



Analog and Discrete
Power Solutions

65V, 2A Automotive-Compliant Synchronous Buck LED Driver from Diodes Incorporated for Lighting Applications with Comprehensive Protection and Fault Reporting

Plano, Texas – December 16 2024 – Diodes Incorporated (Diodes) (Nasdaq: DIOD) today announces the expansion of its automotive-compliant* LED driver portfolio by introducing the [AL8891Q](#). This easy-to-use synchronous Buck LED driver with high-side current sense drives up to 2A from a wide 4.5V to 65V input voltage range. It supports up to 95% duty cycle, allowing the drive of longer LED chains. The device provides a flexible, high-efficiency solution for automotive lighting applications, including daytime running lights (DRL), fog lights, turn lights, brake/stop lights, and interior lights.

Using constant-on-time (COT) control, the AL8891Q achieves simple control-loop compensation and cycle-by-cycle current limiting with a fast transient response without requiring an external compensation capacitor. The device's switching frequency is adjustable from 200kHz to 2.5MHz, allowing it to optimize efficiency or achieve a smaller inductor size and compact form factor. It incorporates a spread spectrum frequency modulation technique to enhance EMI performance, which eases compliance with the most stringent CISPR 25 Class 5 standard.

The AL8891Q has two independent pins—PWM and analog dimming—for enhanced functionality. PWM dimming, from 0.1kHz to 2kHz, is suitable for high-resolution dimming, and analog dimming is from 0.15V to 2V. It features an internal soft-start function, gradually increasing the inductor and switch current to minimize potential overvoltage and overcurrent at the output.

The device features comprehensive protections with fault reporting, including thermal shutdown with auto-restart, input and constant current undervoltage lockout (UVLO), cycle-by-cycle current limit, and LED-open & short circuit protection to help increase system robustness.

The [AL8891Q](#) is available in the thermally enhanced TSSOP-16EP package with an operating temperature range of -40°C to +125°C. It is available at \$0.78 for 1,000-piece quantities. A standard compliance version, AL8891, is available and is suitable for industrial and commercial applications.

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.

**Automotive-compliant—qualified to AEC-Q100 Grade 1, manufactured in facilities certified to IATF 16949, supporting PPAP documents.*

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