MBI5041

Macroblock

# 16-Channel SPWM Constant Current LED Driver

Features

- 16 constant-current output channels
- 16-bit color depth PWM control
- Scrambled-PWM technology to improve refresh rate
- 6-bit programmable output current gain
- Constant output current range: 2~30mA

  2~30mA at 5.0V/3.3V supply voltage
- Output current accuracy:

  Between channels: <±1.5% (typ.), and

  Between ICs: <±3% (typ.)
- Staggered delay of output, preventing from current surge
- Maximum data clock frequency: 30MHz
- Maximum gray scale clock frequency: 33MHz

  Refresh rate doubled by innovative rising/falling edge trigger GCLK
- Schmitt trigger input
- 3.0V-5.5V supply voltage

Small Outline Package
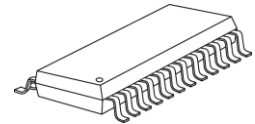
GF: SOP24L-300-1.00

Shrink SOP
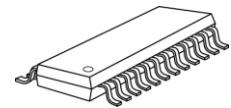
GP: SSOP24L-150-0.64

QFN
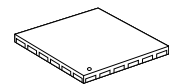
GFN: QFN24L-4x4-0.5

Product Description

MBI5041 is designed for LED video applications using internal Pulse Width Modulation (PWM) control with selectable 16-bit color depth which features a 16-bit shift register which converts serial input data into each pixel gray scale of output port. The output current can be preset through an external resistor. Moreover, the preset current of MBI5041 can be further programmed to 64 gain steps for LED global brightness adjustment.

With Scrambled-PWM (S-PWM) technology, MBI5041 enhances Pulse Width Modulation by scrambling the "on" time into several "on" periods. The enhancement equivalently increases the visual refresh rate. When building a 16-bit color depth video, S-PWM reduces the flickers and improves the fidelity. MBI5041 offloads the signal timing generation of the host controller which just needs to feed data into drivers. MBI5041 drives the corresponding LEDs to the brightness specified by image data. With MBI5041, all output channels can be built with 16-bit color depth (65,536 gray scales). Each LED's brightness can be calibrated enough from minimum to maximum brightness with compensated gamma correction or LED deviation information inside the 16-bit image data.