IS32LT3123

QUAD CHANNEL WITH EXTERNAL MOSFET HIGH CURRENT AUTOMOTIVE LED CONTROLLER

GENERAL DESCRIPTION

The IS32LT3123 is a quad channel, programmable current linear controller capable of accurately regulating LED current with external MOSFETs for rear tail light applications, such as RCL (Rear Combination Lamps) and CHMSL (Center High Mounted Stop Lamps). It is fully programmable with two LED brightness levels for the different intensity requirements of "stop" bright (full brightness) and "tail" dim (PWM dimming). A logic level at the PWMB pin is used to select between the tail and stop output conditions. The stop condition provides the highest intensity output, while the tail condition utilizes an internally generated PWM signal to reduce the intensity of the LEDs' light output.

Multiple devices also can be connected in parallel in a master-slave structure for larger lighting applications.

For added system reliability, the IS32LT3123 integrates fault detection circuitry for open/short circuit, input over voltage and over temperature conditions. The FAULTB pin is dedicated to the fault conditions reporting and the MODE pin can control the action of the device in case of a fault condition.

The device also supports the NTC resister to monitor the LED string temperature. In case of the temperature exceeds the setting threshold, the device can reduce the drive current to protect the LED string.

The device package is an eTSSOP-24 with exposed pad for enhanced thermal dissipation.

FEATURES

- External MOSFETs support high output current with independent current setting
- One resister to simultaneously adjust all channels for LED binning
- Low feedback voltage for high efficiency
- 5.0V to 40V supply voltage
- PWMB logic level input selects between full brightness and PWM dimming
- Flexible LED dimming options
  - Internal PWM dimming set by resistors
    ✓ Programmable duty cycle, 5%~95%
    ✓ Programmable frequency, 100Hz~1kHz
  - External PWM signal input dimming
  - Analog voltage input for PWM dimming
- PWM slew rate control on each output for better EMI performance
- Robust fault protection with reporting
  - LED open/short
  - Input over voltage current derating
  - Over temperature rolloff
  - Thermal shutdown
  - LED string over temperature monitor
- Parallel IC operation for higher number of strings with fault condition and PWM dimming sync
- AEC-Q100 qualification in progress

APPLICATIONS

- Automotive and avionic lighting
- Rear combination light (STOP/TAIL lights)
- Center high mounted stop light
- Position light
- Daytime running light (DRL)
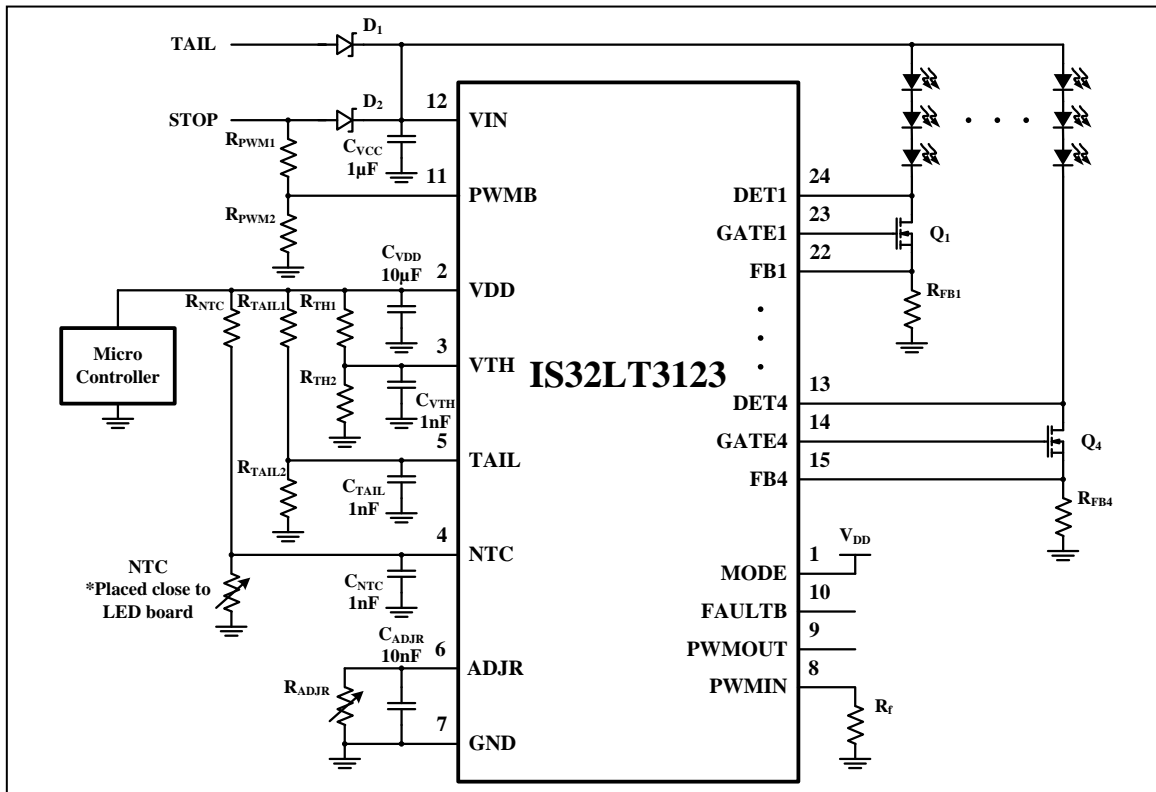- Turn light

