



LH1517AT/AAB/AABTR

1 Form A
Solid State Relay

FEATURES

- 5300 V_{RMS} I/O Isolation
- Linear ac/dc Operation
- High-reliability Monolithic Receptor
- Clean, Bounce-free Switching
- High Surge Capability
- Surface Mountable
- Flammability; UL94,V0

AGENCY APPROVALS

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

APPLICATIONS

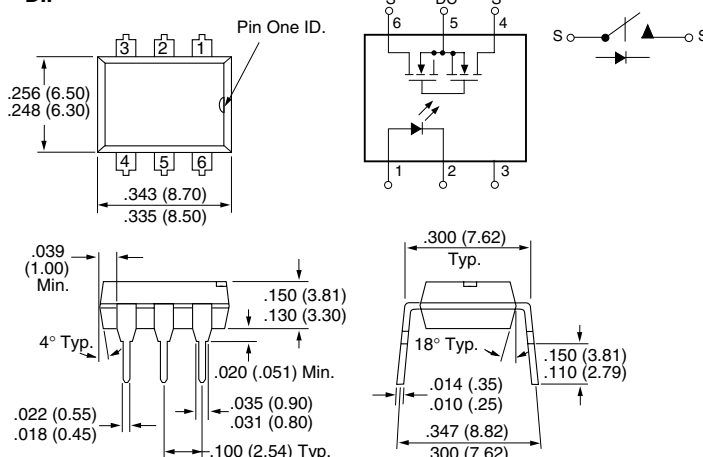
- Telecom Switching
- Programmable Controllers
- Instrumentation
- Industrial Controls
 - Micro Control of Solenoids, Lights, Motors

DESCRIPTION

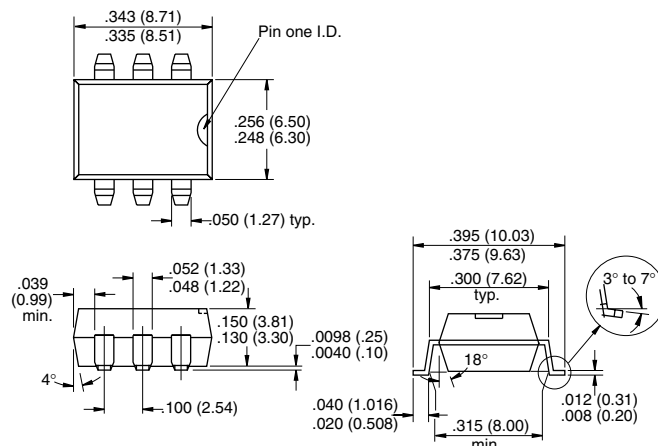
The LH1517 relay is a low ON-resistance, SPST normally open switch (1 Form A) that can replace electromechanical relays in many applications. The relay is constructed using a GaAlAs LED for actuation control and an integrated monolithic die for the switch output. The die, fabricated in a high-voltage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

Package Dimensions in Inches (mm)

DIP



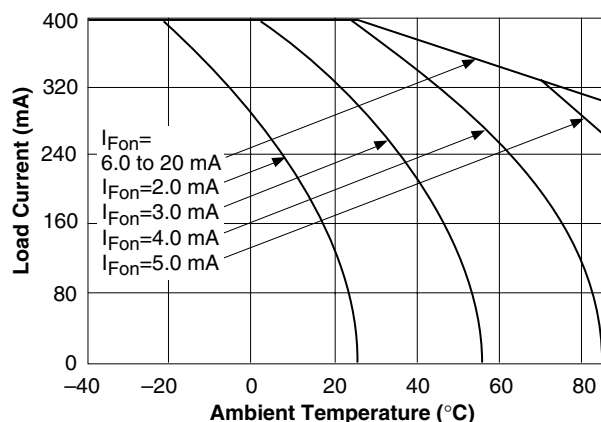
SMD



Part Identification

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

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 ($t=10$ 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 ($I_R \leq 10 \mu\text{A}$) (V_R)	.....	8.0 V
DC or Peak AC Load Voltage ($I_L \leq 50 \mu\text{A}$) (V_L)	.....	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, $T_A=25^{\circ}\text{C}$

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	$I_L=100$ mA, $t=10$ ms
LED Forward Current, Switch Turn-off	I_{Foff}	0.2	0.8	—	mA	$V_L \pm 100$ V
LED Forward Voltage	V_F	1.15	1.26	1.45	V	$I_F=10$ mA
Output						
ON-resistance ac/dc: Pin 4 (\pm) to 6 (\pm) dc: Pin 4, 6 (+) to 5 (\pm)	R_{ON}	1.0	2.0	3.0	Ω	$I_F=5.0$ mA, $I_L=50$ mA
		0.25	0.5	0.85		$I_F=5.0$ mA, $I_L=100$ mA
OFF-resistance	R_{OFF}	0.5	2500	—	G Ω	$I_F=0$ mA, $V_L=\pm 100$ V
Off-state Leakage Current	—	—	0.04	200	nA	$I_F=0$ mA, $V_L=\pm 100$ V
		—	—	1.0	μA	$I_F=0$ mA, $V_L=\pm 150$ V
Output Capacitance Pin 4 to 6	—	—	185	—	pF	$I_F=0$ mA, $V_L=\pm 1.0$ V
		—	45	—		$I_F=0$ mA, $V_L=\pm 50$ 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

