



Product Features	PSCD012	PSCD016	PSCD020	PSCD021	PSCD040	PSCD041	PSCD080	PSCD080	PSCN081	PSCD081	PSCD128	PSCN144	PSCD144	PSCD145
CPU	Secure_MX51	Secure_MX51	Secure_MX51	Secure_MX51	Secure_MX51	Secure_MX51	Secure_MX51	Secure_MX51	Secure_MX51	Secure_MX51	Secure_MX51	Secure_MX51	Secure_MX51	Secure_MX51
ISO Contact Interface	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816
ISO Contactless Interface	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443
NFC Interface type	-	-	-	-	-	-	S2C	S2C	S2C	S2C	S2C	S2C	S2C	S2C
ROM [Byte]	200 K	264 K	200 K	264 K	200 K	264 K	200 K	200 K	264 K	264 K	264 K	200 K	200 K	264 K
RAM (linear addressable) [Byte]	6.4 K	7.5 K	6.4 K	7.5 K	6.4 K	7.5 K	6.4 K	7.5 K	6.4 K	7.5 K	6.4 K	7.5 K	6.4 K	7.5 K
- Standard RAM [Byte]	3.5 K	3.5 K	3.5 K	3.5 K	3.5 K	3.5 K	3.5 K	3.5 K	3.5 K	3.5 K	3.5 K	3.5 K	3.5 K	3.5 K
- RAM accessible by FAMEX [Byte]	2.5 K	2.5 K	2.5 K	2.5 K	2.5 K	2.5 K	2.5 K	2.5 K	2.5 K	2.5 K	2.5 K	2.5 K	2.5 K	2.5 K
EEPROM [Byte]	12 K	16 K	20 K	20 K	40 K	40 K	80 K	80 K	80 K	144 K	144 K	144 K	144 K	144 K
Security Features														
PKI Crypto-Engine (FAMEX2)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
PKI Crypto-Engine (FAMEX) (RSA key length up to 8192-bit)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
SHA (1024 bit signature generation)	99 / 2 ms	71 / 2 ms	99 / 2 ms	71 / 2 ms	99 / 2 ms	71 / 2 ms	99 / 2 ms	99 / 2 ms	71 / 2 ms	71 / 2 ms	71 / 2 ms	99 / 2 ms	99 / 2 ms	71 / 2 ms
(CRT) verification, Exponent: 216+1	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
ECC (192-bit signature) generation/verification	32 / 60 ms	17 / 33 ms	32 / 60 ms	17 / 33 ms	32 / 60 ms	17 / 33 ms	32 / 60 ms	17 / 33 ms	32 / 60 ms	17 / 33 ms	17 / 33 ms	32 / 60 ms	32 / 60 ms	17 / 33 ms
DES-Engine	DES3 < 40 us	DES3 < 40 us	DES3 < 40 us	DES3 < 40 us	DES3 < 40 us	DES3 < 40 us	DES3 < 40 us	DES3 < 40 us	DES3 < 40 us	DES3 < 40 us	DES3 < 40 us	DES3 < 40 us	DES3 < 40 us	DES3 < 40 us
AES-Engine key length 128/192/256-bit	< 10/13/15 us	< 10/13/15 us	< 10/13/15 us	< 10/13/15 us	< 10/13/15 us	< 10/13/15 us	< 10/13/15 us	< 10/13/15 us	< 10/13/15 us	< 10/13/15 us	< 10/13/15 us	< 10/13/15 us	< 10/13/15 us	< 10/13/15 us
Exception Sensors	V, T, Light	V, T, Light	V, T, Light	V, T, Light	V, T, Light	V, T, Light	V, T, Light	V, T, Light	V, T, Light	V, T, Light	V, T, Light	V, T, Light	V, T, Light	V, T, Light
Memory Management Unit (Firewall)	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Additional Product Information														
UART for implemented interfaces	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
CRC-Engine	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Supply voltage [V]	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5
External Clock [MHz]	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)
Internal Clock [MHz]	1...30	1...62	1...30	1...62	1...30	1...62	1...30	1...62	1...30	1...62	1...30	1...62	1...30	1...62
Temperature range [°C]	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85
EEPROM page mode granularity [Byte]	1...128	1...128	1...128	1...128	1...128	1...128	1...128	1...128	1...128	1...128	1...128	1...128	1...128	1...128
16-bit Timer/Counter	2	2	2	2	2	2	2	2	2	2	2	2	2	2
True Random Number Generator	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)
Technology	0.14 µm	0.14 µm	0.14 µm	0.14 µm	0.14 µm	0.14 µm	0.14 µm	0.14 µm	0.14 µm	0.14 µm	0.14 µm	0.14 µm	0.14 µm	0.14 µm
MIFARE™ emulation (option)	yes, 1 K or 4 K	yes, 1 K or 4 K	yes, 1 K or 4 K	yes, 1 K or 4 K	yes, 1 K or 4 K	yes, 1 K or 4 K	yes, 1 K or 4 K	yes, 1 K or 4 K	yes, 1 K or 4 K	yes, 1 K or 4 K	yes, 1 K or 4 K	yes, 1 K or 4 K	yes, 1 K or 4 K	yes, 1 K or 4 K
Delivery Type Wafer	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless
Delivery Type Module	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless
Evaluation and Certification														
3 <sup>rd</sup> Party Hardware Evaluation	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Security Certificates*	CC EALS+ EMVCo	CC EALS+ EMVCo	CC EALS+ EMVCo	CC EALS+ EMVCo	CC EALS+ EMVCo	CC EALS+ EMVCo	CC EALS+ EMVCo	CC EALS+ EMVCo	CC EALS+ EMVCo	CC EALS+ EMVCo	CC EALS+ EMVCo	CC EALS+ EMVCo	CC EALS+ EMVCo	CC EALS+ EMVCo

