



Analog and Discrete  
Power Solutions

## **Intelligent 48-Channel LED Driver with Scan Matrix from Diodes Incorporated Leads the Automotive Dynamic Lighting Revolution**

**Plano, Texas – August 26, 2025** – Diodes Incorporated (Diodes) (Nasdaq: DIOD) today announces the launch of its new automotive-compliant\* [AL5958Q](#) matrix LED driver. With its 48-channel constant current source, capable of up to 32 scans, the AL5958Q enables the automotive dynamic lighting revolution—bringing improved safety, personalization, and aesthetics to new vehicle platforms.

The device is particularly suited for narrow pixel mini- and micro-LED displays, which require multiple RGB LEDs to produce animated, dynamic lighting with data and information. Applications include central information displays, cluster displays, head-up displays, grill and emblem lights, body LED panels, interior lights, and rear lights.

The AL5958Q incorporates built-in intelligent matrix display command functions that significantly reduce the processing overhead on the local microcontroller. These functions encompass automatic black-frame insertion to mitigate blurs caused by scanning switches, reduction of last scan and next scan-line ghost images to eliminate ghosting from parasitic capacitors, and suppression of short-LED caterpillars. Open-LED fail lines and staggered current output delay to minimize inrush current are included, as well as grayscale enhancement (also known as low-brightness uniformity compensation), a grayscale clock (GCK) watchdog timer, and sleep mode to deliver power savings.

The device's differentiated capability is underscored by its integrated 16 N-MOSFETs switches and scan control per device. This allows them to support both static and dynamic systems, ranging from 0 scans to 32 scans with a flexible scan sequence, enabling animated lighting displays. For larger applications, multiple AL5958Q devices can be daisy-chained without limitation. This capability allows the creation of expansive and complex RGB displays while also facilitating local dimming.

The AL5958Q's high 16-bit resolution dimming, coupled with its RGB support, provides highly precise brightness control and color mixing. The current output for each color group can be configured either through three external current-sensing resistors or by programming three 6-bit global current control registers. Furthermore, the distinctive multiplex-pulse density modulation (M-PDM) technology enhances the refresh rate of dynamic scanning systems without

increasing the frequency of the grayscale (GCK) clock, thereby effectively mitigating EMI due to high clock frequencies.

The device integrates a comprehensive suite of advanced diagnostic features and protection mechanisms, providing essential monitoring capabilities. These include error flag registers applied to LED open/short to read out each channel using open/short detection, undervoltage lockout (UVLO) protection, and a watchdog timer.

Operating across a -40°C to +125°C ambient temperature range, the AL5958Q is supplied in the wettable W-QFN9090-76/SWP (Type A1) package, which meets the needs of the general automotive market.

The [AL5958Q](#) is available at \$1.60 in 2,500-piece quantities. A standard compliance version, [AL5958](#), is also available and suitable for industrial and commercial applications.

For more information, please visit the Diodes Incorporated website:  
<https://www.diodes.com/products/power-management/led-drivers/linear-led-drivers/>

#### **About Diodes Incorporated**

Diodes Incorporated (Nasdaq: DIOD), a Standard and Poor's SmallCap 600 and Russell 3000 Index company, delivers high-quality semiconductor products to the world's leading companies in the automotive, industrial, computing, consumer electronics, and communications markets. We leverage our expanded product portfolio of analog and discrete power solutions combined with leading-edge packaging technology to meet customers' needs. Our broad range of application-specific products and solutions-focused sales, coupled with global operations including engineering, testing, manufacturing, and customer service, enable us to be a premier provider for high-volume, high-growth markets. For more information, visit [www.diodes.com](http://www.diodes.com).

*\*Automotive-compliant - AEC qualified, manufactured in facilities certified to IATF 16949, supporting PPAP documents.*

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