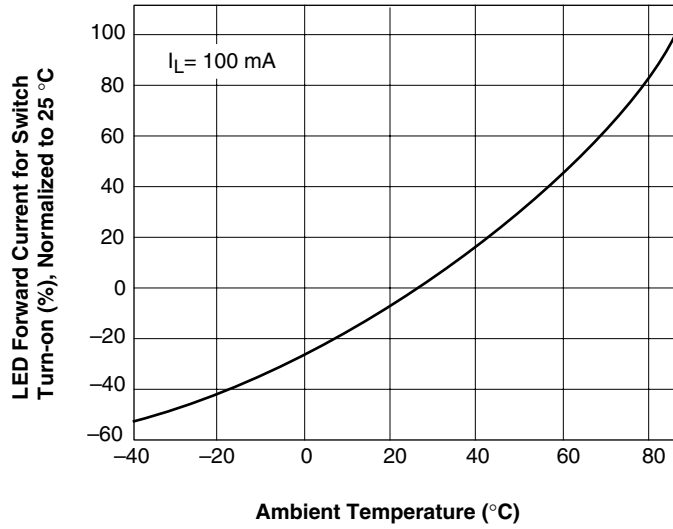


Figure 2. ON-Resistance vs. Temperature

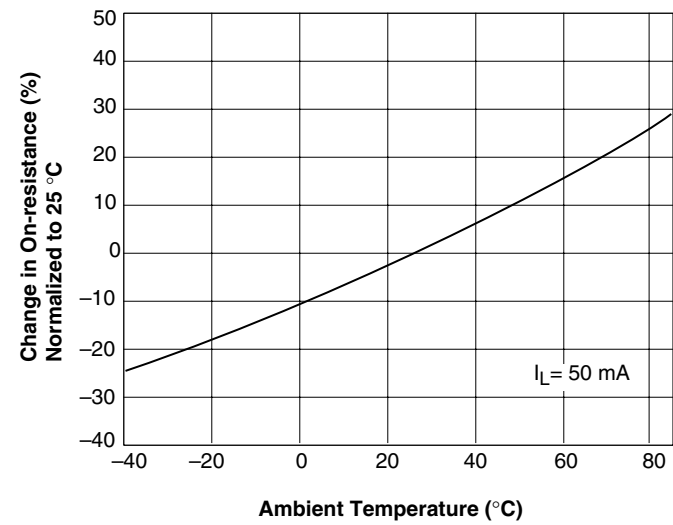


Figure 3. Current Limit vs. Temperature

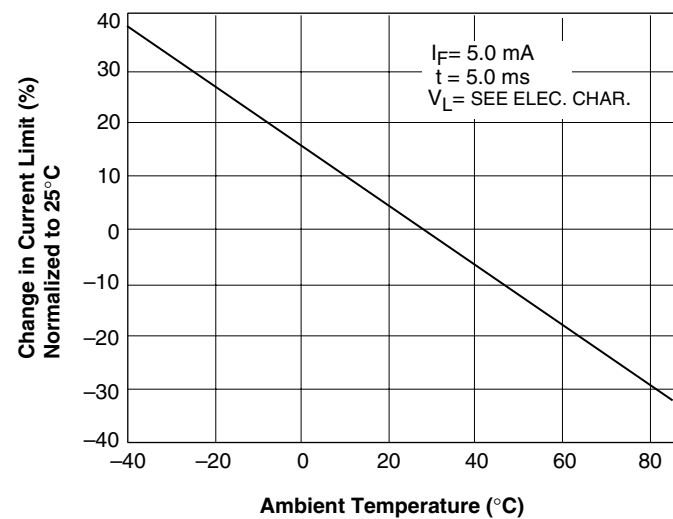


Figure 4. Switch Breakdown Voltage vs. Temperature

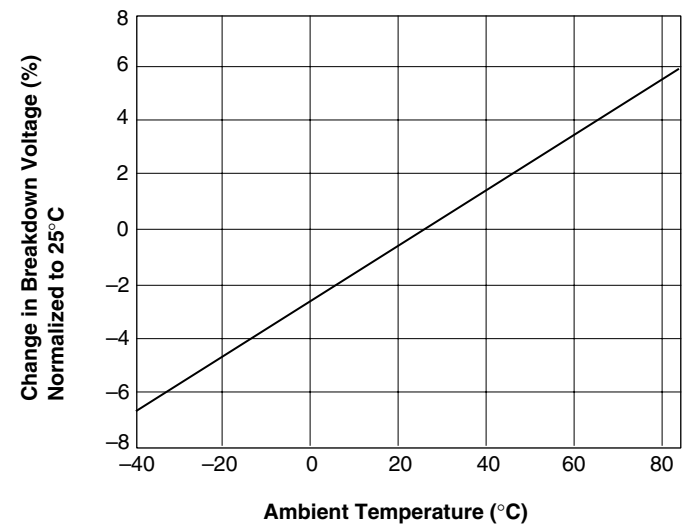


Figure 5. Switch Capacitance vs. Applied Voltage

