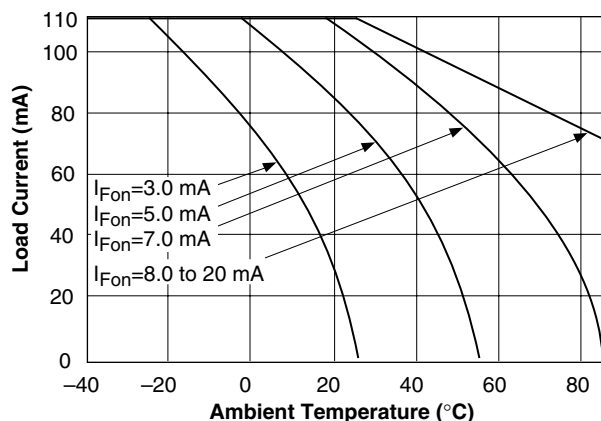




## Recommended Operating Conditions



## 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 the data sheet. Exposure to maximum rating conditions for extended periods can adversely affect device 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 ( $V_{ISO}$ )                       | ..... | 5300 V <sub>RMS</sub> |
| Pole-to-Pole Isolation Voltage (S1 to S2)                          | ..... | 500 V                 |
| 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 ( $I_L \leq 50 \mu\text{A}$ ) ( $V_L$ ) | ..... | 200 V                 |
| Continuous DC Load Current ( $I_L$ )                               | ..... |                       |
| One Pole Operating                                                 | ..... | 150 mA                |
| Two Poles Operating                                                | ..... | 110 mA                |
| Peak Load Current ( $t=100$ ms) (single shot) ( $I_P$ )            | ..... | †                     |
| Output Power Dissipation (continuous) ( $P_{DISS}$ )               | ..... | 600 mW                |

† Refer to Current Limit Performance Application Note 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                             |
|------------------------------------------------|------------|------|------|------|----------------|---------------------------------------------|
| <b>Input</b>                                   |            |      |      |      |                |                                             |
| LED Forward Current, Switch Turn-on            | $I_{Fon}$  | —    | 2.0  | 3.0  | mA             | $I_L=100$ mA, $t=10$ ms                     |
| LED Forward Current, Switch Turn-off           | $I_{Foff}$ | 0.2  | 0.8  | —    | mA             | $V_L \pm 300$ V                             |
| LED Forward Voltage                            | $V_F$      | 1.15 | 1.26 | 1.45 | V              | $I_F=10$ mA                                 |
| <b>Output</b>                                  |            |      |      |      |                |                                             |
| ON-resistance                                  | $R_{ON}$   | 12   | 20   | 25   | $\Omega$       | $I_F=5.0$ mA, $I_L=50$ mA                   |
| Pole-to-Pole ON-resistance Matching (S1 to S2) | —          | —    | 0.2  | 2.0  | $\Delta\Omega$ | $I_F=5.0$ mA, $I_L=50$ mA                   |
| OFF-resistance                                 | $R_{OFF}$  | 0.5  | 5000 | —    | G $\Omega$     | $I_F=0$ mA, $V_L=\pm 100$ V                 |
| Current Limit                                  | $I_{LMT}$  | 230  | 270  | 370  | mA             | $I_F=5.0$ mA, $t=5.0$ ms<br>$V_L \pm 6.0$ V |
| Off-state Leakage Current                      | —          | —    | 0.02 | 200  | nA             | $I_F=0$ mA, $V_L=\pm 100$ V                 |
|                                                |            | —    | —    | 1.0  | $\mu\text{A}$  | $I_F=0$ mA, $V_L=\pm 350$ V                 |
| Output Capacitance                             | —          | —    | 55   | —    | pF             | $I_F=0$ mA, $V_L=1.0$ V                     |
|                                                |            | —    | 10   | —    | pF             | $I_F=0$ mA, $V_L=50$ V                      |
| Pole-to-Pole Capacitance (S1 to S2)            | —          | —    | 3.0  | —    | pF             | $I_F=0$ mA                                  |
|                                                |            | —    | 4.0  | —    | pF             | $I_F=5.0$ mA                                |
| Switch Offset                                  | —          | —    | 0.15 | —    | V              | $I_F=5.0$ mA                                |
| <b>Transfer</b>                                |            |      |      |      |                |                                             |
| Input/Output Capacitance                       | $C_{ISO}$  | —    | 1.1  | —    | pF             | $V_{ISO}=1.0$ V                             |
| Turn-on Time                                   | $t_{on}$   | —    | 1.6  | 2.5  | ms             | $I_F=10.0$ mA, $I_L=50$ mA                  |
| Turn-off Time                                  | $t_{off}$  | —    | 0.65 | 2.5  | ms             | $I_F=10.0$ mA, $I_L=50$ mA                  |

