



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

Data Brief

Features

- 162x132 display matrix
- 200 μ A 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 2M 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: 2.2 to 3.6V
- 3.3V single supply with on-chip 1.8V LDO
- High-voltage display supply range: 4.5 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 STV8116 is a low-power CMOS controller/driver “combo” IC for passive OLED displays featuring extremely low current consumption.

Designed to drive displays of up to 132 rows by 162 columns with 262K colors, the STV8116 provides all necessary functions in a single chip, including an on-chip DC/DC step-up converter resulting in a minimum of externals components.

This IC provides automatic precharge and Vrowoff voltages as well as self adjustment of the Vpp voltage. 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.

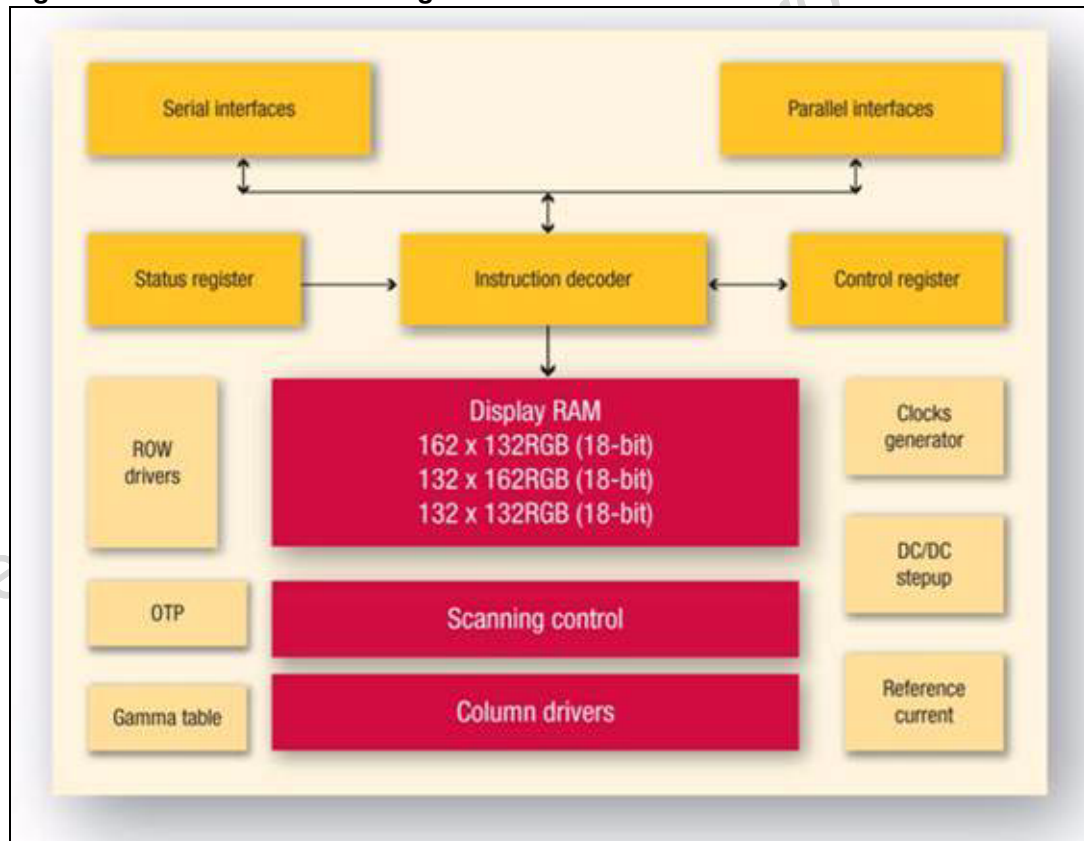
A complete set of digital functions reduces host microcontroller overhead to manage complex display configurations and fast moving image data transfers to the display RAM of the STV8116.

STV8116 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
18-Dec-2006	1	Initial release.

Obsolete Product(s) - Obsolete Product(s)

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2006 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com