

## GENERAL DESCRIPTION

The Atrua Wings™ ATW100 haptic processing system consists of a sensor component and a software component. The small, low cost and low power SenTru™ haptic sensor provides information on finger features and movements and the HapticWare™ software performs highly accurate and responsive fingerprint recognition, navigation & control functions very efficiently, with low CPU and memory requirements.

The sensor creates partial images (frames) of the finger by sensing the ridges and valleys on the finger as it is “swept” across or moved around its surface. Internal circuits within the sensor die convert the sensed data into a stream of digital data (a *frame*) that is presented to the host microprocessor via an 8-bit bidirectional bus interface compatible with most microprocessors.

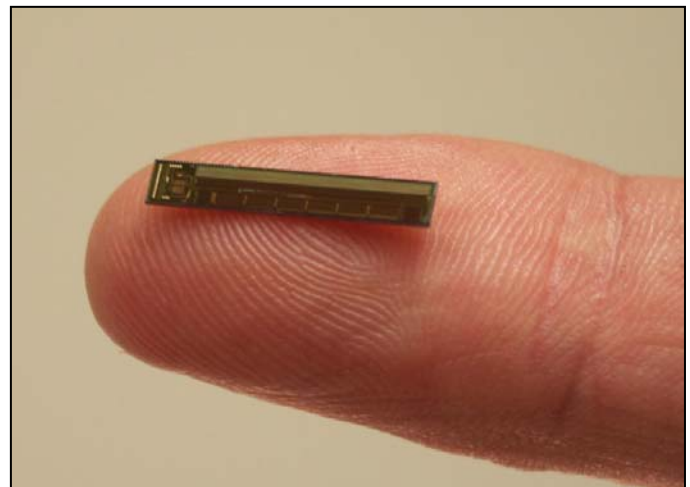
There are two key classes of algorithms that execute on the host and comprise the core functions of this haptic processing system: 1) fingerprint authentication and 2) control & navigation. These algorithms operate on the data streamed from the sensor. The authentication algorithms extract the minutiae features used for fingerprint verification, and match the minutiae pattern to the user’s template stored on the device. The navigation/control algorithms analyze finger motions to provide a new generation of control functions.

Optimized for use in mobile devices, the low cost, small physical size and minimal power consumption of the Atrua Wings ATW100 simplify its integration into mobile phones and other small mobile devices. The ATW100 has an integrated analog-to-digital converter to digitize the sensed data and an automatic gain control (AGC) function that provides high quality finger feature images from all types of skin, dry to moist, in a wide range of climatic conditions, even hot and humid. The sensor features a low operating current, which can be further reduced by putting the sensor in standby mode when haptic input is not active.

The ATW100 is provided in an LGA package. The sensor surface is protected by a special abrasion and chemical resistant coating to provide long life with high reliability.

## KEY FEATURES

- **Low Power Consumption**
  - 2.5 mA typical average operating current
  - 2  $\mu$ A typical power down current
- **High Performance**
  - Up to 48 cm/s swipe/movement rate
  - 50 ns access time
  - Acquisition rate greater than 3,700 frames per sec. (768 bytes per frame)
- **Compact Size**
  - 0.56 x 13.44 mm active sensing area
  - 5.0 x 19.0 x 0.65 mm (0.93 mm package caps) package size
- **I/O Interface Flexibility**
  - 8-bit parallel MCU interface
- **Low Voltage**
  - 2.5 V – 3.3 V
- **Rugged Surface**
  - $\pm$ 15 kV ESD protection (IEC61000-4-2 Level 4)
  - Withstands over 10 million swipes
  - Abrasion resistant
  - Corrosion resistant
- **Low Cost**
  - Integrated Analog-to-Digital Converter
  - Automatic Gain Control for Gray-Scale Image
- **Lead-Free Assembly Compliant LGA Package**



**ATW100 Haptic Sensor**

## KEY FEATURES OF SOFTWARE SUITE

- **Includes Key Software**
  - Touchpad Navigation
  - Rotation
  - Pressure (Touch Clicking)
  - Fingerprint Recognition
    - Image Reconstruction
    - Minutiae Extraction
    - Matching
- **Portable**
  - No floating point operations
  - No transcendental math functions
- **Compact and Efficient**
  - Low memory requirements
  - High CPU efficiency enables use with low-end CPUs
- **OS Independent**
  - Ported to Linux, Windows 95/98/ME/NT/2000/XP, MS DOS, Windows CE (x86, ARM, MIPS, SH3) and ARM 7 embedded (generic RTOS), Symbian, BREW and others

## TYPICAL APPLICATIONS

- **Low cost, small size and minimal power consumption make the Atrua Wings ATW100 Intelligent Touch Controls ideally suited for mobile devices and other personal electronics such as:**
  - Mobile phones
  - Portable gaming devices
  - PDAs
  - Smart Cards
  - Secure Flash Drive Products
  - Portable products that benefit from small, new generation controls
  - Personal products whose users desire user authentication and convenient password automation

## QUICK TIME-TO-MARKET

- **Atrua provides a comprehensive set of hardware and software support tools to assist users in rapidly developing their end applications. These include:**
  - Evaluation Kit
  - Software Development Kit
  - Hardware Development Kit for Embedded Systems

**Note:** Please contact your Atrua sales representative for additional information on these products.

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