



New Product Announcement

AL8841Q

Automotive, 40V, Buck, Dimming LED Driver in Enhanced Thermal and Small-Footprint Packages

The AL8841Q is a hysteretic-mode DC-DC step-down LED driver, designed for driving single or multiple series-connected LEDs efficiently from a voltage source higher than the LED voltage.

The device operates from an input supply between 4.5V and 40V, and provides an externally adjustable output current up to 1A for the TSOT25 and 1.5A for the MSOP-8EP packages.

The AL8841Q integrates the power switch using an external resistor to set the LED current. It provides a simple and small footprint solution using a minimum of four external components.

The device's CTRL pin accepts either a DC analog voltage signal or a PWM digital signal to provide a simple way of adjusting LED brightness. It can also be used to adjust the AL8841Q's soft-start time, and can be adjusted using an external capacitor between the CTRL and Ground. A voltage of 0.3V or lower to the CTRL pin stops the switching, but does not place the device into a low-power standby state, thereby providing faster PWM dimming response than the AL8860Q/61Q.

The AL8841Q is available in the thermally enhanced MSOP-8EP package and the small-footprint TSOT25 package.

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

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The DIODES Advantage

The AL8841Q buck LED driver provides a reliable cost-effective solution for automotive LED lighting.

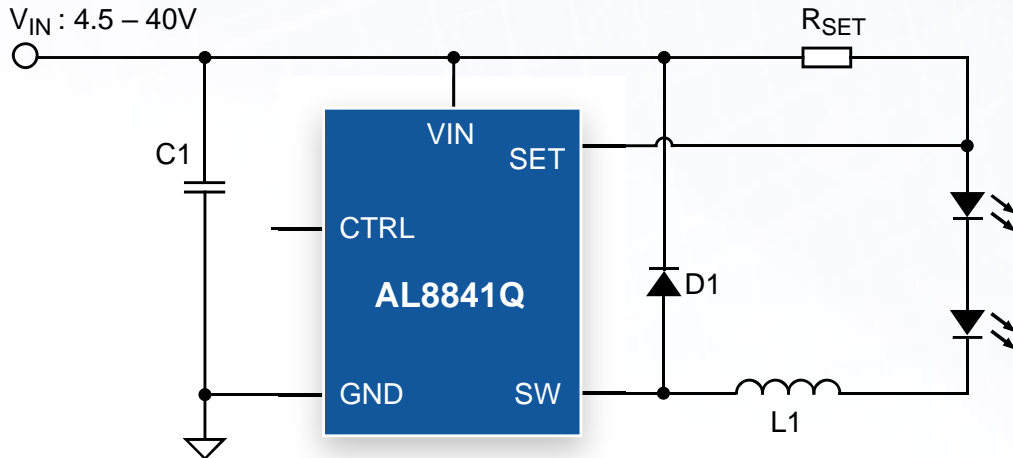
- **Wide 4.5V to 40V Input Voltage Range**
Operates across the entire 12V battery range
- **Integrated Low 200mΩ $R_{DS(on)}$ Power MOSFET**
Achieves up to 97% high efficiency and supports a wide ambient temperature range
- **Supports PWM or Analog Dimming**
Enables the CTRL pin to simultaneously accept both dimming modes
- **Full Protections**
Provides LED open/short and overtemperature shutdown protections
- **Enhanced Thermal and Small-Footprint Packages**
MSOP-8EP for thermal enhancement and TSOT25 for small footprints

Applications

Automotive LED lamps in:

- Daytime running lights
- Fog lights
- Turn/stop signals
- Dimmable interior lights
- Puddle lamps

Typical Application



Product Portfolio

Part Number	Min Input Voltage	Max Input Voltage	Max LED Current	Accuracy	Max Switching Frequency	Hysteresis	Efficiency	Dimming		Inductor Current Limit	Power-Down Mode	Sense Voltage	Fault Flag	Temp. Range	Package
	V	V	A	%	kHz	%	%	PWM	Analog						
	V	V	A	%	kHz	%	%	A	mV						
AL8841Q	4.5	40	1/1.5	4	1000	13	Up to 97	Y	Y	N	N	100	N	-40 to +125	TSOT25, MSOP-8EP
AL8843Q	4.5	40	3	4	1000	13	Up to 97	Y	Y	N	N	100	N	-40 to +125	SO-8EP
AL8860Q	4.5	40	1.5	5	1000	20	>95	Y	Y	N	Y	100	N	-40 to +125	MSOP-8EP
AL8861Q	4.5	40	1.5	5	1000	13	>95	Y	Y	Y	Y	100	N	-40 to +125	MSOP-8EP
AL8862Q	5	55	1	4	1000	13	Up to 97	Y	Y	Y	N	100	Y	-40 to +125	SO-8EP, V-DFN3030-8/SWP

Ordering Information

Orderable Part Number	Compliance (Only Automotive Supports PPAP)	Package	Moisture Sensitivity	Packing	
				Quantity	Carrier
AL8841QWT-7	Automotive	TSOT25	MSL-1	3,000	7" Tape & Reel
AL8841QMP-13	Automotive	MSOP-8EP	MSL-1	2,500	13" Tape & Reel