

LH1544AAC, LH1544AACTR, LH1544AB



Vishay Semiconductors Dual 1 Form A Solid State Relay
(Low Capacitance)

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	8	V
OUTPUT				
DC or peak AC load voltage	$I_L \leq 50\text{ }\mu\text{A}$	V_L	200	V
Continuous DC load current, one pole operating		I_L	55	mA
Continuous DC load current, two poles operating		I_L	40	mA
SSR				
Peak load current (single shot)	$t = 100\text{ ms}$	I_P	100	mA
Ambient temperature range		T_{amb}	- 40 to + 85	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	- 40 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}
Pole-to-pole isolation voltage (S1 to S2) ⁽²⁾	dry air, dust free, at sea level		1600	V
Output 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).
- ⁽²⁾ Breakdown occurs between the output pins external to the package.

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}		0.9	2	mA
LED forward current, switch turn-off	$V_L = \pm 150\text{ V}$	I_{Foff}	0.2	0.8		mA
LED forward voltage	$I_F = 5\text{ mA}$	V_F	1.1	1.19	1.45	V
OUTPUT						
On-resistance	$I_F = 5\text{ mA}$, $I_L = 50\text{ mA}$	R_{ON}	70	110	160	Ω
Off-resistance	$I_F = 0\text{ mA}$, $V_L = \pm 100\text{ V}$	R_{OFF}	0.5	10 000		$G\Omega$
Off-state leakage current	$I_F = 0\text{ mA}$, $V_L = \pm 100\text{ V}$	I_O		0.01	200	nA
	$I_F = 0\text{ mA}$, $V_L = \pm 200\text{ V}$	I_O			1	μA
Output capacitance	$I_F = 0\text{ mA}$, $V_L = 1\text{ V}$	C_O		0		pF
Output capacitance pin 4 to 6	$I_F = 0\text{ mA}$, $V_L = 50\text{ V}$	C_O		0.5		pF
Pole-to-pole Capacitance (S1 to S2)	$I_F = 5\text{ mA}$			0.5		pF
Switch offset	$I_F = 5\text{ mA}$	V_{OS}		0.1		μV
TRANSFER						
Capacitance (input to output)	$V_{ISO} = 1\text{ V}$	C_{IO}		1.1		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}		0.24	0.5	ms
Turn-off time	$I_F = 5\text{ mA}$, $I_L = 50\text{ mA}$	t_{off}		0.13	0.5	ms

Footnotes

The following information refers to the SSR recommended operation conditions:

- Both relays on with equal load currents. For single relay operation, refer to the LH1541 recommended operating conditions graph.



