Automotive LED drivers

High-precision current control and advanced features

AEC-Q100 qualified, compact LED drivers with advanced diagnostics and protection functions to minimize external components

ST offers a large portfolio of constant-current LED row drivers and LED array drivers to meet stringent automotive requirements.

The LED row drivers are up to 60 V input voltage and support up to 6 rows in several topologies. They enable high-current accuracy and integrate PWM dimming features.

20 V input voltage LED array drivers are available with either 8, 12, or 16 independent channels. They embed automatic power saving, error detection and thermal shutdown features.

KEY FEATURES & BENEFITS

- Automatic power-saving feature shuts down device when outputs are off for maximum efficiency
- Short and open error detection modes with read-back status in real-time to ensure fast response to fault conditions
- Local and global dimming
- High output current accuracy

KEY APPLICATIONS

- **Front lighting**
  ALED6000 and ALED6001
- **Rear lighting**
  STAP08DP05, ALED8102S, ALED1262ZT, and STAP16DPS05
- **Interior/ ambient lighting**
  STAP08DP05, ALED8102S, ALED1262ZT, STAP16DPS05, STAP16DPPS05, and ALED1642GW
- **Cluster/ dashboard backlighting**
  STAP16DPPS05, ALED1642GW, ALED7707, and ALED7709
- **Head-up display backlighting**
  ALED7709

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The **ALED7709** is a 4-row LED driver combining a boost/SEPIC controller and four low-side constant-current sinks with a parallel channel connection option. It supports local and global dimming.

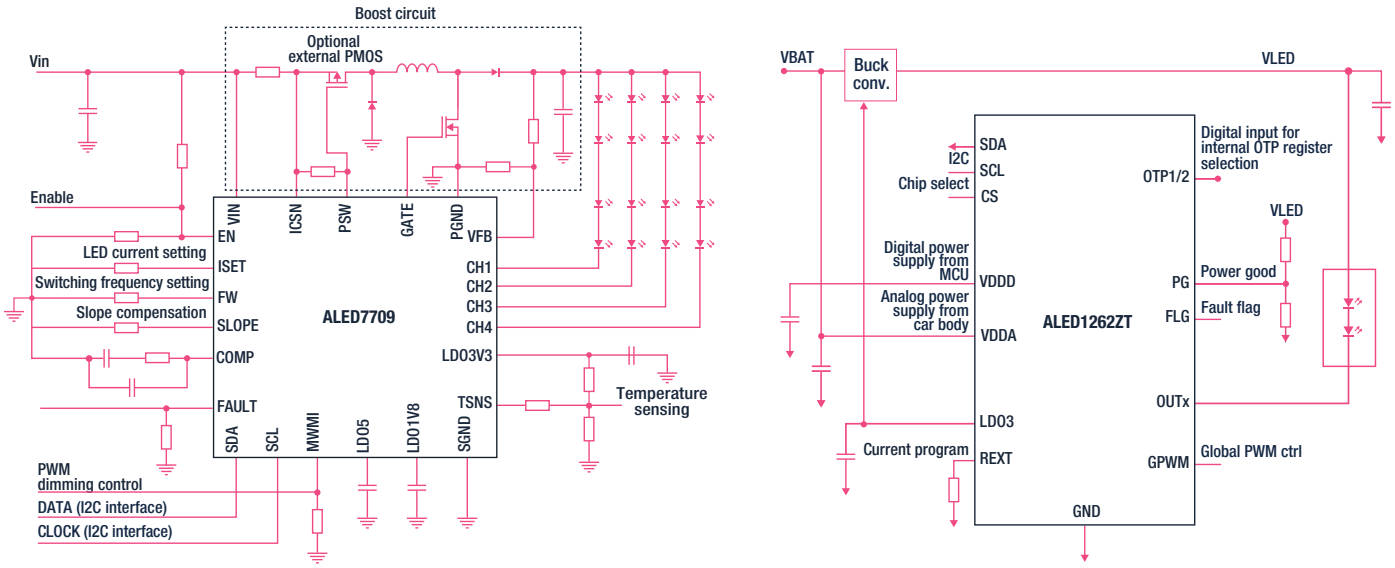
In global mode, mixed PWM and analog dimming is supported to improve the brightness range capability.

The **ALED1262ZT** is a 12-channel LED array driver providing a wide range of features to unleash any graphics implementation and at same time meet reliability requirements.

Thanks to its wide input voltage range, it is fully compliant with direct plug-and-play car battery solutions.

The **ALED8102S** is an easy and flexible 8-channel LED array driver with local and global brightness control designed for interior and exterior LED lighting and able to cover also the rear lighting requirements of two or three wheels.

Examples of application circuits



LED row drivers

Part number	Nb. of rows	V_{IN} (V)	V_{OUT_MAX} (V)	I_{LED_ROW} (mA)	$I_{ACCURACY\_MAX}$ (%) (ch-ch / ch-ref)	Topology	f_{SW} (MHz)	Error detection	Dimming	Package	Evaluation board
ALED6000	1	4.5 to 60	60	3000	n.a / ± 3.2	Buck	0.25 - 1.5	No	PWM	HTSSOP16	STEVAL-ILL089V1
ALED6001	1	5.5 to 36	60	I_{ext_MOS}	n.a / ± 4	Boost, Sepic, floating Buck-Boost	0.1 - 1.0	Yes	PWM + analog	HTSSOP16	STEVAL-ILL072V1
ALED7709	4	4.0 to 42	40	200	± 2 / ±4	Boost, Sepic	0.25 - 2.2	Yes	PWM + analog	QFN24 (5x5 WF)	STEVAL-LLL014V1
ALED7707	6	4.5 to 36	36	85	± 3 / n.a	Boost	0.25 - 1.0	Yes	PWM	QFN24 (5x5)	STEVAL-ILL067V1

LED array drivers

Part number	Nb. of channels	V_{IN} (V)	V_{OUT_MAX} (V)	I_{LED_CH} (mA)	$I_{ACCURACY\_MAX}$ (%) (ch-ch / IC-IC)	Auto power saving	Error detection	Dimming	Package	Evaluation board
ALED8102S	8	3 to 5.5	19	5 to 100	± 3 / ± 6.5	No	No	PWM	HTSSOP16	STEVAL-ILL090V1
STAP08DP05	8	3 to 5.5	20	5 to 100	± 4 / ± 6	No	Yes	PWM	HTSSOP16	-
ALED1262ZT	12	5.5 to 38	19	6 to 60	± 3 / ± 6	No	Yes	PWM	HTSSOP24	STEVAL-LLL002V1
STAP16DPS05	16	3 to 5.5	20	5 to 100	± 5 / ± 6	Yes	Yes	PWM	HTSSOP24	STEVAL-ILL059V1
STAP16DPPS05	16	3 to 5.5	20	3 to 40	± 4 / ± 5	Yes	Yes	PWM	HTSSOP24	STEVAL-ILL060V1
ALED1642GW	16	3 to 5.5	20	3 to 40	± 3 / ± 6	Yes	Yes	PWM	HTSSOP24	STEVAL-ILL073V1