FAQ of For Installing LED Car bulbs

1. Definition of LED color

- **AMBER (YELLOW)**: There is no such pure yellow color existed in LED Lighting, the Amber color means here Amber with some orange
- **PINKY PURPLE**: Purple color in LED Lighting means the color between Pink and Purple, not real Purple, real purple should be ULTRA VIOLET and only for medical use because UV is not bright enough for bulb
- **WARM WHITE**: As known as sunset white, the kelvin range is between 3000K~4000K, with some kind of yellowish white color

2. Warm White, Pure White, and Cold White

- White color temperatures are usually measured in Kelvin. (K)
- **Warm White (Sunset White)**: in our category is classified between 2000K~4000K, yellowish White
- **Pure White (Natural White)**: in our category is classified in 4000K~5000k
- **Cold White (Cool White)**: in our category is classified >4500K, bluish white.
- White Color in LED is made by Blue color chip + Yellow powder (well known as "YAG"), that is normal when we see LED white sometimes has a little but blue or yellow light.
3. General Comparison in Basic various LED packages (LED Types)

- **DIP Through LED (3mm/5mm/8mm/10mm)**

- **Super Flux(Piranha Flat/Round)**

- **SMD(3528/3020 single chip)**

- **SMD( 5050 3 CHIPS)**

- **HIGH POWER(1W, CHIP ON BOARD)**

<table>
<thead>
<tr>
<th>Bright Intensity</th>
<th>RELIABILITY</th>
<th>COST</th>
<th>LIFE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH POWER 1W &gt; SMD5050 3 chips &gt; SUPER FLUX (PIRANHA) &gt; SMD 3528 &gt; SMD3020 &gt; DIP through hole (3mm/5mm/8mm)</td>
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</tr>
</tbody>
</table>

Currently 5050 SMD LED is most well known as the most suitable to make as bulb (THE BALANCE BETWEEN COST, BRIGHTNESS, LIFE AND RELIABILITY)
This is in case we have no idea how to choose, and **LED QTY DOESN’T MEAN THE BRIGHT INTENSITY AND QUALITY**, except LED type, intensity is also affected by some other factors such as operating current or voltages.

4. **How to tell SMD LED?**

SMD LED is generally classified by its size (e.g. 5050 = 50mm x 50mm, same for 1210), 5050 is the only type can be mounted into 3 LED Chips, please see following illustration:

Neither 3528 nor 3020 has enough space for 2 or above chips, to judge the qty of LED in one bulb, necessary to calculate the numbers of LED chips but not LEDs (e.g. a bulb with 12 x 3020 SMD = 12 LED chips with 12 emitting points, a bulb with 12 x 5050 3 CHIPS SMD = 36 LED chips with 36 emitting points) When people say that there are XX pcs SMD LEDs in one bulb, we have to notice what kind of SMD it is, because it affects how many LED chips.

(3020=3mmx2mm  Reflector Size

3528=3.5mmx2.8mm Reflector size a.k.a 1210(.12inch x .10 inch) in the market
*Reflector: the carrier to carry the LED chip, the white part as you can see around the LED in the picture. These 2 SMD LEDs usually has no difference because there is only

5. Auto LED Bulb Wattage, we do not rate LED wattage because.....

The operating voltage of a vehicle should be a range but not a fixed number, when we say car’s voltage is 12VDC, which means the voltage range should be kept between 10~18 V(18V is the highest possible peak voltage) and the average is approx. 14.6V, usually the standard of our products is 14V for CAR, motorcycle, scooter, some boats( we still call 12V in public); 28V for truck and some boats.( we still call 24V in public)

Therefore, when we talk about bulb wattage, it is also a range because

\[ \text{WATTAGE (W)} = \text{Current (A)} \times \text{Voltage (V)} \]

For example, when the current is 0.2A @ 13V, the Watt= 0.2x13=2.6W, the reason we do not rate wattage because a LED auto bulb is made of various electrical components such as resistors, capacitors..etc. A maker can adjust the current easily by controlling the value of inside component to enhance the higher power and brightness in short time but lower reliability and life span. Wattage data for brightness for LED BULB in fact is meaningless.
6. Bright Intensity of LED AUTO Bulbs:

- **First of all, standard LED bulbs are generally not as bright as standard incandescent bulbs:**

  Whenever we are saying a LED BULB can replace a standard bulb, we are talking about this LED has the same "effectiveness" as the regular bulb. Because lighting source for auto LED is also affected by some other opto-issues such as the reflection from the plastic module, creating better visual feeling than regular bulb.

- **We do not rate LED auto bulbs lumens:**

  LED’s lighting source is directional and should NOT be measured and calculated by LUMEN, we do not know how a maker can make a lie to write this kind of information in their specification sheet. We are a responsible supplier and we do not offer any information to rate intensity in so called LUMEN because this unit does not exist in LED lighting. The intensity of LED should be measured in **CD (Candela)**

- **LED offers many advantages over filament bulbs:**

  Longer life, faster on/off times, lower power consumption, more vivid colors(Ra>85%), but NOT brightness. They are generally not as bright but some of them with large numbers of LEDs, will appear brighter than filament bulbs. As an exception, our High Power LED car bulbs are as bright or brighter than most standard filament car bulbs. The light is distributed differently so they can appear brighter in some applications and not as bright in others, it depends on the size and shape of the bulb housing and reflector.

