▲eMagin   **SXGA120 OLED-XL(™) Microdisplay**

SXGA120 OLED-XL MICRODISPLAY

The SXGA120 OLED-XL active matrix microdisplay; the best combination of high resolution and low power requirement available in any technology. The SXGA OLED-XL microdisplay offers digital signal processing in an extremely compact package (0.77 inch diagonal active area) requiring less than 200mW under typical operation.

The SXGA120 OLED-XL microdisplay provides versatility and flexibility for OEM developers though an FPGA driver design available on a separate, lower power driver board, or as source code for integration into end product electronics for maximum power efficiency. The supported video formats are SXGA, 720p, DVGA (through 1280 x 960 pixel doubling), and both frame sequential and field sequential stereovision. Additional enhancements include increased pixel uniformity, improved color gamut, on-chip temperature sensor and compensation for luminance and gamma correction, and 30-bit digital RGB input.

The 1280 x 1024 triad pixel array comprises triads of vertical sub-pixels stacked side by side to make up each 12 x 12µm color pixel. The various display modes and timing options are selected by means of registers that are programmed through the serial port or controlled through the FPGA. On-board circuitry ensures consistent color and brightness over a wide range of operating temperatures.

Additional flexibility is provided for electronic image centering and preventing fixed-pattern burn-in with the ability to adjust the full image positioning by up to 12 pixels both horizontally and vertically.

Proven in military, commercial, and consumer systems, eMagin's portfolio of OLED microdisplays deliver high-resolution, flicker-free virtual images, working effectively even in extreme temperatures and high-vibration conditions that stymie legacy technologies.

SXGA120 OLED-XL MICRODISPLAY ADVANTAGES

- Compact, lightweight, emissive display system
- High-resolution with very low power requirement
- Improved pixel uniformity
- 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

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GENERAL OPERATING CHARACTERISTICS

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

PIXEL PITCH & ASPECT RATIO
- 12 μm square

COLOR PIXEL ARRANGEMENT
- R,G,B vertical stripe

VIEWING AREA
- 15.36 x 12.29 mm (0.77" diagonal)
- Electronic image centering (1 to 12 pixels H and V)

DISPLAY ASPECT RATIO
- 5:4

MECHANICAL ENVELOPE
- 22.9 x 16.4 x 4.79 mm (w x l x h)

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

UNIFORMITY
- >90% 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/m2
- Monochrome Green XLT 15,000 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
- RGB 30-bit digital

  VIDEO FORMATS

- SXGA, 720P, DSVGA, (Pixel doubling)
- Frame or Field sequential stereovision

VIDEO SIGNAL BANDWIDTH
- 135 MHz maximum

CONTROL & SERIAL INTERFACE
- I^{2}C Serial Interface

FRAME RATE
- 30Hz to 120 Hz

POWER INTERFACE
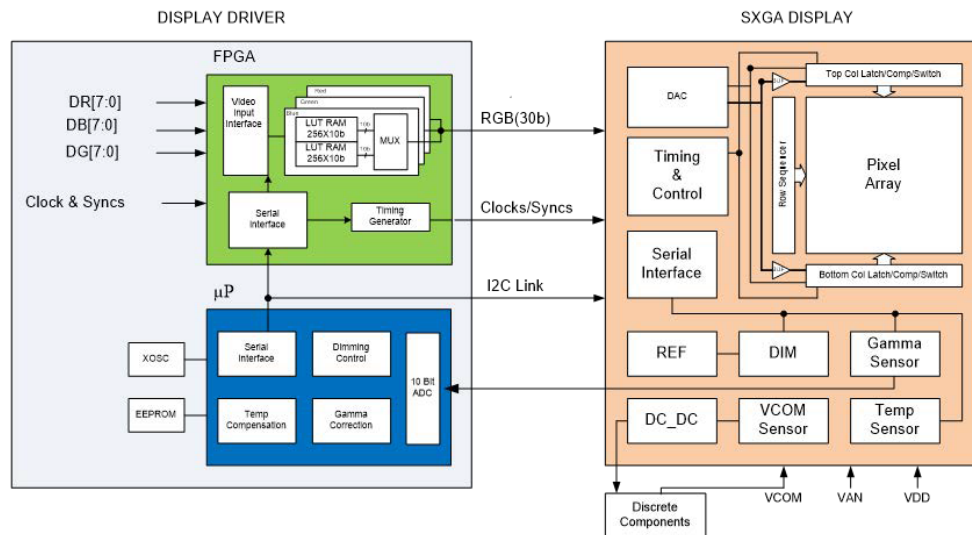
POWER SUPPLY (V$_{DD}$)
- 2.5 Vdc (logic),5Vdc analog/display

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