

FEATURES

- 5300 V_{RMS} I/O Isolation
- Current-limit Protection Built-in
- Linear AC/DC Operation
- High-reliability Monolithic Receptor
- Low Power Consumption
- Clean, Bounce-free Switching
- High Surge Capability
- Surface Mountable
- Flammability; UL94,V0

AGENCY APPROVALS

- UL – File No. E52744
- CSA – Certification 093751

APPLICATIONS

- General Telecom Switching
- Instrumentation
- Industrial Controls

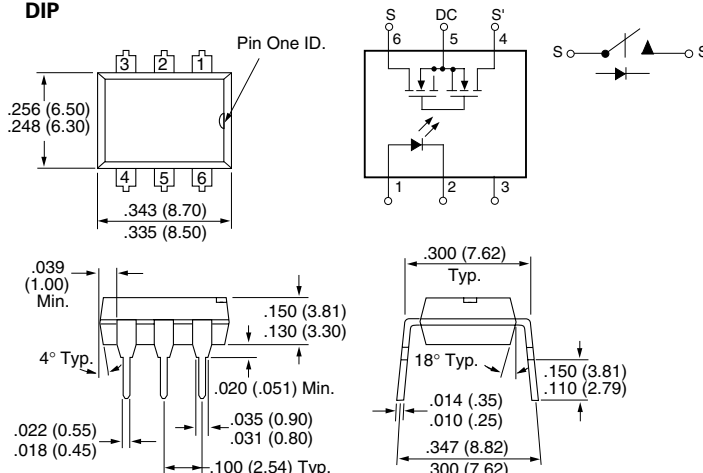
DESCRIPTION

The LH1519 relays are miniature, optically-coupled relays with high-voltage MOSFET outputs. The relays are capable of switching AC or DC loads from as little as nanovolts to hundreds of volts. Likewise, the relays can switch currents in the range of nanoamps to hundreds of milliamps. The MOSFET switches are ideal for small signal switching and are primarily suited for DC or audio frequency applications.

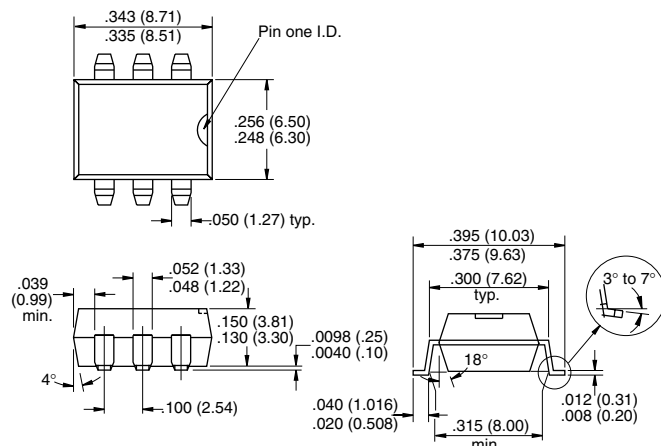
The LH1519 relays offer low on-resistance.

Package Dimensions in Inches (mm)

DIP



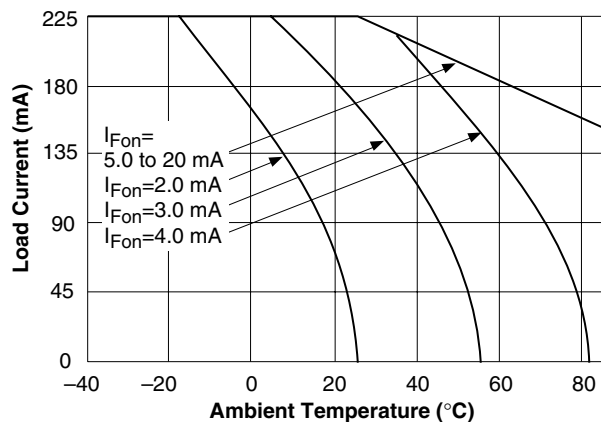
SMD



Part Identification

Part Number	Description
LH1519AT	6-pin DIP, Tubes
LH1519AAB	6-pin SMD, Gullwing, Tubes
LH1519AABTR	6-pin SMD, Gullwing, Tape and Reel

