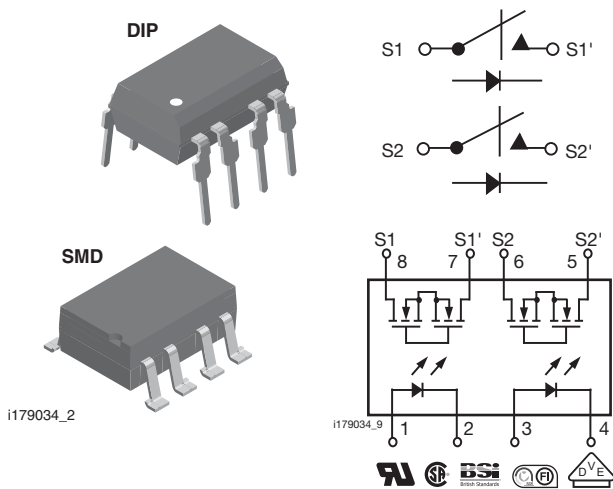


## Dual 1 Form A Solid State Relay



### FEATURES

- Dual channel (LH1550)
- Current limit protection
- Isolation test voltage 5300 V<sub>RMS</sub>
- Typical R<sub>ON</sub> 28 Ω
- Load voltage 350 V
- Load current 90 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

### DESCRIPTION

The LH1533 (dual 1 form A) relays are SPST normally open switches that can replace electromechanical relays in many applications. They are constructed using a GaAlAs LED for actuation control and an integrated monolithic die for the switch output. The die, fabricated in a high-voltage dielectrically isolated technology is comprised of a photodiode array, switch control circuitry, and MOSFET switches. In addition, the relays employ current-limiting circuitry, enabling them to pass FCC 68.302 and other regulatory surge requirements when overvoltage protection is provided.

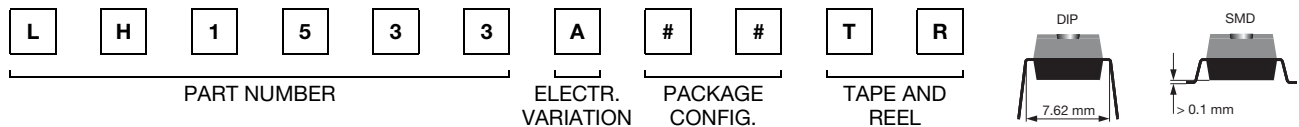
### APPLICATIONS

- 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
- BSI/BABT: certification no. 7980
- DIN EN: 60747-5-2 (VDE 0884)/60747-5-5 (pending), available with option 1
- FIMKO: approval

### ORDERING INFORMATION



PACKAGE	UL, CSA, BSI, VDE, FIMKO
SMD-8, tubes	LH1533AAC
SMD-8, tape and reel	LH1533ACTR
DIP-8, tubes	LH1533AB

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
<b>INPUT</b>				
LED continuous forward current		$I_F$	50	mA
LED reverse voltage	$I_R \leq 10\text{ }\mu\text{A}$	$V_R$	5.0	V
<b>OUTPUT</b>				
Output operation: 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		$I_L$	90	mA
Continuous DC load current: two poles operating		$I_L$	70	mA
<b>SSR</b>				
Ambient operating temperature range		$T_{amb}$	- 40 to + 85	$^{\circ}\text{C}$
Storage temperature range		$T_{stg}$	- 55 to + 150	$^{\circ}\text{C}$
Pin soldering temperature <sup>(1)</sup>	$t = 10\text{ s max.}$	$T_{sld}$	260	$^{\circ}\text{C}$
Input to output isolation voltage		$V_{ISO}$	5300	$V_{RMS}$
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.
- <sup>(1)</sup> Refer to reflow profile for soldering conditions for surface mounted devices (SMD). Refer to wave profile for soldering conditions for through hole devices (DIP).

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>INPUT</b>						
LED forward current, switch turn-on	$I_L = 100\text{ mA}$ , $t = 10\text{ ms}$	$I_{Fon}$			2.5	mA
LED forward current, switch turn-off	$V_L = \pm 300\text{ V}$	$I_{Foff}$	0.001	1.1		mA
LED forward voltage	$I_F = 5.0\text{ mA}$	$V_F$	0.9	1.2	1.4	V
<b>OUTPUT</b>						
On-resistance	$I_F = 5.0\text{ mA}$ , $I_L = \pm 90\text{ mA}$	$R_{ON}$	25	28	50	$\Omega$
Current limit	$I_F = 5.0\text{ mA}$ , $t = 5.0\text{ ms}$ , $V_L = 13\text{ V}$	$I_{LMT}$	150	200	270	mA
Off-state leakage current	$I_F = 0\text{ mA}$ , $V_L = \pm 350\text{ V}$	$I_O$			1.0	nA

**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.

<b>SWITCHING CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Turn-on time	$I_F = 5.0\text{ mA}$ , $I_L = 50\text{ mA}$	$t_{on}$			3.0	ms
Turn-off time	$I_F = 5.0\text{ mA}$ , $I_L = 50\text{ mA}$	$t_{off}$			3.0	ms

