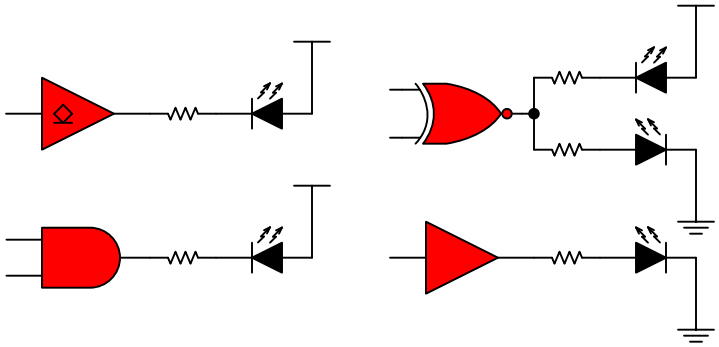
Product Overview

Drive Indicator LEDs



Examples: Using Logic as Indicator LED Drivers

See more about this use case in the *Logic Minute* video *Controlling an Indicator LED*.

Design Considerations

- Indicator LEDs typically need 1 to 20 mA of drive current to illuminate
- Different LED colors will require different forward voltages

Common LED Forward Voltages by Color

Red	Orange	Yellow	Green	Blue	White
1.8 V	2.0 V	2.2 V	3.5 V	3.6 V	4.0 V

- Series resistors are used to limit the current through the LEDs and can be estimated by the equation:

$$R_{limiting} = \frac{V_{supply} - V_{LED}}{I_{desired}}$$

- Logic functions can be used to provide simple or complex control
- The output voltage of a logic gate (V_{OH} or V_{OL}) is specified at a given test current only
- [FAQ] How do I determine the output voltage or output current of a CMOS logic device?
- Need additional assistance? Ask our engineers a question on the *TI E2E™ logic support forum*

Recommended Parts

Part Number	Automotive Qualified	V_{CC} Range	Type	Features	Application
SN74LVC1G07-Q1	✓	1.65 V – 5.5 V	Open-Drain Buffer	Overvoltage tolerant input and output	Open-drain output enables using a 1.8-V signal to control a 5-V powered LED
SN74LVC1G07					
SN74HCS08-Q1	✓	2 V - 6 V	AND Gate	Schmitt-trigger inputs	Control up to 4 LEDs using AND logic
SN74HCS08					
SN74HCS595-Q1	✓	2 V - 6 V	Serial-In Parallel-Out Shift Register	Schmitt-trigger inputs	Drive 8 LEDs per shift register with as few as 3 control inputs
SN74HCS595					

For more devices, browse through the *online parametric tool* where you can sort by desired voltage, channel numbers, and other features.

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