



S3J Electronics LLC

Producers of Advanced Lighting

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OUR COMPANY APART FROM EVERY OTHER COMPANY

There are many lighting companies attempting to get into LED manufacturing. Most don't know much about LED's and others think they do! Some will sell imported products to you with the cost so low you would think you are getting a great deal. However, don't think any imported products will meet any of the requirements set by the Department of Energy (DOE). Don't expect to get a government rebate check anytime soon on anything imported. Most imported products do not have the DOE and Energy Star requirements built into the product. Most don't even come close to any ANSI codes required for LED lighting applications.

It does not stop there. You have to also look at how the LED is being driven, what kind of power supply they are using. Does the supply contain electrolytic capacitors in the design? If so how are they being used? The standard electrolytic capacitor life span is only 2,000 to 5,000 hours. Well, what does this mean? Lets break down a LED product-

First We have an enclosure to house the LED or LEDs and heat sink and power supply. If the enclosure is used correctly it will be part of the heat sink to keep the LEDs and power supply cool. Most companies do not follow this standard.

Second Is the LEDs them self. Who makes them? Is it Cree, Bridgelux, Seoul, Nichia? What are the lumens per watt? If it is not 80 lm/w or better, don't go any further. The lumens per watt are what sets the light output of the LED and how many watts are required to drive the LED. The higher the lumens per watt, the less wattage are required to drive this LED. It sums up to dollars saved. The cost to run the device is less when the lumens per watt are higher.

Third We look at the heat sink being used. A properly designed LED assembly will keep the heat sink temperatures to 65°C or less. To do this you need to utilize the enclosure to keep the temperature down and size the heat sink correctly to displace the heat coming off the LEDs. This is how the LED extends its lifespan to 50,000 or greater hours. The higher the LED is being heated to the shorter the life span of the LED will be. Most companies don't realize the temperature extremes in certain parts of the USA. From Florida to Washington, the temperature changes must be added to the overall temperature of this LED product. This can change the life span of the LED product by 5 years. It is good to know the junction on the LED in different conditions. This way when you purchase the LED product you will know exactly how long it is going to last.

Forth is something we talked about earlier, the power supply. To be honest, this is the most important part to having a successful LED design; the heart of all parts. The supply also puts off heat that must be taken into consideration when designing the sink. If the supply is operating at 113°F in ambient temperatures and you place the LED assembly in a location like Florida, that day in Florida the temperature is 150°F outside you will have 20°C rise. Add the heat from the LED heatsink and the 20°C rise your LED assembly will be at 100°C. If 65°C was the optimal temperature to extend the life of the LEDs to 50,000 hours, then 100°C is going to shorten the life span. Designers need to consider all possible aspects when designing their products, especially the electrolytic capacitor that ideally only has a short life span of 2,000 to 5,000 hours.

Fifth Will be the design of the Lens.

To understand what makes a LED light you must understand how the LED works. A Typical lamp sends light 360°, a LED however only sends light out in one direction only. So this is the way we determine the lumens output of a LED by dividing the total lumens of a traditional lamp by 3.3. This will give you the lumens of a LED light. So if you were to divide a traditional lamp into 3 sections of a pie, only 1/3rd or 1 section of the pie is what a LED lamp will do. That is why a lens must be designed to help direct the light to different angles. You would not just want the light to shine only on the floor and that is only where a LED light would shine without a lens. The downfall to adding a lens is the loss of lumens output seen when doing this. So again, the designer must take this into consideration when designing a LED lamp.

To sum things up:

Designing a LED lamp is not as easy as it looks. On top of the design consideration you must also take into effect the new standards being put out from the Department of Energy, CSA, Dark Sky and Energy Star. All of the standards from each one of those organizations must be incorporated into the LED design. Don't think imported products will meet any of those standards because most of them do not even know what they are.

The USA based quality of LED's from 3 Standards, LM 79, LM 80 and LM 63.

Any quality manufacturer will design LED products to comply all of the LM standards. S3J Electronics prides itself in being one of those companies following the LM standards.

Sometimes the statement of "you get what you pay for" is correct. There are many companies supplying the USA market with off the boat products offering lower cost items, but don't expect that product to last very long. When you buy a LED product you should be expecting that product to last 50,000 hours or longer. This is how the ROI is designed to save you money by giving you less maintenance and low wattage consumption resulting in saving you money on electricity costs.

Some questions you should be asking before you purchase a LED product:

- Where is the LED product made?
- Does the LED product comply with the LM79, LM80 and LM 63 Standards?
- Is the power supply updated to meet the 80,000-hour or more life span?
- Is the LED a USA made LED with 80lm/W or higher?

- Does the light output meet any ANSI, DOE, and Energy Star Standards?
- Does the LED light have UL or CSA certificate?
- Does the LED light have IES files?
- What is the ambient operating temperature for the junction point of the LED?
- Has the LED product been designed to go beyond to direct light out put of light being directed only straight down and not to the sides? If so, this is not good. LED light should be able to shine light to the sides.
- Is the LED designed for Dark Sky?
- What is your LED color temperature for outdoor and industrial lighting?
- Are the LED industrial products modular and repairable in their design?
- How long is the warranty on the LED light?

At S3J Electronics we can answer these questions and tell you why the answers are what they are. Every question is important for the customer to know because an educated customer is a well-informed customer and a well-informed customer will make a smart purchase based upon real information

Here at S3J Electronics we have 20 years of power supply designing experience. Knowing how to design power supplies to last 80,000 hours or longer is something we do best. If the 30% depreciation of the LED is rated for 50,000 hours then you are going to want a supply to last at least as long as the LED life span. So having the power supply designed correctly is very important. We make it our goal to inform our customers about LED lighting and how LED's work. Knowing about LED products is the only way to sort out the bad from the good. In the long run, it is about saving energy costs and reducing the maintenance required to operate a light source.

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