\* Common Criteria (CC), EMVCo, ZXK and other evaluations planned depending on application requirements \*\* MIFARE is a trademark of NXP Semiconductors N.V.

Product Features	P6D0024	P6D0040	P6D0080	P6D0144	P6N0144	P6C0040	P6C0080	P6C0144
CPU (enhanced 8/16/24/32 bit instruction set)	Secure_SMX2	Secure_SMX2	Secure_SMX2	Secure_SMX2	Secure_SMX2	Secure_SMX2	Secure_SMX2	Secure_SMX2
ISO Contact Interface	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816	ISO 7816
ISO Contactless Interface	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443	ISO 14443
NFC Interface type	-	-	-	-	-	S2C	S2C	S2C
Concurrent contactless/contact operation	yes	yes	yes	yes	yes	yes	yes	yes
User ROM [Byte]	300 K	384 K	300 K	384 K	300 K	384 K	300 K	384 K
RAM (linear addressable) [Byte]	8.125 K	8.125 K	8.125 K	8.125 K	8.125 K	8.125 K	8.125 K	8.125 K
- Standard RAM accessible by CPU [Byte]	5.5 K	5.5 K	5.5 K	5.5 K	5.5 K	5.5 K	5.5 K	5.5 K
- RAM accessible by FAMEX and CPU [Byte]	2.625 K	2.625 K	2.625 K	2.625 K	2.625 K	2.625 K	2.625 K	2.625 K
EEPROM [Byte]	24 K	40 K	40 K	40 K	40 K	40 K	40 K	40 K
Security Features								
PKI Crypto-Engine (FAMEX) for ECC/RSAs	yes	yes	yes	yes	yes	yes	yes	yes
SBC Dual/triple key DES-Engine	yes	yes	yes	yes	yes	yes	yes	yes
SBC AES-Engine key length 128/192/256-bit	yes	yes	yes	yes	yes	yes	yes	yes
Sensor/Class Logic/Secure Fields	yes	yes	yes	yes	yes	yes	yes	yes
Memory Management Unit (Firewall)	yes	yes	yes	yes	yes	yes	yes	yes
Additional Product Information								
UART for implemented interfaces	yes	yes	yes	yes	yes	yes	yes	yes
Cygnal Machine and 16/32-bit CRC-Engine	yes	yes	yes	yes	yes	yes	yes	yes
Temperature range [°C]	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5	1.62...5.5
External Clock [MHz]	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)	1...10 (13.56)
Internal Clock (1 CPU cycle/clock) [MHz]	1...20	1...20	1...20	1...20	1...20	1...20	1...20	1...20
EEPROM page mode granularity [Byte]	1...256	1...256	1...256	1...256	1...256	1...256	1...256	1...256
16-bit Timer/Counter	2	2	2	2	2	2	2	2
True Random Number Generator	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)	yes, acc. to FIPS 140-2/ AIS 31 (Class P2)
Technology	0.09 µm	0.09 µm	0.09 µm	0.09 µm	0.09 µm	0.09 µm	0.09 µm	0.09 µm
MIFARE™ Plus™ implementation (option)	yes, 2 K or 4 K	yes, 2 K or 4 K	yes, 2 K or 4 K	yes, 2 K or 4 K	yes, 2 K or 4 K	yes, 2 K or 4 K	yes, 2 K or 4 K	yes, 2 K or 4 K
MIFARE™ DESFire EV™ implementation (option)	yes, 2 K, 4 K or 8 K	yes, 2 K, 4 K or 8 K	yes, 2 K, 4 K or 8 K	yes, 2 K, 4 K or 8 K	yes, 2 K, 4 K or 8 K	yes, 2 K, 4 K or 8 K	yes, 2 K, 4 K or 8 K	yes, 2 K, 4 K or 8 K
Delivery Type Wafer	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless
Delivery Type Module	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless	Contact, Dual Interface, Contactless
Evaluation and Certification								
3 <sup>rd</sup> Party Hardware Evaluation	yes	yes	yes	yes	yes	yes	yes	yes
Security Certificates**	CC EALS+ EMVCo planned	CC EALS+ EMVCo planned	CC EALS+ EMVCo planned	CC EALS+ EMVCo planned	CC EALS+ EMVCo planned	CC EALS+ EMVCo planned	CC EALS+ EMVCo planned	CC EALS+ EMVCo planned

