

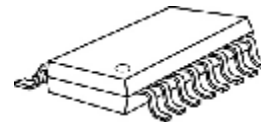


PWM Embedded 3-Channel Constant Current LED Sink Driver for RGB LED Clusters

Features

- I 3-channel constant current LED sink driver for RGB LED clusters
- I Constant output current range per channel: 5~150mA
- I Excellent output current accuracy,
 - Between channels: $<\pm 3\%$ (max.);
 - Between ICs: $<\pm 3\%$ (max.)
- I Sustaining voltage at output channels: 40V (max.)
- I Embedded 16-bit PWM generator
 - Gray scale clock generated by the embedded oscillator, GCLK: 9MHz or 4.5MHz
 - Patented S-PWM technology to improve the visual refresh rate
- I Two selectable modes for color enrichment and correction
 - 16-bit gray scale mode
 - 10-bit gray scale mode (with optional 6-bit dot correction)
- I Reliable data transmission
 - Daisy-chain topology
 - Two-wire only transmission interface (patent pending)
 - Clock re-generation to recover the clock duty cycle
 - Selectable innovative cross-reference interface (patent pending)
- I Supply voltage range (V_{DDH}): 7~30V
- I Supporting 5V power system (V_{DDL})
- I Embedded voltage regulator
 - Providing 5V power supply for peripheral devices when sufficiently biased
- I Acting as a PWM controller with selectable polarity reversion to drive external high-power drivers or MOS
- I RoHS-compliant packages

Shrink SOP



GP: SSOP16L-150-0.64

QFN



GFN: QFN24L-4*4-0.5

Application

- I Architectural lighting
- I LED curtain display or LED strip
- I Neon light replacement
- I Channel letter
- I Remote PWM generator

Product Description

MBI6030 is a 3-channel, constant current, PWM-embedded LED sink driver for RGB LED cluster. MBI6030 provides constant current ranging from 5mA to 150mA for each output channel and sustains 40V at output channels. The constant output current of each output channel is adjustable with three corresponding external resistors.

By S-PWM technology, MBI6030 scrambles the 16-bit PWM cycle into 64 segments to enhance the visual refresh rate up to 64 times of the original frame rate, when GCLK, the gray scale clock generated by the embedded oscillator, frequency is 9MHz. MBI6030 also provides two selectable gray scale modes: 16-bit gray scale mode and 10-bit gray scale mode. 16-bit gray scale mode provides 65,536 gray scales for each LED to enrich the color; on the other hand, 10-bit gray scale mode provides 1,024 gray scales. However, in 10-bit gray scale mode, users may flexibly adopt 6-bit dot correction to adjust each LED by 64-step dot correction to calibrate the LED brightness.

Furthermore, MBI6030 features a two-wire only transmission interface to simplify the system controller design. To improve the transmission quality, MBI6030 provides clock regeneration to recover the clock duty cycle to avoid signal distortion after long-distance transmission. In addition, MBI6030 adopts an innovative cross-reference interface (IX/IY) to reduce common mode noise, so that MBI6030 can support longer transmission distance.

MBI6030 allows wide supply voltage range (V_{DDH}) from 7V to 30V, which is suitable for 12V or 24V systems, or MBI6030 can support 5V power system (V_{DDL}). With the embedded voltage regulator, MBI6030 can also provide 5V power supply for peripheral devices when sufficiently biased. Additionally, MBI6030 preserves selectable polarity reversion to driver external high-power drivers as a PWM controller.