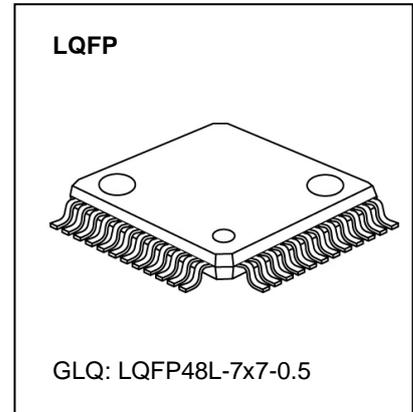


3x8-channel Constant Current LED Driver with Compulsory Open-Circuit Detection

Features

- 24 constant-current output channels
 - Output channels of 3 groups are interleavingly arranged
 - 3 \overline{OE} control each group individually
- Constant output current range per channel: 1~35mA
 - 1~35mA @ 5V supply voltage
 - 1~25mA @ 3.3V supply voltage
 - In 3 different color groups, each group is set by an external resistor
- Excellent output current accuracy,
 - Between different groups from $\overline{OUTA0} \sim \overline{OUTA7}$, $\overline{OUTB0} \sim \overline{OUTB7}$, and $\overline{OUTC0} \sim \overline{OUTC7}$ of channels: $<\pm 2\%$ (typ.), and
 - Between different groups from $\overline{OUTA0} \sim \overline{OUTA7}$, $\overline{OUTB0} \sim \overline{OUTB7}$, and $\overline{OUTC0} \sim \overline{OUTC7}$ of ICs: $<\pm 4\%$ (typ.)
- Fast response of output current
 - Min. output pulse width of \overline{OE} : 70ns
- Compulsory open-circuit detection
 - Open-circuit LEDs can be detected
 - Full panel, data independent
 - Flicker-free error detection with small energy
- Staggered delay of output, preventing from current surge
- 25MHz clock frequency
- Schmitt trigger input



Product Description

MBI5324 is an enhanced 3x8-channel constant current LED sink driver with smart error detection. The output ports are arranged in three groups and each group is set by an external resistor for one color. Users may adjust the output current from 1mA to 35mA with three external resistors R-EXTA, R-EXTB, R-EXTC, which provide users flexibility in controlling the light intensity and white balance of LEDs. The output current of 1mA is designed for small current applications.

Moreover, there are three \overline{OE} controlling each output group individually. It has the same control scheme as MBI5026 to facilitate white balance.

The output channels of 3 groups are interleavingly arranged in $\overline{OUTA0} - \overline{OUTB0} - \overline{OUTC0}$, $\overline{OUTA1} - \overline{OUTB1} - \overline{OUTC1} \dots \overline{OUTA7} - \overline{OUTB7} - \overline{OUTC7}$. The arrangement helps PCB layout easy to design. It's very useful for fine-pitch LED displays, LED mesh displays or LED strips applications.

MBI5324 contains a 24-bit shift register and a 24-bit output latch, which convert serial input data into parallel output format. At MBI5324 output stages, 24 regulated current ports are designed to provide uniform and constant current sinks with small skew between ports for driving LEDs within a wide range of forward voltage (V_F) variations.

MBI5324 guarantees to endure maximum 17V at the output ports. Besides, the high clock frequency with up to 25MHz also satisfies the system requirements for high volume data transmission.

MBI5324 provides compulsory open-circuit detection. With the open-circuit detection, MBI5324 can detect individual LED open-circuit error without extra components. Once the dedicated command is issued, all of the output ports will be turned on with small current. Since the turn-on duration and current are so small, the flicker will not be sensed by human eyes and the image quality will not be impacted. All of the channels are detected no matter the input data is zero or one.

MBI5324 exploits **PrecisionDrive™** technology to enhance the output characteristics. The control method is similar to the conventional 16-channel LED driver IC, e.g. MBI5026 and MBI5039. Users can use the same controller hardware and simply rearrange the RGB data sequence to control MBI5324.

Applications

- Fine-pitch LED video displays
- LED mesh displays
- LED strips