TYPICAL APPLICATION CIRCUIT

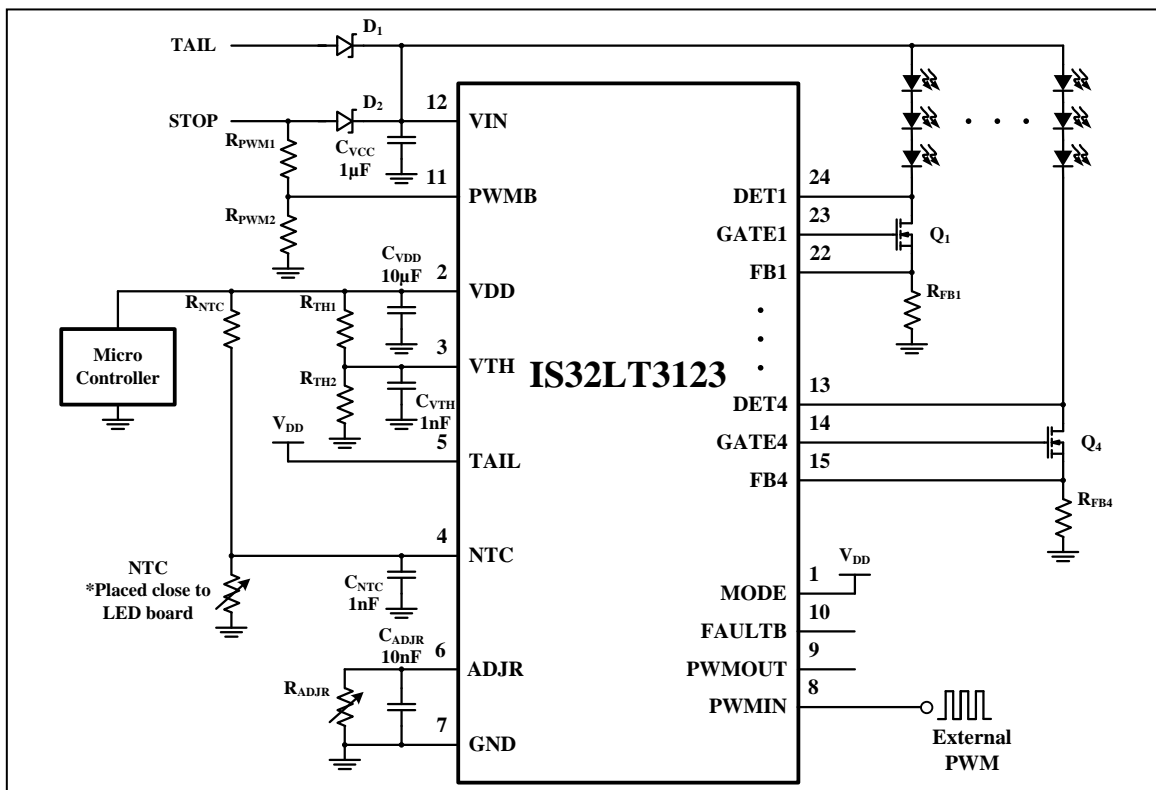**Figure 1**   Typical Application Circuit of Internal PWM Dimming

