



Fraunhofer IMS

FRAUNHOFER INSTITUTE FOR MICROELECTRONIC CIRCUITS AND SYSTEMS IMS



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1 Infrared Camera.

2 Image of the Infrared Camera.

EVAL – IRFPA CAMERA

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EVAL – IRFPA Camera

Our new EVAL – IRFPA (infrared focal plane arrays) camera supports product managers and R&D departments in their development tasks. You get a complete IRFPA camera system, which enables you to test the functionality and performance of our digital IRFPA sensors. Thus, an adjustment to the customer's application can be planned.

The EVAL – IRFPA camera is used for uncompensated image acquisition of temperature distribution.

It is possible to display raw images, without any image enhancement or image correction. The manual or time-based triggering of the shutter – to equalize the offset – is adjustable, as well as a simple bad pixel correction. The image output is available either in b/w or in false color. The digital range setting and the amplification of the FIR image can be varied and adjusted. This also applies to the reference voltages for image scene adaptation.

On request the display software can adapt to customer requirements.

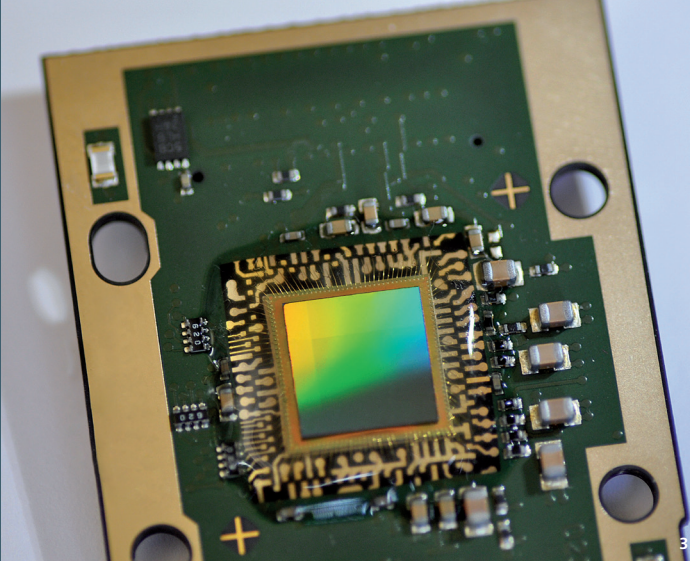
Digital IRFPA Sensors

The Fraunhofer IMS in Duisburg develops and manufactures customized uncooled far-infrared sensors. Our digital IRFPAs (infrared focal plane arrays) are based on microbolometers with a sensor layer made of amorphous silicon and they are working within a wavelength range of 8 μm to 14 μm . We integrate the CMOS readout circuit, the microbolometer with a pixel pitch of 17 μm , and a miniaturized vacuum package (chip-scale-package) to create a complete imager chip. The digital conversion is performed on-chip. The readout of the microbolometers is fully digital, realized via homogeneously distributed $\Sigma\Delta$ ADCs.

Possible Fields of Application:

- Automotive
- Building thermography
- Security applications
- Aerospace industry
- Agriculture





Specifications

EVAL-IRFPA Camera:

Spectral range	8 μm – 14 μm
Temperature measuring range 1	-40 $^{\circ}\text{C}$ – +100 $^{\circ}\text{C}$
Temperature measuring range 2	-40 $^{\circ}\text{C}$ – +500 $^{\circ}\text{C}$
Sensor	IRFPA with digital output
Objective lens	LWIR lens, f/0.85, 30 mm, manual focus
Frame rate	30 Hz
Package size (h/w/d)	107 mm x 85 mm x 102 mm (without lens)
Weight	1,130 g
Protection class	IP20
Power supply	12 V / 1 A with wall power supply
Input power sensor	2.3 W
Interface	USB 2.0 (video data + configuration)
System requirements	PC with Windows 7 and USB 2.0
Included software	USB driver FTDI, PC software to visualize and configure (customer specific adaptations are possible on demand)
Operating temperature	0 $^{\circ}\text{C}$ – +60 $^{\circ}\text{C}$
Storage conditions	-20 $^{\circ}\text{C}$ – +70 $^{\circ}\text{C}$ with rel. humidity between 20 % – 70 %

Digital IRFPA Sensor:

IRFPA detector	uncooled microbolometer, 17 μm pixel pitch
Temperature measuring range 1	-40 $^{\circ}\text{C}$ – +100 $^{\circ}\text{C}$
Temperature measuring range 2	-40 $^{\circ}\text{C}$ – +500 $^{\circ}\text{C}$
Temperature resolution/definition (NETD)	< 80 mK (f /1.0, 295 K)
Resolution	QVGA (320 x 240 pixel)
Data output	digital, 16 bit, completely digital readout of the microbolometer
Max. frame rate	30 Hz
Sensor package	miniaturized chip scale package (CSP)
Operating temperature	-20 $^{\circ}\text{C}$ – +70 $^{\circ}\text{C}$

3 Digital IRFPA with Detector Board.

4 Image of the Infrared Camera.