\* Not implemented MIFARE Plus resp. MIFARE DESFire EV1 implementation \*\* Equivalent to up to 120 MHz in the SmartMX P5 Family

\*\*\* MIFARE and DESFire are a trademark of NXP Semiconductors N.V. \*\*\*\* Common Criteria (CC), EMVCo, ZXK and other evaluations planned depending on application requirements

Product Features	SmartID 4K	SmartID 8K	SmartID 10K	SmartID 24K	SmartID 32K
Pre-installed applications	ICAO-like eID	ICAO-like eID	ICAO-like eID	ICAO-like eID	ICAO-like eID
ICAO P303 file system types	LDS, BAC	LDS, BAC	LDS, BAC	LDS, BAC	LDS, BAC
Enhanced file system types	BAC+	BAC+	BAC+	BAC+	BAC+
Memory					
EEPROM [Byte]	4 K	8 K	11 K	24 K	32 K
Write Endurance [cycles]	500 K	500 K	100 K	500 K	500 K
Data Retention [years]	20	20	20	20	20
RF interface					
Standard	ISO 14443 A	ISO 14443 A	ISO 14443 A	ISO 14443 A	ISO 14443 A
Frequency [MHz]	13.56	13.56	13.56	13.56	13.56
Modulation	1062/1424	1062/1424	1062/1424	1062/1424/948	1062/1424/948
Anticollision	True deterministic	True deterministic	True deterministic	True deterministic	True deterministic
Operating Distance [cm]	10	10	10	10	10
Security					
Unique Serial Number [Byte]	7	7	7 (8 for MIFARE 4K emulation)	7	7
DES-Engine	DES3 < 40ms	DES3 < 40ms	DES3 < 40ms	DES3 < 40ms	DES3 < 40ms
Exception Sensors	V, T, Light	V, T, Light	V, T, Light	V, T, Light	V, T, Light
General Product Information					
Operating Temperature Range [°C]	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85
MIFARE or DESFire implementation (option)	n/a	n/a	MIFARE 4K optional	MIFARE 4K	MIFARE 4K
Package					
MOB4 module	P330G003A4	P330G003A4	P330G002A4	P332G004A4	P332G004A4
MOB6 module	P330G003A6	P330G003A6	n/a	P332G004A6	P332G004A6
Sawn wafer (8" on UV irradiated FCCI)	P330G003A4	P330G003A4	n/a	n/a	n/a

### NXP Authentication Products

Product Features	JTC081	JTC020
CPU	Secure_MX51	Secure_MX51
Operating System	JCOP 2.4.2	JCOP 2.4.2
Application software	Anti-Cloning, Profile of Service, Device Authentication	Anti-Cloning, Profile of Service, Device Authentication
Certificate pre-programming service	supported	supported
Memory		
Available EEPROM (free for Applicant)	75 KB	16 KB
ROM (free for Applicant)	100 KB	20 KB
RAM (linear addressable for Applicant)	3.8 KB	2.3 KB
Bitstream		
PC (Master & Slave)	100 kbits	400 kbits
SP1	2 Mbits	2 Mbits
Number of GPIOs (shared with interfaces)	3	4
Cryptography		
DES/TDES [bit]	56/112/168	56/11