Figure 2   Typical Application Circuit of External PWM Dimming

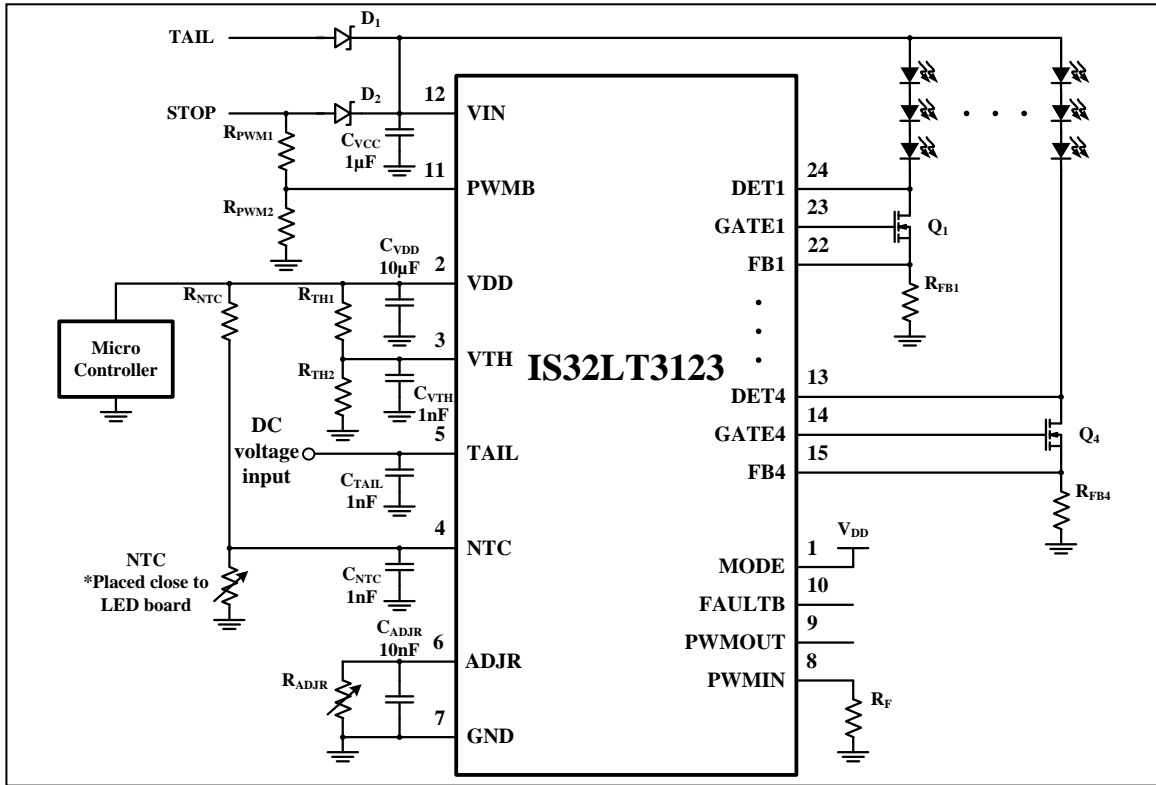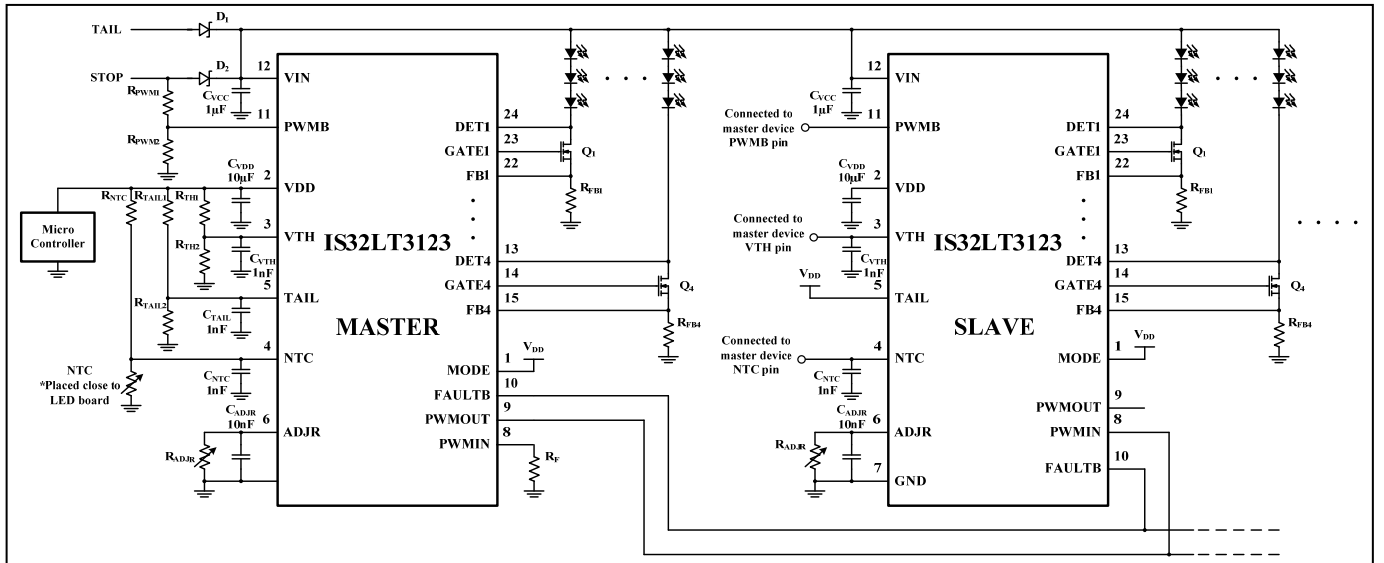**Figure 3** Typical Application Circuit of Analog Input PWM Dimming

Figure 4 Typical Application Circuit of Several Devices in Parallel