

IS32LT3124

QUAD CHANNELS, LINEAR LED DRIVER WITH FAULT REPORTING AND HEADROOM CONTROL

Advance Information
Oct 2016

GENERAL DESCRIPTION

The IS32LT3124 is a linear programmable current regulator consisting of 4 output channels capable of up to 150mA each. Individual external resistors set the maximum current level for the corresponding channel. The outputs can be combined to provide higher current drive capability to max 600mA.

The IS32LT3124 supports dynamic headroom control with an optional external P-FET to minimize IC thermal stress when the supply voltage exceeds the LED string forward voltage. It can operate with a power supply modulation (PSM) voltage for applications requiring dimming without use of the EN pin.

For added system reliability, the IS32LT3124 integrates fault detection circuitry for open/short circuit and over temperature conditions. The fault pins (FLTB) can all be tied together to disable the device and other IS32LT3124 devices on the same parallel circuit.

To handle all these different fault detection and reporting features, the IS32LT3124 has three different versions: A, B and C. All of them can support the above features. In IS32LT3124A/B, if any fault condition occurs, all output current will be disabled. In IS32LT3124B/C, individual ISET pin for each LED channel is redefined as individual PWM dimming control, thus ISET open detection function is removed. The EN pin of IS32LT3124B/C is featured as the enable signal of the internal fault detection block. Pulling this signal low will disable all fault detection action (except thermal shutdown protection), including fault reporting.

The IS32LT3124 is targeted at the automotive market such as interior accent lighting and exterior tail lighting. It is offered in a thermally enhanced eTSSOP-16 package.

FEATURES

- 5.0V to 42V input supply voltage range
- Four output channels can source up to 150mA each
 - Four current set resistors
 - $\pm 4\%$ output current accuracy
 - Low dropout voltage of 1V (Max.) at 100mA
 - Combined for higher current capability with same current accuracy
- PWM dimming and shutdown control input
 - 0~300Hz power supply modulation(PSM)
 - 100Hz~1kHz individual dimming via resistors of ISETx pins (IS32LT3124B/C only)
- Dynamic headroom control with an optional external P-FET to minimize IC thermal
- UVLO (Under Voltage Threshold) is programmable via EN pin (IS32LT3124A only)
- Fault protection and reporting
 - External controllable Enable for fault detection (IS32LT3124B/C only)
 - Programmable fault flag delay (deglitch timer)
 - Fault condition disables output currents (IS32LT3124A/B only)
 - Parallel Fault connection (up to 15 devices)
 - LED string open/short
 - Single LED short
 - ISET pin short
 - ISET pin open (IS32LT3124A only)
 - Over temperature
 - Less than 1.1mA current under fault ($V_{CC}=12V$)
- 42V load dump protection
- Automotive grade: AEC-Q100 (pending)
- Operating temperature range ($-40^{\circ}C \sim +125^{\circ}C$)

