



# New Product Announcement

## AL58263Q

### 16-Channel, 16-Bit Dimming LED Driver with Diagnostic Feedback Improves Robustness of Automotive Lighting

The AL58263Q is an automotive-compliant\* 16-channel constant current LED driver with 16-bit grayscale adaptive pulse density modulation (APDM), which supports error diagnostics, power-saving function, and current gain control.

This distinctive APDM technology abates the non-ideal  $I_{OUT}$  distortion due to non-symmetric transient responses and enhances the refresh rate by efficiently separating the frame waveform.

The device operates over a 3V to 5.5V input voltage range with a 15V output channel voltage, and delivers up to 55mA of high accuracy current to each LED string.

Its 25MHz serial input data clock (DCK) provides fast programming of each channel's output current. All channels' output currents are set by one external sense resistor along with a 6-bit global current control register.

The AL58263Q has built-in diagnostics including LED open/short detection and protection. The results are stored in an error register for the MCU to read out.

The product is qualified to AEC-Q100 Grade 1 and is available in the wettable flank W-QFN4040-24/SWP (Type A1) package.

A standard compliance version, AL58263, is available and is suitable for industrial and commercial applications.

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

*The Diodes logo is a registered trademark of Diodes Incorporated in the United States and other countries.*

*All other trademarks are the property of their respective owners.*

© 2024 Copyright Diodes Incorporated. All Rights Reserved.



#### The DIODES Advantage

The AL58263Q, with its adaptive pulse density modulation dimming, provides a reliable and effective solution for high-resolution displays.

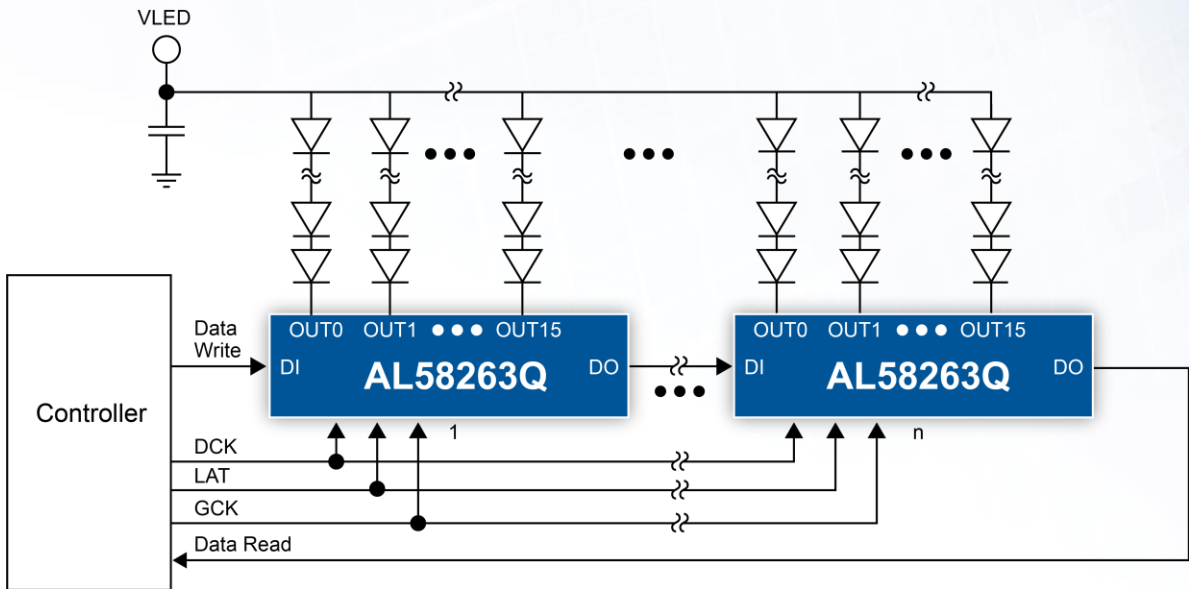
- Independent 16-bit Channel Dimming with 6-Bit Global Dimming**  
 Provides high-resolution brightness control for large displays
- High-Accuracy LED Currents – 1.5% Channel-Channel and 3% Chip-Chip with 0.1% Output Regulation**  
 Improves brightness matching between lamps
- Broad Range of Protection Features with Error Diagnostics Register**  
 Includes LED-open and -short, output short-to-GND and -power, and REXT short-to-GND
- 3V to 5.5V Power Rail with 15V Output Channel Voltage**  
 Drives up to four LEDs in series, increasing display brightness
- Daisy Chaining of up to 1,440 Devices Cascaded**  
 Supports a maximum of 23,040 LED strings

#### Automotive Applications

- Center stack displays
- HVAC control panels
- Interior and RGB lighting
- Exterior lighting



## Typical Application



## Automotive-Compliant Multi-Channel LED Driver Portfolio

Part Number	Min. Supply Voltage	Max. Supply Voltage	Max. Vout	Number of Channels	Channel Max. Output Current	Typ. Channel-to-Channel Accuracy	Interface	Global ADIM	PWMDIM	Ambient Temp. Range	Package
	V	V	V		mA	%		Bits	Bits		
<a href="#">AL58263Q</a>	3.0	5.5	15	16	55	±1.5	Serial	6	16	-40 to +125	W-QFN4040-24/SWP (Type A1)
<a href="#">AL5887Q</a>	2.7	5.5	5.5	36	70	±1	SPI/I2C	6	12	-40 to +125	W-QFN6060-52/SWP

## Ordering Information

Orderable Part Number	Compliance (Only Automotive Supports PPAP)	Package	Moisture Sensitivity	Packing	
				Quantity	Carrier
<a href="#">AL58263QDKZW24-13</a>	<a href="#">Automotive</a>	W-QFN4040-24/SWP (Type A1)	MSL-1	4,000	13" Tape & Reel