ mA, } I_L = 50\text{ mA}$	R_{ON}		20	25	Ω
Off-resistance	$I_F = 5\text{ mA, } V_L = \pm 100\text{ V}$	R_{OFF}	0.1	1.4		$G\Omega$
Off-state leakage current	$I_F = 5\text{ mA, } V_L = \pm 350\text{ V}$			0.08	1	μA
Output capacitance	$I_F = 5\text{ mA, } V_L = 50\text{ V}$			50		pF
TRANSFER						
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 evaluations. Typical values are for information only and are not part of the testing requirements.

SWITCHING CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Turn-on time	$I_F = 5\text{ mA, } I_L = 50\text{ mA}$	t_{on}		2	3	ms
Turn-off time	$I_F = 5\text{ mA, } I_L = 50\text{ mA}$	t_{off}		1	3	ms

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

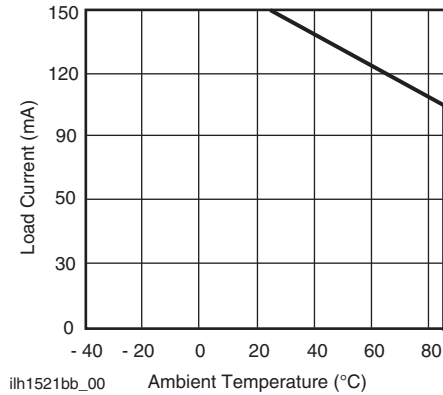
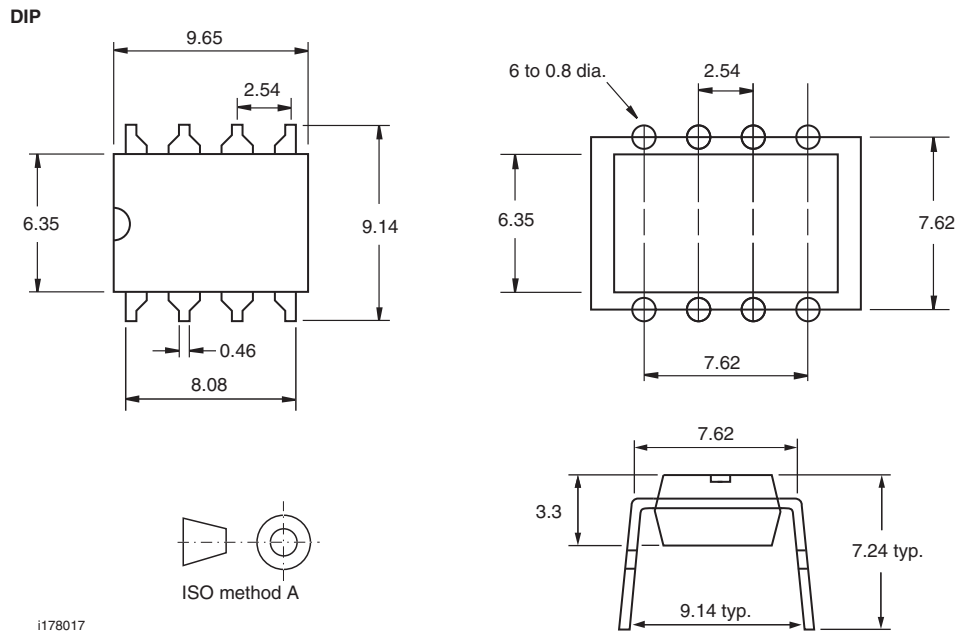


Fig. 1 - Recommended Operating Conditions

PACKAGE DIMENSIONS in millimeters

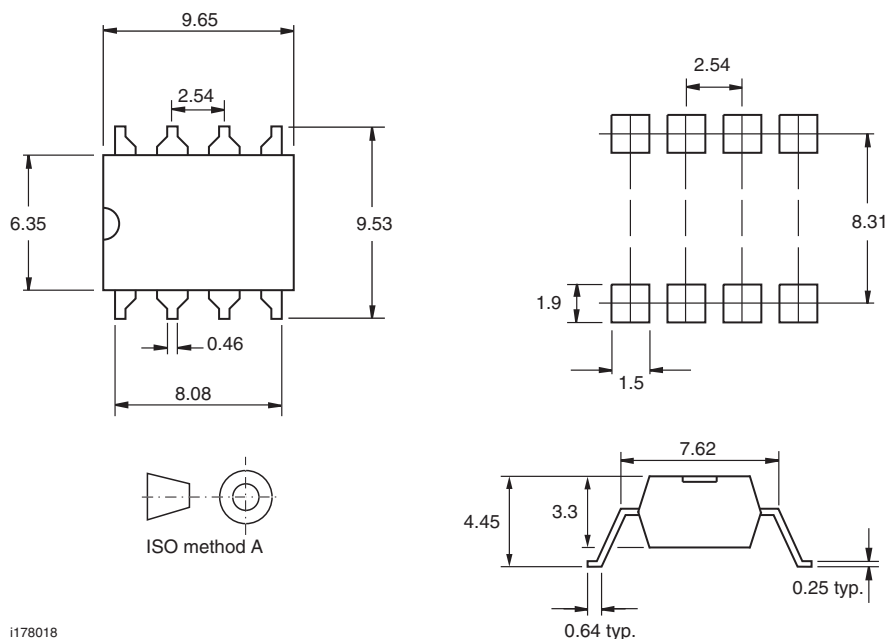


LH1521BAC, LH1521BACTR, LH1521BB

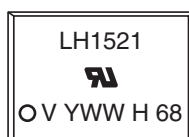
Vishay Semiconductors Dual 1 Form B Solid State Relay



SMD



PACKAGE MARKING (example)



Note

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



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