

LEDs — Understanding the Basics

Types, behavior, and where they fit

LEDs (Light Emitting Diodes) are semiconductor light sources that convert electrical energy directly into visible light – efficient generation with very little heat or wasted power.

VCC's extensive line of **surface-mount and through-hole LED indicators** is engineered for **durability and precision** , in multiple sizes, colors, and intensities. They deliver dependable optical performance in industrial control panels, automotive dashboards, medical devices, aerospace instrumentation, and consumer electronics.

Two main types cover most needs **through-hole** and **chip / surface-mount (SMD)** available in single-color, dual-color, and tri-color RGB

The two main types

- **Through-hole:** robust, easy to hand-place, common at 3 mm and 5 mm – well suited to indication and lower-density boards.
- **Surface-mount (SMD / chip):** compact and reflow-ready for automated assembly and space-sensitive, high-density designs.

Where LEDs are used

- Automotive electronics
- Indoor indication
- Wearables
- Appliances & commercial equipment
- Storage servers & communications
- Residential & landscaping

Featured VCC LED series

SpectraBright RGB & BI-COLOR SMD	LSM0606 0603 HIGH-BRIGHTNESS	CMD15 1206 HIGH-BRIGHTNESS
• Multi-status indication in one chip • RGB (3-color) & bi-color in a single device • Packages: 1204, 1201, 0606, 0603 • High- and low-brightness options • 120°, 150°, 160° viewing angles • Cost savings vs single-chip parts • RoHS & REACH compliant	• Top-emitting 0603 (1608 metric) package • Smallest-footprint surface-mount LED • Wide viewing angle • Colors: red, green, blue, yellow, white • Cost-efficient for compact, low-power designs • Ideal for automated PCB assembly • RoHS & REACH compliant	• High-brightness 1206 single colors • Tape & reel for high-speed auto insertion • Convection & vapor-phase reflow compatible • 140° viewing angle • Colors: red, green, blue, yellow, white • 3,000 pcs per reel · MSL rating 2 • RoHS & REACH compliant