

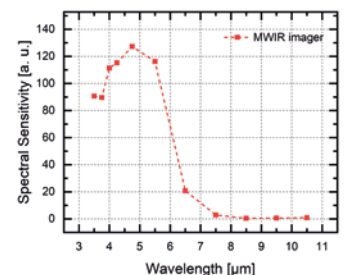
Thermal imaging

Uncooled mid-wave infrared detector

17 μm QVGA infrared focal plane array for mid-wave infrared spectral range (3 μm – 5 μm)

Fraunhofer IMS has introduced the first uncooled infrared focal plane array (IRFPA) optimized for sensitivity in the mid-wave infrared (MWIR) range (3 μm – 5 μm). The MWIR-IRFPAs, based on uncooled microbolometers with a 17 μm pixel pitch and an amorphous silicon sensing layer, include CMOS readout circuitry and a miniaturized chip-scale vacuum package, forming a complete image sensor chip.

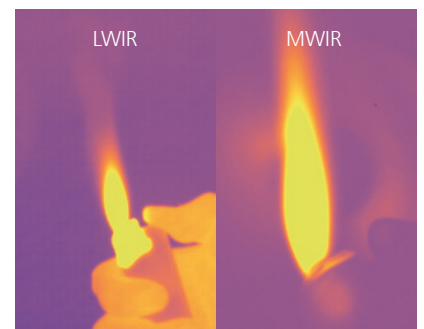
These MWIR-IRFPAs feature QVGA resolution (320 x 240 pixels) at a frame rate of 30 Hz and are designed for high sensitivity in high temperature scenarios with a noise equivalent temperature difference (NETD) of less than 210 mK at 295 K. Digital conversion is performed on-chip, using distributed analog-to-digital converters (ADCs) for complete digital data readout of the analog microbolometers' signal. The MWIR-IRFPAs are entirely developed and manufactured by Fraunhofer IMS.



Spectral sensitivity of Fraunhofer IMS's uncooled MWIR camera.

Customer benefits

- Uncooled MWIR imaging with a maximum spectral sensitivity in the range of 3 μm to 5 μm
- Visualization of high temperature scenarios with high scene contrast such as Visualization / localization of gas leakage
- Suppression of LWIR radiation to reduce false alarms and enhance target detection
- Enhanced scene dynamic range due to 16-bit ADCs
- Optimized spectral range for high temperature objects ($T > 250^\circ\text{C}$)



Uncooled thermal imagers capturing a lighter flame: LWIR on the left, MWIR on the right.

Mid-wave infrared

MWIR imager performance

Optical resolution	QVGA (320 x 240)
Pixel pitch	17 μm
Spectral range	3 μm – 5 μm
NETD @ $T_{\text{scene}} = 295 \text{ K}$	< 210 mK
Data output	Digital, 16 bit
Max. Framerate	30 Hz
Operating Temperature	-20 °C – +70 °C
Sensor Housing	Chip-scale vacuum package

Contact and further information

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