## Typical Performance Characteristics

Figure 1. LED Voltage vs. Temperature

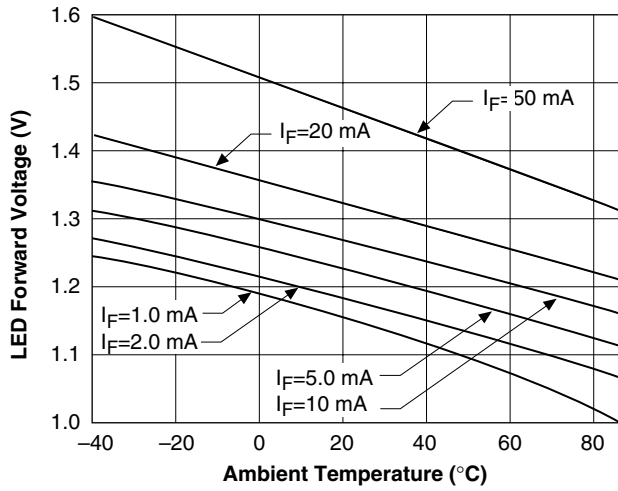


Figure 4. LED Dropout Voltage vs. Temperature

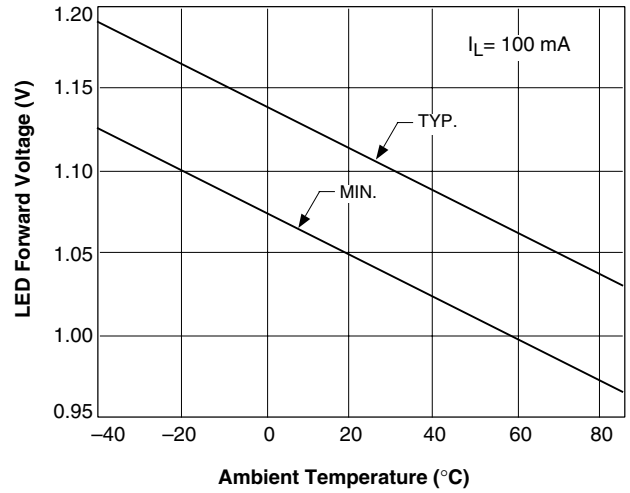


Figure 2. LED Current for Switch Turn-on vs. Temperature

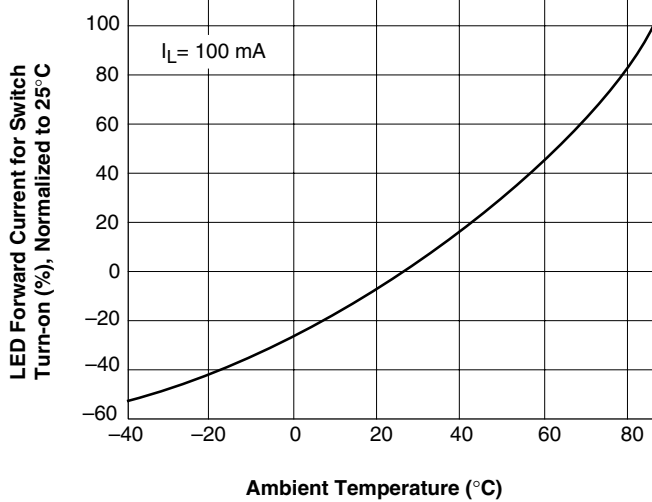