APPLICATIONS

- Automotive LED Lighting
 - Tail light, interior and daytime running lights

TYPICAL APPLICATION CIRCUIT

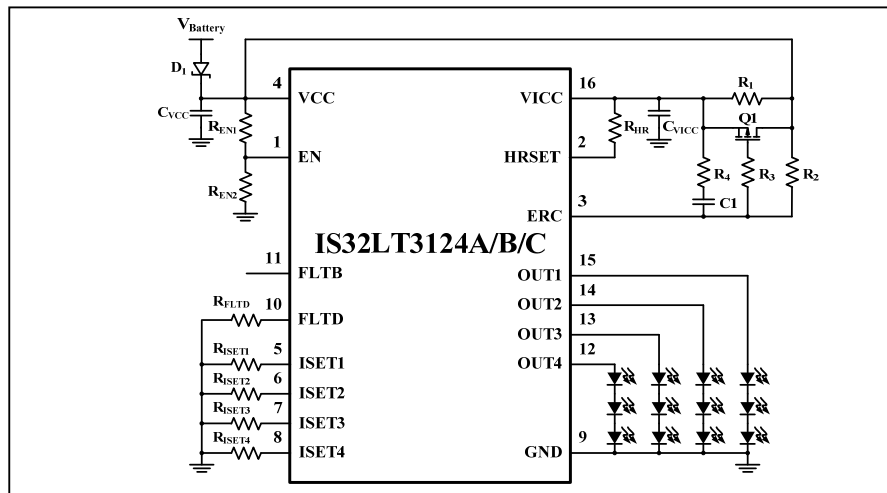


Figure 1 Typical Application Circuit

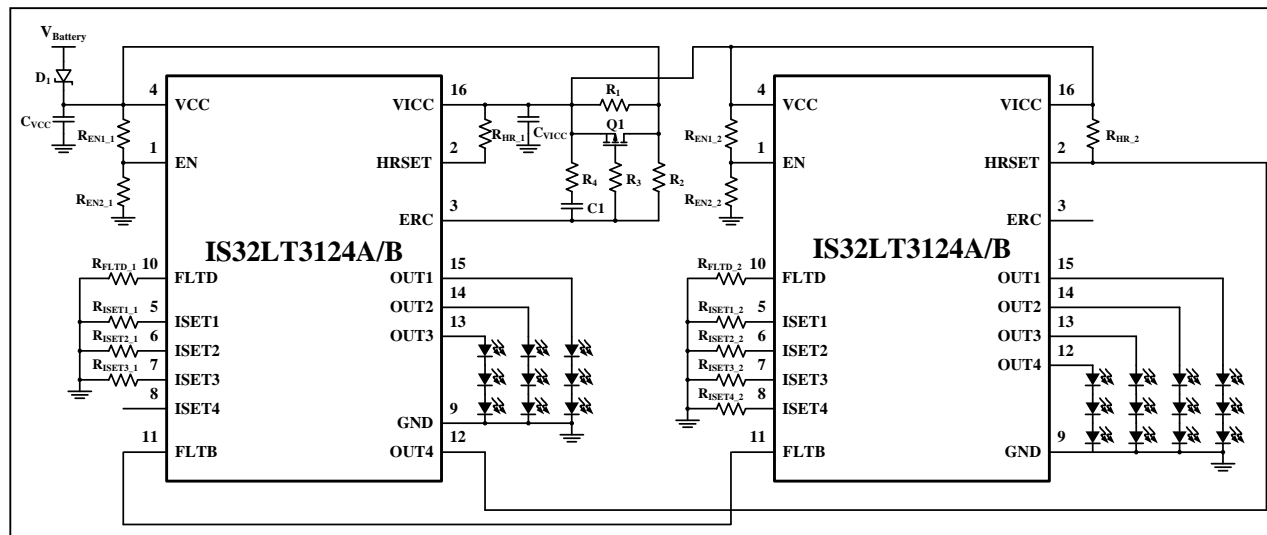


Figure 2 Typical Application Circuit (IS32LT3124A/B only)
Several Devices in Parallel with FAULT Interlinkage with Optional External PMOS FET

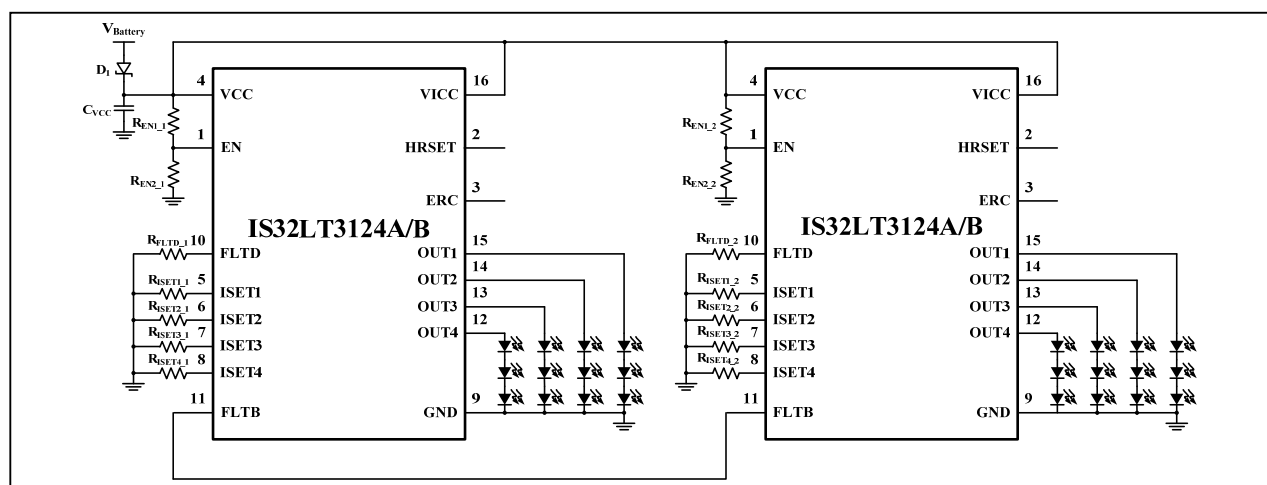


Figure 3 Typical Application Circuit (IS32LT3124A/B only)
Several Devices in Parallel with FAULT Interlinkage without Optional External PMOS FET

