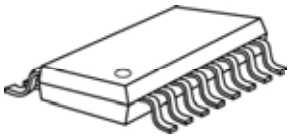
PWM-Embedded 3-Channel Constant Current LED Sink Driver for Small RGB Cluster

Features

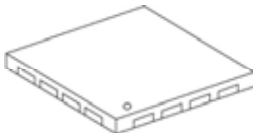
- 3-channel constant current sink driver for RGB LED clusters
- Constant current range 5~50mA
- Individual output current adjusted through external resistors
- Sustaining voltage at output channels: 17V (max.)
- Supply voltage 3V~5.5V
- Embedded 16-bit PWM generator
  - Gray scale clock generated by the embedded oscillator or the external clock
  - PWM counter reset function
  - S-PWM technology
- Two selectable gray scale modes
  - 16-bit gray scale mode (with optional 8-bit dot correction)
  - 10-bit gray scale mode (with optional 6-bit dot correction)
- Reliable data transmission
  - Daisy-chain topology
  - Two-wire only transmission interface
  - Clock reverse
  - Built-in buffer for long-distance transmission
- Flexible operation modes
  - Auto-synchronization mode
  - Manual-synchronization mode
- Selectable polarity reversion to drive high-power drivers or MOS
- RoHS-compliant packages

Shrink SOP



GP: SSOP16L-150-0.64

QFN



GFN: QFN16L-3*3-0.5

Application

- Architecture decorative lighting
- Mesh display, LED strip
- Neon lamp alternative
- PWM generator

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Product Description

MBI6020 is a 3-channel, constant current, PWM-embedded LED sink driver for small RGB LED cluster. MBI6020 provides constant current ranging from 5mA to 50mA for each output channel and three output channels are adjustable with three corresponding external resistors. Besides, MBI6020 can support both 3.3V and 5V power systems and sustain 17V at output channels.

With Scrambled-PWM (S-PWM) technology, MBI6020 enhances pulse width modulation by scrambling the “on” time into several “on” periods, so that MBI6020 reduces the data transmission bandwidth at the same gray scale performance. Besides, the gray scale clock, GCLK, can be generated by either the embedded oscillator or the external clock source. Moreover, MBI6020 provides two selectable gray scale modes: 16-bit gray scale mode and 10-bit gray scale mode. The 16-bit gray scale mode provides 65,536 gray scales for each LED to enrich the color with optional 8-bit dot correction to adjust each LED by 256-step dot correction to calibrate the LED brightness. On the other hand, the 10-bit gray scale mode provides 1,024 gray scales with optional 6-bit dot correction to adjust each LED by 64-step dot correction.

Furthermore, MBI6020 features a two-wire only transmission interface to simplify the system controller design. To improve the transmission quality, MBI6020 provides clock reverse function to enhance long-distance transmission. MBI6020 is flexible for either auto-synchronization or manual-synchronization. In addition, MBI6020 preserves selectable polarity reversion to drive high-power drivers or MOS as a PWM controller.