

FOR IMMEDIATE RELEASE

ParagonLED Successfully Completes 145°C High-Temperature Functional Validation of Its Flip Chip MCPCB Integrated LED Lighting System

Integrated Driver. No Remote Driver Required. Redefining High-Temperature Semiconductor Lighting Technology.



Figure 1. 145°C High-Temperature Functional Validation Test

Midland, Michigan, USA / Los Angeles, California, USA / New Taipei City, Taiwan — July 2026 — ParagonLED Technology Inc. today announced that its proprietary Flip Chip MCPCB LED semiconductor lighting platform has successfully completed functional validation at five elevated ambient temperatures: 105°C, 115°C, 125°C, 135°C, and 145°C.

The validation was performed using a fully integrated LED lighting system, incorporating a Flip Chip MCPCB LED light engine and an integrated LED driver. No remote driver was used throughout the testing.

Test results demonstrated that the complete lighting system continued operating normally at an ambient temperature of 145°C, maintaining stable illumination output and confirming ParagonLED's advancement in extreme high-temperature semiconductor lighting technology.

Breaking the Conventional High-Temperature LED Architecture

Most high-temperature LED lighting products on the market rely on remote drivers because conventional LED drivers cannot tolerate extreme heat. This approach increases installation complexity, wiring requirements, and long-term maintenance costs.

Leveraging its proprietary Flip Chip MCPCB technology, ParagonLED has successfully integrated both the

LED light engine and the LED driver inside the luminaire while achieving successful functional validation at temperatures up to 145°C.

Validation Highlights

- Successful functional validation at 105°C, 115°C, 125°C, 135°C, and 145°C
- Flip Chip MCPCB LED light engine
- Integrated LED driver
- No remote driver required
- Complete semiconductor lighting system remained fully operational
- Stable light output throughout the validation

Target Applications

- Steel mills
- Glass manufacturing
- Foundries
- Heat treatment facilities
- Petrochemical plants
- Mining
- Cement plants
- Other heavy industrial processes

These industries demand lighting systems capable of operating reliably under sustained high-temperature conditions with minimal maintenance. ParagonLED's platform is designed to address these demanding industrial requirements.

Advancing Lighting for Extreme Environments

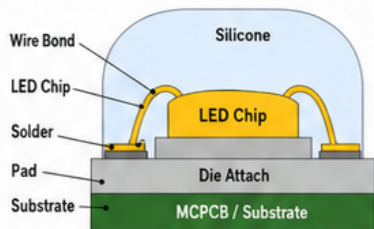
The successful 145°C functional validation represents another important milestone in ParagonLED's development of lighting technologies for extreme environments. The company will continue investing in highly efficient and highly reliable semiconductor lighting solutions for high-temperature, radiation-hardened, military, and other mission-critical industrial applications.

AC LED with Flip Chip – Complete Illustration

Higher Reliability · Better Heat Dissipation · Longer Life · Suitable for High Temp & Extreme Environments

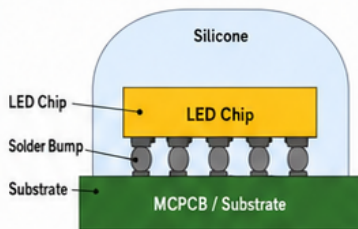
1. STRUCTURAL COMPARISON

Traditional Wire Bond



- ✗ Wire bond prone to fatigue, may break
- ✗ Gold wire used in high current
- ✗ High thermal resistance, poor
- ✗ High EMI noise, more interference
- ✗ Low reliability in high temp & vibration

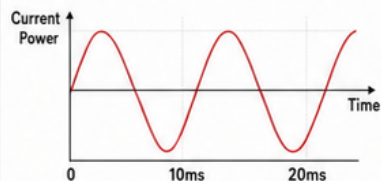
Flip Chip



- ✓ No wire bond, eliminates fatigue failure
- ✓ Current flows through multiple solder bumps
- ✓ Uniform current distribution
- ✓ Lower EMI noise, less interference
- ✓ High reliability in high temp & vibration

2. AC LED FEATURES (Why Flip Chip is Needed)

AC Market Driver (50/60 Hz)



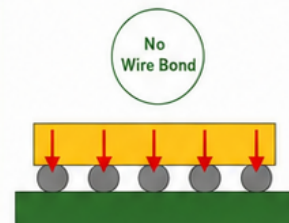
100 times 120 cycles per second

Heating → Cooling → Heating → Cooling ...

