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[Vishay Semiconductor/Opto Division](#)
[LH1533AACTR](#)

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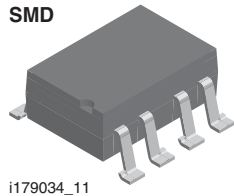


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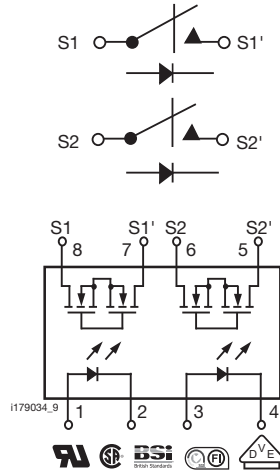
LH1533AACTR

Vishay Semiconductors

Dual 1 Form A Solid-State Relay



i179034_11



FEATURES

- Dual channel (LH1550)
- Current limit protection
- Isolation test voltage 5300 V_{RMS}
- Typical R_{ON} 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 lightning surge testing as per ANSI/TIA-968-B 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							
L	H	1	5	3	3	A	
PART NUMBER						ELECTR. VARIATION	
		#		#		T R	
		PACKAGE CONFIG.		TAPE AND REEL		SMD-8	
						> 0.1 mm	
PACKAGE				UL, CSA, BSI, FIMKO			
SMD-8, tape and reel				LH1533AACTR			



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	5.0	V
OUTPUT				
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
SSR				
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 ⁽¹⁾	$t = 10\text{ s max.}$	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.
- ⁽¹⁾ 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	$I_L = 100\text{ mA}$, $t = 10\text{ ms}$	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
OUTPUT						
On-resistance	$I_F = 5.0\text{ mA}$, $I_L = \pm 90\text{ mA}$	R_{ON}	25	28	50	Ω
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.

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



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

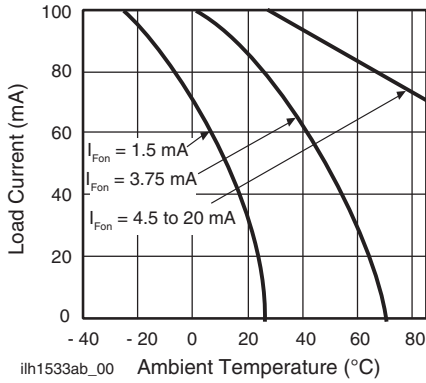


Fig. 1 - Recommended Operating Conditions

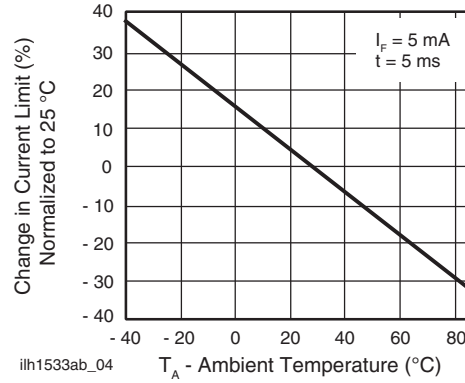


Fig. 4 - Current Limit vs. Temperature

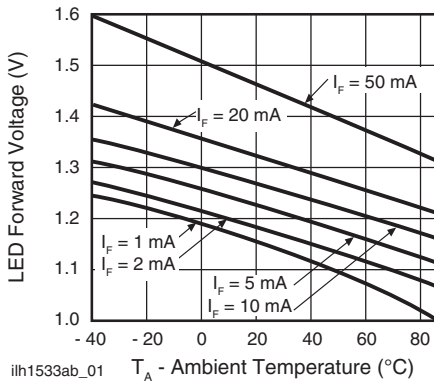


Fig. 2 - LED Voltage vs. Temperature

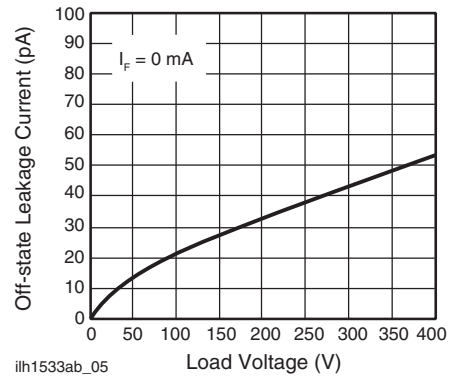


Fig. 5 - Leakage Current vs. Applied Voltage

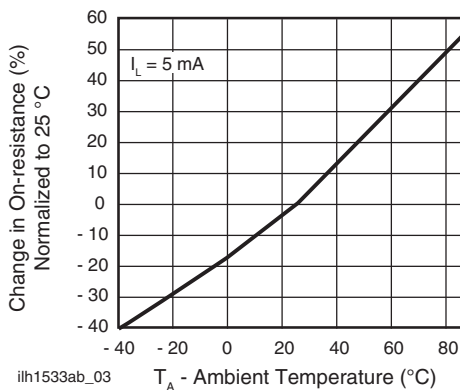


Fig. 3 - On-Resistance vs. Temperature

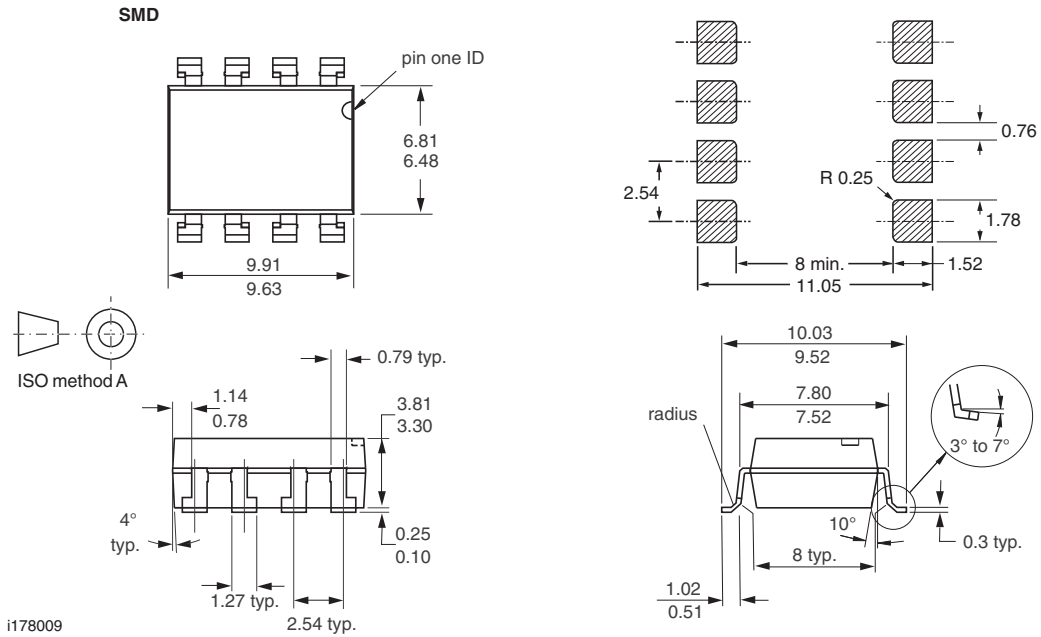


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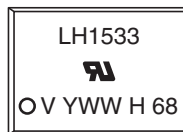
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PACKAGE DIMENSIONS in millimeters



PACKAGE MARKING (example)



Note

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



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