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

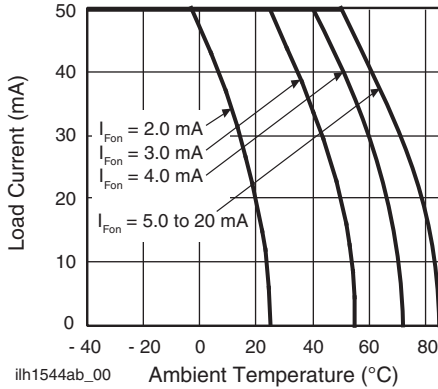


Fig. 1 - Recommended Operating Conditions

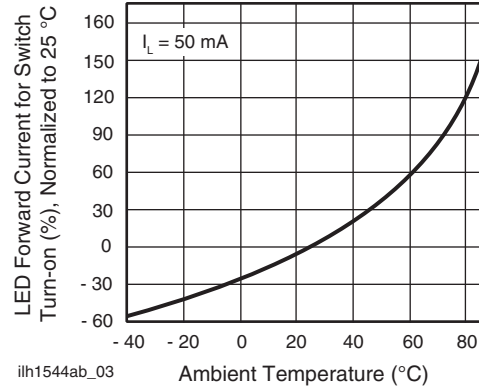


Fig. 4 - LED Current for Switch Turn-on vs. Temperature

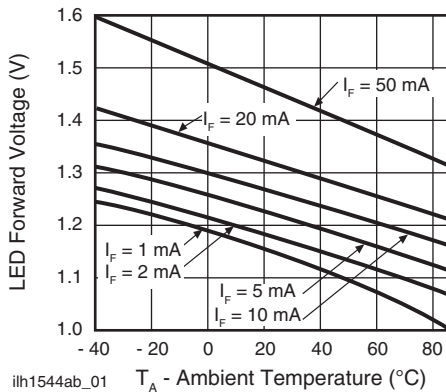


Fig. 2 - LED Voltage vs. Temperature

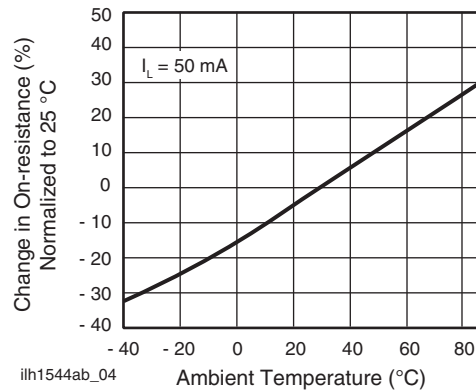


Fig. 5 - On-Resistance vs. Temperature

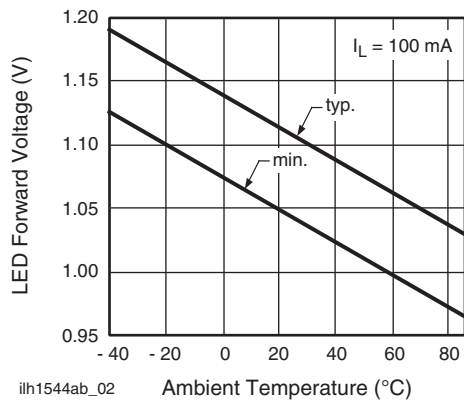


Fig. 3 - LED Dropout Voltage vs. Temperature

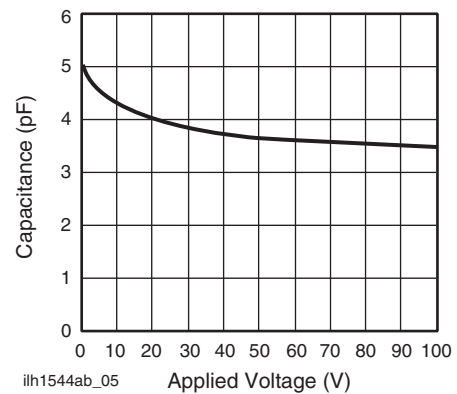


Fig. 6 - Switch Capacitance vs. Applied Voltage

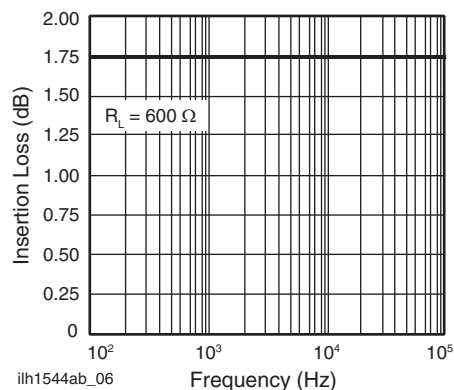


