LH1517AT/AAB/AABTR

1 Form A
Solid State Relay

FEATURES

- **5300 V_{RMS} I/O Isolation**
- **Current-limit Protection Built-in**
- **Linear ac/dc Operation**
- **High-reliability Monolithic Receptor**
- **Clean, Bounce-free Switching**
- **High Surge Capability**
- **Surface Mountable**

AGENCY APPROVALS

- **UL – File No. E52744**
- **CSA – Certification 093751**
- **BSI/BABT Certified**

APPLICATIONS

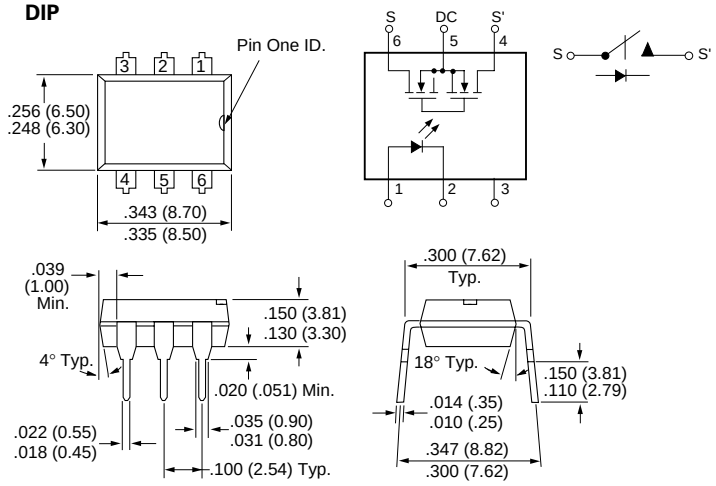
- **Telecom Switching**
- **Programmable Controllers**
- **Instrumentation**
- **Industrial Controls**
  - **Micro Control of Solenoids, Lights, Motors**

DESCRIPTION

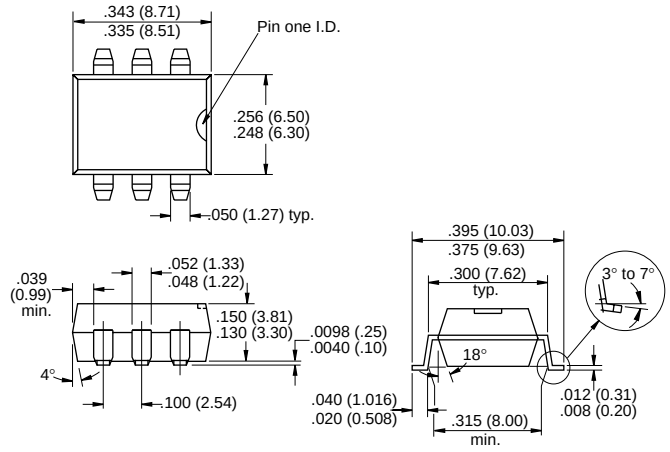
The LH1517 relay is a low ON-resistance, SPST normally open switch (1 Form A) that can replace electromechanical relays in many applications. The relay is constructed using a GaAlAs LED for actuation control and an integrated monolithic die for the switch output. The die, fabricated in a high-voltage dielectrically isolated technology, is comprised of a photodiode array, switch-control circuity, and DMOS switches.

Package Dimensions in Inches (mm)

DIP



SMD

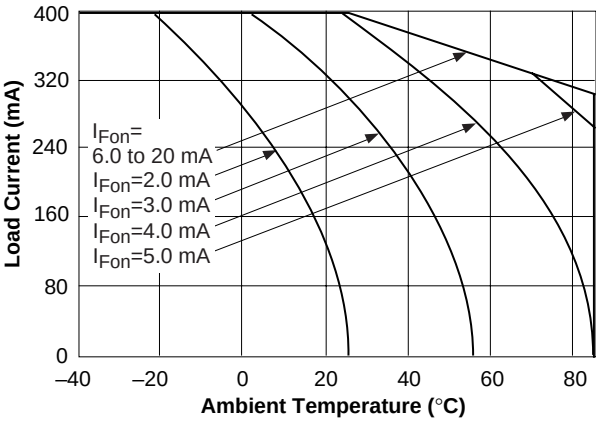


Part Identification

Part Number	Description
LH1517AT	6-pin DIP, Tubes
LH1517AAB	6-pin SMD, Gullwing, Tubes
LH1517AABTR	6-pin SMD, Gullwing, Tape and Reel

www.infineon.com/opto • 1-888-Infineon (1-888-463-4636)
OSRAM Opto Semiconductors GmbH & Co. OHG • Regensburg, Germany
www.osram-os.com • +49-941-202-7178

