LH1537AT/AAB/AABTR
LH1537AB/AAC/AACTR

1 Form C
Solid State Relay

FEATURES

- **Two Versions, 6-pin and 8-pin**
- **Break-before-make Operation**
- **I/O Isolation, 5300 V_{RMS}**
- **Load Voltage, 250 V**
- **On Resistance, Typ. 12 Ω**
- **Linear, AC/DC Operation**
- **Clean, Bounce-free Switching**
- **Low Power Consumption**
- **Surface Mountable**

AGENCY APPROVALS

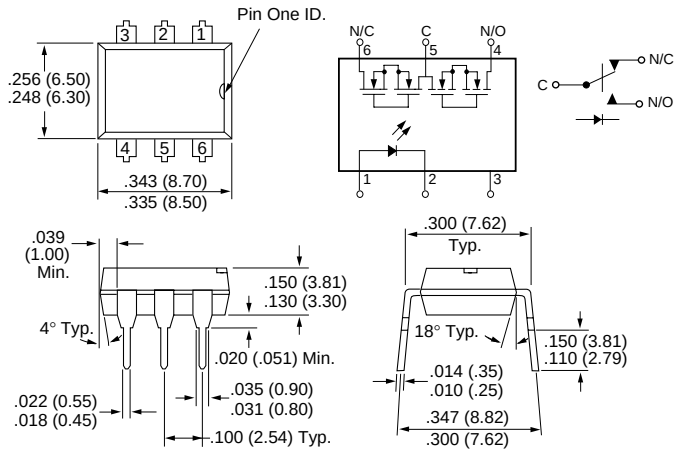
- **UL – File No. E52744**
- **CSA – Certification 093751**
- **VDE 0884 Approval**

APPLICATION

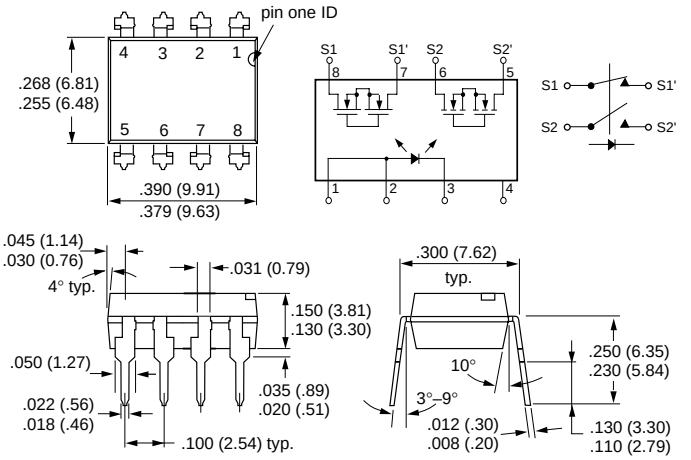
- **General Telecom Switching**
- **Modems**
- **Instrumentation**
- **Programmable Controllers**
- **Industrial**

Package Dimensions in Inches (mm)

6-pin DIP



8-pin DIP



Part Identification

Part Number	Description
LH1537AT	6-pin DIP, Tubes
LH1537AAB	6-pin SMD, Tubes
LH1537AABTR	6-pin SMD, Tape and Reel
LH1537AB	8-pin DIP, Tubes
LH1537AAC	8-pin SMD, Tubes
LH1537AACTR	8-pin SMD, Tape and Reel

