

## Features

### ■ Fingerprint Sensor

- BGA package consisting of 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 polymer, plastic, and ceramic coatings < 100μ in overall thickness
- 32-bit Arm® Cortex®-M0 CPU
- Noise-suppression technologies for the battery chargers, displays, and radios in the device
- Self-calibration and self-testing
- Factory tuned with on-chip baseline storage, no field tuning required
- Secure firmware upgrades via bootloader

### ■ System Performance

- Live Finger Complete Acquisition Time (Get\_Image): ~160ms)
- 14 Finger Identify Match Time: ~500ms (average)
- <1.5% FRR at FAR >1:100K using CY-supplied matching SW
- 360 degree finger placement

### ■ Embedded Environment

- Embedded Framework (CYFPEF) provided for porting into host processor
- Recommended MCU Features: Cortex M4, 256KB of flash, and 96KB of RAM
- Ability to import and export templates securely
- Configurable security levels (1:10K to 1:1000K)
- Simple secure external communication protocol over MCU UART Interface

### ■ Sensor Communication Interface

- SPI slave bit rates up to 7.8 Mbps
- Strong 256-bit AES encryption secures the system interface from sensor to the host processor

### ■ Power (configuration-dependent)

- Operation of 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 °C to +85 °C

### ■ Package Options

- BGA package, 8.87 × 9.26 mm rectangular sensor

## Optional Features

- False finger rejection limiting host processor interruptions
- Fake finger rejection (anti-spoofing)
- Programmable finger detection timing (Wake-on-Finger)
- Navigation

Sensor Shown With Coating



Back of the Sensor



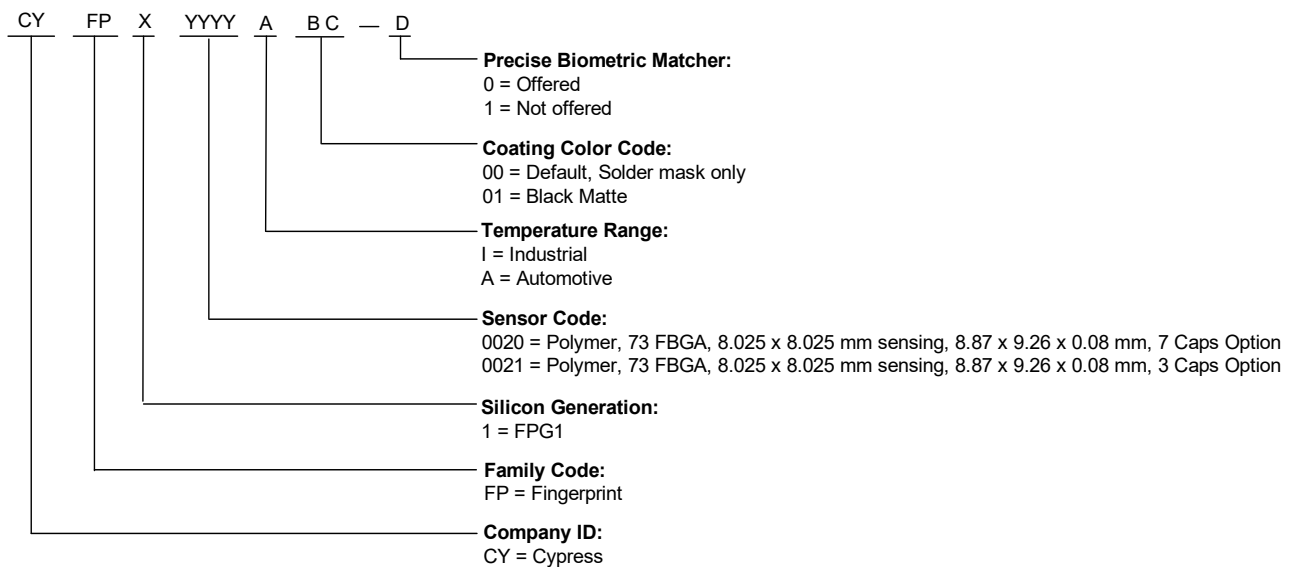
Front of the Sensor

**Ordering Information**

**Table 1. CYFP1 Device Key Features and Ordering Information**

Silicon Type	Package Type	Package Size	Operating Temperature
CYFP10020I00	73-Ball BGA	8.87 × 9.26 × 0.80 mm	Industrial
CYFP10020I01			
CYFP10020I01-1			
CYFP10021I00		12.20 × 12.20 × 0.80 mm	
CYFP10021I01		8.87 × 9.26 × 0.80 mm	
CYFP10021I01-1			

**Part Ordering Code Definitions**



All devices in the CYFP1 family comply to RoHS-6 specifications, demonstrating the commitment by Cypress to Pb-free products. Lead (Pb) is an alloying element in solders that has resulted in environmental concerns due to potential toxicity. Cypress uses the nickel-palladium-gold (NiPdAu) technology for a majority of the lead frame-based packages.

A high-level review of the Cypress Pb-free position is available on our website. Specific package information is also available. Package Material Declaration Datasheets (PMDDs) identify all substances contained within Cypress packages. PMDDs also confirm the absence of many banned substances. The information in the PMDDs will help Cypress customers plan for recycling or other “end of life” requirements.

**Document History Page**

Document Title: CYFP1002XXXX, CYFP1-8080 Datasheet Document Number: 002-11237				
Revision	ECN	Orig. of Change	Submission Date	Description of Change
**	5142470	HFO	02/18/2016	New datasheet.
*A	5363615	HFO	08/19/2016	Updated <a href="#">Features</a> and added board image.
*B	6283450	HFO	09/19/2018	Updated template. Updated <a href="#">Features</a> and <a href="#">Ordering Information</a> .

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