

TCS3B-TCD41B TouchStrip™ chipset

Fingerprint security and 5-way screen navigation
in one compact product



Based on fingerprint biometric technology, **STMicroelectronics'** TouchStrip chipset provides a secure and convenient way of authenticating a user's ID. It consists of an ultra-compact silicon strip sensor (TCS3B) for the high-speed acquisition of fingerprint data, and a powerful companion chip (TCD41B) for real-time fingerprint image reconstruction, biometric authentication, and screen navigation.

The integrated navigation feature, PerfectPoint, allows the TouchStrip chipset to be used like a scroll wheel, button, touchpad, or mouse.

Suitable for a wide range of applications

Extremely compact, highly robust and offering very low power consumption, the TouchStrip chipset is ideally suited to portable consumer applications such as mobile phones, remote controls, tablet PCs, PDAs and ultra-thin laptop computers. Easily integrated into any microcontroller based product, the TCS3B is based on ST's industry proven active-capacitance fingerprint sensing technology and incorporates real-time sensor optimization algorithms to guarantee the highest quality fingerprint image for all skin types under the widest range of environmental conditions.

A PerfectPrint image reconstruction algorithm provides real-time compensation for skew, rotation, and variation in sweep speed. The resulting fingerprint image allows cross-match compatibility with systems based on area sensors such as the TouchChip.

Key features

- 80µA wake-on-finger mode
- Compact silicon fingerprint sensor in 17.650 x 5.0 x 1.915mm BGA package
- Integrated fingerprint authentication and navigation firmware
- PerfectPrint real-time image reconstruction: true 508 dpi 248 x 360 pixel image
- 20cm/second maximum swipe speed, compensated for skew and speed variation
- 2D fingerprint image compatibility with area fingerprint sensor

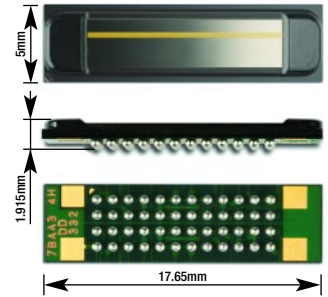
Key benefits

- Low power consumption ideal for portable applications
- Cost optimized for high-volume, price sensitive security and convenience applications
- Environmentally robust: rugged silicon sensor with thick protective coating - withstands 3M swipes, 15kV ESD
- Complete solution - no additional hardware needed
- Quick integration using a few simple TouchStrip API function calls

Product specifications (preliminary):

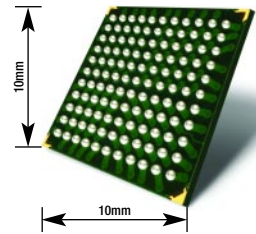
TCS3B TouchStrip silicon fingerprint sensor

CMOS Active Capacitive Sensing Technology	
Protective coating on sensor surface	
Swipe rating	3M finger swipes
ESD tolerance	±15kV air discharge (IEC 61000 cordless)
Image resolution	True 508 dpi (no interpolation, 50µm pixel pitch)
Greyscale image depth	8-bit
Sensor array size	248 pixels/line x 2 lines (out of 4 lines total)
Maximum image data transfer speed	16Mbps SSI
Maximum 508dpi swipe speed	20cm/sec (40cm/sec @ 508/254dpi)
Active sensor array strip width	12.4 (248 pixels @ 50µm/pixel)
Package type	48 ball BGA (12 x 4 ball grid array)
Package dimensions (mm)	17.650 x 5.0 x 1.915 (with balls)



TCD41B TouchStrip companion chip

Real-time 508dpi navigation and image reconstruction performance	
Embedded processor	32-bit RISC @ 96MHz
Embedded firmware	PerfectPoint™ 5-way navigation engine PerfectPrint® image reconstruction PerfectMatch® fingerprint authentication
Maximum reconstructed image	248 x 360 pixels (@ 508dpi)
Maximum 508dpi reconstruction	20cm/sec (40cm/sec @ 508/254dpi)
Skew and rotation compensation	From -45 to +45°C
Speed variation compensation	From 0cm/sec (stopped) to 20cm/sec (maximum)
Fingerprint authentication time	<1.2 sec (from finger lift off)
Biometric compatibility	AFIS and area sensor compatibility supported
On-chip biometric storage	4KB (enough for 1-10 fingerprint templates)
Package type	121 ball BGA (11 x 11 ball grid array)
Package dimensions (mm)	10.0 x 10.0 x 1.26 (with balls)



Interfaces

High speed UART interface (full duplex, asynchronous communication up to 250K baud)
USB version 1.1 interface (slave mode bulk data transfer up to 12Mbps)
Optional SSI (synchronous serial interface) for image transfer speed up to 16Mbps

TouchStrip chipset power consumption*

Single voltage supply	2.7V min to 3.6V max
Sleep mode (wake from host only)	60µA @ 3.3V
Standby mode (wake-on-finger)	80µA @ 3.3V
Navigation mode	77 to 156mA @ 3.3V
Imaging mode (authentication)	<156mA @ 3.3V (TCS3B <51mA, TCD41B <105mA)

Environmental specifications

Operating temperature	-20 to +70°C
Storage temperature	-40 to +125°C
Operating humidity (RH @ 30°C)	5 to 95%

Ordering information

Please contact your local STMicroelectronics sales representative for pricing and product availability.

* Preliminary



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Full product information at www.st.com

ORDER CODE: FLTCS3A/0903