Over one year: Tens of billions of cycles

Wire bond is the most fatigue-prone location!

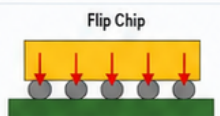
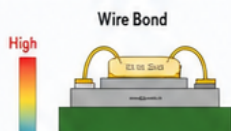
Advantages of Flip Chip



No wire bond
No fatigue cracks
Greatly improved reliability

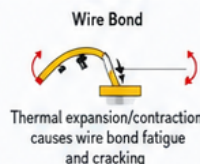
3. SIX KEY ADVANTAGES OF FLIP CHIP

1 Better Heat Dissipation



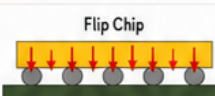
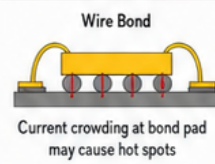
Shorter thermal path,
lower thermal resistance,
lower junction temp,
longer life

2 No Wire Bond Fatigue



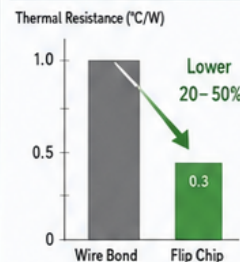
No wire bond structure,
eliminates fatigue
crack mode

3 Uniform Current Distribution



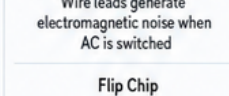
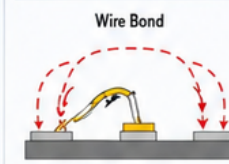
Current flows evenly
through all solder bumps,
uniform brightness,
better light quality

4 Lower Thermal Resistance



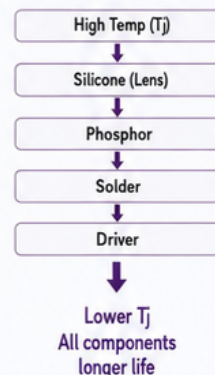
Thermal resistance
20-50% lower
Lower junction temperature
Higher efficiency, longer life

5 Lower EMI

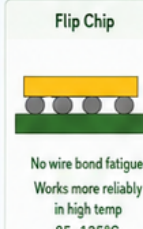
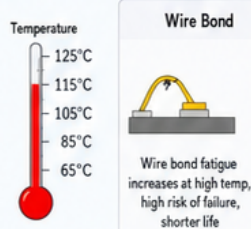


Less EMI noise,
better EMC performance

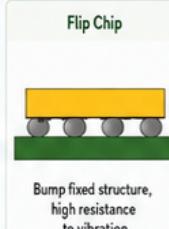
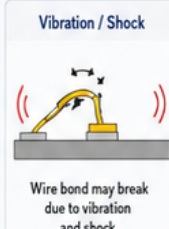
6 Longer Life



4. HIGH TEMPERATURE APPLICATION ADVANTAGE



5. EXTREME ENVIRONMENT ADVANTAGE



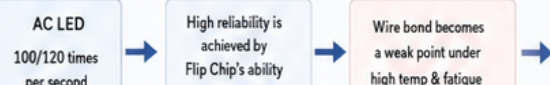
Suitable Environments

- Steel Mills
- Cement Plants
- Glass Factories
- Chemical Plants
- Mining
- Power Plants
- Military / Defense
- Hazardous Locations (HazLoc)

6. ParagonLED Flip Chip ACCOB Strategic Value



7. CONCLUSION (AC LED + Flip Chip = Best High Reliability Solution)



Flip Chip ACCOB

- ✓ No Wire Bond
- ✓ Lower Thermal Resistance
- ✓ Uniform Current
- ✓ Lower EMI
- ✓ Higher Reliability
- ✓ Longer LM80 Life
- ✓ Higher Efficiency
- ✓ Best for Extreme Environments

8. APPLICATIONS

