



MSL6080 Series

8-String R, G, B LED Drivers
with E2PROM, I2C Interface,
Adaptive Power Control and
Integrated Power Sources



Features:

- Supports adaptive 2-D Dimming for advanced LCD TVs and PC monitors
- Drives 8 parallel High-Power LED strings and up to 15 LED's per string
- FLEXISTRING™ technology to assign any string to any color LED
- Up to 100mA LED string current with Internal N-Channel MOSFETs
- Video frame rate synchronization and multiplier helps eliminate motion blur and save power during blanking periods
- Programmable phase delays improve contrast ratio
- $\pm 1\%$ current accuracy and current balance
- Individual LED String brightness and phase control
- Adaptive SourcePower™ correction for adjusting DC-DC output voltage
- Open-circuit and short-circuit fault condition detection.
- Supports area dimming for highest dynamic range LCD TV
- FastMode-Plus I²C/SMBUs interface with up to 16 user programmable addresses.
- PWM phasing and in-rush current control to reduce EMI
- Field programmable Non-Volatile registers for customization and aging compensation
- User programmable temperature control of LED current.
- Sleep mode

Ordering Information:

PART #	LED Channel Current	Pin / Package	Temp Range
MSL6080LA	50mA	7X7 mm ² LGA	-40°C to 85°C
MSL6080LB	100mA	7X7 mm ² LGA	-40°C to 85°C

Contact mSilica for other channel current options.

Description:

The MSL6080 are 8-parallel string high-power LED drivers. The MSL6080 uses a 1MHz I²C compatible serial interface for brightness control and fault monitoring. Each channel has a $\pm 1\%$ (max) accurate constant control current sink capable of driving up to 100mA current.

The MSL6080 has 3 DC/DC converter control outputs allowing one MSL6080 to control 3 separate power sources driving 3 color LED strings.

Each channel can be used for any color LED. The LED current can be modulated for each LED string using an 8-bit individual PWM control. Additionally, a 6-bit Global Brightness control through register setting or PWM pin allows finer control of brightness. 6-bit DAC on each channel allow 64-step analog control of the output current.

The MSL6080 provides signals to adaptively control DC-DC converters that provide input power to LED strings. Adaptive SourcePower™ control provides optimum voltage headroom minimizing power losses. In LCD TV and TFT monitor panels, MSL6080 allows synchronization to video signals using a DLL multiplier to control brightness at a frequency multiple of the video refresh rate. This also allows the backlight to be off during the video blanking period saving power and reducing heat. Phasing circuitry phase shifts PWM on-times to reduce transient loads on the LED power source improving efficiency and visual quality.

The MSL6080 features fault monitoring of open string, short-circuit and overtemperature conditions through the I²C/SMBus. MSL6080 supports both individual device I²C read/write and broadcast write commands. The serial interface uses two pins to select 16 addresses allowing multiple MSL6080s to operate on the same serial interface.

The MSL6080 includes non-volatile memory to maintain settings even when turned-off allowing it to begin full operation within 5ms of turn-on. This also provides for LED aging correction.

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Typical Circuit:

