OV50R40

50-Megapixel Product Brief

TheiaCel™ OV50R40 CMOS Image Sensor Provides Ultra-High Dynamic Range for Smartphones and Action Cameras

The OV50R40 CMOS image sensor features ultra-high dynamic range (HDR) for video and preview with single exposure, excellent low-light performance, fast autofocus and high frame rates. The OV50R40, a 50-megapixel (MP) sensor with a 1.2-micron (µm) pixel, is designed for high-end consumer devices including smartphones, as well as action, vlog and pocket cameras.

The OV50R40 is designed for high-end main cameras in a 1/1.3-inch optical format that supports 4-cell binning for 12.5MP at 120 frames per second (fps) and 4K 60 fps with three-channel HDR with 4x sensitivity for excellent low-light performance. Compared with the previous-generation OV50K40, the new mobile TheiaCel™ sensor, OV50R40, delivers approximately 20% lower power consumption, enabling longer HDR video capture while maintaining system stability.

It offers premium-quality 8K video with dual analog gain (DAG) HDR and on-sensor crop zoom. OMNIVISION's second-generation TheiaCel™ technology further expands single exposure HDR to 110 decibels (dB). The sensor supports 100% coverage quad phase detection (QPD) for best-in-class autofocus performance. The OV50R40 is built on OMNIVISION's PureCel®Plus-S stacked-die technology.

Applications

- Smartphones
- Video conferencing
- Pro-consumer video

Features

- **Active array size:** 8192 x 6144
- **Maximum image transfer rate:**
  - 8192 x 6144 linear: 30 fps
- **Power supply:**
  - Core: 0.9V
  - Analog: 2.8V and 1.8V
  - I/O: 1.8V or 1.2V
- **Output interfaces:**
  - 4-lane D-PHY MIPI TX interface
  - 2/3-trio C-PHY MIPI TX interface
- **Output formats:** 10/12/14-bit RGB RAW
- **Lens size:** 1/1.302"
- **Pixel size:** 1.2 µm x 1.2 µm

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