

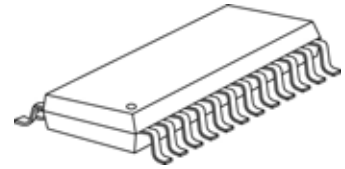


## 16-Channel Constant Current LED Sink Driver with Error Detection and Current Gain

### - Features

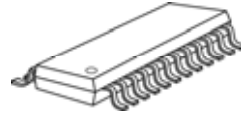
- 16 constant-current output channels  
Constant output current range:
  - 5-90mA @ 5V supply voltage
  - 3-70mA @ 3.3V supply voltage
- In-message error detection
  - Both open-circuit and short-circuit LEDs can be detected
  - On-the-fly error detection
  - Data-in, error-out; both errors are merged and coded with zeros
- Compulsory error detection
  - Full panel, data independent
  - Silent error detection with 0.1mA in 500ns
- Settable threshold voltage for LED short-circuit detection
- Thermal detection
  - Over-temperature report (e.g. temp.>150 °C)
- 64-step programmable current gain: from 12.5% to 200%
- Excellent output current accuracy,
  - Between channels: <math>\pm 1.5\%</math> (typ.), and
  - Between ICs: <math>\pm 3\%</math> (typ.)
- Fast response of output current
  - Min. output pulse width of  $\overline{OE}$ :  
35ns with good uniformity between output channels
- Staggered delay of output, preventing from current surge
- 30MHz clock frequency
- Schmitt trigger input

#### Small Outline Package



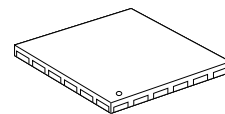
GF: SOP24-300-1.00

#### Shrink SOP



GP: SSOP24L-150-0.64

#### Quad Flat No-Lead



GFN: QFN24-4\*4-0.5

### Product Description

MBI5039 is an enhanced 16-channel constant current LED sink driver with smart error detection and output current gain. MBI5039 succeeds MBI5026 and also exploits **PrecisionDrive™** technology to enhance the output characteristics. Furthermore, MBI5039 adopts **Share-I-O™** technology to be backward compatible with MBI5026, MBI5027 and MBI5029 in pin definition and to extend the functionality for LED's in-message error detection, compulsory error detection, and current gain control in LED display systems.

MBI5039 contains a 16-bit shift register and a 16-bit output latch, which convert serial input data into

parallel output format. At MBI5039 output stages, sixteen 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. Users may adjust the output current from 5mA to 90mA with an external resistor  $R_{ext}$ , which provides users flexibility in controlling the light intensity of LEDs. MBI5039 guarantees to endure maximum 17V at the output ports. Besides, the high clock frequency, up to 30MHz, also satisfies the system requirements of high volume data transmission.