Recommended Operating Conditions



Absolute Maximum Ratings, T_A=25°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 s max) (T_S) ..... 260°C
Input/Output Isolation Voltage (V_{ISO}) ..... 3750 V_{RMS}
LED Continuous Forward Current (I_F) ..... 50 mA
LED Reverse Voltage (I_R≤10 µA) (V_R) ..... 8.0 V
DC or Peak AC Load Voltage (I_L≤50 µA) (V_L) ..... 150 V
Continuous DC Load Current (I_L)
Bidirectional Operation ..... 400 mA
Unidirectional Operation ..... 800 mA
Peak Load Current (t=100 ms) (single shot) (I_P) ..... 1200 mA
Output Power Dissipation (P_{DISS}) ..... 600 mW

Electrical Characteristics, T_A=25°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 mA, t=10 ms
LED Forward Current, Switch Turn-off	I_{Foff}	0.2	0.8	—	mA	V_L±100 V
LED Forward Voltage	V_F	1.15	1.26	1.45	V	I_F=10 mA
Output						
ON-resistance ac/dc: Pin 4 (±) to 6 (±)	R_{ON}	1.0	2.0	3.0	Ω	I_F=5.0 mA, I_L=50 mA
dc: Pin 4, 6 (+) to 5 (±)		0.25	0.5	0.85		I_F=5.0 mA, I_L=100 mA
OFF-resistance	R_{OFF}	0.5	2500	—	GΩ	I_F=0 mA, V_L=±100 V
Current Limit ac/dc: Pin 4 (±) to 6 (±)	I_{LMT}	—	—	—	mA	I_F=5.0 mA, t=5.0 ms
dc: Pin 4, 6 (+) to 5 (±)		—	—	—		I_F=5.0 mA, V_L=±4.0 mA t=5.0 ms
Off-state Leakage Current	—	—	0.04	200	nA	I_F=0 mA, V_L=±100 V
		—	—	1.0	µA	I_F=0 mA, V_L=±150 V
Output Capacitance Pin 4 to 6	—	—	185	—	pF	I_F=0 mA, V_L=±1.0 V
		—	45	—		I_F=0 mA, V_L=±50 V
Switch Offset	—	—	0.1	—	V	I_F=5.0 mA
Transfer						
Input/Output Capacitance	C_{ISO}	—	0.8	—	pF	V_{ISO}=1.0 V
Turn-on Time	t_{on}	—	1.7	3.0	ms	I_F=5.0 mA, I_L=50 mA
Turn-off Time	t_{off}	—	1.3	3.0	ms	I_F=5.0 mA, I_L=50 mA