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

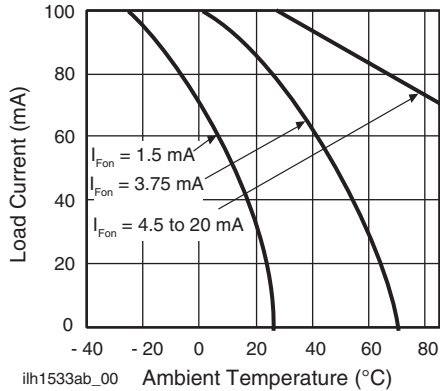


Fig. 1 - Recommended Operating Conditions

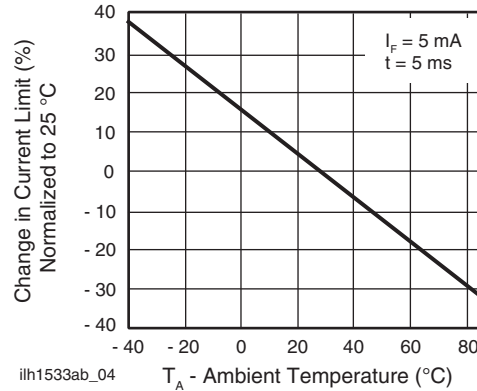


Fig. 4 - Current Limit vs. Temperature

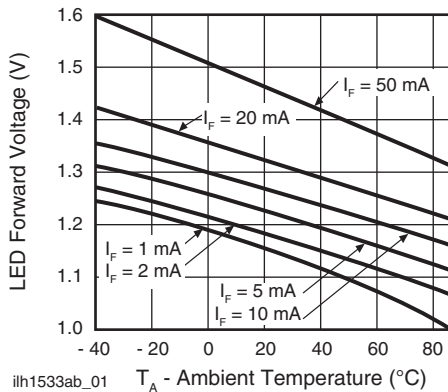


Fig. 2 - LED Voltage vs. Temperature

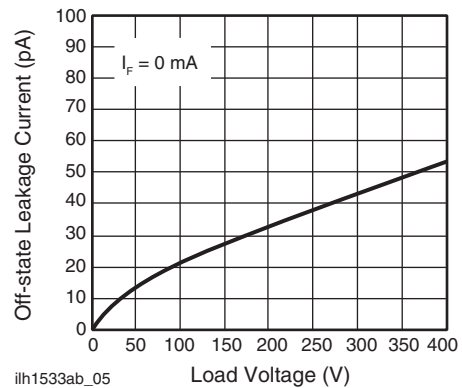


Fig. 5 - Leakage Current vs. Applied Voltage

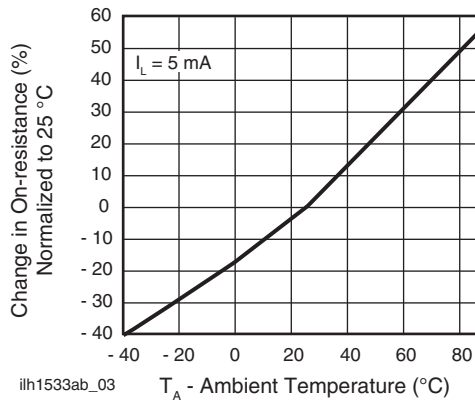


Fig. 3 - On-Resistance vs. Temperature

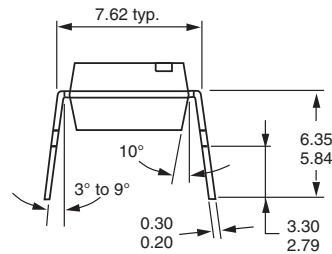
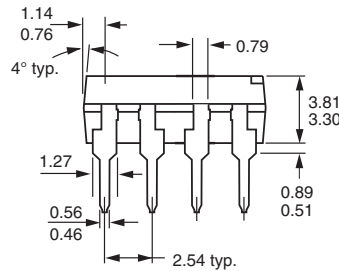
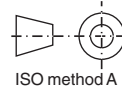
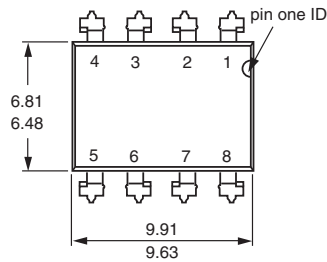
# LH1533AB, LH1533AAC, LH1533AACTR

Vishay Semiconductors Dual 1 Form A Solid State Relay



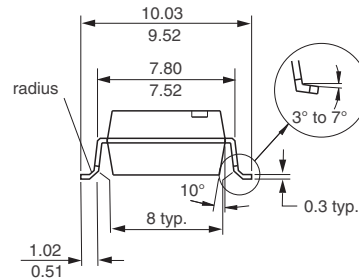
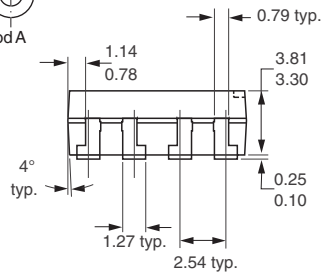
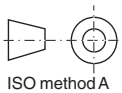
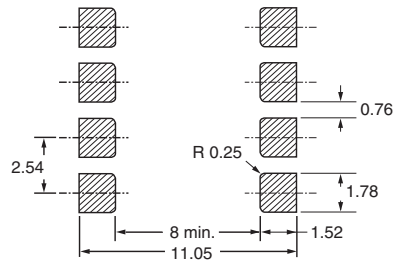
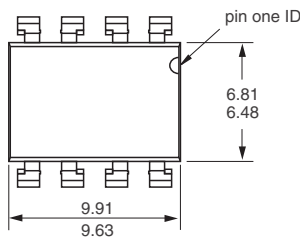
## PACKAGE DIMENSIONS in millimeters

DIP



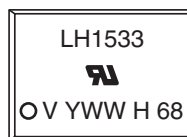
i178008

SMD



i178009

## PACKAGE MARKING (example)



### Note

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



## Disclaimer

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