MAX25503

4 x 24 Automotive LED Matrix Driver

General Description

The MAX25503 is a 4 x 24-channel modular matrix driver. The integrated current outputs can sink up to 65mA LED current each. The source drive pins provide current to the columns of the matrix on a multiplexed basis. Device power comes from an external 3.3V or 5V supply while the LED current-sink outputs can operate at up to 14V.

A feedback output pin (FB) is provided to control an external DC-DC converter so that voltage headroom can be optimized and the overall system power dissipation reduced.

The device is highly flexible due to its programmability using the SPI interface. Among the programmable parameters are the LED current, individual PWM settings, and multiplex ratio.

The high-speed interface can be used to control up to 16 devices.

The MAX25503 is available in TQFN and TSSOP packages and operates in the -40°C to +125°C temperature range.

Applications

- Central Information Displays
- Instrument Clusters
- Interior Lighting
- Exterior Rear Lighting

Benefits and Features

- Flexible Configuration
  - Programmable Multiplex Ratio between 4:1 and 1:1
  - Integrated Column Drivers
  - Programmable Dither for Enhanced Resolution
  - Optional Individual Programmable Delays
  - Optional Pseudorandom Spread Spectrum on Each Output
- 24 Row Drivers
  - Up to 65mA Peak Output Current
  - Very Narrow Minimum Current Pulse for Maximum Dimming Ratio
  - Optional Ghosting Elimination
- Extensive Diagnostics
  - Shorted or Open LEDs
  - Programmable V_{LED} Overvoltage Detection with Flag
  - Shorted SNK_ or SRC_ to GND
  - ISET out of Range
  - Thermal Warning/Shutdown
- FB Output to Control External DC-DC Converter
- High-Speed SPI Interface
- V_{SYNC} Synchronization Input (Programmable Active High/Low)
- 48-Lead TQFN and TSSOP Packages
- AEC-Q100 Grade 1