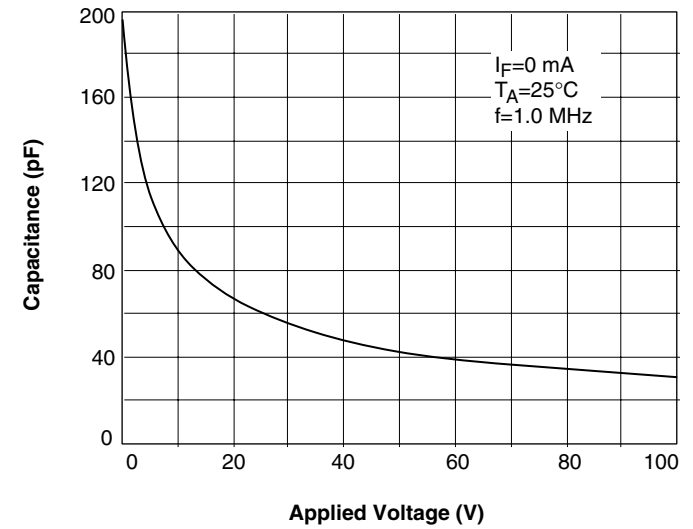


Figure 6. Leakage Current vs. Applied Voltage at Elevated Temperatures

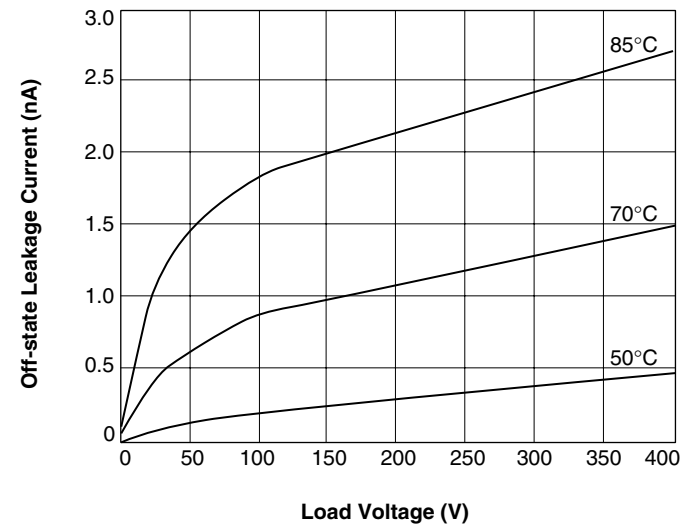


Figure 7. Leakage Current vs. Applied Voltage

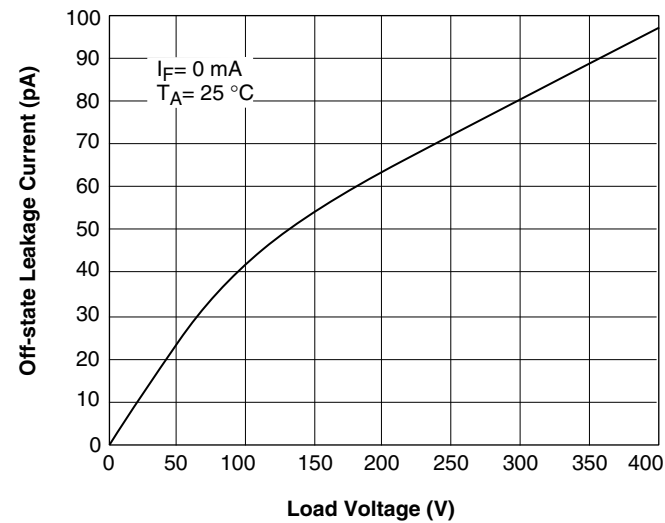


Figure 8. Turn-On Time vs. LED Current

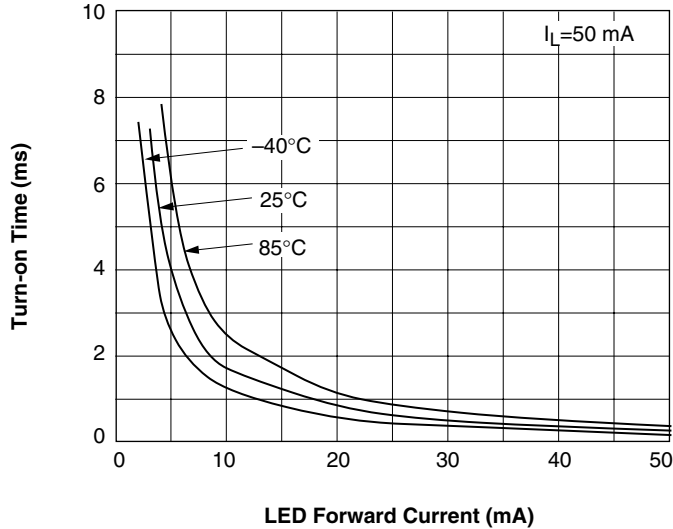


Figure 9. Turn-Off Time vs. LED Current

