

IS31FL3195

CHARGE PUMP RGBW LED DRIVER WITH PROGRAMMABLE SELF-RUNNING PATTERNS

Advance Information
September 2018

GENERAL DESCRIPTION

The IS31FL3195 is a compact and efficient 4-channel charge pump LED driver with programmable sequence operation for automated RGBW lighting effects. It is capable of driving 1 to 4 LEDs with a low drop-out and current matching so all 4 LEDs maintain consistent brightness. Each channel can support up to 20mA of current.

The built-in charge pump (CP) structure will automatically toggle between 1x, 1.5x operation depending on the battery's state of charge. This DC/DC converter operates at a high switching frequency which enables the use of small external capacitors and achieves 92% peak total efficiency. The IS31FL3195 is optimized for battery applications. To conserve battery life, the charge pump goes into high impedance mode whenever the IS31FL3195 is shutdown consuming less than 1 μ A.

The IS31FL3195 can operate in either "Current Level" or "Programmable Sequence" mode. In Current Level mode, the average output current of each output is independently programmed and controlled in 256 PWM steps to simplify color mixing. In programmable sequence mode, the timing characteristics for each output can be individually adjusted to maintain a pre-established pattern sequence without requiring any additional MCU interaction, thus saving valuable system resources.

The IS31FL3195 is available in a small QFN-16 and WLCSP-16 (0.45mm ball pitch, 0.2mm ball diameter) package. It operates from 2.7V to 5.5V over the temperature range of -40°C to +85°C.

With automated lighting effects and a DC/DC charge pump, the small package IS31FL3195 is ideal for low power battery applications.

FEATURES

- 2.7V to 5.5V supply voltage
- Charge pump
 - 1x, 1.5x operating modes
 - Highly efficient across battery state of charge
 - 1MHz constant frequency
 - Enter 1.5x mode if any of the four OUTx pins < 150mV (50mV~300mV selectable)
- Power saving operating
 - 1 μ A Shutdown current
 - 640 μ A Quiescent operating current (CP1x mode)- Two selectable sleep modes
 - Sleep 1 Mode: 35 μ A
 - Sleep 2 Mode: 1 μ A
 - Auto sleep mode if all OUTx outputs are off for >30s.
- Support four LEDs - RGBW
 - Resistor sets LED current up to 20mA
 - 8-bit dot correction
- LEDs can operate with pre-established lighting patterns
 - Run without a micro
 - Fixed number of iterations or non-stop operation
 - Each channel has its own fade registers (TS-T4) with independent start/stop
- 1MHz I2C bus interface
 - Automatic address increment function
 - 4 selectable I2C address locations
- Over-temperature protection
- QFN-16 (4mm × 4mm) and WLCSP-16 (0.45mm ball pitch, 0.2mm ball diameter) package
- Operating temperature T_A= -40°C ~ +85°C

APPLICATIONS

- Internet-of-Things (IOT)
- Low-power battery applications
- Wearable applications
- Hand-held devices requiring visual notifications

IS31FL3195

TYPICAL APPLICATION CIRCUIT

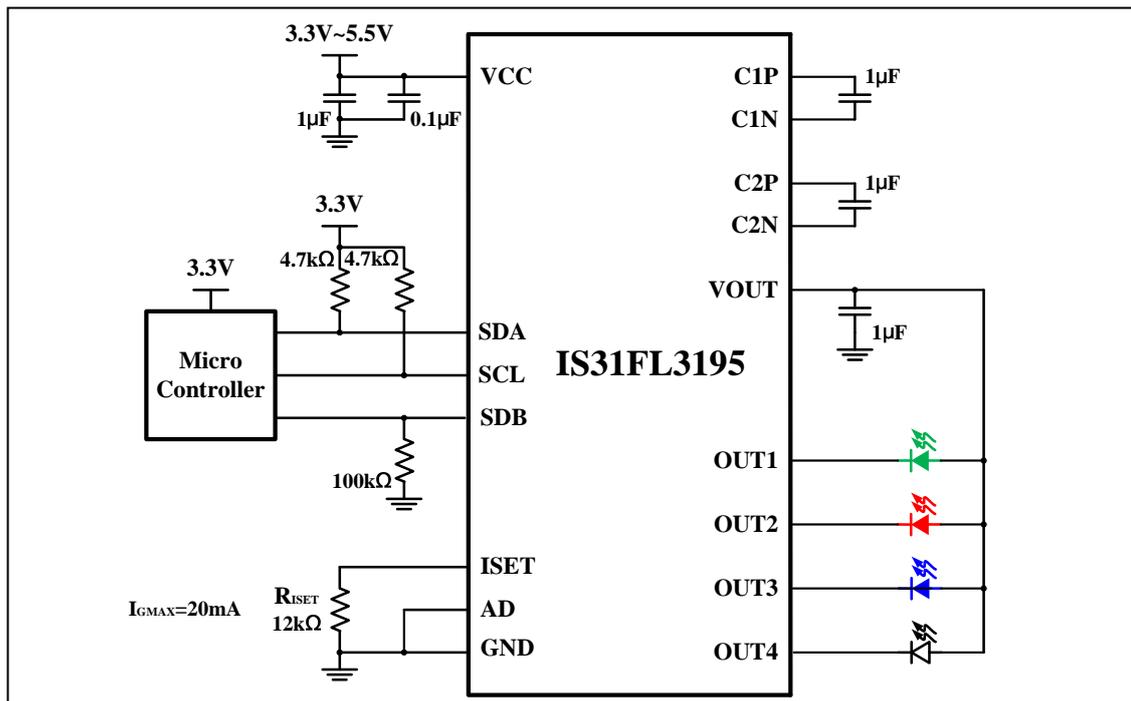


Figure 1 Typical Application Circuit