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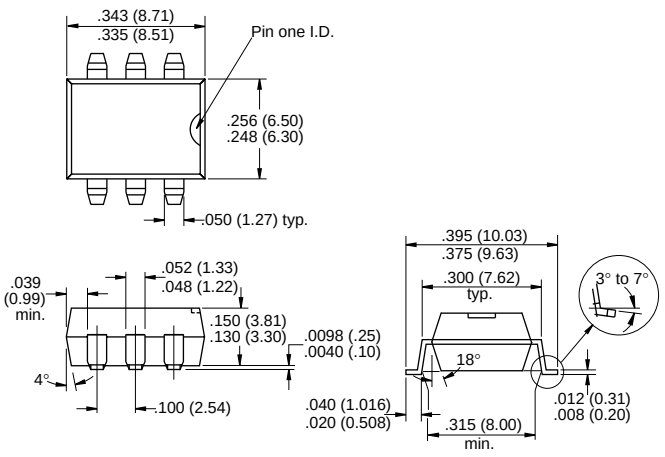
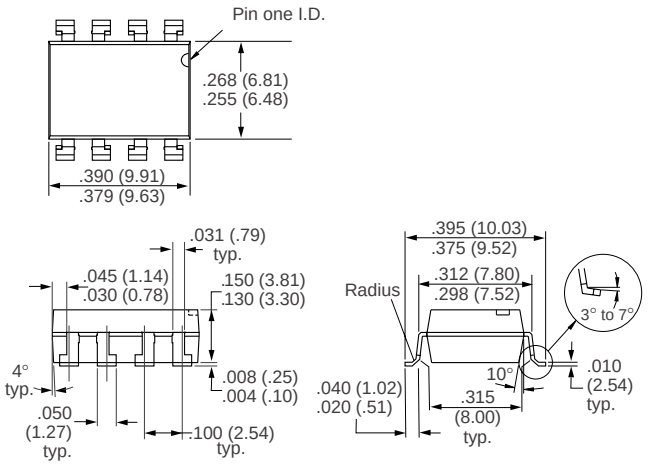
Package Dimensions in Inches (mm)

6-pin SMD

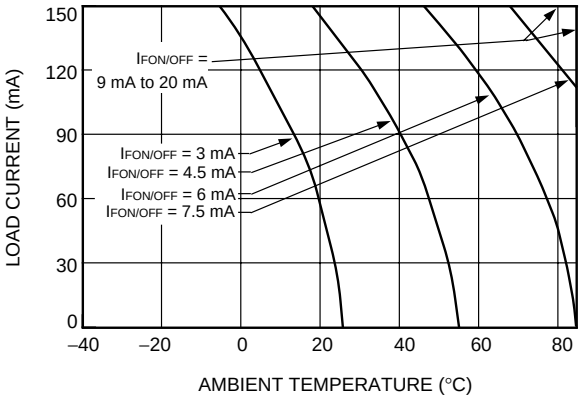


Package Dimensions in Inches (mm)

8-pin SMD



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 Operating 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 Test Voltage,
(t=1.0 s, I_{ISO}=10 μA max.) (V_{ISO}) .....5300 V_{RMS}
Pole-to-Pole Isolation Voltage (S1 to S2)*
(dry air, dust free, at sea level) .....1600 V
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) .....250 V
Continuous dc Load Current (I_L)
(Form C Operation).....150 mA
Peak Load Current (I_P)
(t=100 ms) (single shot) .....500 mA
Output Power Dissipation (continuous) (P_{DISS})
6-pin Package .....500 mW
8-pin Package .....600 mW

* Breakdown occurs between the output pins external to the package.

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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 for Switch Turn-on (NO)	I_{Fon}	—	2.0	3.0	mA	I_L=100 mA, t=10 ms
LED Forward Current for Switch Turn-off (NO)	I_{Foff}	0.2	1.0	—	mA	V_L=±200 mA
LED Forward Current for Switch Turn-on (NC)	I_{Fon}	0.2	0.6	—	mA	I_L=100 mA, t=10 ms