Figure 5. Current Limit vs. Temperature

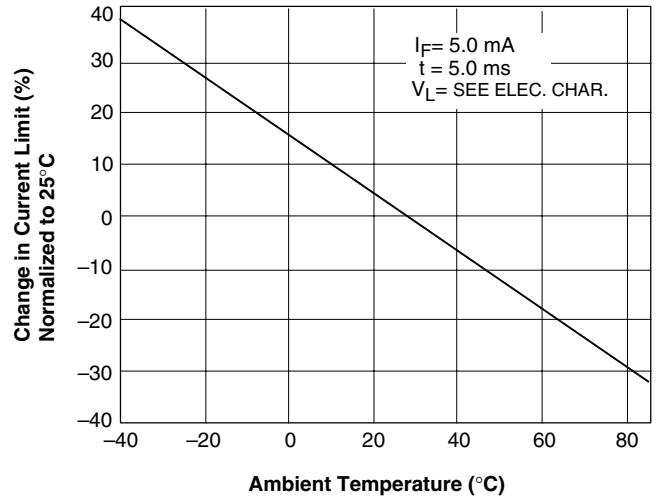


Figure 3. On-resistance vs. Temperature

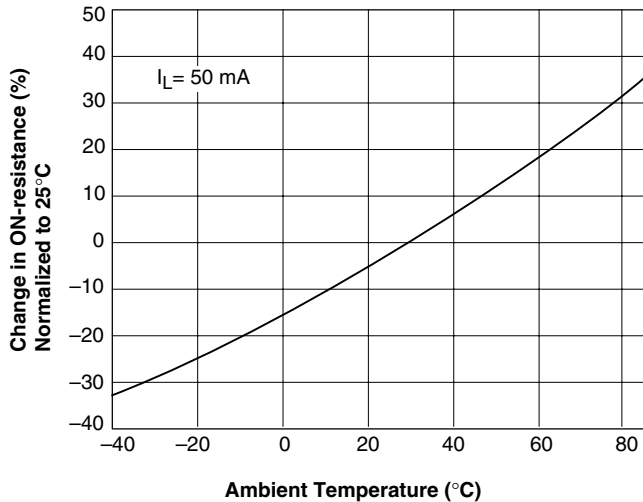


Figure 6. Variation in On-resistance vs. LED Current

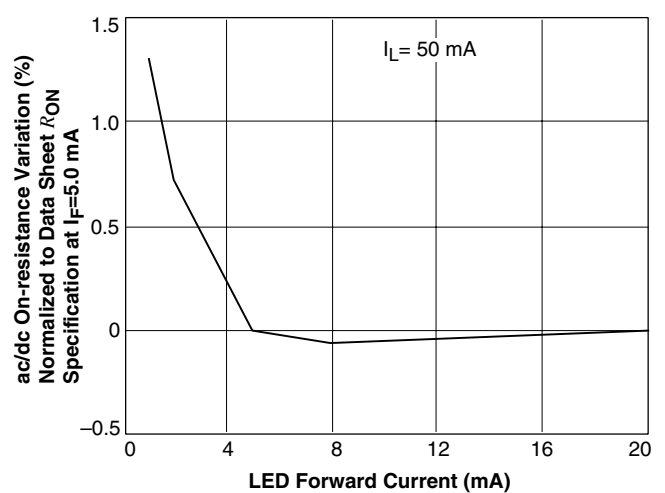


Figure 7. Switch Capacitance vs. Applied Voltage

