IS32LT3956



Advance Information

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CONSTANT-CURRENT 3-AMPERE BUCK REGULATOR LED DRIVER WITH HIGH-SIDE BYPASS NMOS

GENERAL DESCRIPTION

The IS32LT3956 is a DC-to-DC switching converter, which integrates an N-channel MOSFET to operate in a buck configuration. The device supplies a wide input voltage between 4.5V and 40V and provides a constant current of up to 3A for driving a single LED or multiple series connected LEDs.

The external resistor, R_{SET} , is used to adjust LED output current, which allowing the output voltage to be automatically adjusted for a variety of LED configurations. True average output current operation is achieved with fast transient response by using cycle-by-cycle, controlled on-time method.

The IS32LT3956 operates in a fixed frequency mode during switching. There is an external resistor connected between the VCC and TON pins used to configure the on-time (switching frequency).

A logic input PWM signal to the enable (EN) pin is applied to adjust the LED current. The brightness of LED is proportional to the duty cycle of the PWM signal. The embedded high-side NMOS can be used to bypass some LEDs in the LED string to achieve different amount LEDs output. Such as high/low beam application.

IS32LT3956 is available in an eTSSOP-16 package with an exposed pad for enhanced thermal dissipation.

FEATURES

- Integrated high-side bypass NMOS for different amount LEDs output
- Wide input voltage supply from 4.5V to 40V
- 3A maximum true average output current control
- Cycle-by-cycle current limit
- Integrated MOSFET switch
- Dimming via direct logic input or power supply voltage
- Internal control loop compensation
- Under-voltage lockout (UVLO) and thermal shutdown protection
- 2µA low power shutdown
- Spread spectrum to optimize EMI
- Robust fault protection and report function:
 - LED string open/short circuit
 - Pin-to-GND short
 - Component open/short faults
 - Adjacent pin-to-pin short
 - Parallel FAULTB pins connection
 - AEC-Q100 qualification in progress

APPLICATIONS

- Motorcycle high/low bean
- Daytime running lights
- Turn/stop lights
- Front and rear fog lights
- Dimmable interior lights



Figure 1 Typical Application Circuit with Bypass Function Used

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TYPICAL APPLICATION CIRCUIT

IS32LT3956





Figure 2 Typical Application Circuit with Bypass Function Unused