LED Forward Current for Switch Turn-off (NC)	I_{Foff}	—	0.7	3.0	mA	V_L=±200 mA
LED Forward Voltage	V_F	1.15	1.26	1.45	V	I_F=10 mA
Output						
ON-resistance: (NO, NC)	R_{ON}	8.0	12	20	Ω	I_F=5.0 mA (NO) 0 mA (NC) I_L=50 mA (NC)
OFF-resistance: (NO)	R_{OFF}	0.5	600	—	GΩ	I_F=0 mA, V_L=±100 V
(NC)		0.1	5.0	—		I_F=5.0 mA, V_L=±100 V
Off-state Leakage Current: (NO)	—	—	0.17	200	nA	I_F=0 mA, V_L=±100 V
(NC)		—	0.02	1.0	µA	I_F=5.0 mA, V_L=±100 V
(NO, NC)		—	—	1.0		I_F=0 mA (NO) I_F=5.0 mA, V_L=±250 V
Output Capacitance: (NO)	—	—	60	—	pF	I_F=0 mA, V_L=1.0 V
		—	15	—		I_F=0 mA, V_L=50 V
(NC)		—	45	—		I_F=5.0 mA, V_L=1.0 V
		—	15	—		I_F=5.0 mA, V_L=50 V
Pole-to-Pole Capacitance (S1 to S2)	—	—	0.5	—	pF	I_F=0 mA
Switch Offset: (NO)	—	—	0.15	—	µV	I_F=5.0 mA (NO) I_F=5.0 mA (NC)
(NC)		—	0.1	—		I_F=0 mA (NC) I_F=5.0 mA (NO)
Transfer						
Input/Output Capacitance	C_{ISO}	—	1.1	—	pF	V_{ISO}=1.0 V
Turn-on Time (NO)	t_{on}	0.5	3.1	5.0	ms	I_F=10 mA, I_L=37.5 mA V_L=150 V*
(NC)		0.5	2.3	4.5		I_F=6.0 mA, I_L=100 mA V_L=50 V*
Turn-off Time (NO)	t_{off}	—	1.2	4.5	ms	I_F=1.0 mA, I_L=37.5 mA V_L=STC V*
(NC)		—	1.6	4.5		I_F=10 mA, I_L=37.5 mA V_L=150 V*
Transfer OFF Time (NC off to NO on)	t_{tfr}	0	0.6	—	ms	I_F=10 mA, I_L=37.5 mA V_L=150 V*

