



SXGA096 OLED-XLE™ Microdisplay

MICRODISPLAY CAPABILITIES

The SXGA096 OLED-XLE is a more compact 1280 x 1024 microdisplay than the SXGA120 series, leveraging eMagin Corporation's 9.6 micron pitch pixel design. 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-XLE 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 OLED-XLE is comprised of 1292 x 1036 square pixels with a 9.6-micron pitch including and 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-XLE 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.



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SXGA096 OLED-XL MICRODISPLAY ADVANTAGES

- Compact 9.6 micron design
- High-contrast with very low power requirement
- Low-power LVDS Input
- Dynamic gamma correction support
- Integrated temperature sensor
- Wide operating temperature range
- 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 ASPECT RATIO & PITCH

- 9.6 μm 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 XLE 1500 cd/m²
- Monochrome White XLE 4,000 cd/m²

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

- I²C Serial Interface

FRAME RATE

- 30Hz to 85Hz

POWER INTERFACE

POWER SUPPLY (V_{DD})

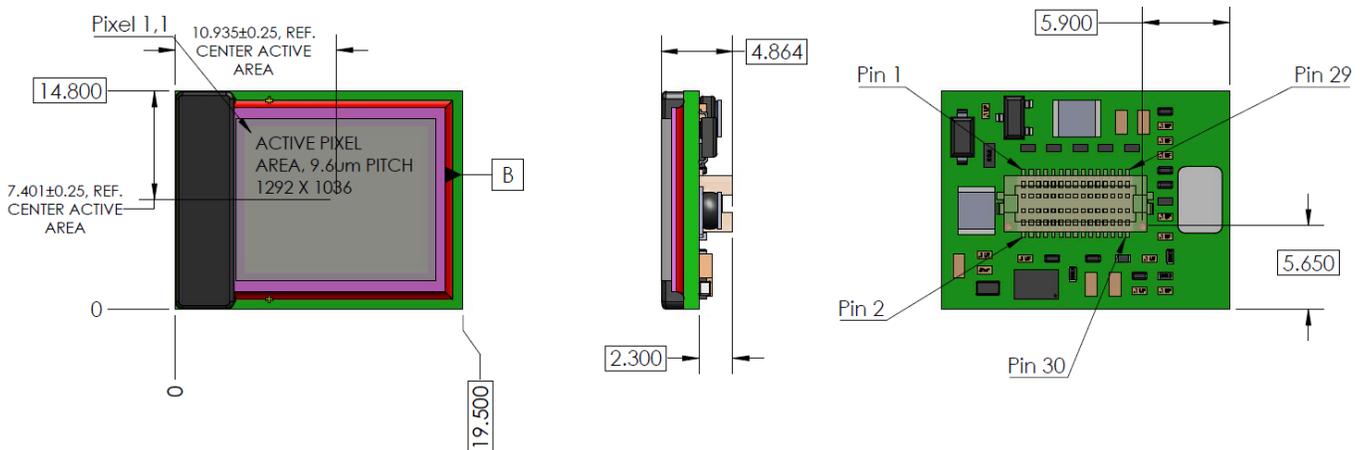
- 2.5 Vdc (logic), 5Vdc analog/display

TOTAL POWER DISSIPATION

- <300 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.

ASSEMBLY DIAGRAM



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