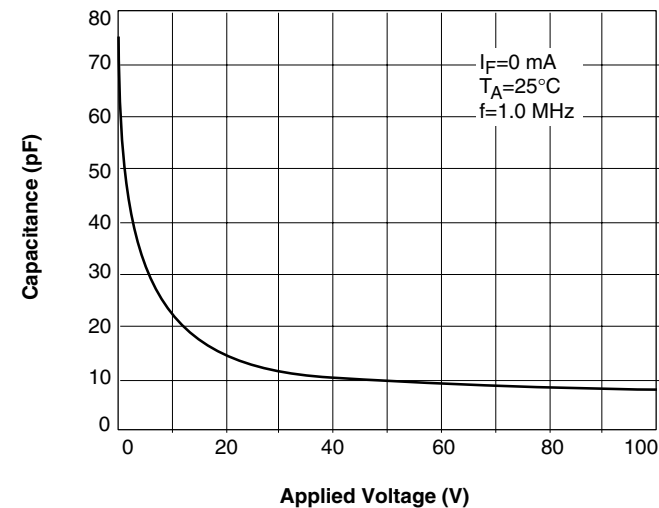


Figure 10. Insertion Loss vs. Frequency

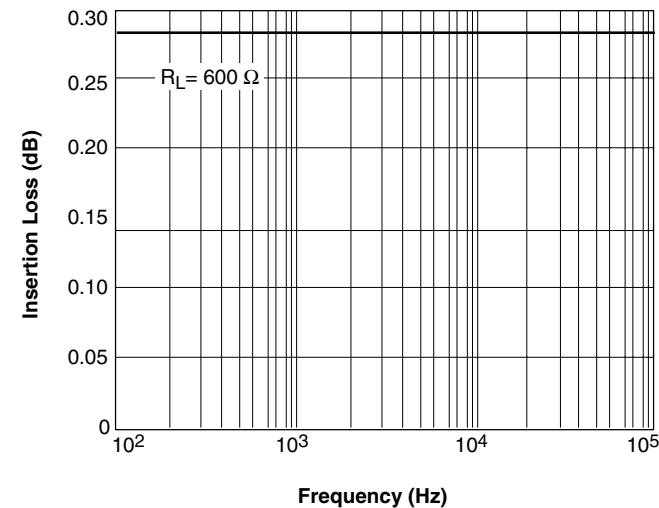


Figure 8. Output Isolation

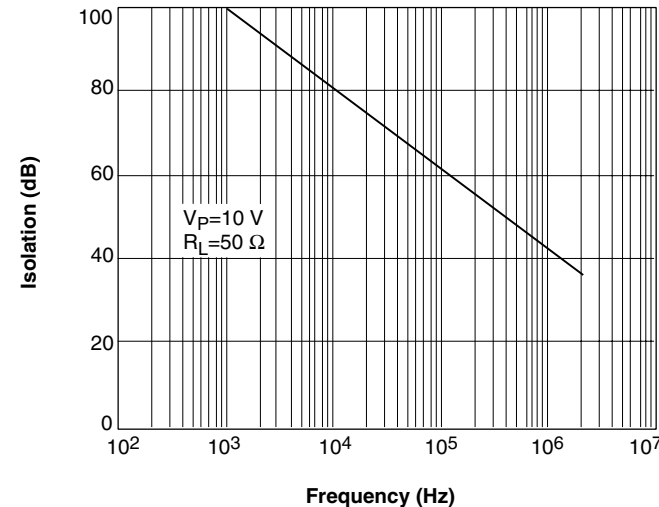


Figure 11. Leakage Current vs. Applied Voltage

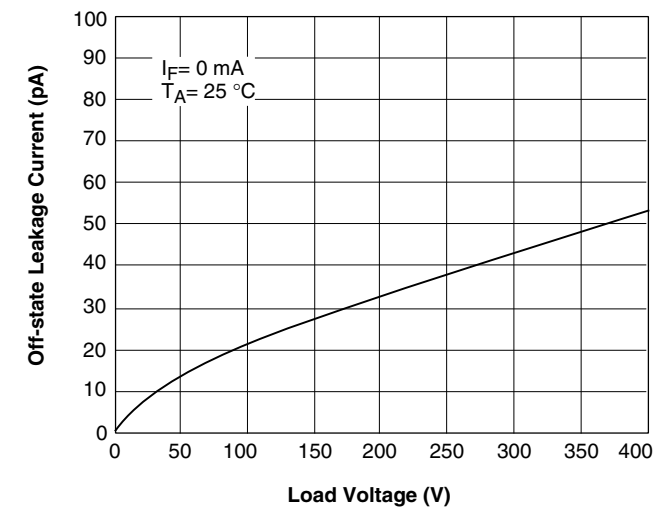


Figure 9. Leakage Current vs. Applied Voltage at Elevated Temperatures

