

ALED8102S

Automotive-grade 8-channel LED driver with direct switch control



Flexible low-voltage LED driver with local and global brightness control

Designed for interior and exterior LED lighting systems in automotive applications, the ALED8102S also covers the rear lighting requirements of two- or three-wheel vehicles.

With an input voltage supply range up to 5.5V, this flexible LED driver can control up to 8 channels via direct switch inputs for local and/or global dimming scenarios. The 8 LED channels can be parallelized by two (four fixed couples) to double output current capability; the 4 direct control switches can be driven by either a simple passive circuitry or an MCU.

Fully AEC-Q100 Grade 1 compliant, the ALED8102S is available in an HTSSOP16 exposed pad package with high thermal efficiency.



KEY FEATURES & BENEFITS

- 8 constant current output channels controlled by four switch inputs
- Supply voltage: 3 to 5.5 V
- LED current for each channel: 5 to 100 mA
- 20 V output driving capability
- Local or global dimming
- Parallel channel connection option
- Programmable LED current by single external resistor
- Thermal shutdown
- HTSSOP16 exposed pad package

KEY APPLICATIONS

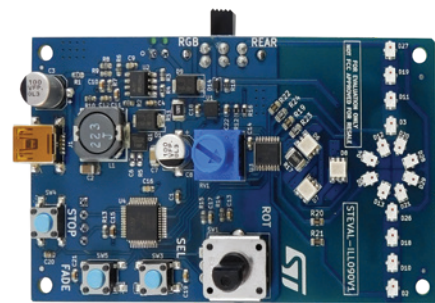
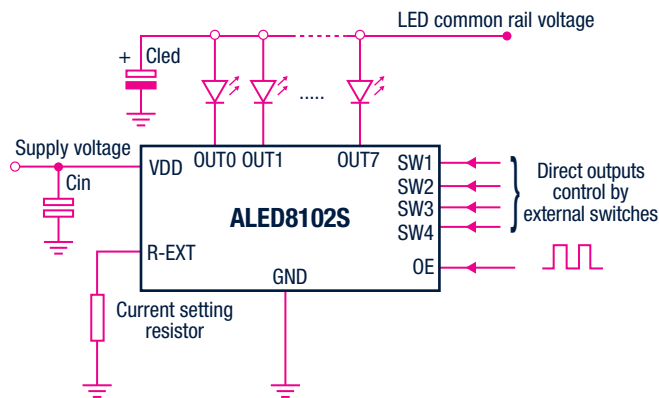
- Automotive LED interior and exterior lighting
 - Cluster/infotainment LCD backlighting
 - Ambient light
 - Rear combination light (brake and turn signals)

The ALED8102S is a monolithic, low voltage LED driver with 8 low-side channels with an operating supply voltage range between 3 and 5.5 V. The ALED8102S guarantees an output driving capability up to 20 V allowing users to connect several LEDs in series. In the output stage, 8 regulated current sources provide a constant current from 5 to 100 mA to drive the LEDs. Current is programmed through a single external resistor and its accuracy between channels is typically $\pm 1\%$.

The ALED8102S is equipped with a thermal shutdown protection mechanism (typically power-off at 170 °C with 15 °C hysteresis to restart) that switches OFF the output channels only. Four switch inputs control the output channels, providing an on/off toggle action that is also suitable for local dimming. Moreover, brightness can be adjusted on all active output LEDs with a global PWM signal applied to the Output Enable pin. Outputs can be connected in parallel, or left unconnected if not used, as required by the application.

Available in a highly thermal efficient HTSSOP16 package, the ALED8102S is fully AEC-Q100 Grade 1 compliant. An evaluation board (STEVAL-ILL090V1) is available to reduce development time. The board implements two automotive scenarios with the ALED8102S directly controlled by an embedded MCU. There is an ambient light scenario based on three RGB LEDs with configurable brightness and color and a motorbike rear light scenario for both brake and turn signals.

Typical application circuit



STEVAL-ILL090V1

Product table

Part number	V _{supply} (V)	V _{OUT} (V)	I _{OUT} (mA)	Package	Packaging
ALED8102S	3 to 5.5	0.85 to 20	5 to 100 per channel	HTSSOP16	Tape and reel

Evaluation board

Order code	Description	Documentation
STEVAL-ILL090V1	Evaluation kit for the ALED8102S 8-channel LED driver with direct switch control	Databrief DB4309



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