Fig. 7 - Insertion Loss vs. Frequency

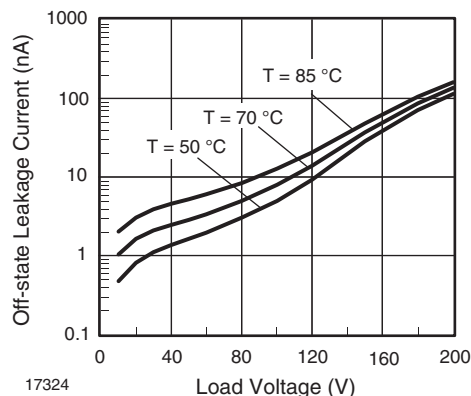


Fig. 10 - Leakage Current vs. Applied Voltage at Elevated Temperatures

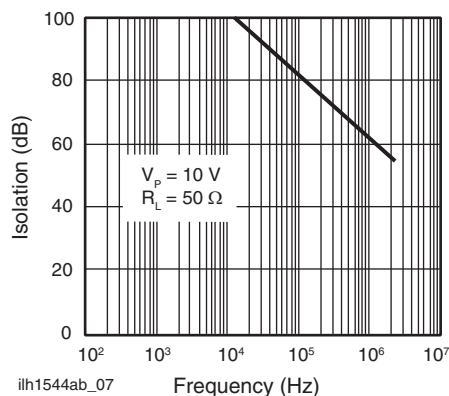


Fig. 8 - Output Isolation

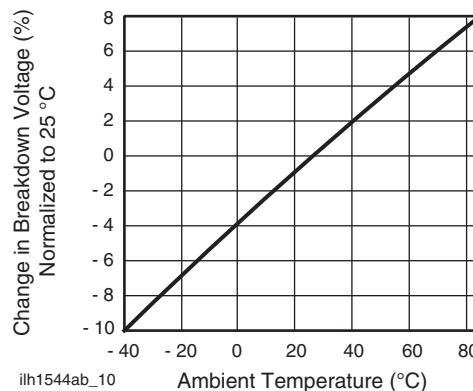


Fig. 11 - Switch Breakdown Voltage vs. Temperature

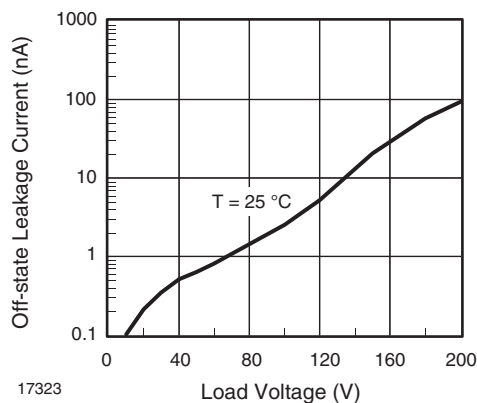


Fig. 9 - Leakage Current vs. Applied Voltage

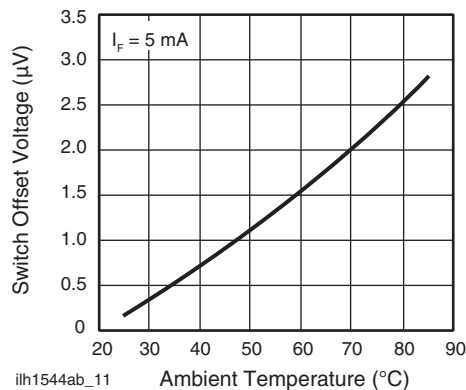


Fig. 12 - Switch Offset Voltage vs. Temperature



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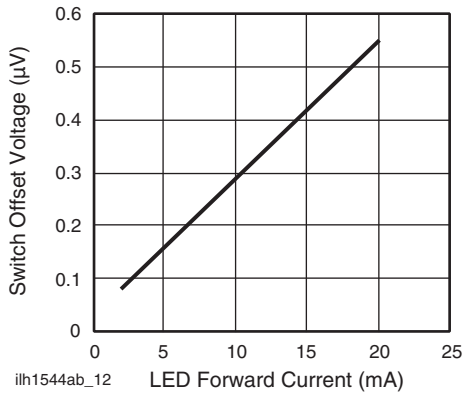