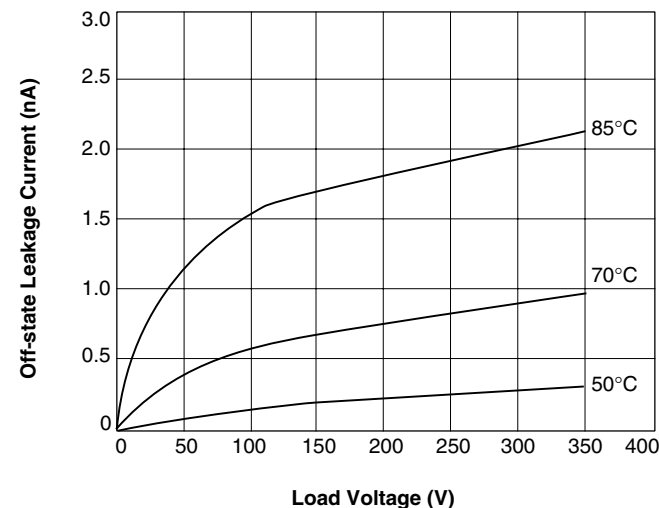


Figure 12. Switch Breakdown Voltage vs. Temperature

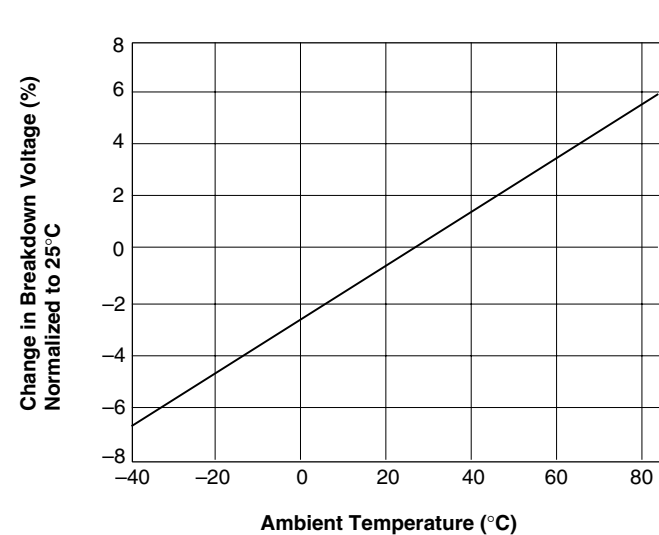


Figure 13. Switch Offset Voltage vs. Temperature

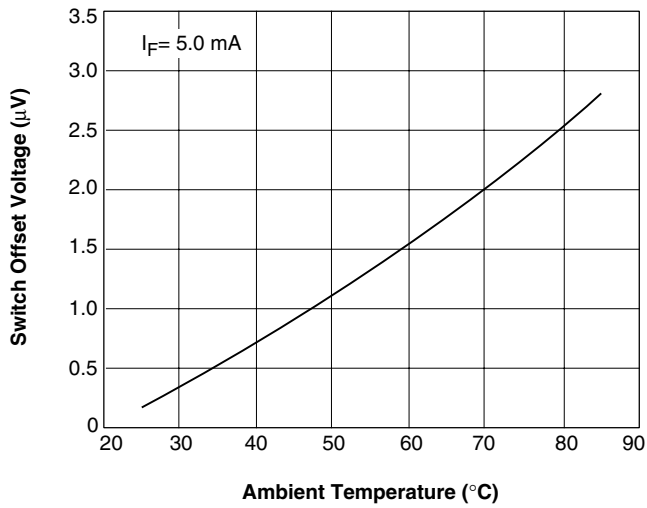


Figure 16. Switch Offset Voltage vs. LED Current

