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MAX6954

4-Wire Interfaced, 2.7V to 5.5V LED Display Driver with I/O Expander and Key Scan



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Overview

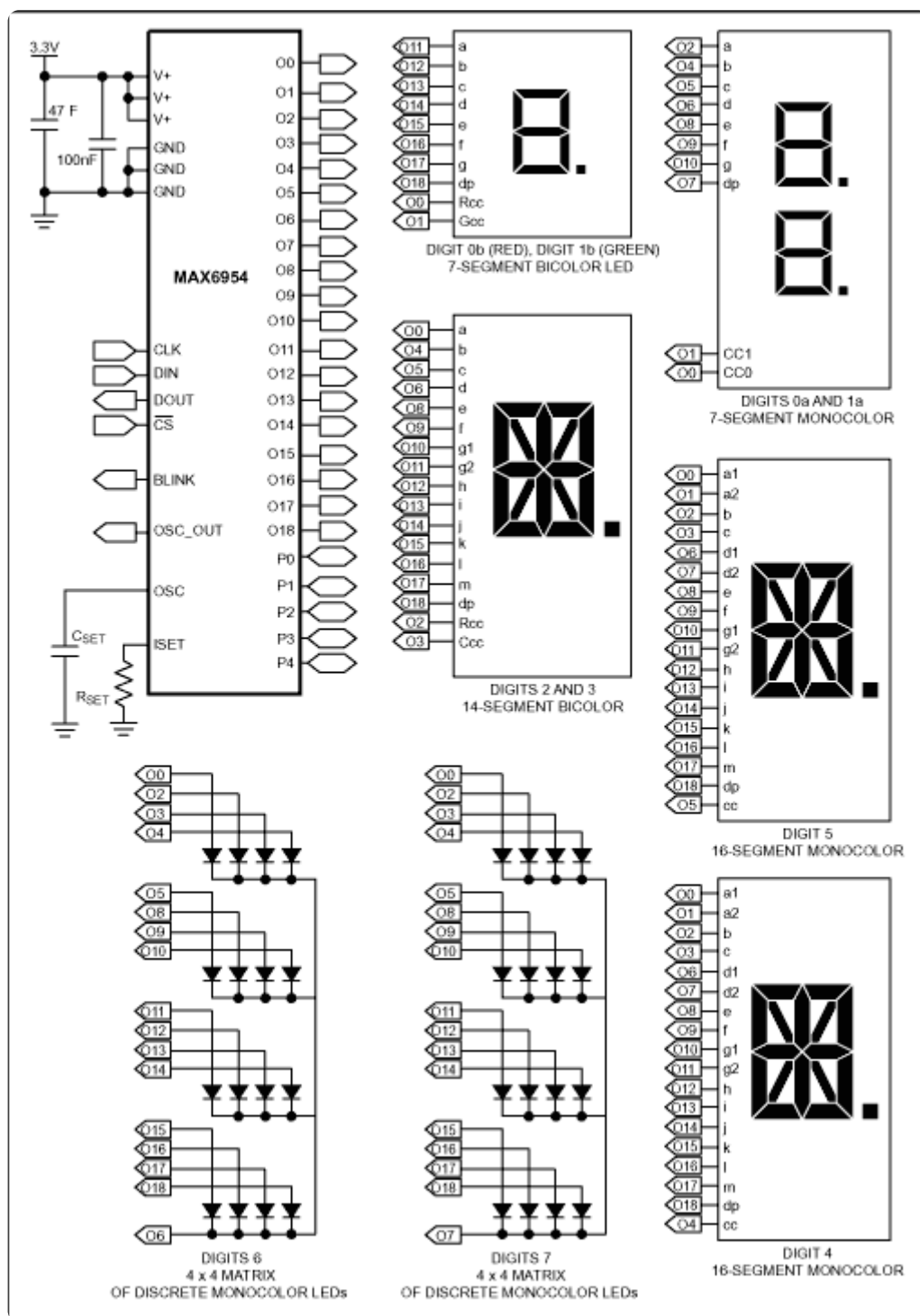
Description

The MAX6954 is a compact display driver that interfaces microprocessors to a mix of 7-segment, 14-segment, and 16-segment LED displays through an SPI- or QSPI-compatible 4-wire serial interface. The serial interface may be cascaded through multiple devices. The MAX6954 drives up to 16 digits 7-segment, 8 digits 14-segment, 8 digits 16-segment, or 128 discrete LEDs, while functioning from a supply voltage as low as 2.7V. The driver includes five I/O expander (or GPIO) lines, some or all of which may be configured as a key-switch reader, which automatically scans and debounces a matrix of up to 32 switches.

Included on chip are full 14- and 16-segment ASCII 104-character fonts, a hexadecimal font for 7-segment displays, multiplex scan circuitry, anode and cathode drivers, and static RAM that stores each digit. The maximum segment current for the display digits is set using a single external resistor. Digit intensity can be independently adjusted using the 16-step internal digital brightness control. The MAX6954 includes a low-power shutdown mode, a scan-limit register that allows the user to display from 1 to 16 digits, segment blinking (synchronized across multiple drivers, if desired), and a test mode, which forces all LEDs on. The LED drivers are slew-rate limited to reduce EMI.

For a 2-wire interfaced version, refer to the MAX6955 data sheet. An evaluation kit (EV kit) for the MAX6955 is available.

MAX6954: Typical Operating Circuit



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Key Features

- High-Speed 26MHz SPI/QSPI/MICROWIRE®-Compatible Serial Interface
- 2.7V to 5.5V Operation
- Drives Up to 16 Digits 7-Segment, 8 Digits 14-Segment, 8 Digits 16-Segment, 128 Discrete LEDs, or a Combination of Digit Types

- Drives Common-Cathode Monocolor and Bicolor LED Displays
- Built-In ASCII 104-Character Font for 14-Segment and 16-Segment Digits and Hexadecimal Font for 7-Segment Digits
- Automatic Blinking Control for each Segment
- 10µA (typ) Low-Power Shutdown (Data Retained)
- 16-Step Digit-by-Digit Digital Brightness Control
- Display Blanked on Power-Up
- Slew-Rate Limited Segment Drivers for Lower EMI
- Five GPIO Port Pins Can Be Configured as Key-Switch Reader to Scan and Debounce Up to 32 Switches with n-Key Rollover
- IRQ Output when a Key Input Is Debounced
- 36-Pin SSOP and 40-Pin DIP and TQFN Packages
- Automotive Temperature Range Standard

Applications/Uses

- Audio/Video Equipment
- Bar Graph Displays
- Panel Meters
- Set-Top Boxes
- White Goods

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