Fig. 13 - Switch Offset Voltage vs. LED Current

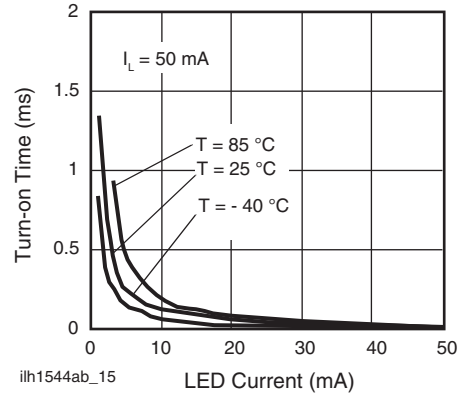


Fig. 16 - Turn-on Time vs. LED Current

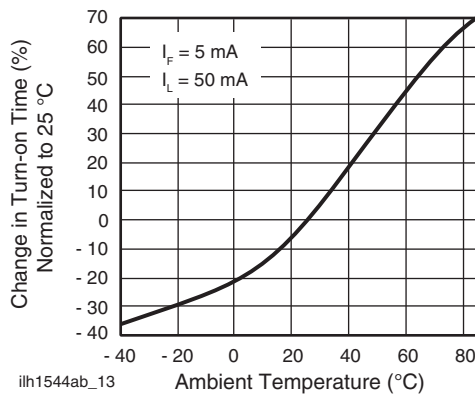


Fig. 14 - Turn-on Time vs. Temperature

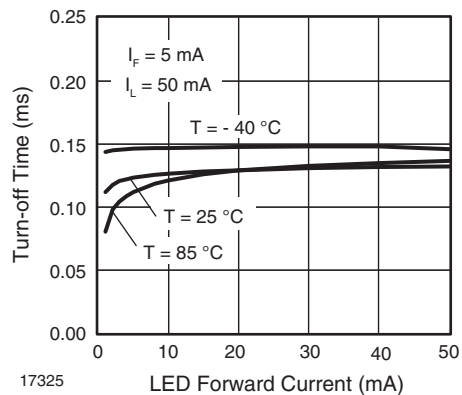


Fig. 17 - Turn-off Time vs. LED Current

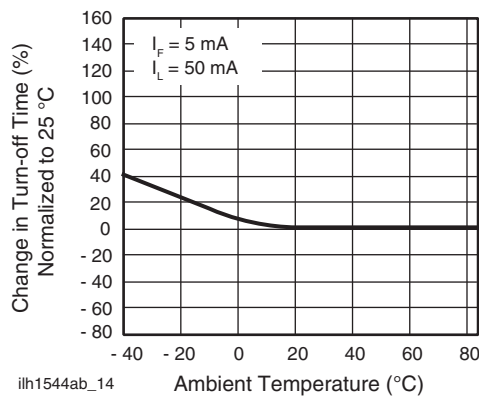


Fig. 15 - Turn-off Time vs. Temperature

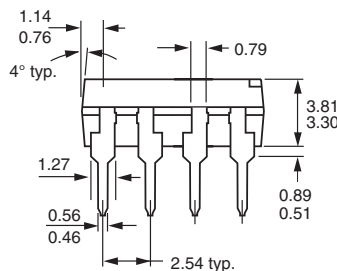
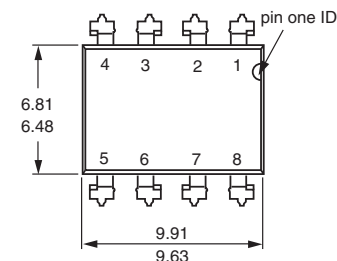
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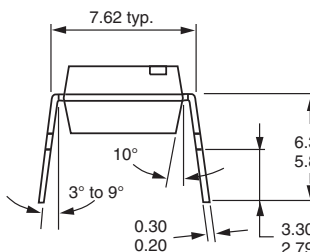


PACKAGE DIMENSIONS in millimeters

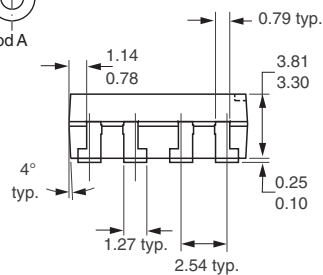
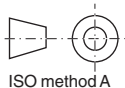
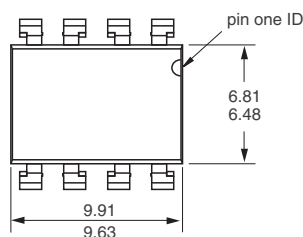
DIP



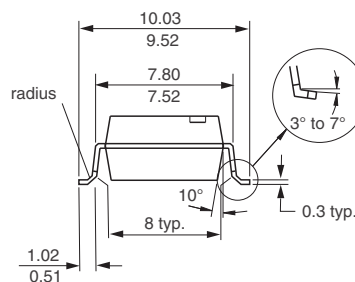
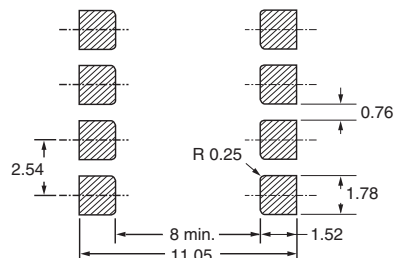
i178008



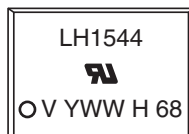
SMD



i178009



PACKAGE MARKING (example)



Note

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



Footprint and Schematic Information for LH1544AAC, LH1544AACTR, LH1544AB

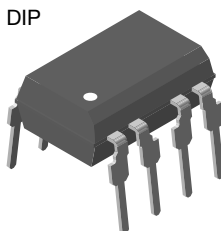
The footprint and schematic symbols for the following parts can be accessed using the associated links. They are available in Eagle, Altium, KiCad, OrCAD / Allegro, Pulsonix, and PADS.

Note that the 3D models for these parts can be found on the Vishay product page.

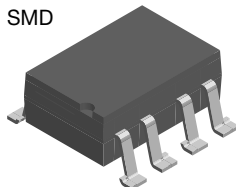
PART NUMBER	FOOTPRINT / SCHEMATIC
LH1544AAC	www.snapeda.com/parts/LH1544AAC/Vishay/view-part
LH1544AACTR	www.snapeda.com/parts/LH1544AACTR/Vishay/view-part
LH1544AB	www.snapeda.com/parts/LH1544AB/Vishay/view-part

For technical issues and product support, please contact optocoupleranswers@vishay.com.

DIP



SMD



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