

## BLUE DIGITAL LED

### ALD-SP-0004

# Optimizing image quality and power efficiency: The future of local dimming backlighting units

Ultra-Compact 2-in-1 Digital LED

### Advanced On-Chip Memory Capabilities

- ✓ 16 Bits On-Chip Data Memory
- ✓ Dynamic range : High Dynamic Range capability, boasting 40 000:1
- ✓ Drive & Binning : Constant current drive (PWM)
- ✓ No Vf binning, no brightness binning  
Stability: No wavelength shift over full dynamic range

### Advanced Features

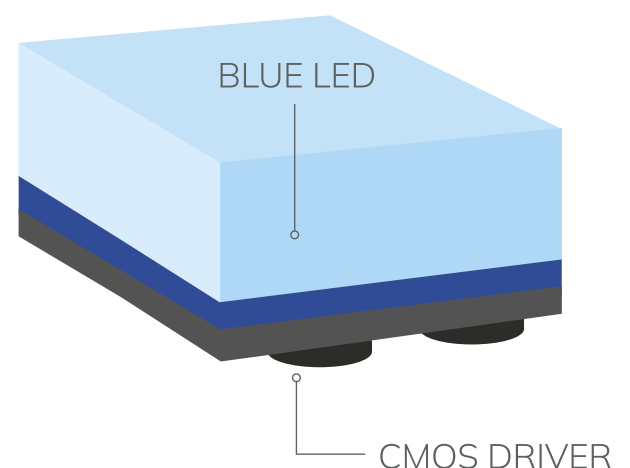
- ✓ Size : 150µm x 150µm LED with 4 bumps designed for Chip-On-Board
- ✓ Emission profile : Batwing
- ✓ Variants : The chip will be also available in 175 µm x 175µm size (ALD-SP-0004)

### Applications

- ✓ Suitable for backlighting units demanding high contrast and high brightness
- ✓ Capable of providing up to one Digital LED per dimming zone, allowing for one unique design irrespective of zone quantity
- ✓ Offers a no flicker and reduced halo system

### Main features

- Innovative power efficient architecture eliminating the need for TFT, this chip is compatible with 2-metal layers PCB
- This leads to a cost effective full active-matrix architecture
- Provides up to 30% display power saving in normal use-cases



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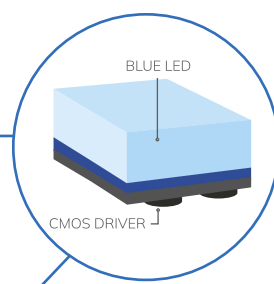
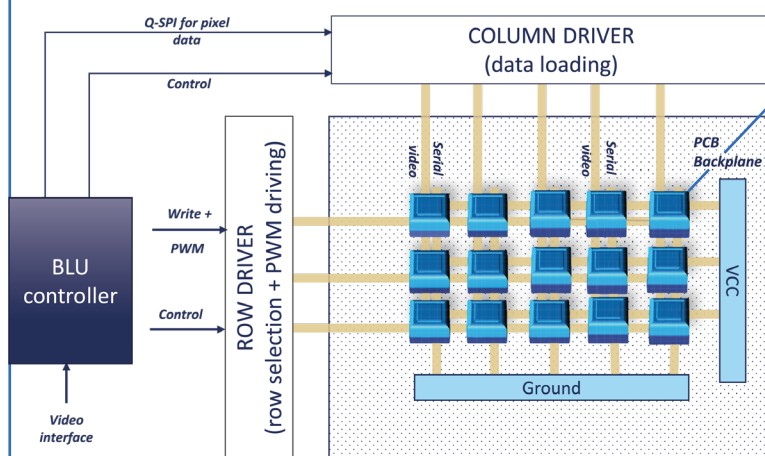
## What's new with ALD-SP-0004?

### A 2-in-1 component: blue emitting LED integrated with CMOS driving electronics

- ✓ Digital driving electronics equipped with on-chip 16 bits data memory and PWM current driving capability
- ✓ On-chip compensation for non-uniformity
- ✓ 4 bumps LED, optimized for conventional PCB
- ✓ Streamlined deployment of active-matrix driving architecture
- ✓ Row and column drivers available for effortless control of ALD-SP-0004 arrays
- ✓ BLU controller board (FPGA-based) for easy demonstration
- ✓ The ALD-SP-0004 product will be available in both consumer and automotive grades

- **Value proposition:** Elevate LCD performances to compete with OLED. Simplified strategy for active-matrix backlighting units
- **Core benefits:** Reduced power consumption. Elevated brightness. Deep blacks and slim display design
- **Performance metrics:** Peak luminous intensity of 50 mcd per chip at 25°

### Use Case



### Efficient configuration:

Utilizes just two sister chips to support active-matrix operation up to 2 916 digital LEDs. Sister chips are scalable for higher digital LEDs quantity. Timing controller, Row and Columns drivers can even be a single chip.



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