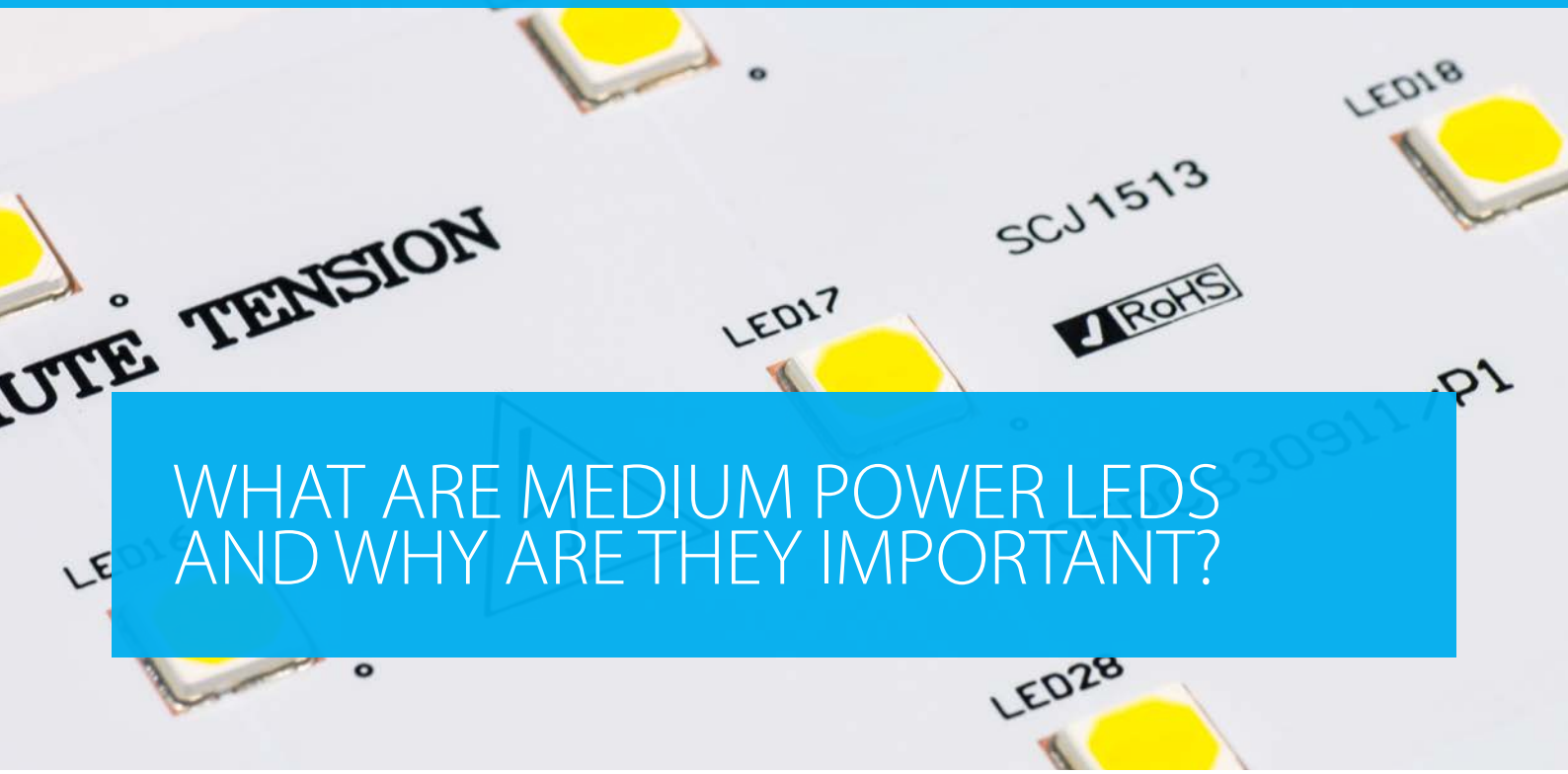


WHAT ARE MEDIUM POWER LEDS AND WHY ARE THEY IMPORTANT?

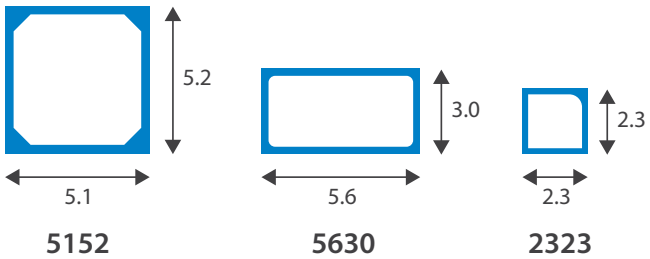
BACKGROUND

Light emitting diode efficiency continues to advance at a rapid pace. There are various types of LED available, but the "medium power" type (for example LEDs < 0.5W) have seen the most significant improvement in recent years, now having efficacies up to 180 lm/W. These LEDs significantly outperform fluorescent T5 technology.

Medium power LEDs can be manufactured economically in large quantities. Their lower power produces less heat therefore luminaire heat sinking is normally not required. This combination makes the overall light fitting construction simpler and cheaper than other LED types.

One type of LED will not suit all applications, and high powered LEDs still have their advantages, for example, where a large concentration of light is required from a small fixture, such as a flood light or street light.

FIGURE 1: LED CHIP SIZES



WHY DID SOLITE CHOOSE 5152 MEDIUM POWER LEDS AS ITS FIRST CHOICE?

The size of the LED chip plays a significant role in three key performance areas; lifetime, efficiency and glare. For its medium power boards Solite uses one of the largest medium power LEDs available, known as the 5152 package. As the name suggests these LEDs are 5.1mm x 5.2mm resulting in a surface area of 26.5mm^2; 5 times larger than other common "2323" chips and 1.5 times larger than a "5630" (see Figure 1).

BETTER LIFE EXPECTANCY

Using a larger chip size enables an increased contact surface between the LED and circuit board and benefiting from the consequential improved heat extraction there is a slower degradation in light output. This can result in much longer lifetimes, for some Solite products up to 100,000 hours can be achieved.

EFFICIENCY

All LEDs suffer from a phenomena called "Droop", an effect that reduces light production efficiency the "harder" the LED is driven. Operating at typically only 0.1W to 0.3W max, Solite significantly under runs their LEDs to ensure that they suffer less "Droop" and therefore produce light very efficiently. In addition, under running the LEDs means less heat, therefore increasing the LED lifetime and reliability.

BETTER GLARE CONTROL

In the race to achieve supreme efficiency the basics such as glare control and luminaire luminance should not be forgotten. A larger chip reduces glare compared with another LED producing the same amount of light but over a smaller area. When combined with appropriate luminaire optics the 5152 package is ideally suited to frequently occupied industrial and commercial applications.