Recommended Operating Conditions



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 +150°C
Pin Soldering Temperature ($t=10 \text{ s max}$) (T_S)	..... 260°C
Input/Output Isolation Voltage (V_{ISO})	..... 5300 V_{RMS}
LED Continuous Forward Current (I_F)	..... 50 mA
LED Reverse Voltage ($I_R \leq 10 \mu\text{A}$) (V_R)	..... 8.0 V
DC or Peak AC Load Voltage ($I_L \leq 50 \mu\text{A}$) (V_L)	..... 250 V
Continuous DC Load Current (I_L)	.....
Bidirectional Operation	..... 240 mA
Unidirectional Operation	..... 450 mA
Peak Load Current ($t=100 \text{ ms}$) (single shot) (I_P) †
Output Power Dissipation (P_{DISS})	..... 550 mW

† Refer to Current Limit Performance Application Note 58 for a discussion on relay operation during transient currents.

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}	—	0.9	2.0	mA	$I_L=100 \text{ mA}$, $t=10 \text{ ms}$
LED Forward Current, Switch Turn-off	I_{Foff}	0.2	0.8	—	mA	$V_L \pm 200 \text{ V}$
LED Forward Voltage	V_F	1.15	1.26	1.45	V	$I_F=10 \text{ mA}$
Output						
ON-resistance ac/dc: Pin 4 (±) to 6 (±) dc: Pin 4, 6 (+) to 5 (±)	R_{ON}	3.0	6.0	10	Ω	$I_F=5.0 \text{ mA}$, $I_L=50 \text{ mA}$
		0.75	1.5	2.5		$I_F=5.0 \text{ mA}$, $I_L=100 \text{ mA}$
OFF-resistance	R_{OFF}	0.5	2500	—	G Ω	$I_F=0 \text{ mA}$, $V_L=\pm 100 \text{ V}$
Current Limit ac/dc: Pin 4 (±) to 6 (±) dc: Pin 4, 6 (+) to 5 (±)	I_{LMT}	330	450	550	mA	$I_F=5.0 \text{ mA}$, $t=5.0 \text{ ms}$ $V_L=\pm 4.0 \text{ V}$
		—	—	—		$I_F=5.0 \text{ mA}$, $V_L=4.0 \text{ mA}$ $t=5.0 \text{ ms}$
Off-state Leakage Current	—	—	0.04	200	nA	$I_F=0 \text{ mA}$, $V_L=\pm 100 \text{ V}$
		—	—	1.0	μA	$I_F=0 \text{ mA}$
Output Capacitance Pin 4 to 6	—	—	100	—	pF	$I_F=0 \text{ mA}$, $V_L=1.0 \text{ V}$
		—	20	—		$I_F=0 \text{ mA}$, $V_L=50 \text{ V}$
Switch Offset	—	—	0.1	—	V	$I_F=5.0 \text{ mA}$
Transfer						
Input/Output Capacitance	C_{ISO}	—	0.8	—	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}	—	0.9	3.0	ms	$I_F=5.0 \text{ mA}$, $I_L=50 \text{ mA}$

