

Biometric Sensor Chips Information

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Biometric sensors are semiconductors with embedded algorithms that are used in security systems or environments that require user authentication. They produce electrical signals from fingerprints or other physical characteristics in biometric access control systems. Biometric sensors consist of an array of tiny electrodes and an analog-to-digital converter (ADC) that digitizes information from the sensor array. In fingerprint access control systems, the user presses an index finger to a scanning device that includes a biometric sensor. The varying capacitive values across the sensor array are then converted into an image of the fingerprint. Other components of the biometric access control system then compare the image to a stored template.

Specifications

Selecting biometric sensors requires an analysis of product specifications and features. Specifications include:

- resolution
- size
- image area
- operating current
- standby current
- voltage
- frame rate
- operating temperature
- programmable gain
- signal-to-noise ratio
- interfaces
- integrated circuit (IC) package type

Types

Universal serial bus (USB), serial peripheral interface (SPI), and 8-bit multipoint control unit (MCU) are popular interfaces. IC packages use through-hole technology (THT) or surface mount technology (SMT) and include package types such as low quad flat package (LQFP).

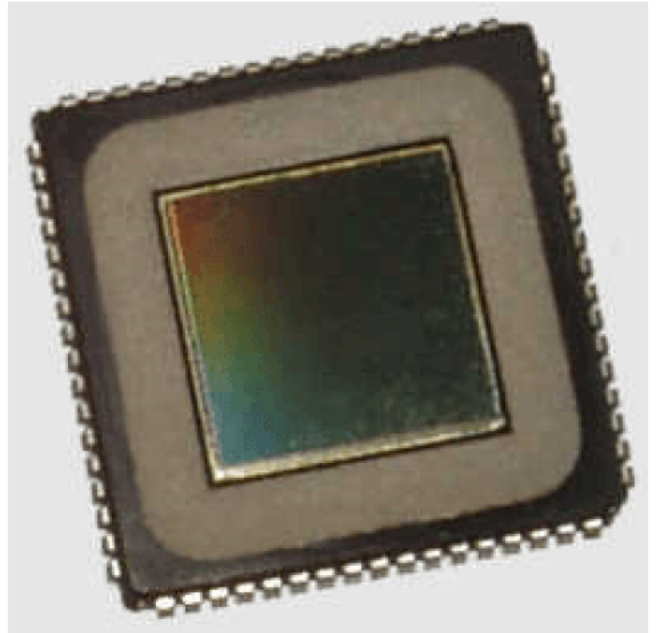
Features

In terms of features, some biometric sensors are supplied with software development kits. Others have a waterproof or abrasion-resistant

Applications

Applications for biometric sensors include:

- computer and network security
- building and facility access
- mobile device security
- government and military identification
- medical records
- kiosks
- point of sale (POS) terminals



Standards

Products comply with many different regulatory requirements and quality standards. In the United States, biometric sensors meet FCC-B guidelines from the [Federal Communications Commission \(FCC\)](#). They may also meet U.S. military specifications (MIL-SPEC) and standards (MIL-STD). In Europe, biometric sensors bear the CE Mark to indicate compliance with relevant European Union (EU) directives regarding electromagnetic interference (EMI) and radio frequency interference.

Related Information

[Electronics360—NEXT Biometrics and Innolux to Mass-Produce Flexible Fingerprint Sensors](#)

[IEEE Spectrum—Special Report: Hacking the Human OS](#)

[IEEE Spectrum—Medtronic Wants to Implant Sensors in Everyone](#)

[IEEE Spectrum—The Pursuit of Corporate Happiness](#)

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Related Products & Services

Inertial Sensor Chips

Inertial sensors are semiconductor devices used to measure acceleration, changes in inclination, and gyration.

Light Sensor Chips

Light sensor chips convert light into electrical signals which are then conditioned to produce a desired electrical output. They are sometimes called light-to-frequency chips, light-to-voltage chips, or ambient light sensors.

Pressure Sensor Chips

Pressure sensor chips are die, IC chips or sensing element devices that sense changes in pressure. They can be used as stand-alone devices or can be embedded in ceramic- or plastic-based packages such as surface mount or through-hole chips.

Sensor Chips

Sensor chips are dies incorporating semiconductor circuit elements that are used to convert changes to some physical parameter to an electrical signal.

Sensor Interface Chips

Sensor interface chips are used as interfaces to sensors and other devices. The input at the interface collects data from the sensor and the output of the interface sends the data to a computer or other suitable device.

Temperature Sensor Chips

Temperature sensor chips are semiconductor dies or packages that have built-in temperature sensors.

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