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Typical Performance Characteristics

Figure 1. LED Voltage vs. Temperature

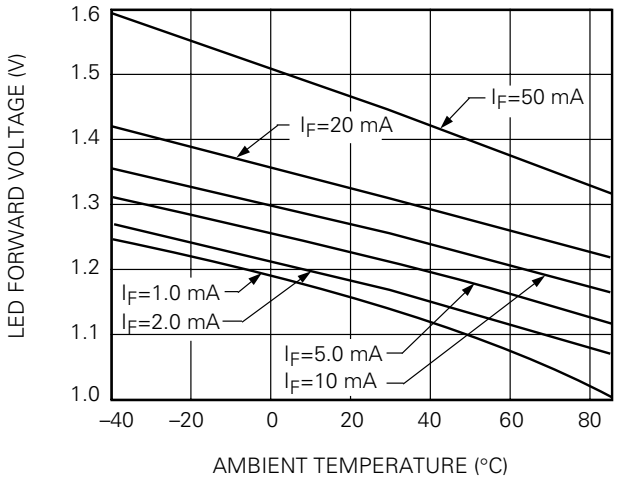

Figure 2. LED Dropout Voltage vs. Temperature

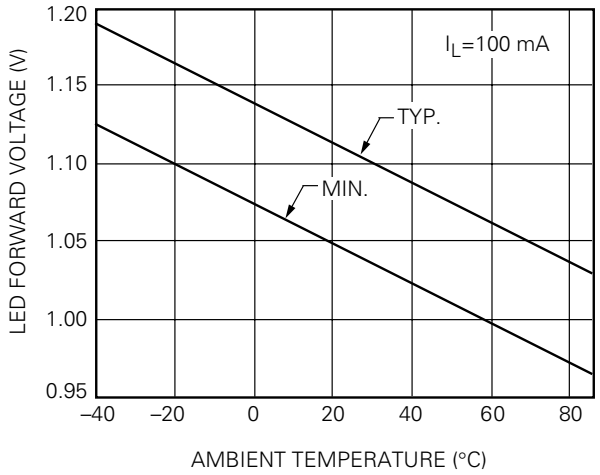

Figure 3. LED Current for Switch Turn-off vs. Temperature

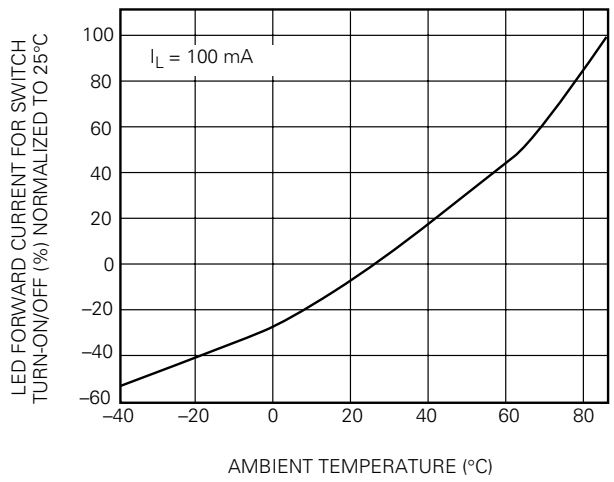

Figure 4. ON-resistance vs. Temperature

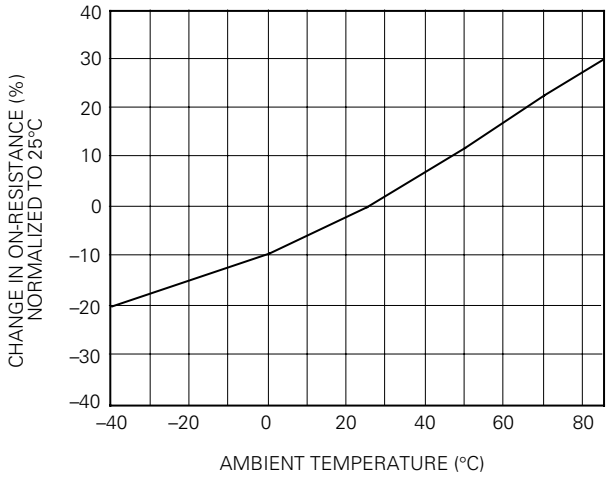

Figure 5. Variation in ON-resistance vs. LED Current

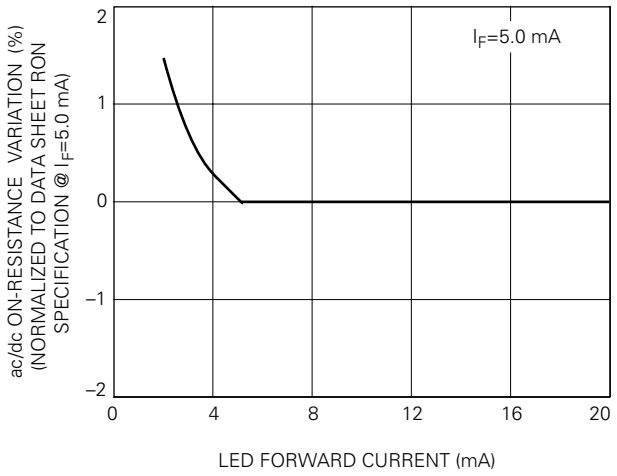

Figure 6. Switch Capacitance vs. Applied Voltage

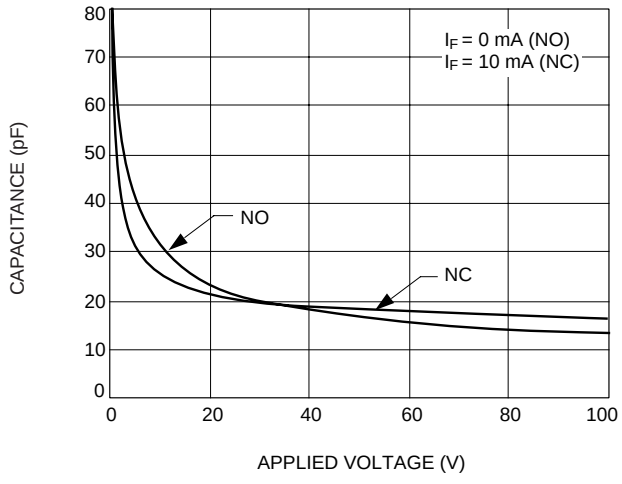

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Figure 7. Insertion Loss vs. Frequency

