Step 1 : Power Supply Key Component Distinguish

The importance of power supply to LED tube is just like the engine to the automobile. The lifetime of LED tube is decided by the power supply key component, specially capacitor.

Q What's the key component on power supply?

A

1. Ask your supplier to send some clear photoes of their tube power supply details, including 3 key components: Capacitor, driving IC, MOSTET.
If you have already bought tubes from the supplier, please take the power supply apart from the tube and check those 3 key components mentioned above.

2. Ask your supplier the key components Brand name.

Q How to Distinguish the quality of key component?

A

1. Capacitor: Only capacitor with Rubycon brand name from Japan can be convinced as high quality. Please see the picture of Rubycon capacitor on the power supply.

2. Driving IC: It must be imported brand, such as ST, TI from USA; Neither Taiwan nor China domestic brand IC can be used. Otherwise the electric stability of power driver can not be ensured.

3. MOSTET: Recommended brands are Japan TOSHIBA (the best) and Korea AUK. Neither Taiwan nor China domestic brand can be used.

Q How to judge the rated lifetime by your supplier is true ?

A

1. Check with your supplier about the brand name of capacitor and ask for picture for evidence.

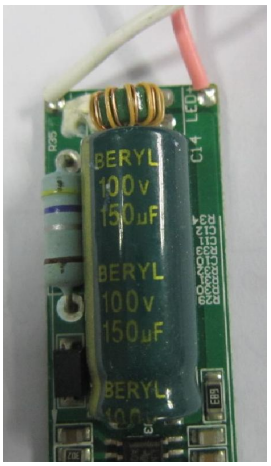
2. If 10,000 hours Rubycon is used (10000 hours lifetime means the capacitor can be used for 10,000 hours continuously at 105℃ high temperature), please see the lifetime of LED tube calculation below:

Temperature	Capacitor Lifetime
105℃	10,000 hours
95℃	20,000 hours
85℃	30,000 hours
75℃	40,000 hours
65℃	50,000 hours

If Room termperature is 25~30℃, the LED tube aluminum housing is 45℃, the power supply is 65℃, the capactor is 70℃.

Calculation result:
The lifetime of LED tube= The lifetime of capacitor= 40,000~50,000 hours (70℃ condiction)

3. If the capacitor is Beryl, instead of Rubycon, please see the photo of Beryl below:



The lifetime of Beryl is 2000 hours at 105℃, 1/5 of Rubycon; as a result, the LED Tube lifetime with Beryl is 8,000~10,000 hours.

4. If the capacitor is other brands in China, the lifetime is only 1000 hours at 105℃; so the LED tube lifetime is only 4,000~5,000 hours.

Step 2 : LED Chip

There are three main kinds of SMD LED chip which are commonly used by most of LED tube manufacturers: SMD3528, SMD3014, SMD5630.

Q Which kind of LED Chip is the best?

A

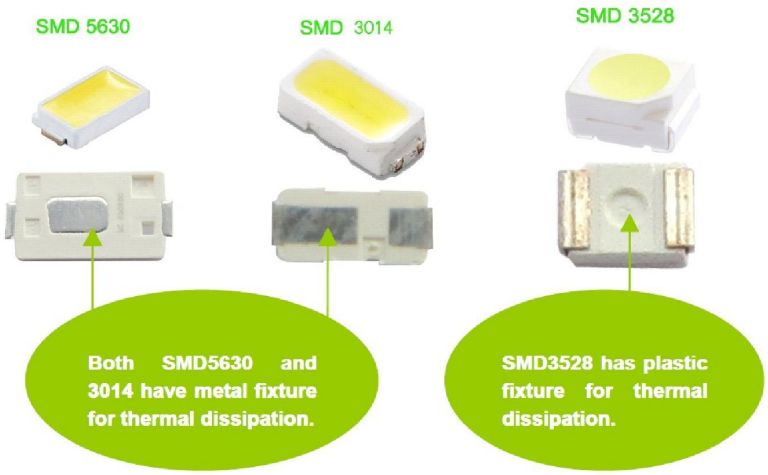
1. **Lumen per pcs performance:**

No.1: SMD5630: 45~55lm/pcs
No.2: SMD3014: 15~17lm/pcs
No.3: SMD3528: 6~7.5 lm/pcs

2. **Chip thread size:**

No.1: SMD5630: 20X44 mils
No.2: SMD3014: 11X28 mils
No.3: SMD3528: 8X10 mils

3. **Thermal fixture structure:**



Heat dissipation performance:
No.1: SMD5630
No.2: SMD3014
No.3: SMD3528

Light Maintenance:
No.1: SMD5630
No.2: SMD3014
No.3: SMD3528

Conclusion:

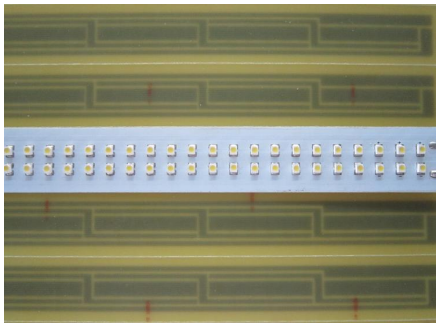
1. SMD5630 chip is the best, SMD3014 in second place, SMD3528 in the end.
2. But the price of SMD5630 is higher than SMD3014 and SMD3528, only high end LED tube with high lumen adopts SMD5630;
3. For mass market, it is the competition between SMD3014 and SMD3528; from the above analysis, SMD3014 is the recommended for mass market, from cost effecient, lumen output, chip thread size, heat dissipation, light maintenance.

Step 3 : Heat Dissipation

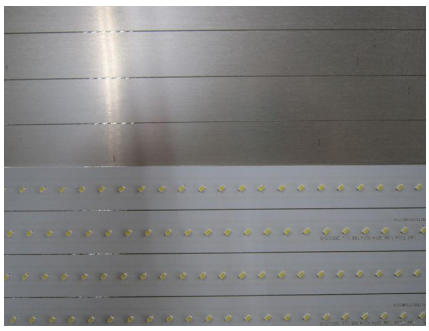
The aluminum housing of LED tube is similar in the market, so when we analyse LED tube's heat dissipation, we must see LED chips are assembled on what material of PCB.

Q Which kind of PCB material is used by LED Tube manufacturers?

A Most of LED Tube manufacturers are using Glass Fibre PCB, and small part of manufacturers are using Metal Aluminum PCB.



Glass Fibre PCB

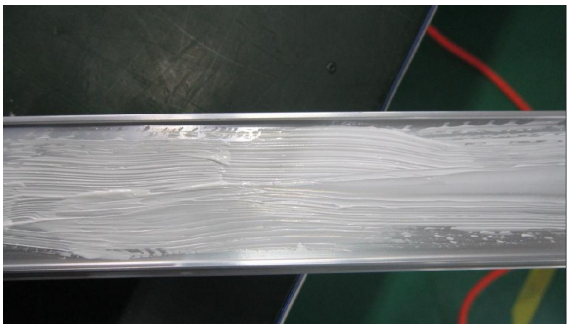


Metal Aluminum PCB

Q Which material is better for heat dissipation?

A The heat dissipation speed of Aluminum PCB is 10 times of Glass Fibre PCB, so the LED light delay on aluminum pcb is much less.

If thermal grease can be adopted on the heatsink under aluminum PCB, it can be great helpful for thermal transfer from pcb to aluminum tube housing.



Simple Advice for quality LED T8 Tube

- Power Supply with Rubycon capacitor, imported IC and MOSFET
- SMD5630 or SMD3014 LED Chip
- LED Chip is assembled on aluminum PCB