



Automotive-Compliant 40V Buck LED Driver with Enhanced Protection and Analog Dimming

The AL8860/1Q devices are hysteretic mode DC-DC buck LED drivers and are AEC-Q100 Grade 1 qualified.

The drivers operate over a wide 4.5V to 40V input supply voltage—4.5V enables them to operate under start-stop conditions while 40V enables them to withstand load dumps. They can drive up to 1.5A LED current in a MSOP-8EP package.

AL8860/1Q supports PWM and analog dimming through the CTRL/SET pin. Using an external capacitor on this pin allows a soft-start time to be set. Applying $\leq 0.2V$ to the CTRL/VSET pin turns off the internal power switch and causes the device to enter a standby mode with micropower consumption.

The AL8860/1Q is automotive-compliant and supports PPAP documents.



The Diodes Advantage

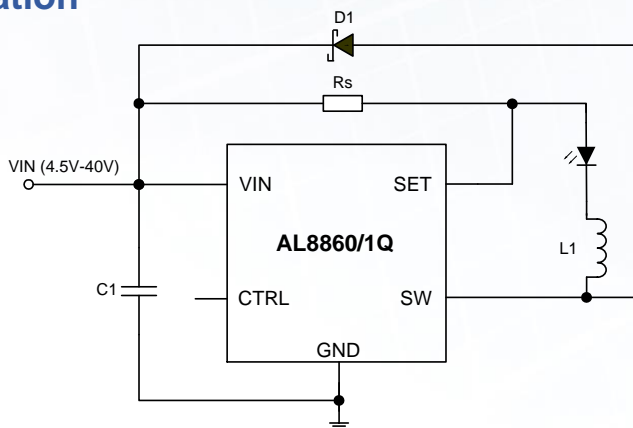
The AL8860/1Q hysteretic mode DC-DC LED drivers provide a simple cost-effective solution for automotive LED lamps.

- **Wide 4.5V to 40V Input Voltage Range and up to 1.5A LED Current**
Simple solution for LED lamps that must work under start-stop conditions with minimal number of external components
- **Versatile Single pin (CTRL/VSET) for Analog and PWM Dimming as well as Soft Start**
 - Wide Dynamic Range Analog Dimming
 - Fast PWM Dimming Resolution 1%-100%
 - Programmable Soft Start with an External Capacitor on CTRL/VSET pin
- **High Switching Frequency up to 1MHz**
 - Reduced Magnetic Component Dimensions and Cost
 - Enables Wide Operating Voltage Required by Automotive Applications
- **Inherent Protection Features:**
 - Short and Open led Operation, Current-Sense Resistor Short Protection (AL8861Q only) and Overtemperature Protection
 - Robust and Reliable Solution for Automotive LED Lamps
- **High Efficiency**
Up to 95% Efficiency

Applications

- Automotive Interior LED Lamps
- Automotive Exterior LED Lamps
- Fog Lamps
- Position Lamps

Typical Application



LED Lamp Using one LED-enabling Correct Operation During Start-Stop Conditions

Diodes DC/DC Buck LED Driver

Part Number	Min. Input Voltage	Max Input Voltage	Max LED Current	Accuracy	Current Sense Accuracy	Efficiency	Operating Temp Range	Analog Dimming	Dimmable PWM	Current Sense Hysteresis	Package Outline
	V	V	A	%	%	°C					
AL8860QMP-13	4.5	40	1.5	5	>95	-40 ~ +125	0.3-2.5V	Y	±20%	MSOP-8EP	
AL8861QMP-13	4.5	40	1.5	5	>95	-40 ~ +125	0.3-2.5V	Y	±13%	MSOP-8EP	
AL8807QMP-13	6	30	1.3	5	96	-40 ~ +125	0.5-2.5V	Y	±20%	MSOP-8EP	

Ordering Information

Part Number	Package Code	Package	Tape Width	Tape and Reel (13")	
				Quantity	Part Number Suffix
AL8860QMP-13	MP	MSOP-8EP	8mm	2500/Tape & Reel	-13
AL8861QMP-13	MP	MSOP-8EP	8mm	2500/Tape & Reel	-13

Further Information

AL8860Q: <https://www.diodes.com/part/AL8860Q>

AL8861Q: <https://www.diodes.com/part/AL8861Q>

Automotive LED Drivers: <https://www.diodes.com/products/automotive/automotive-products/automotive-led-drivers>