TYPES OF LEDS

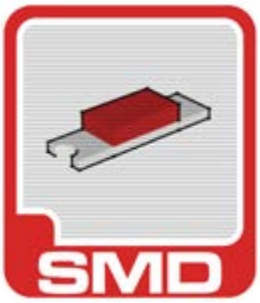
Congratulations, you know the basics! Maybe you've even gotten your hands on a few LEDs and started lighting stuff up, that's awesome! How would you like to step up your blinky game? Let's talk about makin' it fancy.

Here's the cast of characters:

RGB (Red-Green-Blue) LEDs are actually three LEDs in one! But that doesn't mean it can only make three colors. Because red, green, and blue are the additive primary colors, you can control the intensity of each to create every color of the rainbow. Most RGB LEDs have four pins: one for each color and a common pin. On some, the common pin is the anode, and on others, it's the cathode.

Some LEDs are smarter than others. Take the flashing LED, for example. Inside these LEDs, there's actually anintegrated circuit that allows the LED to blink without any outside controller. Simply power it up and watch it go! These are great for projects where you want a little bit

more action but don’t have room for control circuitry. There are even RGB flashing LEDs that cycle through thousands of colors!



SMD LEDs aren’t so much a specific kind of LED but a package type. As electronics get smaller and smaller, manufacturers have figured out how to cram more components in a smaller space. SMD (Surface Mount Device) parts are tiny versions of their standard counterparts. SMD LEDs come in several sizes, from fairly large to smaller than a grain of rice! Because they’re so small, and have pads instead of legs, they’re not as easy to work with, but if you’re tight on space they might be just what the doctor ordered.

High-Power LEDs, from manufacturers like Luxeon and CREE, are crazy bright. Generally, an LED is considered High-Power if it can dissipate 1 Watt or more of power. These are the fancy LEDs that you find in really nice flashlights. Arrays of them can even be built for spotlights and automobile headlights. Because there’s so much power being pumped through

the LED, these often require heatsinks. A heatsink is basically a chunk of heat conducting metal with lots of surface area whose job is to transfer as much waste heat into the surrounding air as possible. High-Power LEDs can generate so much waste heat that they'll damage themselves without proper cooling. Don't let the term "waste heat" fool you, though, these devices are still incredibly efficient compared to conventional bulbs.

There are even LEDs that emit light outside of the normal visible spectrum. You probably use Infrared LEDs every day, for instance. They're used in things like TV remotes to send small pieces of information in the form of invisible light! On the opposite end of the spectrum you can also get Ultraviolet LEDs. Ultraviolet LEDs will make certain materials fluoresce, just like a blacklight! They're also used for disinfecting surfaces, because many bacteria are sensitive to UV radiation.

With fancy LEDs like these at your disposal, there's no excuse for leaving anything un-illuminated. However, if your thirst for LED knowledge hasn't been slaked, then read on, and we'll get into the nitty-gritty on LEDs, color, and luminous intensity!

Source : https://learn.sparkfun.com/tutorials/light-emitting-diodes-leds#types-of-leds