Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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MAX20078

Synchronous Buck, High-Brightness LED Controller

General Description

The MAX20078 is a high-voltage, synchronous n-channel MOSFET controller for high-current buck LED drivers. The device uses a proprietary average current-mode-control scheme to regulate the inductor current. This control method does not need any control-loop compensation while maintaining nearly constant switching frequency. Inductor current sense is achieved by sensing the current in the bottom synchronous n-channel MOSFET. It does not require any current sense at high voltages. The device operates over a wide 4.5V to 65V input range. The device is designed for high-frequency operation and can operate at switching frequencies as high as 1MHz. The high- and low-side gate drivers have peak source and sink current capability of 2A. The driver block also includes a logic circuit that provides an adaptive nonoverlap time to prevent shoot-through currents during transition. The device includes both analog and PWM dimming. The device includes a 5V V_{CC} regulator capable of delivering 10mA to external circuitry. The device also includes a current monitor that provides an analog voltage proportional to the inductor current. The device has a fault flag that indicates open and shorts across the output. Protection features include inductor current-limit protection, overvoltage protection, and thermal shutdown. The MAX20078 is available in a space-saving (3mm x 3mm), 16-pin TQFN or a 16-pin TSSOP package and is specified to operate over the -40°C to +125°C automotive temperature range.
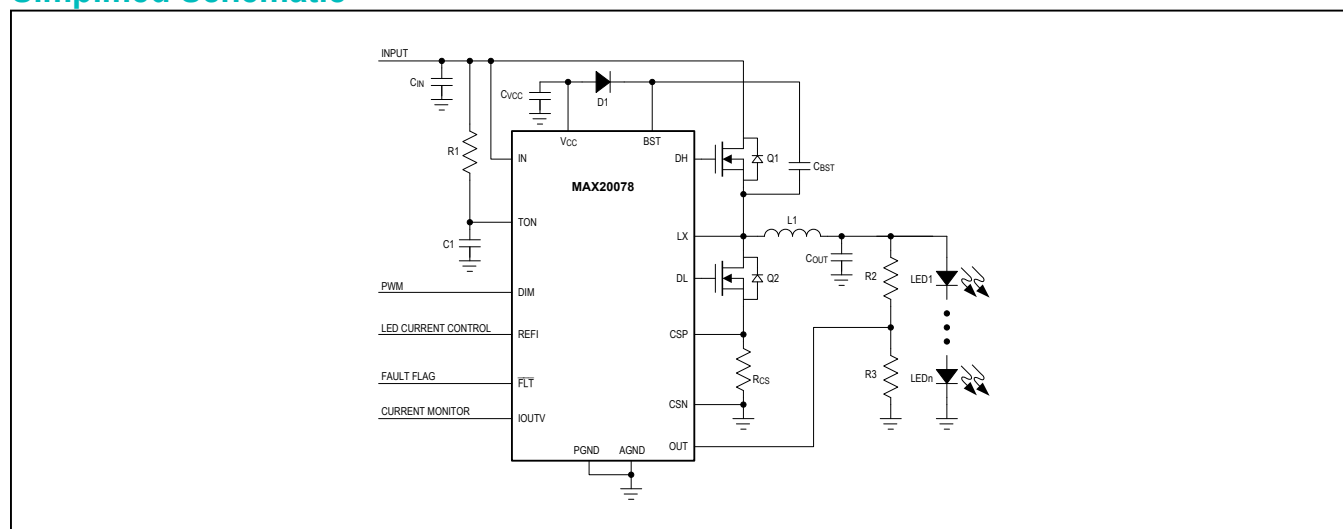
Benefits and Features

- Automotive Ready: AEC-Q100 Qualified
- Wide Input Voltage Range: 4.5V to 65V
- Easy to Design
  - No Compensation Components
  - Programmable Switching Frequency
- Wide Dimming Ratio Allows High Contrast Ratio
  - Analog Dimming
  - PWM Dimming
- Suitable for Matrix Lighting
  - Maintains Current Regulation While Shorting/Opening Individual LEDs in the String
  - Ultrafast-Response Control Loop Prevents Overshoots and Undershoots
- Fault Detection and Protection
  - Overvoltage Protection
  - Open and Short Detection
  - Low-Power Shutdown Mode
  - Thermal Shutdown
  - Inductor Current Monitor

Applications

- Automotive Front Lights
- Automotive Matrix Lights
- Head-Up Displays
- Constant-Current Regulators

Ordering Information **appears at end of data sheet.**

Simplified Schematic

maxim integrated™

MAX20078

<div align="right">

Synchronous Buck,
High-Brightness LED Controller

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Ordering Information

PART	TEMP RANGE	PIN-PACKAGE
MAX20078ATE+	-40ºC to +125ºC	16 TQFN-EP*
MAX20078ATE/V+	-40ºC to +125ºC	16 TQFN-EP*
MAX20078ATE/VY+	-40ºC to +125ºC	16 TQFN-EP* (SW)
MAX20078AUE/V+	-40ºC to +125ºC	16 TSSOP-EP*

+Denotes a lead(Pb)-free/RoHS-compliant package.
/V denotes an automotive qualified part.
(SW) = Side wettable.
**EP = Exposed pad.*

Chip Information

PROCESS: CMOS

Package Information

For the latest package outline information and land patterns (footprints), go to **www.maximintegrated.com/packages**. Note that a "+", "#", or "-" in the package code indicates RoHS status only. Package drawings may show a different suffix character, but the drawing pertains to the package regardless of RoHS status.

PACKAGE TYPE	PACKAGE CODE	OUTLINE NO.	LAND PATTERN NO.
TQFN-EP	T1633+4C	21-0136	90-0031
TQFN-EP (SW)	T1633Y+4C	21-100108	90-100046
TSSOP-EP	U16E+4C	21-0108	90-0446