

The TouchChip TCESC4K fingerprint module provides easy-to-integrate, embedded fingerprint authentication. Major companies have integrated the TCESC4K module into millions of devices such as laptops, garage door openers, USB Flash drives, car alarms and more.

## Easy to Integrate and Fast Time to Market

Integrating fingerprint biometrics can seem daunting. To make things simple, the TCESC4K module is fully assembled and tested. Also available is a complete integration toolkit. These modules provide three interface options: USB, SPI and UART (RS-232), which are:

- **Quick to integrate** – Just connect and interface with simple commands.
- **Self Contained** – On-board matcher and storage for up to ~100 fingerprint templates.
- **Proven** – Designed and certified by the fingerprint experts.

## Robust

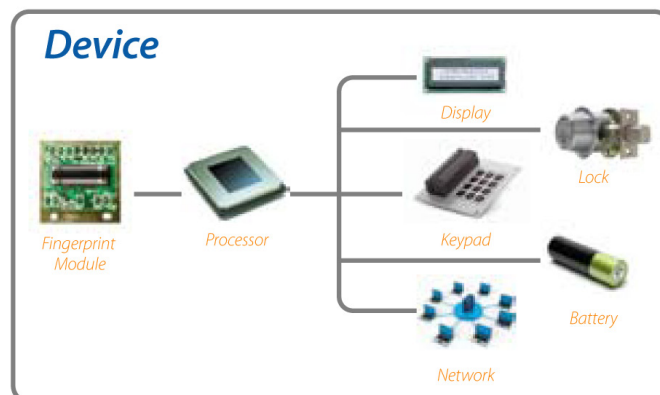
Fingerprint sensors need to withstand human interaction and the elements. The SteelCoat protective coating delivers durability six times more robust than competing swipe sensors.

## Secure

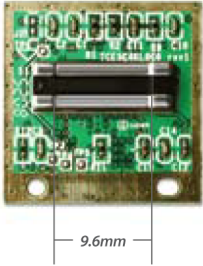
TouchChip fingerprint sensors take user authentication from the weakest to the strongest link in a security architecture. Live-layer sensing senses the surface and subsurface of the skin and third generation anti-spoofing technology counters attempts to fool the sensor with a fake fingerprint.

## Satisfying for End Users

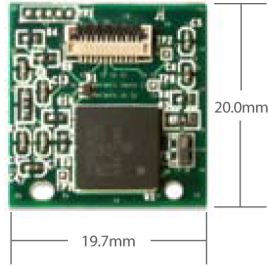
Fingerprint sensors need to work for everyone in all conditions - old and young, big and small, dry and wet, etc. TouchChip embedded fingerprint sensors offer a convenient user experience based on proprietary HD3D Sensing technology that senses 3-D ridges and valleys of a fingerprint and captures the highest image quality for a swipe sensor. Advanced technology significantly reduces "Failure to Enroll."



Module Top



Module Bottom



9.6mm

19.7mm

20.0mm

## Flexible Connection Options

To meet today's diverse embedded fingerprint product needs, the UPEK TCESC4K swipe fingerprint module offers three interface options for device flexibility:

- **USB (Full speed):** For USB peripherals such as fingerprint readers, keyboards and smart card readers.
- **UART (RS-232):** Common serial interface available on most embedded processors. (up to 230.4 kbps)
- **SPI:** Higher speed serial interface. More flexible and fewer connect lines. (250k to 1Mbps)

## Product Ordering Information

To help customers design products using UPEK's embedded swipe fingerprint module, UPEK offers development kits, evaluation kits and fingerprint sensors. Contact UPEK sales for details.

| Product   | Part Number |
|---|-------------|
| TouchChip Embedded Module<br>(TCS4K snsr, TCD50D processor, USB/SPI/UART)                     | TCESC4KOCO  |
| TCESC4K Starter Kit<br>(80 TCESC4K modules)<br>MOQ for bulk orders: 400                       | TCKTO6      |
| TouchChip Module Development Kit TCKDSMOD4<br>(Sample HW, development board, SW tools & docs) |             |

## Specifications

### Hardware

|                                    |  |
|------------------------------------|--|
| Fingerprint sensor                 | TCS4K (192 pixels)<br>508 or 381 DPI<br>9.6 x 25mm image size<br>SteelCoat protective layer                              |
| Processor                          | TCD50D, 32-bit RISC, 144 MIPS  |
| Fingerprint Template database size | Up to ~100 templates (typical)   |
| ESD                                | IEC 61000-4-2 level 4<br>+/- 15KV air, +/- 8KV contact   |
| Power (typical)                    | 3.0V to 3.6V<br>78ma (capture, match, navigate)<br>Standby (USB): 1350uA<br>Standby (UART/SPI): 1150uA                   |
| Finger Detection option            | Wakes processor, to save power   |
| Dimensions                         | 20.0 x 19.7 x 3.6mm<br>0.80" x 0.77" x 0.14"   |
| Environmental                      | Operating temp: -30°C to +70°C<br>Storage temp: -30°C to +125°C<br>Humidity: 5%-93%, non-condensing<br>ROHS, Low Halogen |

### Biometric Capabilities

|             |  |
|-------------|--|
| Swipe Speed | ~40cm/sec (15in/sec)   |
| Match Time  | 1 finger: <0.4 sec (from finger liftoff)<br>15 fingers: <0.75 sec<br>100 fingers: ~2.5 sec |

### Sensor Durability

|                        |  |
|------------------------|--|
| Swipe resistance       | >20 million swipes                       |
| Pen scratch resistance | 6H hardness with 20N force               |
| Pen Drop resistance    | 60cm                                     |
| Ball Drop resistance   | 60cm                                     |
| Waterproof             | 24h water soak                           |
| Chemical resistance    | 24h contamination with over 20 chemicals |

### Software & Tools

|  |   |
|--|---|
| PerfectTrust API (PTAPI)<br>[Embedded] | Image capture & transfer,<br>enrollment, match  |
| Biometric Services API (BSAPI)         | Windows 32-bit and 64-bit; Linux x86<br>PTAPI features plus support for RSA/OATH OTP, secure<br>network communications & other features (USB only)  |
| Driver Support                         | UART and SPI interface libraries - reference<br>implementation for 32-bit MCUs in C source code<br>USB: Windows 2000/XP/Vista (signed)<br>UART: Windows 2000/XP/Vista, WinCE<br>SPI: provided by customer |

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