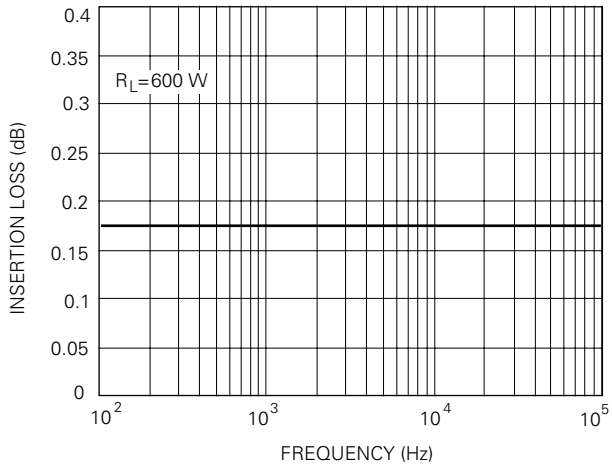

Figure 8. Output Isolation

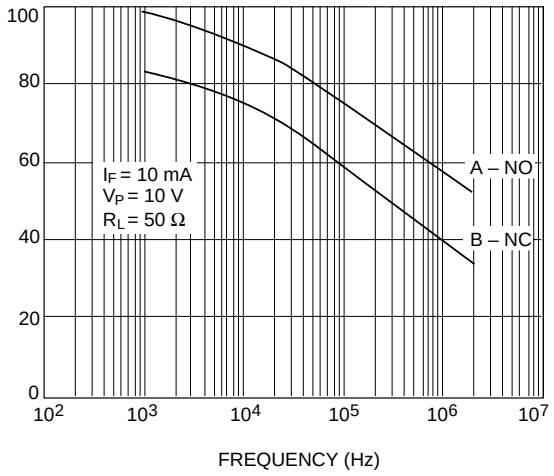

Figure 9. Leakage Current vs. Applied Voltage (NO)

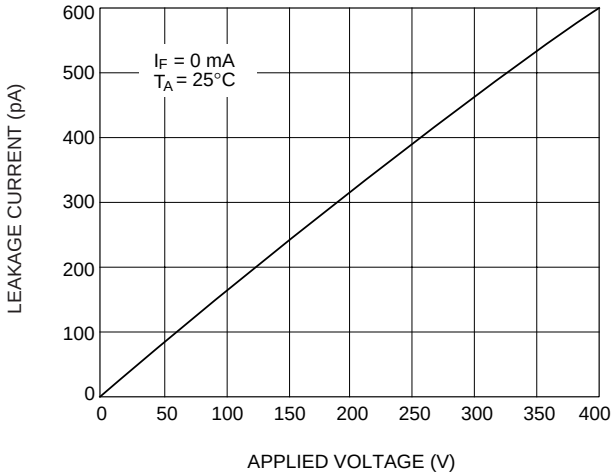

Figure 10. Leakage Current vs. Applied Voltage at Elevated Temperatures (NO)

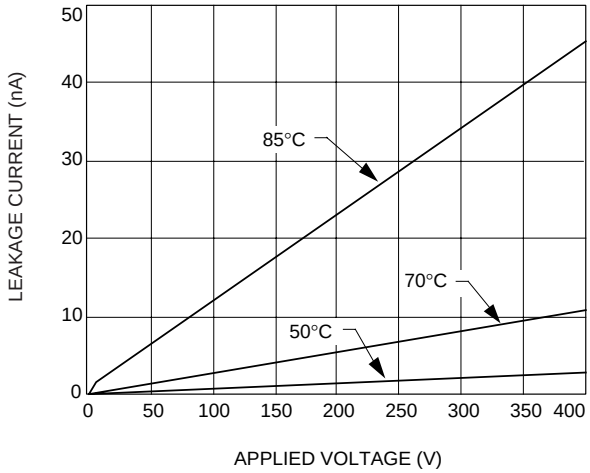

Figure 11. Leakage Current vs. Applied Voltage (NC)

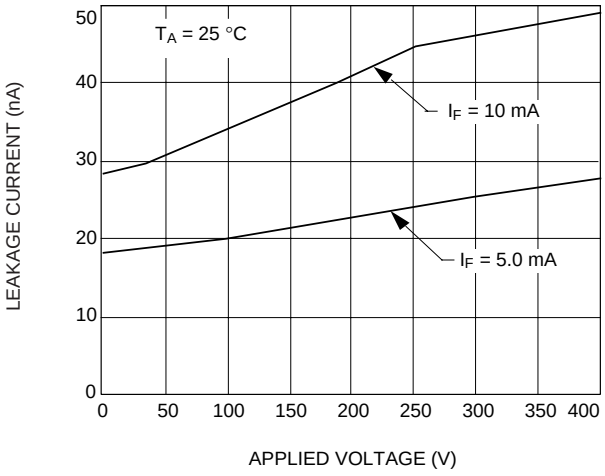

Figure 12. Leakage Current vs. Applied Voltage at Elevated Temperatures (NC)