Typical Performance Characteristics

Figure 1. LED Current for Switch Turn-on vs. Temperature

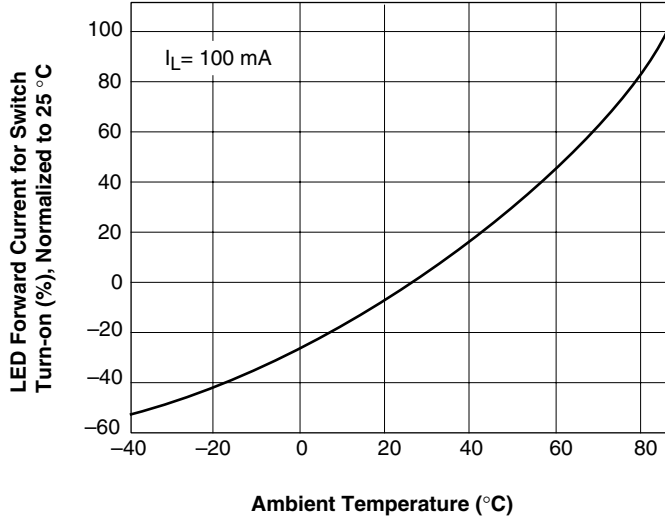


Figure 4. Current Limit vs. Temperature

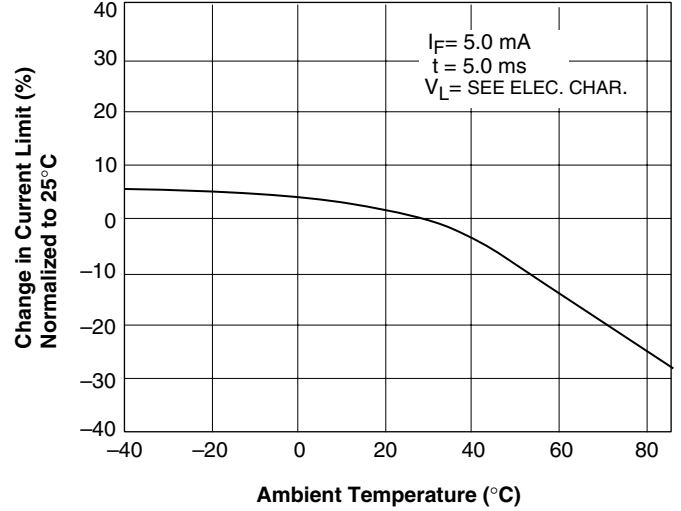


Figure 2. LED Drop-out Voltage vs. Temperature

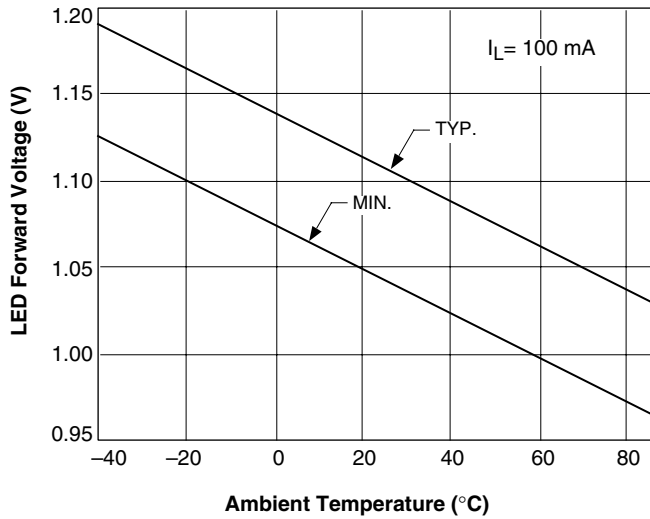


Figure 5. Switch Capacitance vs. Applied Voltage

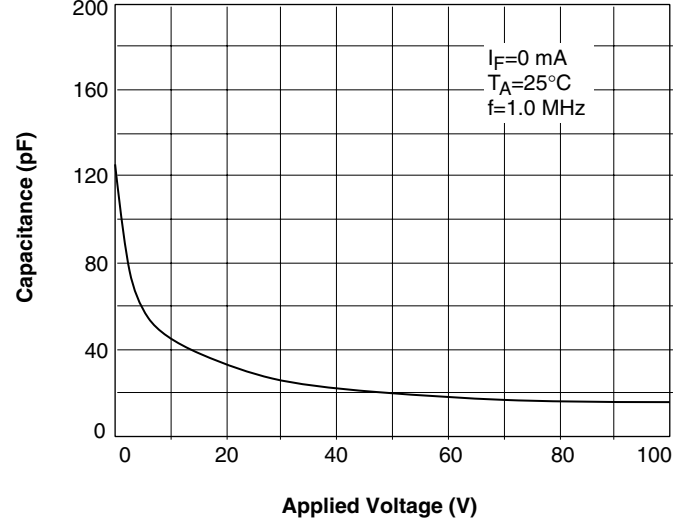


