## Change Notice

# Changes to LED Specifications for TL Toggles with Bright Red (C) or Bright Amber (D) 

Type of Change:<br>$\boxtimes$ Engineering $\square$ Part Number<br>- Product 『 Appearance



LED Specification Revisions for TL Series

The TL Series Illuminated Toggles will have changes to the LED specifications for Bright Red (code C) and Bright Amber (code D) LEDs. The changes will effect all of the switches, including both actuators lengths, and standard and custom devices. The specification revisions are outlined below, followed by effected standard part numbers.

## BRIGHT LED COLOR CODES \& SPECIFICATIONS

Electrical specifications are determined at a basic temperature of $25^{\circ} \mathrm{C}$.

Lamp circuit is independent of switch operation.

|  |  | Before Change |  | After Change |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| LED Factory Assembled Not Available Separately | Color | 5C Red | 5D Amber | 5C Red | 5D Amber |
| Maximum Forward Current | $I_{\text {fM }}$ | 30 mA | 30 mA | 30 mA | 30 mA |
| Typical Forward Current | $\mathrm{I}_{\mathrm{F}}$ | 20 mA | 20 mA | 20 mA | 20 mA |
| Forward Voltage | $V_{\text {F }}$ | 2.0 V | 2.1 V | 2.05 V | 2.05 V |
| Maximum Reverse Voltage | $V_{\text {RM }}$ | 4 V | 4 V | 10 V | 10 V |
| Current Reduction Rate Above $25^{\circ} \mathrm{C}$ | $\Delta \mathrm{I}_{\mathrm{F}}$ | $0.32 \mathrm{~mA} /{ }^{\circ} \mathrm{C}$ | $0.32 \mathrm{~mA} /{ }^{\circ} \mathrm{C}$ | $0.40 \mathrm{~mA} /{ }^{\circ} \mathrm{C}$ | $0.40 \mathrm{~mA} /{ }^{\circ} \mathrm{C}$ |
| Ambient Temperature Range |  | $-10^{\circ} \mathrm{C}$ | $+55^{\circ} \mathrm{C}$ | $-10^{\circ} \mathrm{C}$ | $+55^{\circ} \mathrm{C}$ |

## Notes

- The LED circuit is isolated and requires an external power source.
- If the source voltage exceeds the rated voltage, a ballast resistor is required. The resistor value can be calculated by using the formula shown here.
- There are no changes to any other specifications or external dimensions.


| $R$ | $=\frac{E-V_{F}}{I_{F}}$ |
| ---: | :--- |
| Where: | $R=$ Resistor Value (Ohms) |
|  | $E=$ Source Voltage $(\mathrm{V})$ |
|  | $V_{F}=$ Forward Voltage $(\mathrm{V})$ |
| $I_{F}$ | $=$ Forward Current $(A)$ |

- Contact the factory if further details are needed.


## TL Toggles Standard Part Numbers

| $.689 "(17.5 \mathrm{~mm})$ Toggle | $.433 "(11.0 \mathrm{~mm})$ Toggle |
| :---: | :---: |
| TL22DCAW015C | TL22SCAG015C |
| TL22DDAW015D | TL22SDAG015D |

## Effective Date

Changes to TL Illuminated Toggles with bright Red or Amber LEDs will be effective December 2017.

