



## Description

The AL58263 is a 16-channel constant current LED driver with 16-bit grayscale Adaptive Pulse Density Modulation (APDM), supports error diagnostics, power saving function and current gain control. This distinctive APDM technology abates the non-ideal I<sub>OUT</sub> distortion due to non-symmetric transient responses and enhances the refresh rate by separating efficiently the frame waveform.

The device operates over a 3V to 5.5V input voltage range, 15V output channel voltage, a fast 25MHz data clock (DCK) serial input, delivers up to 55mA of high accuracy current to each string of LED. Each channel output current can be programmable thru digital interface individually. All channels output current could be set by one external sensing resistor along with 6-bit global current control register.

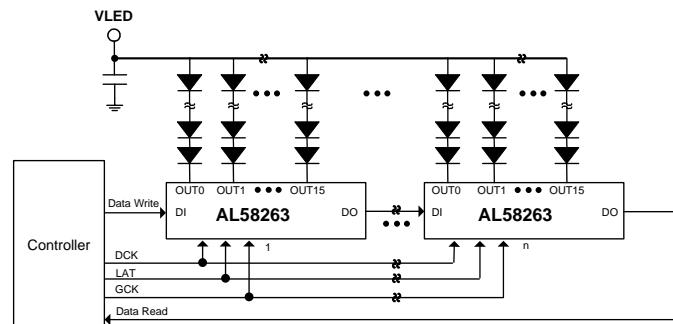
The AL58263 has built-in diagnosis and LED open/short protection and error detection, those errors results are stored in register for MCU to read out.

AL58263 is available in a TSSOP-24EP (Type A1-B) package and specified over the -40°C to +85°C ambient temperature range.

## Features

- Input Voltage VDD: 3V to 5.5V
- Output Current Range
  - 2~55mA/5V, 2~35mA/3.3V
  - $\pm 0.1\%$  Output current regulation capability
  - 6-bit global current control: from 12.5% to 200%
- 16 Constant-Current Sink Output Channel
  - 16-bit grayscale resolution with Adaptive Pulse Density Modulation control
  - 15V Rated output channels for long LED strings
  - Fast Transient Response – supports external grayscale clock with double edge up to 16MHz
  - $\pm 1.5\%$  (typ.) LED Current accuracy between channels
  - $\pm 3\%$  (typ.) LED Current accuracy between chips
  - Non-scramble waveform for high power LED application
  - Grayscale counter reset selection
  - Grayscale data synchronization selection
- Diagnosis and Protections
  - Error detection includes LED Open, LED Short, Output port leakage, Output short-to-GND, Output short-to-Power and REXT short-to-GND
  - Error detection LEDs on at 0.1mA to avoid any flickering
  - Short detection threshold voltage selection (2/3/4/4.5V)
  - Sleep and 0-data mode to lower down the supply current
  - Pre-Over-temperature warning
- 4-Wire Serial Interface (LAT, DI, DO, DCK)
  - 25MHz Clock frequency for data transfer
  - EMI reduction grayscale clock
  - Cascaded capability (Max 1,440 devices)
  - External GCK watchdog
  - Stagger outputs delay for EMI reduction
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative.**
- <https://www.diodes.com/quality/product-definitions/>

## Application Example



## Applications

- Indoor and Outdoor LED Video Displays
- Variable Message Sign (VMS)
- Traffic Sign
- Outdoor Billboard Signage
- LCD Display Backlighting

## Ordering Information

Part Number	Package	Body-Size
AL58263T24E-13	TSSOP-24EP (Type A1-B)	7.8 mm x 6.4 mm

Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.  
 2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green", and Lead-free.  
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.