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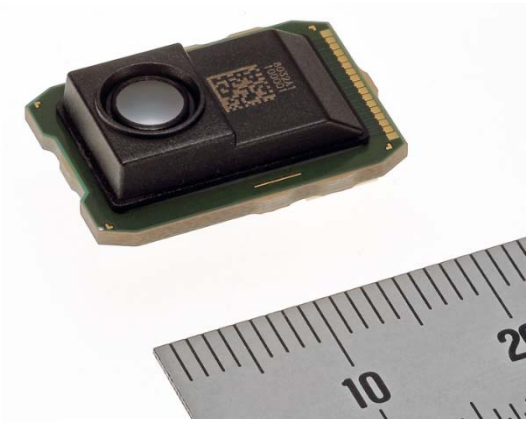
Mitsubishi Electric to Launch MelDIR Thermal Diode Infrared Sensor

Accurately detects heat to identify types of heat sources and specific human behavior

TOKYO, August 6, 2019 – Mitsubishi Electric Corporation (TOKYO: 6503) announced today that it will launch the Mitsubishi Electric Diode InfraRed sensor (MelDIR), a thermal sensor for applications in the fields of security, heating, ventilation and air conditioning (HVAC) and smart buildings, on November 1. MelDIR accurately distinguishes between humans and other heat sources and enables the identification of specific human behavior, such as walking, running or raising hands. It delivers high-pixel, high-thermal-resolution images using thermal diode infrared sensor technology that Mitsubishi Electric developed for the Advanced Land Observing Satellite-2 "DAICHI-2" (ALOS-2).



MelDIR Thermal Diode Infrared Sensor

Features

1) High-pixel, high-thermal-resolution images

- 10 times higher pixel resolution (80x32 pixels) and five times higher thermal resolution of 100mK, or 0.1 degree Celsius, compared to 16x16 pixel thermopile sensors now sold in the market, using thermal diode infrared sensor technology installed in the Compact InfraRed Camera (CIRC) for observing the earth with the ALOS-2, which Mitsubishi Electric delivered to the Japan Aerospace Exploration Agency in 2014 and is now in operation.

- Supporting legs, made extra thin thanks to microfabrication technique, convey energy efficiently without releasing heat, enabling more (smaller) pixels to be used for increased resolution. (Fig. 1)
- Electrical noise minimized by mounting thermal diode and high-spec amplifier close to each other on same chip, helping to maintain accuracy and achieve high thermal resolution.
- Enables highly detailed thermal images for distinguishing between humans and other heat sources and for identifying specific human behavior, such as walking, running or raising hands. (Fig. 3)

2) Compact, space-saving sensor developed with proprietary chip-scale vacuum-sealing technology

- Package is 80 percent smaller than that of existing sensors thanks to new packaging technology.
- Proprietary chip-scale packaging technology and vacuum-sealing technology (Fig. 2) enable sensor to be vacuum sealed (without using conventional ceramic package) to avoid heat radiation and achieve high thermal resolution.

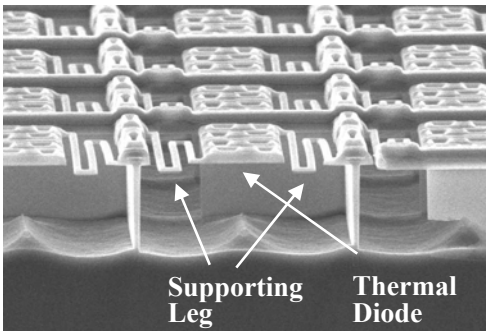


Fig. 1 Pixel structure of thermal diode infrared sensor

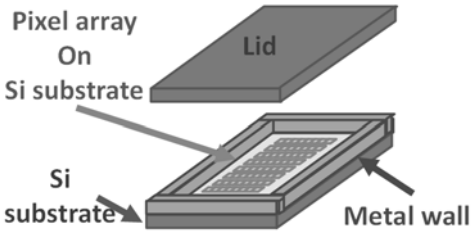


Fig. 2 Chip-scale vacuum package

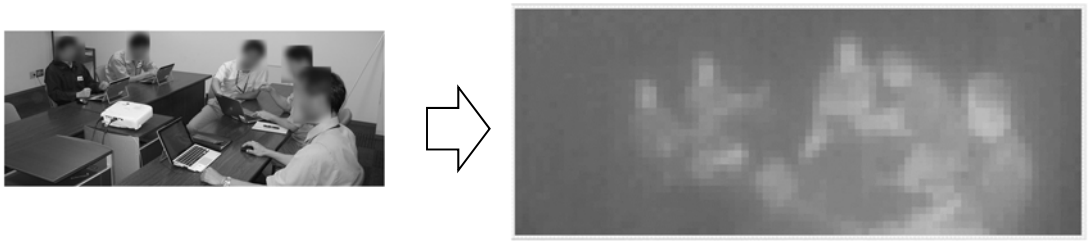


Fig. 3 Scenes taken with normal camera (left) and thermal (infrared) sensor (right)

Main Specifications

Model	MIR8032A1
Pixels	80x32
Temp. resolution (NETD)	100mK (Typ)
FOV	78º x 29º (Typ)
Operating voltage	3.3V
Current consumption	<50mA
Product dimensions	19.5 x 13.5 x 9.5mm
Detectable temp. range	–5 to +60ºC
Interface	Serial Peripheral Interface (SPI)

Background

Infrared sensors that measure temperature by detecting the infrared radiation of objects are widely used in security, HVAC and smart-building applications. The demand is growing, however, for sensors that offer higher pixel and thermal resolution in applications including to distinguish between humans and other heat sources and to identify specific human behavior. To meet this growing demand, Mitsubishi Electric will release its new MelDIR thermal diode infrared sensor, which combines high pixel (80x32) resolution and high thermal (100mK) resolution.

Environmental Awareness

This product is compliant with the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) directives 2011/65/EU and (EU) 2015/863.

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About Mitsubishi Electric Corporation

With nearly 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, transportation and building equipment. Embracing the spirit of its corporate statement, Changes for the Better, and its environmental statement, Eco Changes, Mitsubishi Electric endeavors to be a global, leading green company, enriching society with technology. The company recorded a revenue of 4,519.9 billion yen (US$ 40.7 billion*) in the fiscal year ended March 31, 2019. For more information visit:
www.MitsubishiElectric.com

*At an exchange rate of 111 yen to the US dollar, the rate given by the Tokyo Foreign Exchange Market on March 31, 2019