

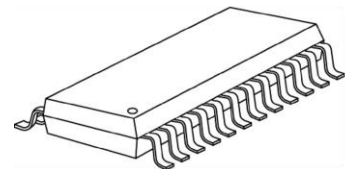


16-Channel PWM Constant Current LED Driver for 1:8 Time-Multiplexing Applications

Features

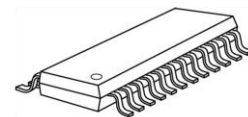
- 3V-5.5V supply voltage
- 16 constant current output channels
- Constant output current range:
 - 1~20mA @ 5V supply voltage
 - 1~10mA @ 3.3V supply voltage
- Excellent output current accuracy:
 - Between channels: $<\pm 2.5\%$ (Max.)
 - Between ICs: $<\pm 3\%$ (Max.)
- Built-in 4K-bit SRAM to support time-multiplexing for 1 ~ 8 scans
- 16-bit /14-bit color depth PWM control to improve visual refresh rate
- 6 bit current gain, 12.5%~200%
- LED open detection (Threshold voltage, 0.3V~0.6V selectable)
- Integrating ghost elimination circuit
- GCLK multiplier technology
- Maximum DCLK frequency: 30MHz
- Staggered delay of output to reduce EMI

Small Outline Package



GF: SOP24L-236-1.00

Shrink SOP



GP: SSOP24L-150-0.64

Product Description

MBI5151 is designed for LED video applications using internal Pulse Width Modulation (PWM) control with selectable 16-bit / 14-bit color depth. MBI5151 features a 16-bit shift register which converts serial input data into each pixel's gray scale of the output port. Sixteen regulated current ports are designed to provide uniform and constant current sinks for driving LEDs with a wide range of V_F variations. The output current can be preset through an external resistor. The innovative architecture with embedded SRAM is designed to support up to 1:8 time-multiplexing applications. Users only need to send the whole frame data once and to store in the embedded SRAM of the LED driver, instead of sending every time when the scan line is changed. It helps to save the data bandwidth and to achieve high grayscale with very low data clock rate. With scan-type Scrambled-PWM (S-PWM) technology, MBI5151 enhances PWM by scrambling the "on" time of each scan line into several "on" periods and sequentially drives each scan line for a short "on" period. The enhancement equivalently increases the visual refresh rate of scan-type LED displays. In addition, the innovative GCLK multiplier technique doubles visual refresh rate.

MBI5151 drives the corresponding LEDs to the brightness specified by image data. With MBI5151, all output channels can be built with 16-bit color depth (65,536 gray scales). When building a 16-bit color depth video, S-PWM technology reduces the flickers and improves the image fidelity.

Through compulsory error detection, MBI5151 detects individual LED for open-circuit errors without extra components. Besides, integrated ghost elimination circuit eases the ghost problems. For EMI reduction, constant current output with staggered delay is applied on each channel