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# 14 Programmable Gamma Reference Buffers with 4 Static References for TFT-LCD Displays

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#### **General Description**

The MAX9590 provides 14 programmable voltage references and 4 static voltage references for gamma correction in TFT-LCD displays. Two register banks are provided to store two sets of gamma reference values. Gamma values are programmed into the banks through the  $I^2C^*$  interface and the outputs can switch between values in 0.5µs.

The 14 programmable reference voltages are divided evenly into seven upper and seven lower voltages for the upper and lower gamma curves of LCD column drivers.

Each gamma reference voltage has an 8-bit DAC and isolation buffer associated with it to ensure stable operation. Therefore, the reference voltages remain stable without synchronizing to the LCD horizontal timing. In addition, each buffer is able to provide a high current that further ensures a stable voltage when critical levels and patterns are displayed.

The 14 programmable buffers wake-up in high-impedance state until the registers are programmed. This protects the LCD system from high transient currents during the startup phase.

The MAX9590 is available in a 38-pin TQFN package and is specified for operation over the -40°C to  $+85^{\circ}$ C temperature range.

**Applications** 

TFT-LCD Displays Industrial Reference Voltage Generators

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PART	TEMP RANGE	PIN-PACKAGE	PKG CODE
MAX9590ETU+	-40°C to +85°C	38 TQFN (5mm x 7mm)	T3857-1

+Denotes lead-free package.

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**Features** S tion Jes

Independent DACs with 8-Bit Resolution

 Two Register Banks for Two Sets of Gamma Values

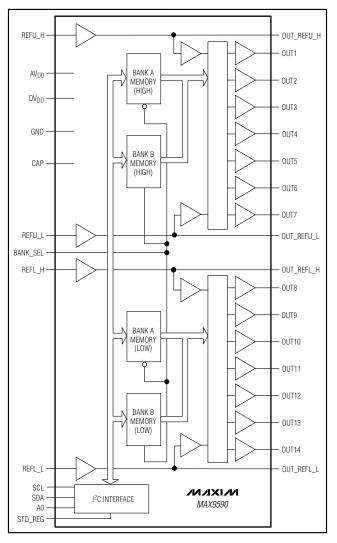
14 Programmable Reference Voltages

- Fast Switching between Gamma Values
- 16.5V (max) Operating Voltage

4 Static Reference Voltages

- Output Swing within 150mV of Rails
- Peak Current Greater than 200mA
- Output Channels Tri-Stated During Wake-Up

## **Block Diagram**



For pricing, delivery, and ordering information, please contact Maxim/Dallas Direct! at 1-888-629-4642, or visit Maxim's website at www.maxim-ic.com.