

UC1611

*Single-Chip, Ultra-Low Power
160COM x 240SEG Matrix
Passive LCD Controller-Driver*

INTRODUCTION

UC1611 is an advanced high-voltage mixed-signal CMOS IC, especially designed for the display needs of ultra-low power hand-held devices.

This chip employs UltraChip's unique DCC (Direct Capacitor Coupling) driver architecture to achieve near crosstalk free images, with well balanced gray shades.

In addition to low power SEG and COM drivers, UC1611 contains all necessary circuits for high-V LCD power supply, bias voltage generation, timing generation, and graphics data memory.

Advanced circuit design techniques are employed to minimize external component counts and reduce connector size while achieving extremely low power consumption.

MAIN APPLICATIONS

- Cellular Phones, Smart Phones, PDA, and other battery-operated palmtop devices and/or portable instruments.

FEATURE HIGHLIGHTS

- Single-chip controller-driver supports 160x240 STN LCD, 16-shade-per-pixel with gamma compensated modulation, and hardware dither support for 64-shade image display.
- Soft-ICON: Partial scroll function to support programmable graphics ICON or scroll bar.
- Support both row ordered and column ordered display buffer RAM access
- Support industry standard parallel interface (8080 or 6800) in 8-bit and 4-bit mode.
- Support industry standard 3-wire SPI and 4-wire SPI serial interface.
- Special driver structure and gray shade modulation scheme produce near crosstalk free image, with low power consumption for all display patterns.
- Support the 80-80-80 partial display function on the SEG driver.
- Fully programmable Mux Rate, partial display window, Bias Ratio, and Line Rate allow many flexible power management options.
- Four software programmable frame rates (125Hz, 150Hz, 175Hz, 200Hz). Support the use of fast Liquid Crystal material for speedy LCD response.
- 4 software-programmable temperature compensation coefficients.
- On-chip Power-ON Reset and Software RESET command make RST pin optional.
- Self-configuring 10x charge pump with on-chip pumping capacitor requires only 5 external capacitors to operate.
- Flexible data addressing/mapping schemes to support wide ranges of software models and LCD layout placements.
- V_{DD} (digital) range: 2.5V ~ 3.3V
 V_{DD} (analog) range: 2.5V ~ 3.3V
LCD V_{OP} range: 6.5V ~ 16.5V
- Available in gold bump dies
Bump pitch: 50 μ M min.
Bump gap: 18 μ M min.

BLOCK DIAGRAM