Typical Performance Characteristics

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

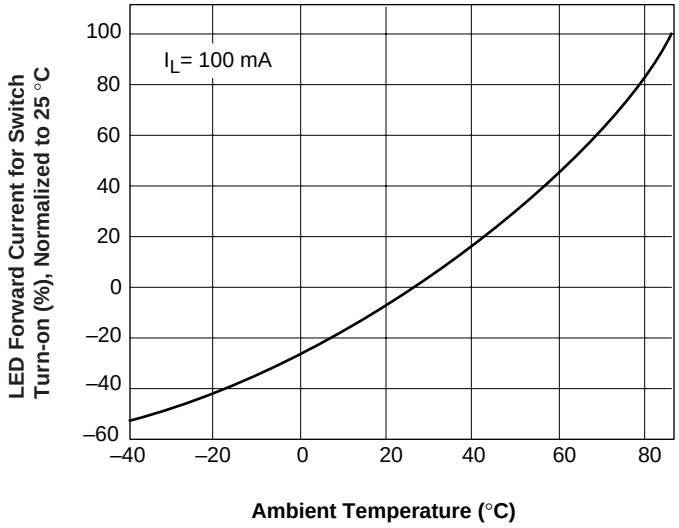


Figure 2. ON-Resistance vs. Temperature

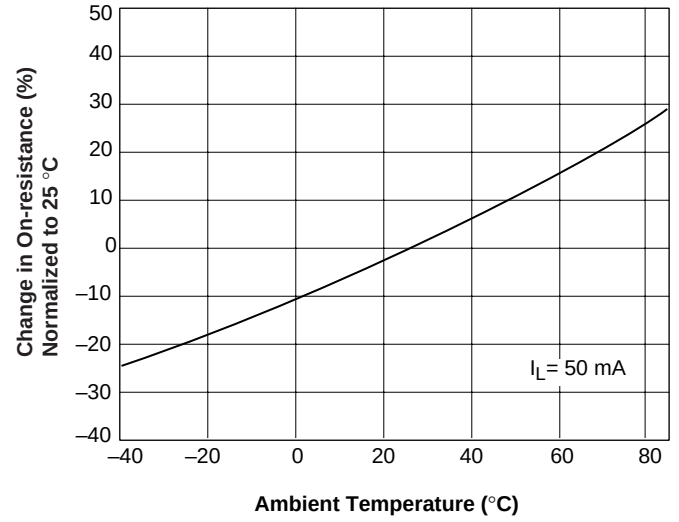


Figure 3. Current Limit vs. Temperature

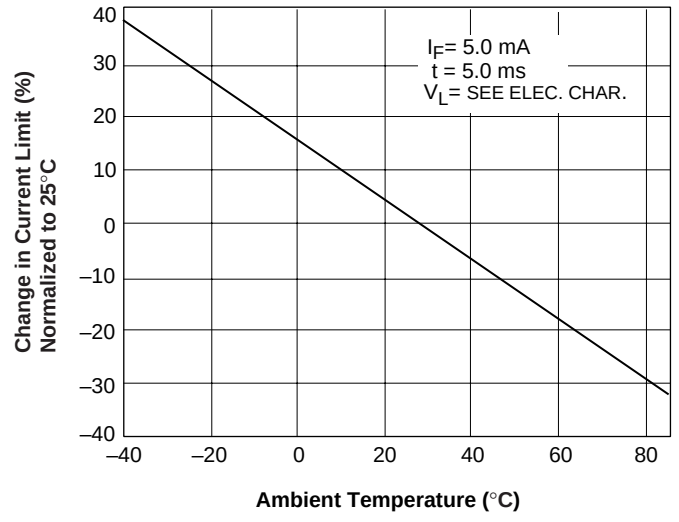


Figure 4. Switch Breakdown Voltage vs. Temperature

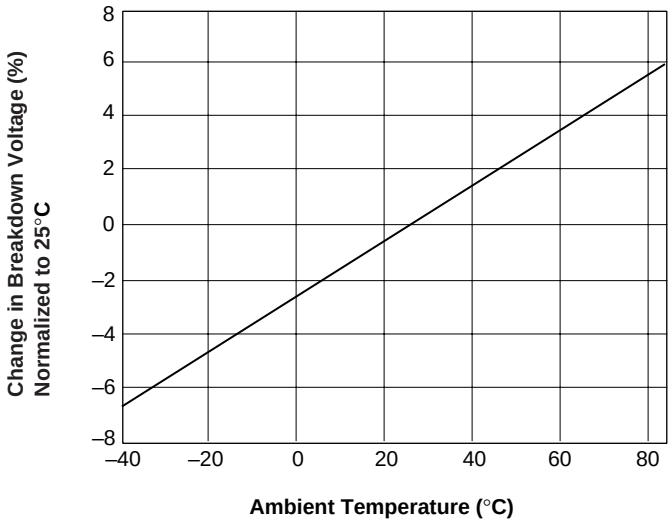


Figure 5. Switch Capacitance vs. Applied Voltage

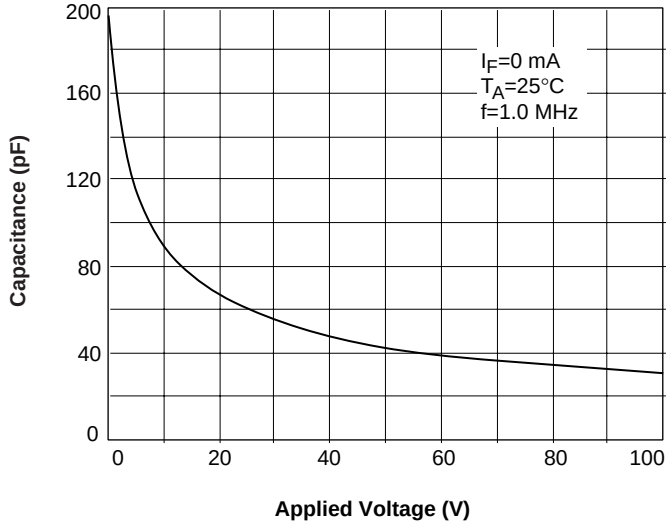