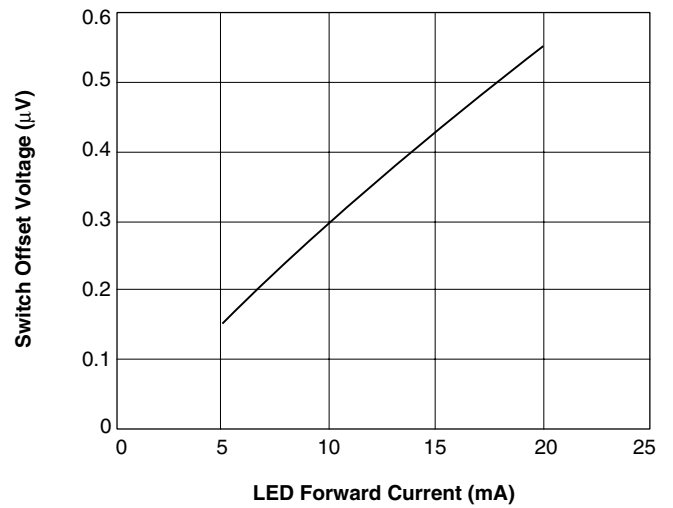


Figure 14. Turn-on Time vs. Temperature

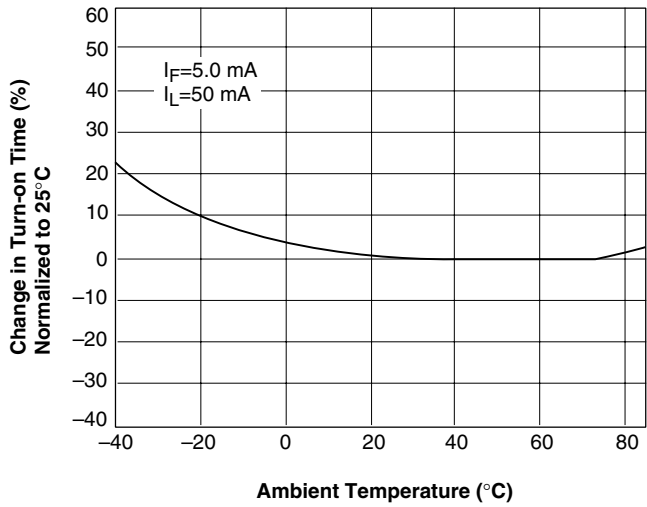


Figure 17. Turn-off Time vs. Temperature

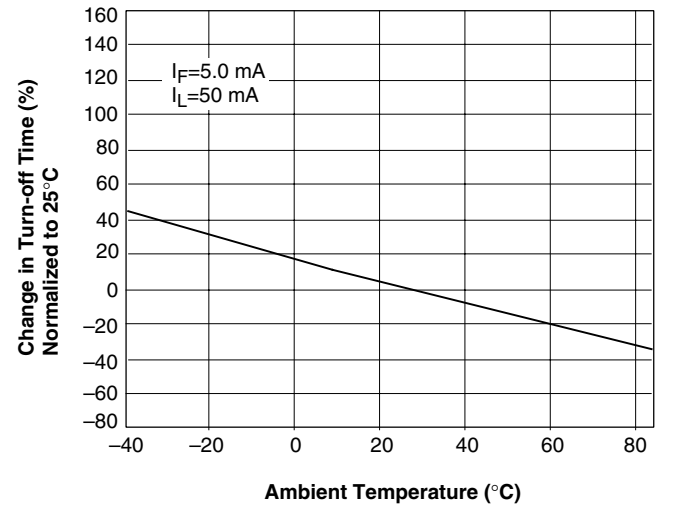


Figure 15. Turn-on Time vs. LED Current

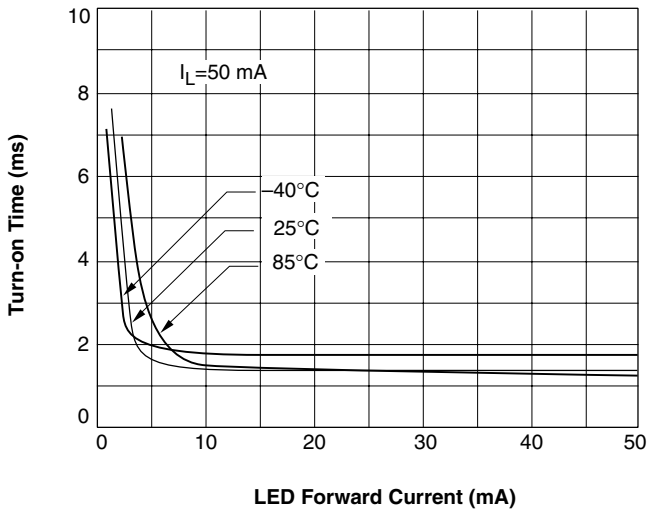


Figure 18. Turn-off Time vs. LED Current

