

Java Card Platform

The **TOP GX4** smartcard range benefits from the latest standard release of Java Card technology. These Java Card platforms are available from Gemalto as open, multi-application cards and ideally suited for markets such as Identity or Security/Access. These Public Key Java Cards meet the most advanced security requirements of long term, multi-application programs, including those being deployed by large global organizations. TOP GX4 complies with the latest international standards:

- Java Card 2.2.1
- Global Platform 2.1.1 (amendment A)
- ISO 7816 parts 1, 2, 3, 4, 5, 6, 8 & 9

The TOP GX4 range benefits also from FIPS and Common Criteria certifications.

Key Benefits

Ready ROMed* reference Applets do not impact available EEPROM:

- Classic applets are directly supported by Gemalto Classic Client software and enable building PKI applications.
- MPCOS applet is fully compatible with high performance native MPCOS and available for data management and/or purse applications.
- OATH OTP applet offers One Time Password services.

Very large memory extends multi-application capability, data capacity and lifetime.

Due to ROMed applets, approximately 68KB of memory is available (TOP IM GX4 and TOP DM GX4) to store data and host additional applets for application evolution during the expected card lifetime. TOP IS GX4 is the 36KB version of TOP IM GX4. TOP DL GX4 provides 128KB of free memory.

Real Garbage Collector

New in JC2.2 spec, memory can be released to the platform in real time upon object deletion and made available to the applets.

Part of a full range of product and services

Additional benefits from Gemalto's proven Java Card experience and product offering include support, middleware, personalization services and a Card Management system.

Flexibility and Modularity

The open platform principle and interoperability enable separation of application development (Applet) from the platform. This also supports aggressive time-to-market for introduction of new applications. Existing third party applets from most vendors can be loaded and cards that are compatible with existing ones can be generated quickly.

No compromise on security

As reflected by the FIPS and Common Criteria certifications, the TOP GX4 platform implements the most advanced security countermeasures for enforcing protection of all sensitive data and functions in the card.



TOP GX4 Technical Specifications

General Features

- Java Card Virtual Machine, RTE and API compliant with **JC2.2.1**
- Card Management & API compliant with **GP2.1.1**
SCP01 and SCP02 supported with scripting capability of Amendment A
- Cryptographic algorithms: 3DES (ECB, CBC), AES (128, 192, 256), **RSA up to 2048bit**, SHA-1, SHA-256 (option)
- On-card asymmetric **key pair generation**
- PK-based **DAP** for better control of applets that can be loaded on the card
- Delegated Management
- Multiple Logical Channel to permit selection of multiple applets at the same time
- Contact interface: T=0, T=1, PPS, with baud rates up to 230Kbps
- Contactless interface (TOP DM GX4 & TOP DL GX4): ISO 14443, T=CL
- Mifare emulation (TOP DM GX4 & TOP DL GX4)

Pre-loaded applets in ROM*

- Classic applets
- MPCOS applet
- OATH OTP applet (TOP IM GX4)

Chip characteristics

- Latest generation Smart Card microcontroller
- EEPROM size: 128K Bytes (TOP DL GX4), 72K Bytes (TOP DM GX4 & TOP IM GX4) or 36K (TOP IS GX4)
- Embedded security controller for asymmetric cryptography
- True random number generator

Performance

TOP GX4 Virtual machine has been highly optimized to offer maximum software performance without compromising security. Combined with the latest generation of high performance silicon, this provides one of the fastest Java Open Platforms available.

Security

The TOP GX4 includes multiple hardware and software countermeasures against various attacks:

- Side channel attacks
- Invasive attacks
- Advanced fault attacks
- Other types of attacks.

The TOP GX4 range benefits also from FIPS 140 and CC EAL 4+ certifications.

Memory management

TOP GX4 advance memory management supports the following features

- Applet deletion
- **Real Garbage collector** (JC 2.2.1 specification) – memory space can be recovered after individual object deletion

*ROMed applet means the Applet Package is preloaded in ROM without using EEPROM memory. Depending on customer preference, ROMed applet packages may be loaded or deleted during manufacturing with no impact on EEPROM capacity.