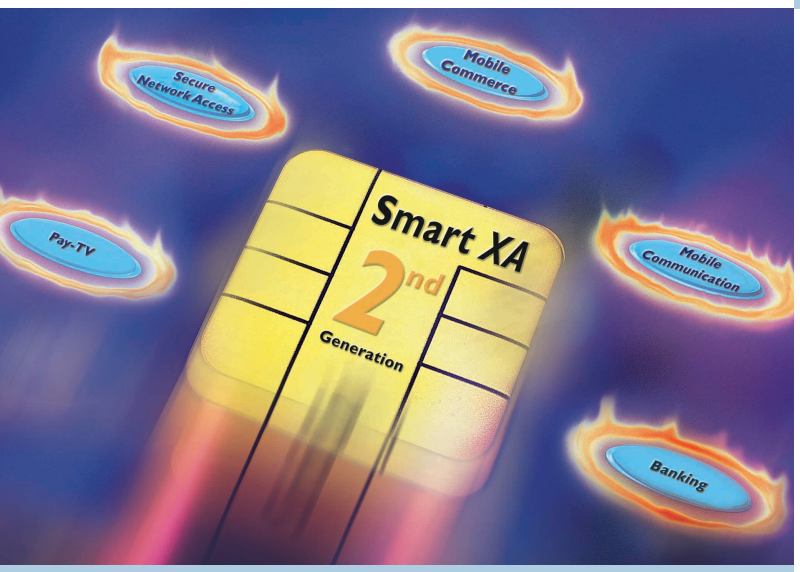
SmartXA Family
2nd Generation
Card IC / Chip Module



Product Family Features

- Fully static 16-bit *XA*-based CPU architecture
- Enhanced multi-tasking and multi-application support
- Low power / low voltage
- Hardware firewall concept
- Multi-mode operation
- Memory management unit protects code and data memory
- Option for additional integrated flash memory
- Fame*X* 32-bit crypto coprocessor for PKC
- High speed triple-DES coprocessor
- Cyclic Redundancy Code (CRC) module
- True Random Number Generator (TRNG)
- Two 16-bit timers
- ISO 7816 UART including DMA
- USB V1.1
- Advanced hardware security includes exception sensors, memory scrambling, glue logic and 5-metal layer process
- Die-individual FabKey

High security and performance, low power consumption, standardised operating systems and secure multi-application support are the main requirements of future smart card ICs. The Smart*XA* 2nd generation builds on the first generation Smart*XA* ICs, delivering enhanced features and extended memory to meet future market requirements.

The high computing performance of its true 16-bit architecture provides optimum support for interpreter-based languages while taking into account the low-power requirements of applications such as mobile communications. This makes Smart*XA* 2nd generation the ideal base for open platform concepts such as Java, Windows for Smart Cards or Multos.

Its hardware firewall, built upon the multi-mode operation and memory management unit, guarantees the integrity of all applications and data. A 32-bit Fame*X* crypto unit and a triple-DES coprocessor together with a True Random Number Generator and a Cyclic Redundancy Code unit put this product family at the leading edge in technology and security.

The instruction set is tailored and optimised to support high level languages. All operations, registers and address modes can be combined to achieve an unmatched code density. The complete tool chain, C-compiler, simulator and emulator, is available to provide fast development of card-operating systems, reducing time-to-market for new applications.

Visit our website at
www.semiconductors.com/identification
Info.bli@philips.com

Specification subject to change without notice

PHILIPS

Let's make things better.

Specification SmartXA Family

Operating frequency	1 to 6 MHz
Operating supply voltage	2.7 to 5.5 V
Write endurance	min. 100.000 cycles
Data retention	min. 10 years
EEPROM page mode programming time	4.5 ms
EEPROM personalization time	31.25 ms / 1KByte
FabKey area	64 byte, customized
Standard public key algorithms	RSA, DSS, Elliptic Curve, Diffie-Hellmann, Guillou-Quisquater
ESD protection on ISO pads	5 kV
(acc. to MIL Standard 883-C method 3015)	
Operating temperature	-25 to + 85 °C
Wafer thickness	180 µm
Wafer diameter	8 inches

Product Information

P16W....AEW	Wafer on FFC sawn, 180 µm
P16W....AEV	ISO chip card module, 8 contacts

FameX Performance Benchmark

RSA Key Length	Signature Generation (Chinese remainder theorem)	Signature verification
512 bit	≤ 40 ms	≤ 95 ms
1024 bit	≤ 160 ms	≤ 400 ms
2048 bit	≤ 1100 ms	≤ 6400 ms

SmartXA 2nd Generation - Product Family Overview

	EEPROM (kbyte)	RAM (kbyte)	ROM (kbyte)	Flash	3 DES	FameX	UART	USB
P16WX064	64	5	128	No	Yes	Yes	Yes	Yes
P16WC064	64	5	128	No	Yes	Yes	Yes	No
P16WC032	64	4	128	No	Yes	Yes	Yes	No
P16WS032	64	4	128	No	Yes	No	Yes	No
P16WFxxx	64	5	128	64	Yes	Yes	Yes	Yes

Note: Certain memory configurations may be subject to change.