

OP02220

LCOS product brief



Industry's First Single-Chip 1080p LCOS Microdisplay with Integrated Driver for AR/VR and Projector Designs

OMNIVISION's OP02220 is a 1080p liquid crystal on silicon (LCOS) microdisplay with integrated driver functions and memory. This compact, low-power and cost-effective microdisplay is especially valuable for augmented reality (AR) applications such as AR glasses. By integrating the driver function into the microdisplay, the OP02220 saves board space and streamlines the development process, allowing designers to accelerate time-to-market and create lighter, more comfortable products with longer battery life.

The OP02220's integrated driver and memory buffer also facilitates stable video processing with low power consumption. Based on a 4.5-micron pixel, the 0.39-inch OP02220 LCOS panel produces crisp, clear HD video in 1080p resolution at 60 frames per second (fps) or 720p HD video at 120 fps. The OP02220 can accept video data input via a 4-lane MIPI DSI.

OMNIVISION facilitates product development by providing an evaluation kit that includes a reference board with video data output connections to the LCOS microdisplay panel.

Find out more at www.ovt.com.

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OP02220

Ordering Information

- **OP02220-MCTA-1B-Z**
  51-pin microcell package, silicon rev BA
- **OP02220-MCTA-001C**
  40-pin FPCA package, silicon rev BA, without compensator

Applications

- AR glasses
- pico projectors
- high speed communication
- HUD (head up display)

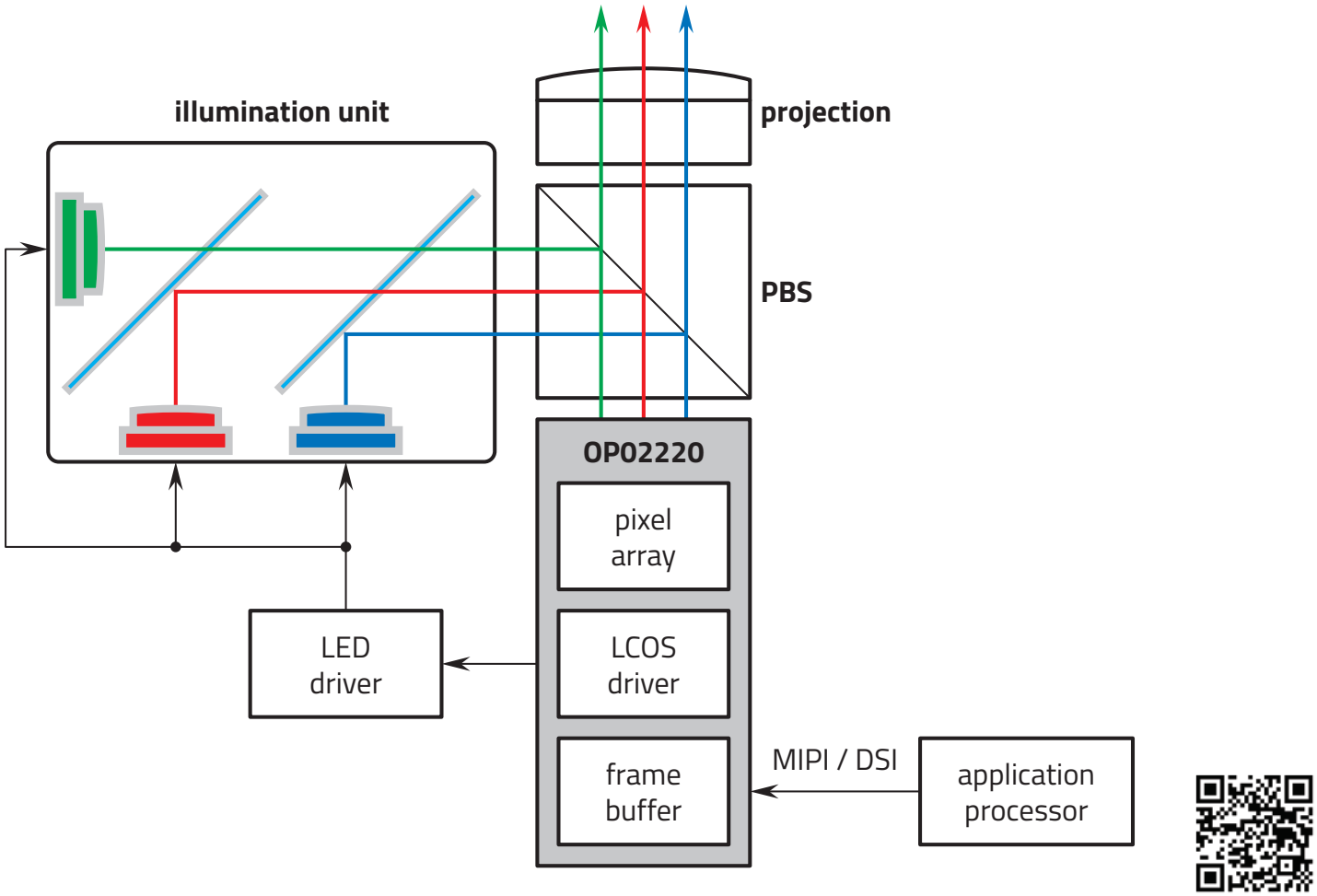
Technical Specifications

- power supply:
  - core: 1.5V ±5%
  - MIPI: 1.5V ±5%
  - I/O: 1.8V ±10%
  - pixel array: 3.3V ±10%
  - DRAM: 3.3V ±10%
- power requirements:
  - active: 330 mW
  - standby: 10 mW
- LC operational temperature range:
  +10°C to +70°C
- active native area: 8.64 mm x 4.86 mm
- native resolution: 1920 x 1080
- native device diagonal: 0.39"
- pixel pitch: 4.5 µm
- package dimensions:
  - microcell: 25.7 x 12.6 x 3.33 mm
  - FPCA: 15.96 x 55.29 x 2.17 mm

Product Features

- 4-channel MIPI DSI receiver, 24-bit packed RGB888
- internal PLL for clock generation
- outputs enable/disable control signals to external solid state light sources
- standard 100% digital CMOS technology
- no spacers in active area
- digital interface
- high aperture ratio
- supports horizontal and vertical flipping
- insensitive to photo-induced carrier generation
- designed for color field sequential operation
- 16 pixels for horizontal alignment
- 16 rows for vertical alignment

Functional Block Diagram



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