UC1602(i)

Single-Chip, Ultra-Low Power

65COM x 102SEG
Passive Matrix LCD Controller-Driver

INTRODUCTION

UC1602(i) 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.

In addition to low power COM and SEG drivers, UC1602(i) contain 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.
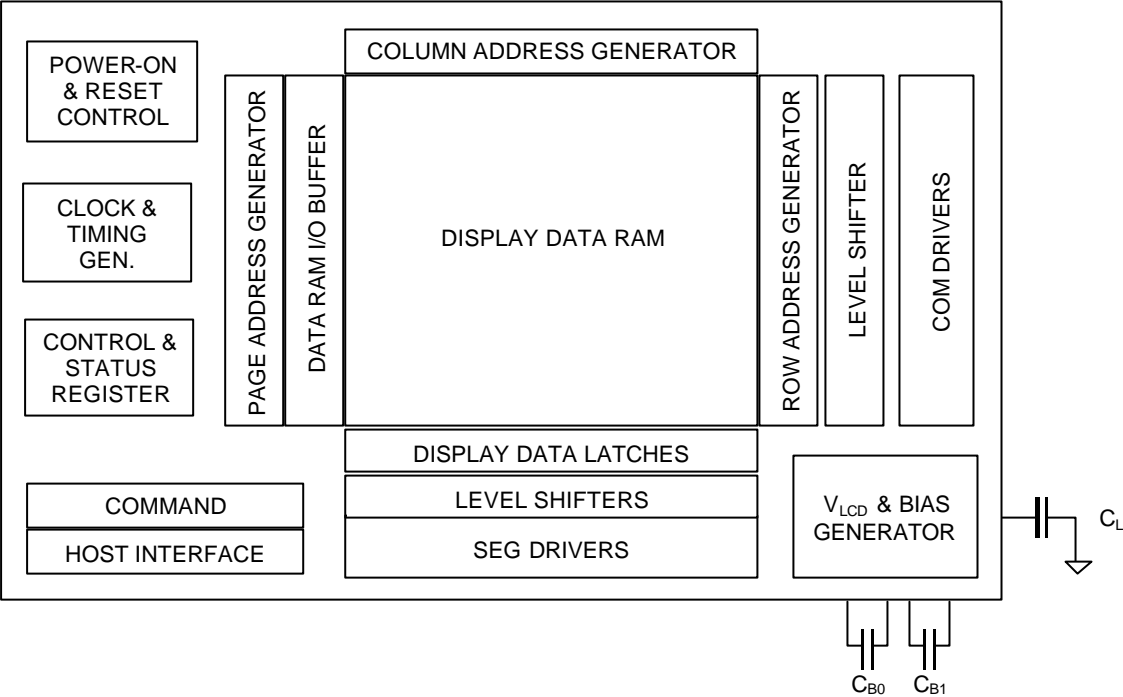
MAIN APPLICATIONS

- Cellular Phones, Smart Phones, and other battery operated devices and/or portable Instruments

FEATURE HIGHLIGHTS

- Single chip controller-driver supports 65 COM x 102 SEG LCD.

- Support industry standard 8-bit parallel interface (8080 or 6800), 4-wire SPI (S8), and 2-wire I^2C serial interface.

- Two multiplexing rates (49, 65).

- Self-configuring 6x charge pump with on-chip pumping capacitor requires only 3 external capacitors to operate.

- Flexible data addressing/mapping schemes to support wide ranges of software models and LCD layout placements.

- Software programmable 4 temperature compensation coefficients.

- On-chip bypass capacitor for V_{LCD} makes V_{LCD} bypass capacitor optional for small LCD panels.

- On-chip Power-ON Reset and Software RESET commands, make RST pin optional.

- V_{DD} (digital) range: 2.4V ~ 3.3V
  V_{DD} (analog) range: 2.4V ~ 3.3V
  LCD V_{OP} range: 4.5V ~ 10.5V

- Available in gold bump dies
  Bump pitch: 55μM min.
  Bump gap: 20μM min.

BLOCK DIAGRAM

		COLUMN ADDRESS GENERATOR			
POWER-ON & RESET CONTROL	PAGE ADDRESS GENERATOR	DATA RAM I/O BUFFER	DISPLAY DATA RAM	ROW ADDRESS GENERATOR	LEVEL SHIFTER	COM DRIVERS

POWER-ON
& RESET
CONTROL

CLOCK &
TIMING
GEN.

CONTROL &
STATUS
REGISTER

PAGE ADDRESS GENERATOR

DATA RAM I/O BUFFER

COLUMN ADDRESS GENERATOR

DISPLAY DATA RAM

ROW ADDRESS GENERATOR

LEVEL SHIFTER

COM DRIVERS

DISPLAY DATA LATCHES

LEVEL SHIFTERS

SEG DRIVERS

COMMAND

HOST INTERFACE

V_{LCD} & BIAS
GENERATOR

C_L

C_{B0} C_{B1}

1602 v1.3D