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 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

<table>
<thead>
<tr>
<th>Silicon Type</th>
<th>Package Type</th>
<th>Package Size</th>
<th>Operating Temperature</th>
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</thead>
<tbody>
<tr>
<td>CYFP10020I00</td>
<td>73-Ball BGA</td>
<td>8.87 × 9.26 × 0.80 mm</td>
<td>Industrial</td>
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<td>CYFP10021I00</td>
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<td>12.20 × 12.20 × 0.80 mm</td>
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<tr>
<td>CYFP10021I01</td>
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<td>8.87 × 9.26 × 0.80 mm</td>
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<td>CYFP10021I01-1</td>
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<td></td>
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</tbody>
</table>

Part Ordering Code Definitions

- **Silicon Type:**
  - CYFP1

- **Family Code:**
  - FP = Fingerprint

- **Company ID:**
  - CY = Cypress

- **Sensor Code:**
  - 0020 = Polymer, 73 FBGA, 8.025 x 8.025 mm sensing, 8.87 x 9.26 x 0.08 mm, 7 Caps Option
  - 0021 = Polymer, 73 FBGA, 8.025 x 8.025 mm sensing, 8.87 x 9.26 x 0.08 mm, 3 Caps Option

- **Silicon Generation:**
  - 1 = FPG1

- **Temperature Range:**
  - I = Industrial
  - A = Automotive

- **Coating Color Code:**
  - 00 = Default, Solder mask only
  - 01 = Black Matte

- **Precise Biometric Matcher:**
  - 0 = Offered
  - 1 = Not offered

- **Document Number:** 002-11237 Rev. *B
- **Page 2 of 4**
### Document History Page

**Document Title:** CYFP1002XXXX, CYFP1-8080 Datasheet  
**Document Number:** 002-11237

<table>
<thead>
<tr>
<th>Revision</th>
<th>ECN</th>
<th>Orig. of Change</th>
<th>Submission Date</th>
<th>Description of Change</th>
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<td>**</td>
<td>5142470</td>
<td>HFO</td>
<td>02/18/2016</td>
<td>New datasheet.</td>
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<tr>
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<td>5363615</td>
<td>HFO</td>
<td>08/19/2016</td>
<td>Updated Features and added board image.</td>
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<td>*B</td>
<td>6283450</td>
<td>HFO</td>
<td>09/19/2018</td>
<td>Updated template. Updated Features and Ordering Information.</td>
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