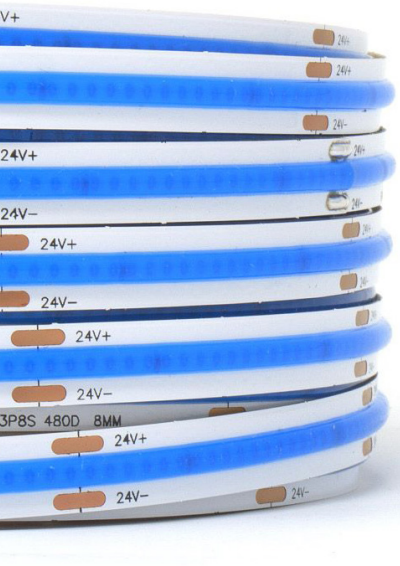
LED Technologies
Creative LED & Effect Technology for the Trade Professional

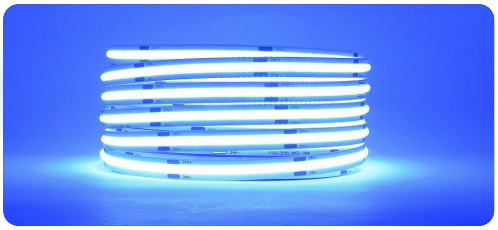
COB vs SMD Information Document

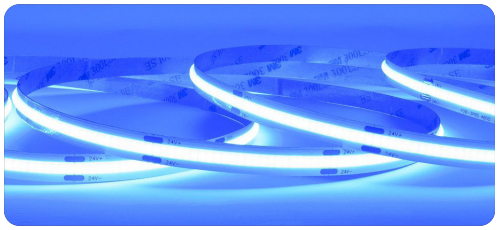
Many people are familiar with COB LED strips and standard LED strips, but few truly understand the differences and advantages of each type. That's where we step in to help guide you in selecting the appropriate lighting for your project. Over the past few years, LED strip lights have surged in popularity, and you'll find them in a wide range of projects. But which type is the best choice for you?



COB (Chip on Board) LED Strip

» COB, short for Chip on Board, refers to a method where the LED is directly attached to the PCB, unlike SMD chips which use a plastic reflector or casing that is then soldered to the circuit board. COB chips are significantly smaller than standard chips as they do away with the need for a plastic casing and reflector, allowing a greater number of chips to be fitted per metre on the PCB. However, it is important to note that COB chips do not undergo a binning stage during production, resulting in potential colour inconsistency across the length of the strip.





Advantages

» **Seamless Linear Lighting -** COB tape provides linear lighting with no visible dots, ensuring a smooth and uniform illumination across the entire surface.

» **No Profile Needed for Seamless Light Output -** Usually, an SMD LED Strip will require a profile/extrusion to provide a flush, seamless band of light, however, a COB tape will provide a seamless band of light due to design of the coating.

Disadvantages

» **Thermal Conductivity -** COB (Chip on Board) chip, although relatively small, is directly attached to the PCB board, leading to direct heat conduction to the PCB. This results in the PCB becoming hot, limiting power output to a maximum of 15W/m (even for 15W/M types, the PCB can feel very hot). Excessive heat can shorten the service life of the light source.

» **Unverified Lifespan -** Unlike other LED types, COB tape has a predicted rather than tested lifespan, with no LM80 data to support its longevity claims. This lack of certified testing means that the actual performance and durability over time are uncertain, posing a risk for long-term reliability.

» **Colour Consistency -** Each batch of COB (Chip on Board) LED strip orders may exhibit variations in colour and brightness due to the inability to sort by light and colour like SMD (Surface Mounted Diodes) LEDs. Colour temperature testing is conducted on a first sample, and if within an acceptable range, subsequent orders are produced accordingly.

» **Limited Customisation Options -** COB (Chip on Board) LED strips are not ideal for highly specialised customisation.

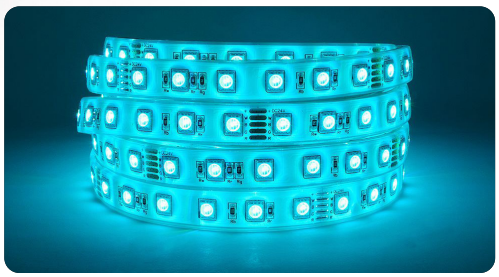
» **More Susceptible to Damage -** Unlike other LED chips, COB chips are not encased in protective housing. This lack of casing makes them more vulnerable to physical damage during handling and installation.

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SMD (Surface Mounted Diodes) LED Strip

» SMD LEDs, or Surface Mounted Diode, signifies that the LED chip is mounted directly onto the PCB within a protective casing. This casing contains both the LED diode and phosphor, which are attached to the circuit board using machinery. The phosphor in the LED chip converts a portion of the light into red and green wavelengths. SMD LEDs are undeniably the most common type of LED strip available, and with technological advancements over the years, their market has seen substantial growth.





Advantages

» **Excellent Colour Consistency -** Each LED can be sorted by light and colour, ensuring consistent and stable colour performance, essential for high-quality lighting applications where precise colour matching is crucial.

» **Improved Heat Dissipation -** SMD (Surface Mounted Diode) LEDs are designed with brackets that significantly improve heat dissipation. This efficient thermal management extends the lifespan of the LEDs and permits higher power output per metre.

» **Versatile Waterproofing -** SMD LEDs can be processed to achieve various levels of waterproofing, making them highly adaptable for diverse applications. This versatility ensures that they can be used both indoors and outdoors, in settings ranging from decorative lighting to industrial installations.

» **Flexible for Custom Designs -** Well-suited for customised designs.

» **Superior Kelvin Ranges -** SMD LEDs offer a broader and more versatile Kelvin range compared to COB LEDs. This means SMD LEDs can achieve a wider spectrum of colour temperatures, from warm white, daylight white to cool white.

» **High CRI Ratings (95+ Available) -** SMD LEDs are available with exceptionally high Colour Rendering Index (CRI) ratings, often exceeding 95. This ensures that colours are rendered with a higher level of accuracy and vibrancy, closely mimicking natural light.

» **Compact Size with High LED Density -** SMD tapes can feature impressively compact sizes, allowing for up to 336 LEDs per metre. This high LED density ensures incredibly bright and consistent lighting, making it ideal for applications where space is limited but powerful illumination is required on top of the other benefits.

» **3oz+ PCBs for Enhanced Durability -** SMD tape can utilise 3oz+ PCBs, significantly improving durability and reliability. These thicker PCBs provide better heat dissipation and strength, ensuring the LED strip withstands harsher conditions and extends its overall lifespan.

Disadvantages

» **Spotting Visibility -** Standard 60 LED/m strips will show spotting. Direct visibility of LED spots may not be preferable for some projects.

» **Potentially Irregular Cutting Points -** Cuttings points on SMD (Surface Mounted Diodes) LED Strips can be irregular across different types of tape.

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