FC LED Introduction

The Next Generation in Lighting
What is **FC LED**?

- FC (Flip-Chip) LED is a new patented technology by mounting the LED diode upside down compared to the present day LED production. (Diagram A)
- Majority of the current market LED products are using gold wire bonding method for their LED (Diagram B)
Diagrams

Current LED (Wire Bond)  Flip Chip LED

[Diagram of Current LED (Wire Bond)]

[Diagram of Flip Chip LED]
FC LED
12W Light Engine Chip Layout

- PCB Diameter: 57.5mm
- Plastic Ring Inside Diameter: 37mm
- Plastic Ring Wide: 4mm
- LED PAD
- Power Pad
- Plastic Ring Outside Diameter: 43mm
- PCB Thickness: Aluminum: 1.5mm
- phosphor powder Thickness: 500um

eco-friendly
In our FC LED, we apply patented Flip Chip process instead of traditional wire bonding. Flip-chip not only shorten the production process (which means more stable quality), but also significantly reduce thermal resistance and result in higher heat dissipation rate than in the traditional golden wire bonding LED. Therefore, by release the heat much faster, and no lead frame for certain light angles, our FC LED light engine is the ideal lighting component for your need.

Below are some of the EXCITING benefits from FC LED:

- No need heavy weight thermal HEAT SINK (due to better heat dissipation rate)
- Cheaper in Production: Less cost due to minimizing heat sink unit
- Longer life: Almost no decade (estimated about 3% in 6000 hours)
- Surface light (COB - Chip on Board) instead of Spot light (individual separate LED bulbs unit), FC LED also provides higher module reflective brightness.
- No Shadow of light, no lead frame for certain light angles limitation.
Benefit of FC LED - 2

- our flip-chip technology on LED have about 200 times faster thermal dissipation rate on each diode compare to ordinary wire-bond LED.

- our flip-chip technology allow wider light angle of about 120 degree.

- with constant 450mA current, we are producing similar lighting specification as other higher current LED products.

- our flip-chip technology only need about 18 square cm of heatsink per watt. So if your fixture can satisfied this you don’t need to have another outer heatsink mechanism to dissipate heat.

- our product ranges (currently) are 4W, 6W, 9W, 12W, 15W, and 18W, they are suitable for majority of indoor and outdoor main or secondary lighting usage.
Shorten Process

Wire Bond LED Process

Epi-Wafer

Die bond

Die bond

Wire Bond

Encapsulating Phosphor

Modulate

FC LED

FINAL ASSY Personalization

Eliminated

Modulate

Modulate

Encapsulating Phosphor

Encapsulating Phosphor

Wire Bond Lead Frame

Die bond

Wire Bond Prop Stand

Epi-Wafer
Substrate

Epi wafer

SiC, GaN

High Brightness: AlGalnp, InGaN

Chip

Packaged device

Chip probing, Chip sorting

Disappeared, and merged to just one FC LED process

White LED package

Module / System

Lighting Module

Final Application
No need for heavy weight thermal HEAT SINK anymore!!
Surface light (COB - Chip on Board) VS. Spot light (individual separate High Power LED bulbs unit)

FC LED – Surface Light (no spotting effect)
Ex. 1 x 12W LED chip = 10W unit

Ordinary High Power LED – Spot Light (due to separate bulb composition)
Ex. 3 x 3W LED bulb = 9W unit
No Shadow of Light

Wire Bond LED

- 20% radiate light covered by wires
- Chip-by-chip Encapsulating (Lead Frame) Phosphor
- Require lots of equipments because of point 2

FC LED

- No wire no cover for radiate surface
- Phosphor powder printing by module
- 90% less equipments required
No Lead Frame for Certain Light Angles

Encapsulated Lead Frame High Power LED CHIP

FC LED Technology
Available Color Temperature

- Warm White (3500K)
- Cool White (5500K)
Thank You!

For your interest in our product! 😊