



New Product Announcement

AL8891Q

65V, 2A Synchronous Buck LED Driver with High-Side Current Sense for Ground-Cathode Connected LEDs

The AL8891Q is an easy-to-use synchronous buck LED driver with high-side current sense. The device is capable of driving up to 2A of LED current from a wide 4.5V to 65V input voltage range.

Utilizing constant on-time (COT) control, it achieves simple control-loop compensation and cycle-by-cycle current limiting with fast transient response. It has an adjustable switching frequency, up to 2.5MHz, allowing it to be optimized for efficiency or for a smaller inductor size and compact form factor.

For enhanced functionality, the AL8891Q has a fault flag along with PWM dimming, analog dimming, internal soft-start, and enable. A number of protection features help increase system robustness: thermal shutdown, VCC UVLO, cycle-by-cycle current limit, and open & short protection for LEDs and external components.

The AL8891Q provides a flexible and easy-to-use platform for a wide range of automotive lighting applications and has been qualified to AEC-Q100 Grade 1 in the thermally enhanced TSSOP-16EP package.

A standard compliance version, AL8891, is available and is suitable for industrial and commercial applications.

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

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The DIODES Advantage

The AL8891Q provides a flexible, high-efficiency solution for automotive lighting applications.

- **Wide 4.5V to 65V Input Voltage Range with 2A LED Current Drive**
Supports 12V-, 24V-, and some 48V-battery lighting applications utilizing high-current LEDs
- **Adjustable 200kHz to 2.5MHz Switching Frequency**
Supports lower switching frequencies for improved efficiency or higher switching frequencies for smaller footprint
- **Two Independent Pins for PWM and Analog Dimming**
Enables 0.1~2kHz PWM for high resolution dimming and 0.15~2V analog dimming for soft-start and other adjustments
- **Spread Spectrum for Better EMC Performance**
Passes CISPR 25 Class 5 standard
- **Comprehensive Protections with FAULT Reporting**
Includes overtemperature, UVLO, cycle-by-cycle current limit, and LED-open & -short protections

Applications

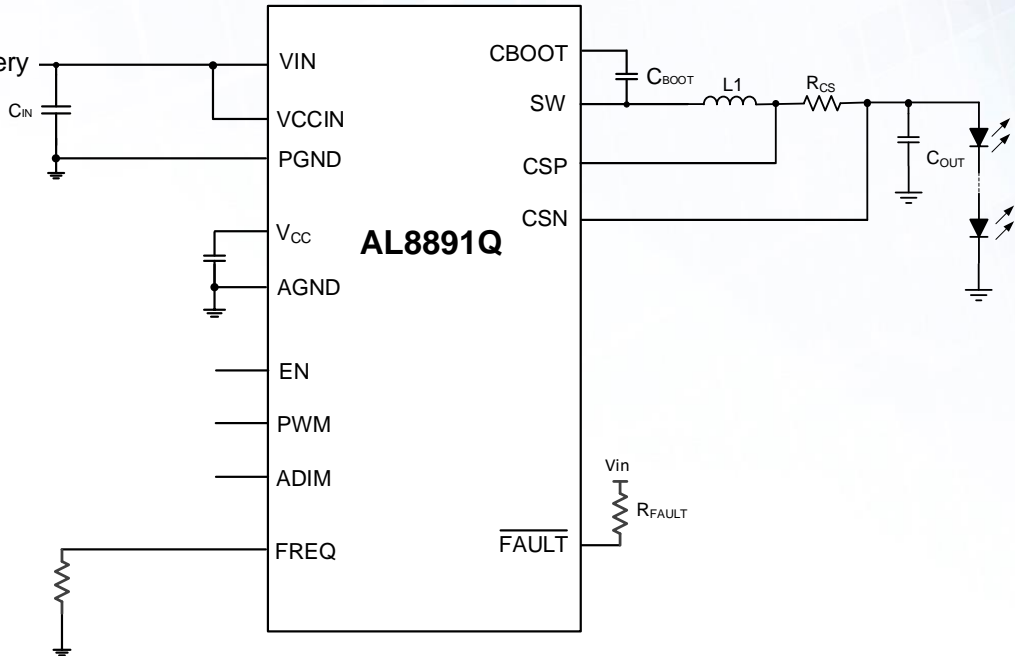
Automotive LED Drivers in:

- Exterior front lights:
 - Daytime running lights
 - Fog lights
 - Turn/position lights
- Rear lights:
 - Fog lights
 - Turn/position lights
 - Brake lights
- Interior lights



Typical Application

12V, 24V,
and 48V Battery



Automotive Buck LED Driver Portfolio

Part Number	Min. Input Voltage	Max. Input Voltage	Max. Output Current	Synchronous	Control Type	Fault Flag	Dimming Mode		Reference Voltage Accuracy	Operating Temp. Range	Package
	V	V	A				Analog	PWM			
AL8891Q	4.5	65	2	Yes	COT	Y	Y	Y	4	-40 to +125	TSSOP-16EP
AL8862Q	5	55	1	No	Hysteretic	Y	Y*	Y*	5	-40 to +125	SO-8EP, W-QFN3030-8/SWP
AL8841Q	4.5	40	1.5	No		No	Y*	Y*	5	-40 to +125	TSOT25, MSOP-8EP

* Combined pin

Ordering Information

Orderable Part Number	Compliance (Only Automotive Supports PPAPs)	Package	Moisture Sensitivity	Packing	
				Quantity	Carrier
AL8891QT16E-13	Automotive	TSSOP-16EP	MSL-1	2,500	13" Tape & Reel