MBF200 Solid-State Fingerprint Sensor

**Features**

- Rugged, solid-state capacitive fingerprint sensor
- High resolution 500 DPI, 8-bit grayscale imager
- Large image area:
  - 12.8mm x 15.0mm (0.5" x 0.6")
  - 256 x 300 pixel array (50μm pitch)
- Programmable gain adapts to wet/dry fingers
- Small size: 24mm x 24mm x 1.4mm
- Multiple interfaces: USB1.1, 8-bit MCU, SPI
- Durable:
  - ESD to >10kV (FCC-B/CE certified)
  - Operating temperature: -20°C to +85°C
  - Hard protective coating
- 8-bit analog-digital converter
- Auto finger-detection for low power sleep mode
- Low Power
  - 3.3V to 5.0V
  - 20mA active, <200μA sleep, 20μA standby

**Description**

The Fujitsu MBF200 is a 500 DPI 8-bit grayscale solid-state fingerprint sensor that reliably captures fingerprint information. The MBF200 is designed to integrate into devices for improved security and convenience. Applications for the MBF200 include: computer and network logon, physical access control, Point-of-Sale terminals, transportation security, medical information protection, cardholder ID validation and many other uses. The Fujitsu MBF200 provides a reliable, quick and user-friendly alternative to passwords, PIN's and other forms of user authentication.

The Fujitsu MBF200 solid-state fingerprint sensor is a rugged, thin, low power, cost effective direct-contact fingerprint image capture device. The MBF200 sensor consists of a 256 x 300 pixel array of tiny electrodes that accurately capture the image of the applied finger. The MBF200 scans the finger at 500 dots-per-inch (DPI) and 8-bit grayscale for high-resolution zero distortion fingerprint images that meet AFIS image quality standards. The MBF200 is manufactured in standard CMOS technology and integrates an 8-bit analog-to-digital converter to digitize the information from the sensor array. The MBF200 sensing area is 0.5" x 0.6" (12.8mm x 15.0mm) and passes FCC-B (>10KV) and CE ESD and EMI requirements.

The Fujitsu MBF200 is a capacitive sensing device with a high signal-to-noise ratio that reliably captures fingerprint information under broad environmental conditions. Fujitsu's MBF200 software automatically adjusts the MBF200 sensor to its optimal settings, enabling industry-leading image capture reliability for a wide range of wet, dry and damaged fingers. A hard passivation layer on the surface of the MBF200 provides excellent abrasion resistance. When a person presses their finger on the sensor, the varying capacitive values across the array are converted into an image of the
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fingerprint. In less than one second, the sensor can capture a fingerprint image, adapt to various finger types, process the image and authenticate a user's identity.

Each Fujitsu MBF200 fingerprint sensor supports three standard bus interfaces:
(1) USB 1.1 for integration into computer applications.
(2) 8-bit parallel MCU interface
(3) SPI interface, a serial interface with 6 wires.

The Fujitsu MBF200 has an Automatic Finger Detection (AFD) circuit that allows the sensor to enter a low power 'sleep' mode and generate an interrupt when a finger is detected. In AFD mode the MBF200 draws less than 200 microamps of current. Normal image acquisition of the sensor operates at between 3.3v and 5.0v, and requires typically 20 ma of current during active image capture. Operating temperature is -20 to +85 degrees C, and storage temperature is -65 to +150 degrees C.

The Fujitsu MBF200 fingerprint sensor can be programmed using the DKF200 software development kit that includes the driver software and a minutia-based matching algorithm.

The Fujitsu MBF200 sensor is a robust, cost effective fingerprint image capture device with 500 DPI image resolution, low power, small size and high durability, making it an excellent choice for a wide variety of user authentication applications.

Applications

• Computer peripherals – improves security and convenience
• Transportation systems – validation of operators, drivers and inspectors
• Medical equipment – authorization of operator or technician
• Physical access systems – approval for entry
• Kiosks and vending machines – confirmation of person receiving the selection
• Point of Sale terminals – authentication of tellers and cashiers

Specifications

• Resolution: 500-dpi, 8-bit grayscale
• Size: 24mm x 24mm x 1.4mm
• Voltage: 3.3 V to 5.0 V
• Current:
  - 20 mA typical, active
  - <200 uA typical, AFD (sleep)
  - <20 uA typical, standby
• Temperature:
  - operating: -20C to +85C
  - storage: -65C to +150C
• Frame rate:
  - 30 with MCU interface
  - 13 with USB interface
  - 10 with SPI interface
• Electrostatic discharge (ESD)
  - <10kV
  - FCC-B: CFR47 part 15
  - CE: EN61000-4-2
• 80-Pin LQFP Surface mount package

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