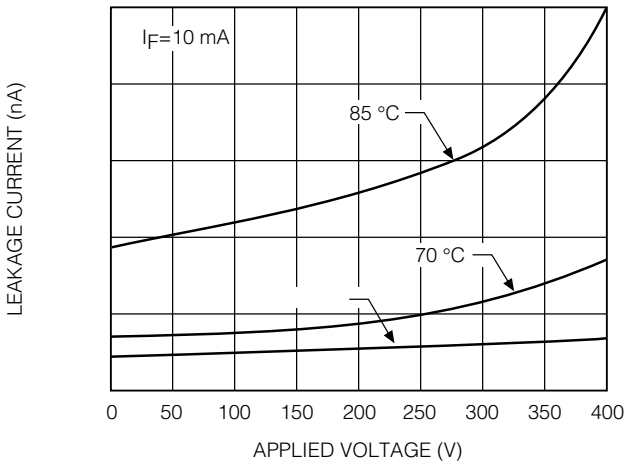

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Figure 13. Switch Breakdown Voltage vs. Temperature

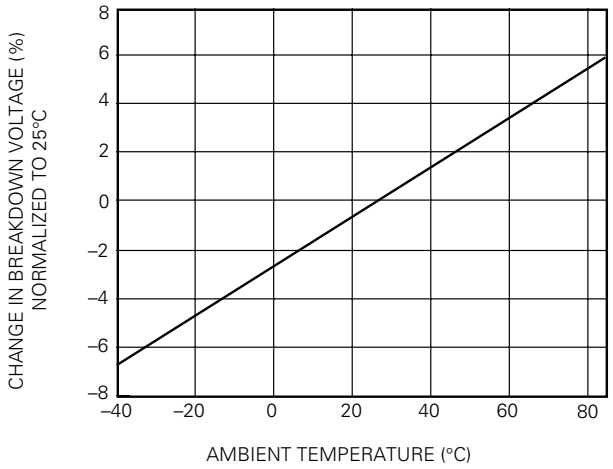

Figure 14. Switch Offset Voltage vs. Temperature

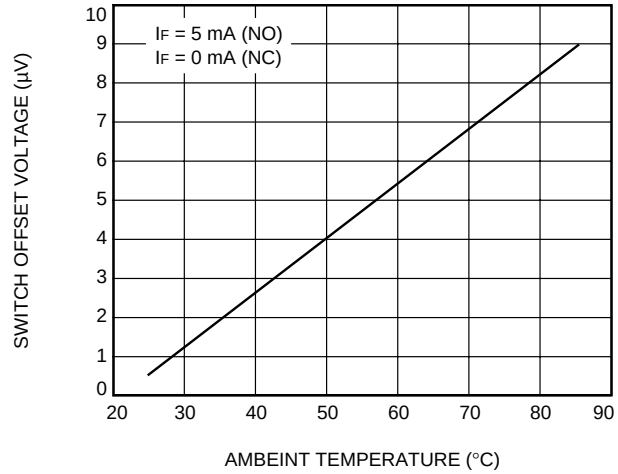

Figure 15. Switch Offset Voltage vs. LED Current

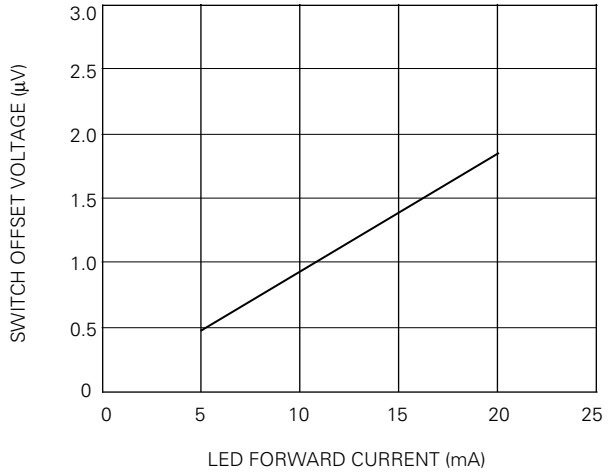

Figure 16. t_{on}/t_{off} vs. Temperature

