

### Automotive-Compliant 40V, 3A High-Power Buck LED Driver

The AL8843Q is a 3A hysteretic-switching buck LED driver, designed for driving single or multiple series-connected LEDs. The hysteretic-mode control requires no external compensation, providing an inherently stable low-component count solution.

Its wide 4.5V to 40V operating voltage matches usual automotive operating voltage ranges, including load dumps.

The AL8843Q's integrated low  $R_{DS(ON)}$  power switch and high-side output current sensing circuit supports an adjustable LED current up to 3A.

Its CTRL pin supports both analog (DC voltage between 0.3V and 2.5V) and PWM dimming. This feature allows for user-adjustable brightness controls as well as adjustable soft-start.

The AL8843Q is available in the thermally enhanced SO-8EP package. It is automotive-compliant, qualified to AEC-Q100 Grade 1, and supports PPAP documentation.



#### DIODES Advantage

**The AL8843Q buck LED driver is a cost-effective, high-power solution for automotive LED lamps.**

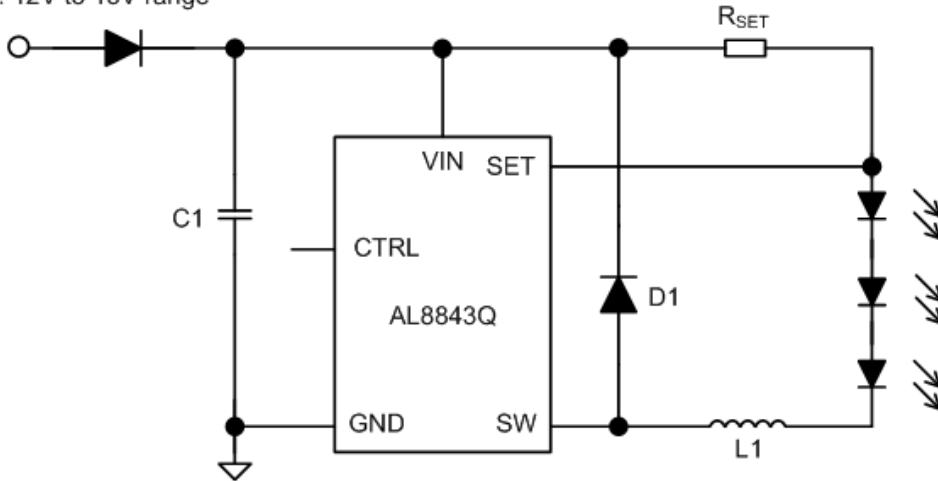
- Wide 4.5V to 40V Input Voltage Range**  
 Supports full automotive voltage range—including load dumps
- Integrated 40V/0.2Ω Power MOSFET Supports 3A LED Current**  
 Minimizes board space and reduces BOM cost while maintaining high efficiency, capable for high-power applications
- Single Pin for PWM Dimming or Analog Dimming**  
 Flexible dimming mode selection and broad dimming range capability, allowing for user-adjustable brightness controls
- Robust Built-in Protections against LED Short/Open, Thermal Overload (OTP) Protections Ensure a Reliable System**  
 Provides a reliable system performance
- Automotive-Compliant with AEC-Q100 Grade 1 Qualification and PPAP Document Support**  
 Supports ambient temperature up to +125°C

#### Applications

- Automotive Front Fog Lights
- Automotive Headlamps
- Automotive Front Fog Lights
- Automotive Exterior Lamps

### Typical Applications Circuit with 12V Car Battery

$V_{BAT}$ : 12V to 15V range



### Product Portfolio

Part	Min Input Voltage V	Max Input Voltage V	Max LED Current A	Accuracy %	Switching Frequency kHz	Max Hysteresis %	Efficiency %	Dimming		Inductor Current Limit A	Sense Voltage mV	Temp Range °C	Package
								PWM	Analog				
AL8860Q	4.5	40	1.5	5	1000	20	>95	Y	Y	N	100	-40~+125	MSOP-8EP
AL8861Q	4.5	40	1.5	5	1000	13	>95	Y	Y	Y	100	-40~+125	MSOP-8EP
AL8843Q	4.5	40	3	5	1000	13	>95	Y	Y	N	100	-40~+125	SO-8EP

### Ordering Information

Part Number	Package Code	Package	13" Tape and Reel	
			Quantity	Part Number Suffix
AL8843QSP-13	SP	SO-8EP	2500/Tape & Reel	-13