

# CYFP1 Automotive fingerprint sensor

## General description

CYFP10020x00 is a fingerprint sensor optimized for automotive applications. Its precision analog front end capacitive sensing circuits and built-in image optimization algorithms enable high fidelity image capture of the ridge and valley structures of a user's fingerprint. The sensor is qualified to AEC-Q100 automotive standards, and operates over a temperature range of  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  or  $+105^{\circ}\text{C}$ . Combined with appropriate fingerprint matching software, this device enables accurate and reliable biometric identification of a user.

## Features

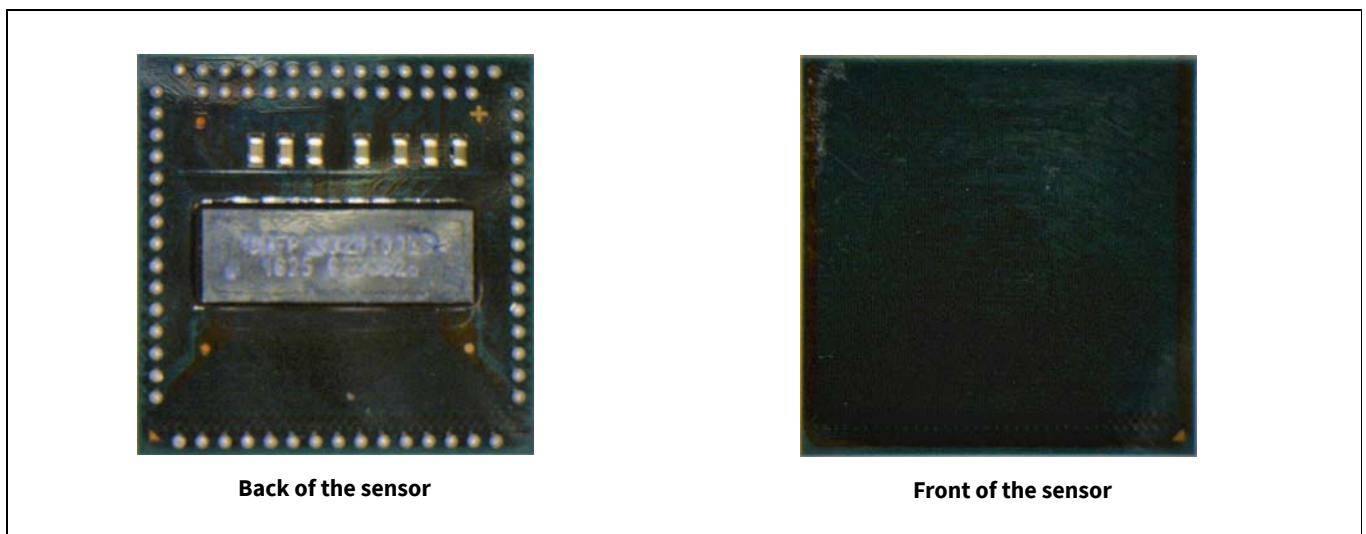
- Fingerprint sensor
  - BGA package consisting of a die mounted on a polymer substrate sensor
  - 8.0 mm × 8.0 mm active imaging area fingerprint sensor
  - 340 DPI 107 × 107 pixel array at 8-bits per pixel resolution
  - Great image quality with customer-applied polymer, plastic, and ceramic coatings < 100 μm in overall thickness
  - 32-bit Arm® Cortex®-M0 CPU with Infineon-supplied firmware optimized for system environment
  - Noise-suppression technologies for battery chargers, displays, and radios in the device
  - Self-calibration and self-testing
  - Factory tuned, no field tuning required
  - Automotive Electronics Council (AEC)-Q100 Qualified
- System performance
  - Live finger complete acquisition time (get\_image): ~160 ms
  - <1.5% FRR at FAR >1:100K using recommended matching software
- Embedded environment
  - Embedded framework (CYFPEF) available for porting into host processor, enabling the CYFP1 sensor to be integrated into a biometric system
  - Recommended host processor MCU features: Cortex® M4, 256 KB of flash, and 96 KB of RAM
  - Configurable security levels (1:10K to 1:1000K) via recommended matching software
- Sensor communication interface
  - SPI slave bit rates up to 7.8 Mbps
  - Strong 256-bit AES encryption secures the system interface from the sensor to the host processor
- Power (configuration-dependent)
  - Operation with single 3.3-V supply
  - 1.71 V to 1.95 V direct digital supply or 2.0 V to 5.5 V via LDO
  - 2.65 V to 5.5 V analog supply
  - <80-mW active power (average power while sensing)
  - 8-μW typical deep-sleep power
  - 400-μW finger detection power @ 10 detects per second
- Operating temperature range
  - $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
  - $-40^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$
- Package options
  - 73-BGA package, 8.87 × 9.26 mm rectangular sensor

Optional features

## Optional features

- Fake finger rejection (anti-spoofing)
- 360 degree finger placement
- Programmable finger detection timing (wake-on-finger)
- On-chip baseline storage
- Secure firmware upgrades via factory-programmed bootloader
- Navigation

## Images of sensor



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Revision history

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Document revision	Date	Description of changes
**	2024-07-23	Initial release.

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