Constant Current LED Driver Detects Dark Pixels In Real Time

Macroblock's MBI5039, aimed at LED panel applications, offers real-time error detection of the full LED panel, helps designers to detect dark pixel errors. This 16-channel constant current LED driver supports constant output current from 3 mA to 90 mA and sustains up to 17V at the output ports. The clock frequency (30 MHz) satisfies the system requirements of high volume data transmission. The MBI5039 includes two error detection functions: “In-Message Error Detection” and “Silent Error Detection”. The “In-Message Error Detection” performs the online detection as data-in and error-out sequentially, helping to identify the LED open and short errors and report the exact position of the broken LED simultaneously. The “Silent Error Detection” features full LED panel detection to detect even dark pixels in real time, and moreover, the “Silent Error Detection” can diagnose the LED at low current (0.1 mA) within short period (500 ns) to avoid flickers or noise on the LED panel. Thermal detection is also an add-in feature in the MBI5039 to protect the system from over-temperature. The MBI5039 also provides a 64-step programmable current gain for LED brightness and uniformity adjustment. For better display uniformity, the driver is said to achieve output current accuracy within 1.5 percent variation between channels and within 3 percent variation between ICs. It also provides fast response of output current with minimum output pulse at 35 ns, which enhances the gray scale and the visual refresh rate of the LED panel.

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