

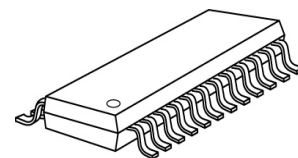


16-Channel PWM Constant Current LED Driver for 1:32 Time-Multiplexing Applications

Features

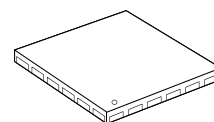
- 3V-5.5V supply voltage
- 16 constant current output channels
- Constant output current range:
 - 0.5~20mA @ 5V supply voltage
 - 0.5~10mA @ 3.3V supply voltage
- Excellent output current accuracy:
 - Between channels: $<\pm 2.5\%$ (Max.)
 - Between ICs: $<\pm 3\%$ (Max.)
- Built-in 16K-bit SRAM to support time-multiplexing for 1 ~ 32 scans
- 14-bit / 13-bit color depth PWM control to improve visual refresh rate
- 6bit current gain, 12.5%~200%
- LED failure isolation
 - LED failure induced cross elimination
- LED open detection
- Integrating ghost elimination circuit
- GCLK multiplier technology
- Maximum DCLK frequency: 30MHz

Shrink SOP



GP: SSOP24L-150-0.64

Quad Flat No-leads



GFN: QFN24L-4x4-0.5

Product Description

MBI5153 is designed for LED video applications using internal Pulse Width Modulation (PWM) control with selectable 14-bit / 13-bit color depth. MBI5153 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 1:32 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, MBI5153 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.

MBI5153 drives the corresponding LEDs to the brightness specified by image data. With MBI5153, all output channels can be built with 14-bit color depth (16,384 gray scales). When building a 14-bit color depth video, S-PWM technology reduces the flickers and improves the image fidelity.

Through compulsory error detection, MBI5153 detects individual LED for open-circuit errors without extra components. MBI5153 equipped an innovative cross elimination function, and it solves the cross phenomenon induced by failure LEDs. Besides, integrated ghost elimination circuit eases the ghost problems.