XX-XXXX; Rev 0; 4/06

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

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 I²C* 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°C temperature range.

Applications

TFT-LCD Displays

Industrial Reference Voltage Generators

Ordering Information

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

+Denotes lead-free package.

**Purchase of I²C components from Maxim Integrated Products, Inc. or one of its sublicensed Associated Companies, conveys a license under the Philips I²C Patent Rights to use these components in an I²C system, provided that the system conforms to the I²C Standard Specification as defined by Philips.*

Features

- **14 Programmable Reference Voltages**
- **4 Static Reference Voltages**
- **Independent DACs with 8-Bit Resolution**
- **Two Register Banks for Two Sets of Gamma Values**
- **Fast Switching between Gamma Values**
- **16.5V (max) Operating Voltage**
- **Output Swing within 150mV of Rails**
- **Peak Current Greater than 200mA**
- **Output Channels Tri-Stated During Wake-Up**

Block Diagram