



# NXP® JCOP® Java Card™ OS for SmartMX3® Secure Microcontrollers

## JCOP 4: The Most Advanced Java Card OS for Secure Identity Applications

JCOP 4 is a secure, field-proven, vendor-independent OS for secure identity chip-card applications. It provides multi-application support for contact, contactless, and dual communication interfaces, and delivers benchmark transaction performance for security documents.

### KEY FEATURES

- ▶ >1 billion devices powered by JCOP already deployed in the field
- ▶ Best-in-class in terms of performances with an e-Passport SAC transaction in less than 2s
- ▶ Java Card v3.0.5 Classic Edition
- ▶ GlobalPlatform®
  - GP v2.2 ID Configuration
  - GP v2.2 Mapping Guidelines configuration v1.0.1
  - GP v2.3 Common Implementation Configuration v2.0
- ▶ ISO 7816-3 T=0, T=1
- ▶ ISO 14443 (up to 848kbps)
- ▶ Dual-interface support
- ▶ Support of DES, 3DES, AES, RSA, ECC and SHA via dedicated hardware-based coprocessors
- ▶ Operating System located in ROM boosting execution performance
- ▶ Available Non-Volatile Memory (NVM) for applications and personalization data up to 180kB
- ▶ Highly flexible feature and Applet selection for FLASH preloading for customer-specific products
- ▶ MIFARE Plus® / MIFARE Classic® EV1 or MIFARE® DESFire® EV2 contactless IC implementations
- ▶ Support (optional)
  - Korean SEED support (optional)
  - Match-on-Card (optional)
- ▶ Common Criteria EAL 6+ certified
- ▶ EMVCo™ approved
- ▶ FIPS certified

### KEY BENEFITS

- ▶ Unique platform supports convergence of secure identity, payment and transport, increasing flexibility while reducing cost and complexity
- ▶ Easy implementation with full range of certified applets available for loading to FLASH, improving time-to-market, offering highest customization capabilities
- ▶ Optimized for high performance OS initialization and personalization for excellent machine utilization and throughput
- ▶ JCOP best-in-class transaction speed – from border control gates to contactless payment terminals, and automatic fare/ collection schemes – enabling a unique and differentiated customer experience
- ▶ Trusted Java Card OS Open Platform based on current and future NXP secure ICs with highest certification security level, ensuring reliable project deployment

### APPLICATIONS

- ▶ National eID
- ▶ Electronic Passport
- ▶ Electronic Driver's License Card
- ▶ Electronic Health and Social Benefits Cards
- ▶ ePKI / eServices / Digital Signature Card
- ▶ Payment and Micro Payment
- ▶ Public Transport
- ▶ Logical and Physical Access



Common Criteria EAL 6+ certified and EMVCo approved, JCOP 4 is optimized for use with NXP's SmartMX3 family, a line of secure microcontrollers with hardware accelerators.

JCOP 4 supports every SmartMX3 crypto-algorithm and delivers best-in-class transaction performance and personalization time (with ~50% reduced perso time compared to JCOP 3).

Customers can develop their own Java Card applets based on JCOP and have them loaded to FLASH memory, or get a head start on design by using NXP's available applets.

The NXP offering for JCOP includes cost-effective solutions based on the first advanced CMOS040 technologies available on the market with more than >1B FLASH secure ICs sold.

## PRODUCT FEATURES

ITEM	JCOP 4
<b>Specifications and Features</b>	
Java Card Version	3.0.5 Classic Edition
GlobalPlatform Version	2.3
Secure Channel Protocol (SCP)	SCP 01, 02 and 03
Delegated Management	Yes
Secure Box	Yes
Physical Unclonable Function (PUF)	Yes
<b>Available Memory and Technology</b>	
FLASH (available before loading MIFARE, Applets, OS Addons)	up to 180kB
CMOS Technology	CMOS040
<b>MIFARE IC</b>	
MIFARE Classic / Plus Implementation	EV1 – up to 4kB (optional)
MIFARE DESFire Implementation	EV2 – up to 8kB (optional)
<b>Transaction Performance</b>	
SAC Electronic Passport	< 2s
MasterCard Transaction Time	< 200ms
<b>Cryptography</b>	
DES/TDES	56b, 112b and 168b
AES	256b
RSA	4096b
ECC GF(p)	521b
SHA	128b, 224b, 256b, 384b and 512b
<b>Certifications and Approvals</b>	
EMVCo Platform Approval	Yes
VISA Approvals	Yes
MasterCard PIC (TAS & CAST)	Yes
EMVCo CPA	Yes
Common Criteria for OS	EAL 6+ (AVA_VAN.5, ALC_FLR.1 and ASE_TSS.2)
Federal Information Processing Standard (FIPS)	140-2 level 3

## APPLETS

Name	Specification & Features
Secure Identity Application Suite	<ul style="list-style-type: none"> <li>• ICAO BAC (CC EAL4+)</li> <li>• ICAO SAC / EAC (PACEv2) (CC EAL5+)</li> <li>• Secure Signature Creation Device – SSCD (CC EAL5+)</li> <li>• National eID</li> <li>• European Citizen Card</li> <li>• PKI / Digital Signature</li> <li>• eIDAS</li> <li>• International Driving License</li> <li>• European Health Insurance Card</li> <li>• Fingerprint Match-On-Card</li> <li>• One Time Password</li> </ul>
VISA	VSDC2.9, VSDC2.8.1G1
MasterCard M/Chip Advance	M/Chip Advance v1.2 Specification including Data Storage and MMAR
EMVCo CPA	<ul style="list-style-type: none"> <li>• EMV Common Payment</li> <li>• Application Specification v1 Dec 2005</li> </ul>