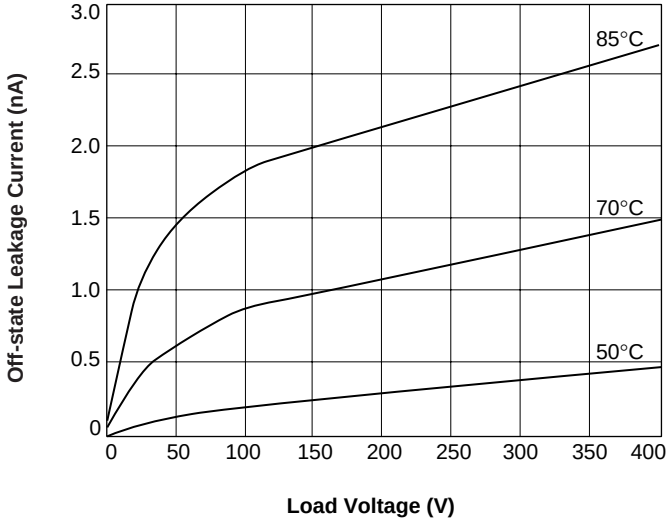


Figure 6. Leakage Current vs. Applied Voltage at Elevated Temperatures



www.infineon.com/opto • 1-888-Infineon (1-888-463-4636)
OSRAM Opto Semiconductors GmbH & Co. OHG • Regensburg, Germany
www.osram-os.com • +49-941-202-7178

Figure 7. Leakage Current vs. Applied Voltage

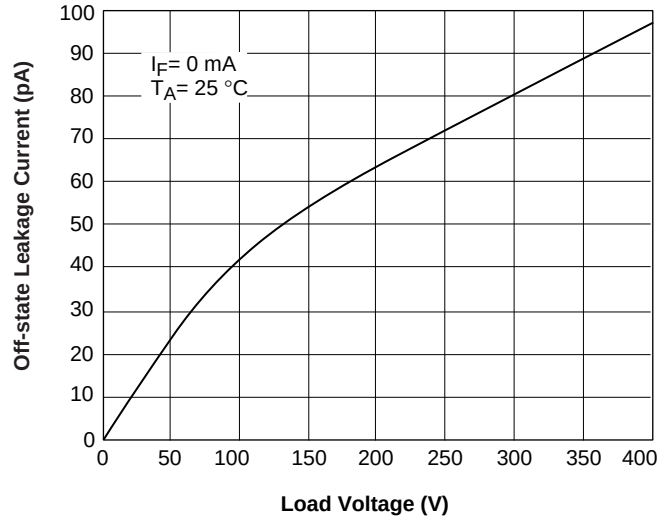


Figure 8. Turn-On Time vs. LED Current

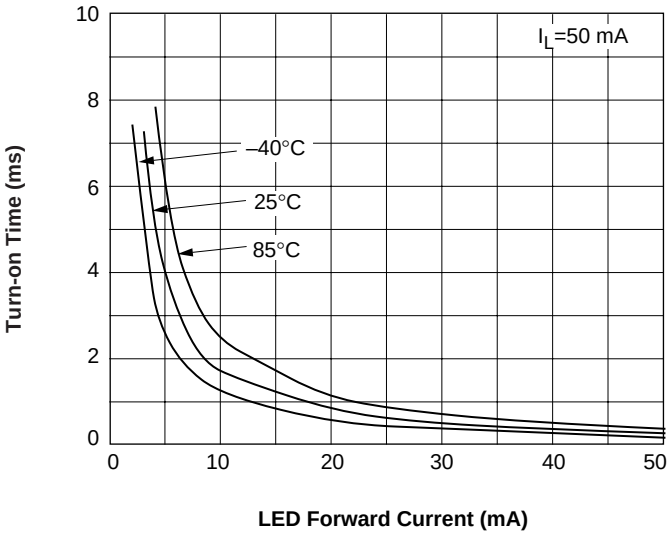


Figure 9. Turn-Off Time vs. LED Current