- **Most LED bulbs emit light like a flashlight, all out the end:**

  Regular filament bulbs emit light from the end and all sides, so they will be better suited for some lighting applications than LED bulbs. This is the same reason why we do not rate LED car bulbs in lumens or watts, the numbers would be deceptively low because the light is measured
from all sides and the end on standard filament bulbs but only from the end on LED bulbs.
7. What is current regulator and why it is important in AUTO LED bulb?

We all know that even everyone calls car is suitable for 12v, and truck is for 24v, in fact, during the driving or starting the engine, the voltage usually increases peak voltage to 18V(Car) or 32V(Truck), while the voltage is going up, leads the current going up as well, but we have to know the sudden increase in current will cause the LED’s death since LED cannot endure the so sudden high current, for solving this problem, we add LED Driver IC(or we call current regulator) to protect the circuit and regulate the current in stable range, as you can see these 2 photos above, we take our 5SMD type T10 LAMP for CAR use as an example, to test with a power supplier, when we emit the LED in 13V, the current is 0.05mA, then we enlarge the voltage to 18v, the current still keeps at 0.05mA, this is what LED regulator functioned and protected.

If we take a LED Bulb without regulator, the current will be getting higher by the increase of voltage, and leads high risk for life of LED( LED can be brighter by operating higher current, once the current exceeds unlimitedly the normal range that a LED can endure, LED will be damaged quickly)

![Voltage and Current](image-url)
8. Where we install this regulator (IC) inside the LED Bulb?

We add this component in where the space between the base and BACK PCB as following:

Of course we cannot tell if the LED BULB has regulator added only by eye vision since we are not available to see inside construction, so what we need to do is to use the power supply to check if the current is in the same range.

The Regulator we use is the LM317L from USA National Semiconductor:

9. Which Emitted Colors should we choose if my lens color is red?

For best results the LED color should be the same as the lens color or if bulb is behind a clear lens, use the appropriate color for turn and brake light functions. As an example: a red lens will filter out all but the red portion of the light so if the light is all red, none or very little light will be blocked by the lens. The light from a White LED contains very little light in the red portion of the visible spectrum so most of the light would be filtered out by a red lens. In additional, usually the lens are designed in some optical theory such as reflection, the original color (red lens and red LED) creates the best result. *(Bulb Color = Lens Color unless Lens is Clear, Bulb Colors = Lens Colors unless Lens is water clear.)*

10. Turn signal "Hyper Flash" issues with LED bulbs

LED brake/tail lamps will not flash with stock flasher units due to their extremely low current draw, the turn signals may flash faster than normal (called "Hyper-Flash"). These installations will require an electronic flasher unit. Try to find flashers designed to work with LED bulbs, they will say "LED compatible". Often HEAVY DUTY flashers will also work with LED bulbs.

We offer some LED Flashers(Relay) in our Tail/Brake Turn Signal Bulb category but we are sorry we do not have any cross reference sheet to know which one (if any) will fit your vehicle. You have to compare the pin-out of your flasher with the pin-outs of the flashers we offer before you change.

Another solution is the installation of Load Resistors which are wired across (in parallel with) the turn signal bulbs to simulate the load of a standard filament bulb. Currently we provides 2 versions in 50W 60OHM and 25W 100OHM respectively, both are most popular used in the market, also please be informed this is not produced by ourselves, users have to know which version fit your car by yourselves.
11. Dash indicators reporting burnt out bulbs

LED bulbs may cause some newer vehicles to indicate a bulb is burnt out (because of their low power consumption, car computer misjudge the bulb is burnt). Some cars indicate this by increasing the flash rate of the turn signals, some turn on a bad bulb indicator. The only fix for this is to install Load Resistors across the bulbs that are being indicated as bad. Some vehicles will also disable the cruise control system if a brake light bulb is being indicated as bad, the installation of Load Resistors will also solve this problem. Currently we provides 2 versions in 50W 6OHM and 25W 10OHM respectively, both are most popular used in the market, also please be informed this is not produced by ourselves, users have to know which version fit your car by yourselves.

12. Viewing Angle and Brightness

Wider viewing angle, lower brightness, vise versa. We cannot recommend which type would work best in your vehicle because it depends on the size, shape and depth of your bulb housings. The wide angle bulbs usually work best for most vehicles than narrow angles.

13. How LED brake bulbs operated in dual intensity?

All of our Tail/Brake bulbs achieve dual intensity modes (1157 3157 Bayonet, 7443 T20 Wedge) by turning all of the LEDs on dim or all of the LEDs on bright, all of the LEDs are always lit when either mode is active, and the normal design we set the brightness in approx. 1(normal emitting) :4( brake emitting) proportion.
14. Will the LED bulbs for dashboard or gauge, will the dimmer still work?

YES, no doubt about it!

15. Product Warranty

We offer 2 years guarantee to our distributor around the world (Web Shops Items such as Ebay is 6 months), and half years to our retail sales items unless some special items to be specified.( All bulbs need to be used under the normal vehicle applications.)

We do not warrant our car bulbs when used in applications other than normal vehicle bulb installations or if used in headlamp housings or to replace GM Daytime Running Lights (Some GM vehicles apply a pulsed voltage to the Daytime Running Lights (DRL), this pulsed voltage causes LED bulbs to fail quickly, just as the stock filament bulbs also fail quickly in these DRL installations. Use in these applications voids the warranty.) All our products is size photo provided before buying, we do not warrant the item just because users choose wrong size.
16. LED Bulb Base/Socket:

Basically are classified various types and please click here for detail information.