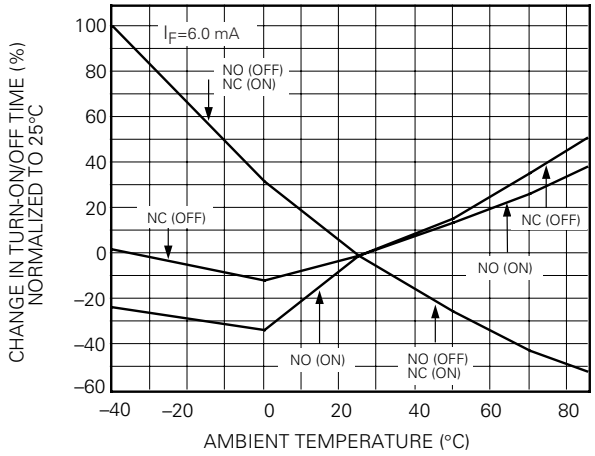

Figure 17. NO Turn-on Time vs. LED Current

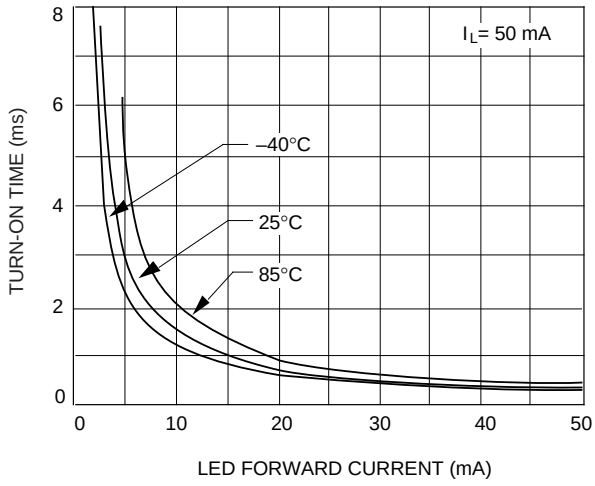

Figure 18. NC Turn-off Time vs. LED Current

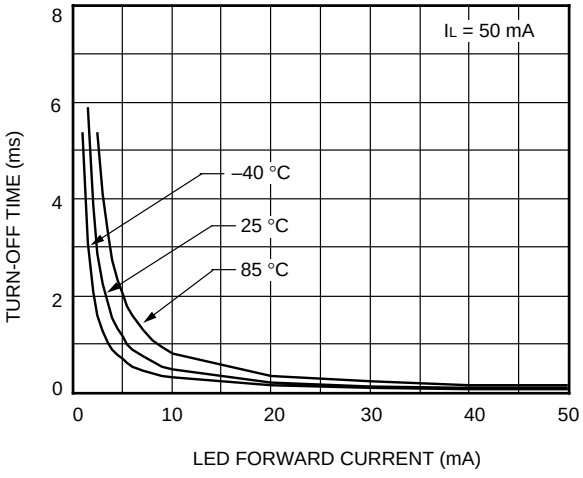

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Figure 19. NC Turn-on Time vs. LED Current

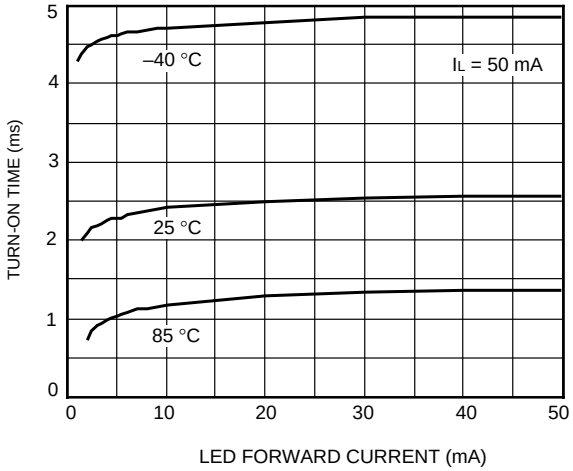

Figure 20. NO Turn-off Time vs. LED Current