DSVGA OLED-XL(™) Microdisplay

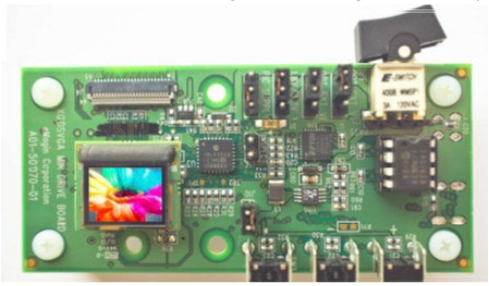
DSVGA OLED-XL MICRODISPLAY CAPABILITIES

The DSVGA OLED-XL is the latest addition to eMagin's family of digital interface microdisplays. Built upon on a single crystal silicon backplane the DSVGAOLED-XL 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 DSVGA 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 1,542,528 dots the active array of the DSVGA is comprised of 824 x 634 square pixels with a 15-micron pitch including and extra 24 columns and 24 rows (beyond the 800 x 600 main array) for optical alignment of the display, or extended image area.

With a typical power requirement of about 70mW (Monochrome) and less than 120mW full (Color), the DSVGA OLED-XL is twice as efficient at eMagin's long successful SVGA+ OLED-XL, and is an excellent choice for near-to-eye, battery operated devices (including data glasses and other augmented vision systems when combined with eMagin's new high-efficiency/high-luminance OLED



DSVGA shown with Interface & Development Kit (IRDK) mini-board.

DSVGA OLED-XL MICRODISPLAY ADVANTAGES

- Compact 15-micron pixel design
- High-contrast with very low power requirement (~70mW monochrome)
- 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

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

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GENERAL OPERATING CHARACTERISTICS

FORMAT
- 800 (x 3) x 600
- Total pixel array 824 (x 3) x 624

PIXEL PITCH & ASPECT RATIO
- 15 µm square

COLOR PIXEL ARRANGEMENT
- R,G,B vertical stripe

VIEWING AREA
- 12 x 9 mm (0.59” diagonal)
- Electronic image centering (1 to 12 pixels H and V)

DISPLAY ASPECT RATIO
- 4:3

MECHANICAL ENVELOPE
- 18.0 x 16.0 x 5.01 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 White 1,800 cd/m2
- Monochrome Green 20,000 cd/m2

TEMPERATURE
- Operating: -46°C to >+70°C
- Storage: -55°C to +90°C

HUMIDITY
- 85% RH non-condensing

VIDEO INPUTS

R, G, B INPUTS
- 24 bit digital RGB 1.8V COMS
- BT-656

VIDEO FORMATS
- SVGA (or any window up to full array)
- Stereovision compatible

VIDEO SIGNAL BANDWIDTH
- 65 MHz maximum

CONTROL & SERIAL INTERFACE
- I^2C Serial Interface

FRAME RATE
- 30Hz to 120 Hz

POWER INTERFACE

POWER SUPPLY (V_{DD})
- 1.8 Vdc (logic),5Vdc analog/display

TOTAL POWER DISSIPATION
- <120 mW typical (full color display)
- <70 mW typical (monochrome 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