

A SAMSUNG DISPLAY COMPANY

## SXGA096 OLED-XL™ Microdisplay

### SXGA096 OLED-XL MICRODISPLAY CAPABILITIES

The SXGA096 OLED-XL is the latest addition to eMagin's family of digital interface microdisplays. Built upon on a single crystal silicon backplane the SXGA096 microdisplay features eMagin's proprietary thin-film OLED XL™ technology offering extended luminance performance and life.

Designed specifically for near-to-eye applications demanding high image quality, compact size, and very low power, the SXGA096 OLED-XL active matrix microdisplay delivers crisp, high-contrast imagery via eMagin's True Black™ pixel technology. This voltage drive pixel technology provides contrast of 10,000:1 across the full operating temperature range of the microdisplay (-45°C to +65°C). eMagin's pulse-width-modulation (PWM) function can be combined with the standard analog control to provide an extended dimming range. The PWM function also enables an impulse drive mode of operation that significantly reduces motion artifacts in high-speed scene changes.

Combining a total of 4,015,536 dots the active array of the SXGA096 is comprised of 1292 x 1036 square pixels with a 9.6-micron pitch including an extra 12 columns and 12 rows (beyond the 1280 x 1024 main array) for optical alignment of the display, or extended image area.

The SXGA096 OLED-XL is an excellent choice for head-mounted displays (HMDs) or other applications that require cabling from a remote drive source as it is driven by a very low-power, low-voltage-differential-signaling (LVDS) serialized video interface that minimizes the number of board interconnections and connector size, reduces electromagnetic emissions, and is compatible with standard LVDS drivers found in most commercially available FPGAs.



**eMagin Corporation**  
700 South Drive, Suite #201  
Hopewell Junction, NY 12533  
Tel 845.838.7900  
[sales@emagin.com](mailto:sales@emagin.com)  
[www.emagin.com](http://www.emagin.com)

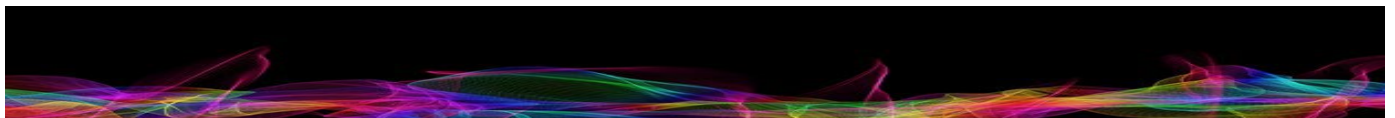


### SXGA096 OLED-XL MICRODISPLAY ADVANTAGES

- Compact 9.6 micron design
- High-contrast with very low power requirement
- Low-power LVDS Input
- Instant on at low temperatures; no heaters required
- Integrated temperature sensor
- No clearing at high temperature
- High commercial/military ruggedness
- No back light or liquid materials required

### APPLICATIONS

- Situational awareness
- Personal display systems
- Night vision/thermal imaging
- Command and control
- Field maintenance and repair
- Instrumentation and test equipment
- Mobile computing systems
- Augmented reality



## GENERAL OPERATING CHARACTERISTICS

### FORMAT

- 1280 (x 3) x 1024
- Total pixel array 1192 (x3) x 1036

### PIXEL PITCH & ASPECT RATIO

- 9.6  $\mu\text{m}$  square

### COLOR PIXEL ARRANGEMENT

- R,G,B vertical stripe

### VIEWING AREA

- 12.4 x 9.945 mm (0.62" diagonal)
- Electronic image centering (1 to 12 pixels H and V)

### DISPLAY ASPECT RATIO

- 5:4

### MECHANICAL ENVELOPE

- 20.0 x 16.5 x 5.0 mm (w x l x h)

### COLOR GAMUT

- >75% of NTSC gamut
- Up to 256 gray levels

### UNIFORMITY

- >85% End to end
- >95% Pixel to pixel uniformity

### CONTRAST RATIO

- >10,000:1(Across full temperature range)
- Dimming ratio (combinable multiplier up to 50,000:1)
  - Analog mode >500:1
  - PWM mode >200:1

### LUMINANCE MAXIMUM

- Color XL 400 cd/m<sup>2</sup>
- Color XLS 800 cd/m<sup>2</sup>
- Monochrome White 1,800 cd/m<sup>2</sup>

- Monochrome Green 20,000 cd/m<sup>2</sup>

### TEMPERATURE

- Operating: -45°C to >+65°C
- Storage: -55°C to +90°C

### HUMIDITY

- 85% RH non-condensing

### VIDEO INPUTS

#### R, G, B INPUTS

- Serialized LVDS (24/48 bit digital RGB) (8 twisted line pairs including clock pair)

#### VIDEO FORMATS

- SXGA, 720P, DSVGA, 8-bit control of active window
- Frame or Field sequential stereovision

#### VIDEO SIGNAL BANDWIDTH

- 50 MHz maximum

#### CONTROL & SERIAL INTERFACE

- I<sup>2</sup>C Serial Interface

#### FRAME RATE

- 30Hz to 120 Hz

### POWER INTERFACE

#### POWER SUPPLY (V<sub>DD</sub>)

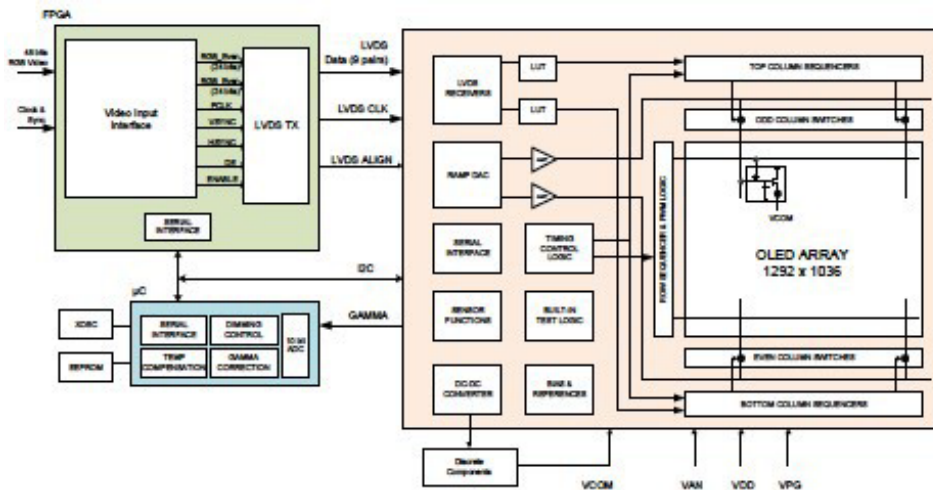
- 2.5 Vdc (logic), 5Vdc analog/display

#### TOTAL POWER DISSIPATION

- <250 mW typical (full color display)

\* Data represent performance at 20°C for standard commercial and industrial pricing. Characteristics will vary with temperature requirements. Low-cost commercial or consumer operating specifications may vary.

## BLOCK DIAGRAM



eMagin Corporation is a registered trademark of eMagin Corporation. All other products mentioned herein are trademarks of their respective owners and are hereby recognized as such. eMagin Corporation reserves the right to change products and specifications without prior notice. This information does not convey any license by any implication or otherwise under any patents or other rights. Application circuits shown, if any, are typical examples illustrating the operation of the devices. This information is subject to change without notice. ©2023, eMagin Corporation, Hopewell Junction, NY. All rights reserved.