STV8115

132 RGB x 162 single chip true 262K color OLED controller/driver

Data Brief

Features

- 132RGB x 162 display matrix
- 200µA max column current
- 100mA max row current
- On-chip DC/DC step-up converter supplied from a 2.3 to 6V battery
- Low power optimization:
  - automatic precharge voltage
  - Vrowoff optimization voltage
  - Vpp self adjustment
- 262Kcolor mode among 16 Million color Palette (24-bit look-up table for gamma settings)
- Dual partial display modes
- Vertical scrolling
- Programmable number of lines
- Programmable frame rate, 165Hz max.
- Selectable input interfaces (read and write), operating voltage compatible with 1.8V as well as 3.3V signals:
  - 68000 and 8080 parallel interfaces
  - 3-wire and 4-wire SPI interfaces
  - 3-wire, 9-bit serial interface
- Fully integrated oscillator requires no external components
- 7-bit RGB brightness control
- 5-bit luminance control
- Low voltage digital supply range: 1.65 to 1.95V
- Low-voltage analog supply range: 2.3 to 3.6V
- 3.3V single supply with on-chip 1.8V LDO
- High-voltage display supply range: 5 to 22V
- One Time Programmable (OTP) non-volatile embedded memory
- Delivered in bumped die for chip-on-glass (COG) or chip-on-foil (COF).

Description

The STV8115 is a low-power CMOS controller/driver “combo” IC for passive, small screen, OLED displays.The STV8115 features extremely low current consumption.

Designed to drive displays of up to 162 rows by 396 (132 RGB) columns with 262K colors, the STV8115 provides all necessary functions in a single chip, including an on-chip DC/DC step-up converter resulting in a minimum of external components.

Note. For small screen, OLED display applications of up to 132 rows by 486 (162 RGB) columns, see the datasheet for the STV8116.

The STV8115 provides automatic precharge and Vrowoff voltages as well as self adjustment of Vpp. Global power management is automatically adjusted to changes in brightness levels, aging of the display and temperature. Embedded OTP memory allows various adjustments and storages such as white balance, gamma table and frame frequency. These features contribute to enhanced picture quality, low power dissipation, improved robustness and reduced manufacturing cost.

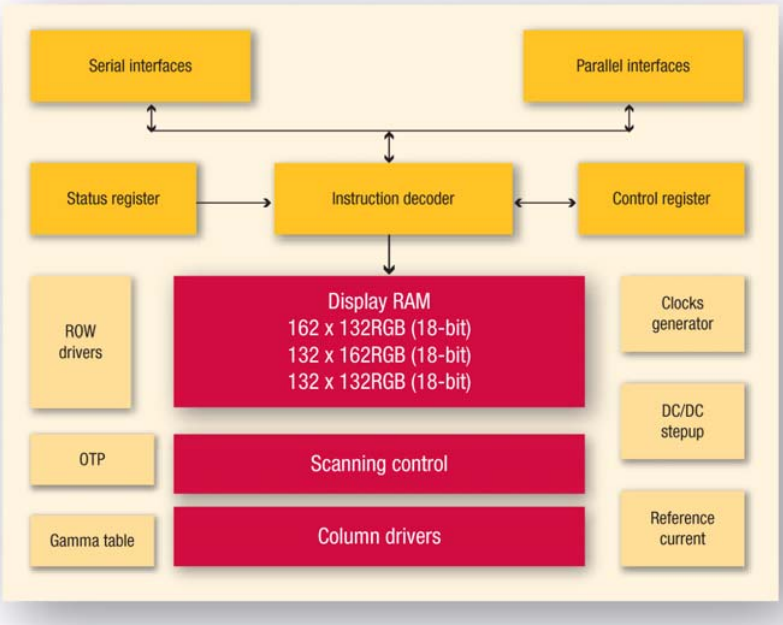
A complete set of digital functions reduces host microcontroller overhead to manage complex display configurations and fast moving image data transfers to the display RAM of the STV8115.

STV8115 features five standard I/O interfaces (3-wire serial, 3-wire SPI, 4-wire SPI, 68000 parallel and 8080 parallel) for easy interfacing with the host microcontroller.

Table 1. Key features and benefits

Features	Benefits
Fully automatic precharge system	Precise pixel voltage settings with any brightness current value and with any change of OLED pixel physical characteristics due to aging or temperature. Improved power consumption. Improved image quality. Improved OLED pixel reliability.
Gray scale by pulse width modulation 262Kcolors selected among 16M colors.	Enables Gamma correction and guarantees finer picture quality
On-chip DC/DC converter On-chip oscillator	Reduced number of system components
Embedded OTP memory	Allows parameters setting for calibration at module maker
Interface operating voltage @ 1.8V	Direct interface with system host: - reduced number of system components - optimization for next generation of handsets

Figure 1. Functional block diagram



Revision history

Table 2. Document revision history

Date	Revision	Changes
09-Jan-2007	1	Initial release.

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