



SVGA+ OLED MICRODISPLAY

SVGA+ CAPABILITIES

Proven in combat and first-responder systems, eMagin's SVGA+ OLED (organic light-emitting diode) microdisplays deliver high-resolution, flicker-free images for near-eye applications – even under adverse conditions. It comes on instantly, even at -40°C. eMagin builds its OLED displays on silicon chips with internal video control electronics, eliminating the need for additional circuit boards. And because it is a solid-state, emissive display, the SVGA+ offers low-power operation that extends system battery life.



An active matrix device, it is ideal for use in computer display systems, entertainment headsets, and training simulators. They are used extensively in commercial, military, and industrial markets.

The SVGA+ is easy to integrate into system designs, providing a completely integrated analog interface. The microdisplay's integrated circuit accepts dc-coupled R,G,B inputs with separate external vertical and horizontal synchronization inputs. A fourth analog input is available for NTSC- and PAL-compatible composite monochrome for easy use in camera and sight applications. The microdisplay also includes an on-chip PLL (phase-locked loop) for pixel clock recovery, ensuring clear, crisp images.

Designers can easily select video modes by way of a register set accessible through the on-chip serial interface. The I²C serial interface also provides for easy user adjustments such as contrast, brightness, PLL parameters, and display orientation.



The eMagin SVGA+ OLED Microdisplay delivers 852 (x 3) x 600 pixels and up to 16.7 million colors (or monochrome green, yellow, or white) in a 0.61-inch display.

OLED ADVANTAGES

- Unsurpassed power efficiency for near-eye applications (no added circuit boards required)
- Compact, lightweight, emissive display system (no backlight required)
- Wide operating temperature range
- Easy integration
- Full color and monochrome options
- Long life

APPLICATIONS

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



SVGA+ Product Family

- Color – >16.7 million colors
- Monochrome – white, green, yellow, and custom

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GENERAL OPERATING CHARACTERISTICS

FORMAT

- 852 (x 3) x 600 pixels

PIXEL ASPECT RATIO & PITCH

- Square
- 15 μ m

COLOR PIXEL ARRANGEMENT

- R,G,B vertical stripe
- >16.7 million colors

VIEWING AREA

- 12.78 x 9 mm (0.61 in diagonal)

DISPLAY ASPECT RATIO

- 4:3 or 16:9

MECHANICAL ENVELOPE

- 19.8 x 15.2 x 5.1 mm

COLOR GAMUT

- >75% of NTSC gamut

GRAY LEVELS

- Up to 256

UNIFORMITY

- >85% (Area uniformity as per VESA FPDM Standard)

CONTRAST RATIO

- >100:1 Intrinsic (Dark Ambient)

LUMINANCE MAXIMUM

- > 70 cd/m² (Color)

TEMPERATURE

- Operating: -40°C to +65°C
- Storage: -55°C to +90°C

HUMIDITY

- 85% RH non-condensing

VIDEO INPUTS

R, G, B INPUTS

- 0 to 0.7V, compatible with VESA VSIS standard

VIDEO INPUTS

- SMPTE-170 & PAL (monochrome only)

VIDEO SIGNAL BANDWIDTH

- 56 MHz maximum (VESA SVGA 85 Hz mode)

CONTROL & SERIAL INTERFACE

- Digital 3.3V CMOS

FRAME RATE

- 30 to 85 Hz

POWER INTERFACE

LOGIC/ANALOG SUPPLY (V_{DD})

- 3.3V dc @ 50 mA Max.

OLED SUPPLY (V_{AN})

- 4.0V dc (4.6V maximum) @ 50 mA Max.

OLED RETURN (V_{COMMON})

- -3V dc

CLOCK RECOVERY

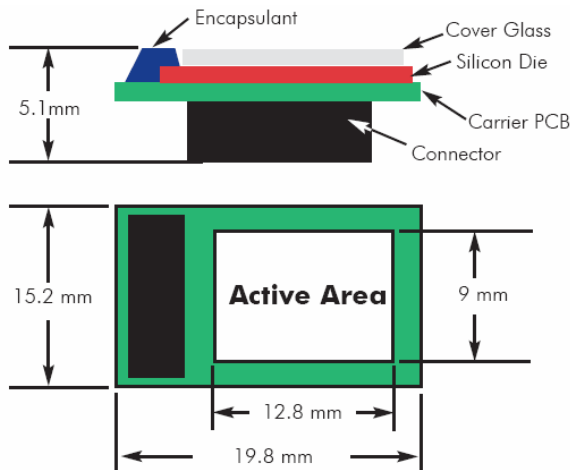
- PLL

TOTAL POWER DISSIPATION

- Typically <200 mW @ 60 cd/m² running movie-like video
- 395 mW peak (25°C, 60 Hz, All pixels on)

* 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.

MECHANICAL OUTLINE



A leader in virtual imaging technology, eMagin integrates high-resolution OLED microdisplays, magnifying optics, and systems technologies to create a virtual image that appears comparable to that of a computer monitor or a large-screen television. With unique technology for producing high-performance small molecule OLED-on-silicon microdisplays and related optical systems, eMagin is the only company to supply these displays in commercial quantities to OEMs. In addition, the company sells integrated modules to military, industrial and medical customers, and has recently announced its first consumer system, the Z800 3D Visor. eMagin's microdisplay operations are co-located with IBM on its campus in East Fishkill, N.Y. Optics and system design facilities are located in Redmond, WA. For additional information, please visit www.emagin.com and www.3dvisor.com.

BLOCK DIAGRAM