Figure 3. ON-Resistance vs. Temperature

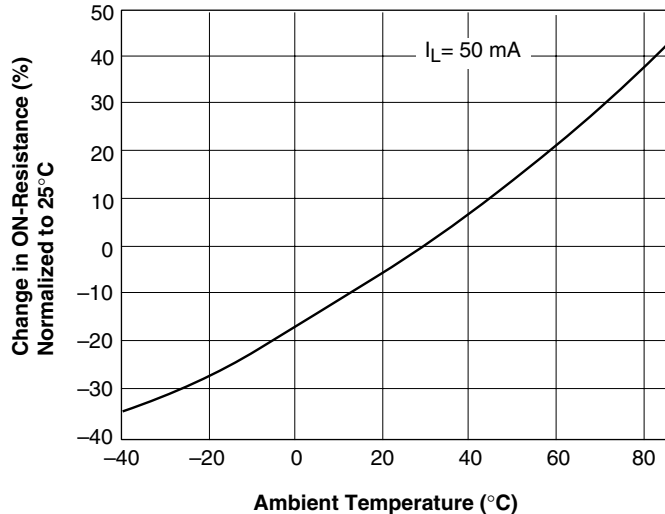


Figure 6. Leakage Current vs. Applied Voltage

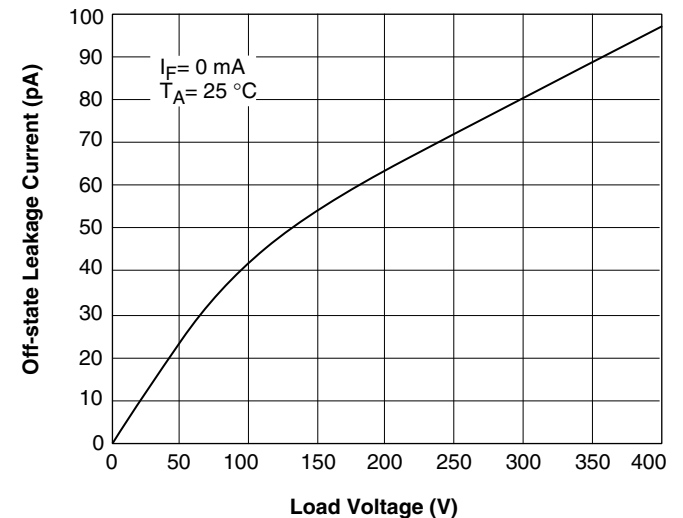


Figure 7. Leakage Current vs. Applied Voltage at Elevated Temperatures

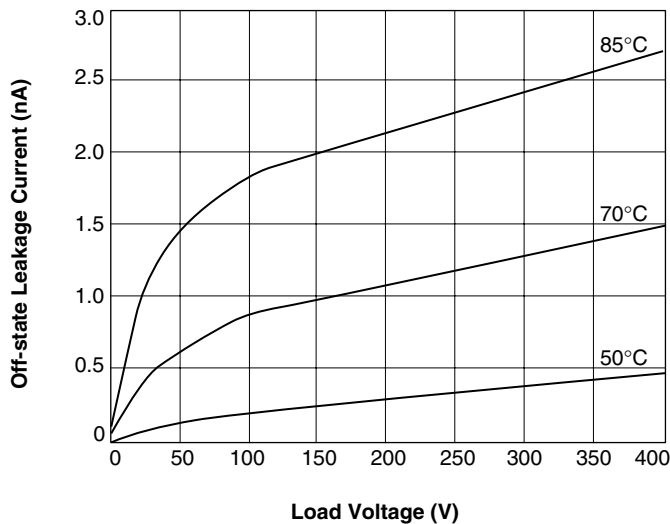


Figure 8. Turn-Off Time vs. Temperature

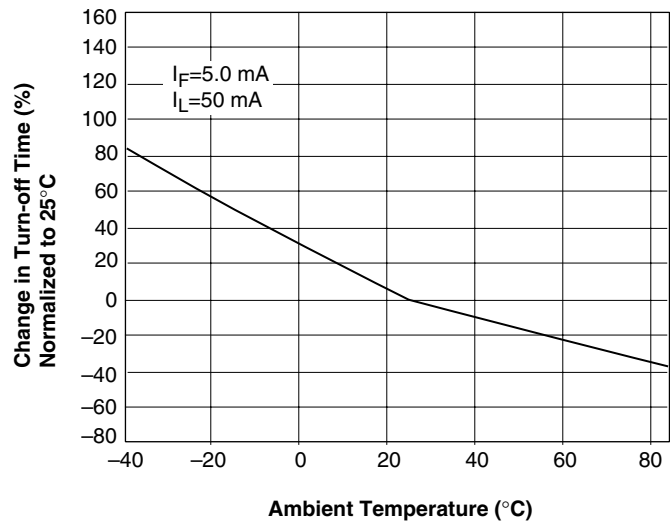


Figure 9. Turn-On Time vs. LED Current

