



Calypso revision 3 specification compliant transportation dual-interface secure microcontroller

Data brief

Features

Standards

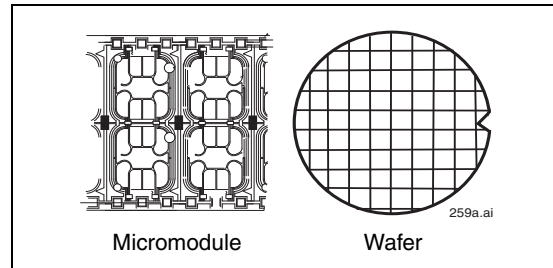
- Calypso compliant with:
 - Portable Object Application Revision 3 specification
 - Card Application Revision 2 specification
 - Calypso revision 1 contactless protocol
 - CD97 specifications
 - CD97-BX specifications
 - CDLight specifications

Applications

- Automatic fare collection
- Public transportation access
- Access control
- Ticketing payment
- City services and Events
- Leisure parks and stadium
- Corporate card, Student card

Multi-purpose card

- Single or multiple ticketing applications
- Transportation payment
- Stored value (token purse)
- Loyalty



ST23YR (8/16bit) MCU Core

- 4, 8 or 18 Kbytes of EEPROM
- Innovatron contactless protocol
- 3V and 5V supply voltage ranges
- Internal CPU clock frequency up to 29 MHz
- Anti-collision and 16-bit CRC features
- ISO/IEC 14443B (Parts 1 to 4) at 106, 212 and 424 kbps
- Complies with ISO/IEC 7816-3 T=0
- Dual or contactless-only configuration
- DES, DESX and TDES capability
- Full transaction duration, including typical terminal processing compliant with public transportation requirements
- Common Criteria EAL5+
- EMVCo™ certification

Order codes

Part number	Memory	Package
CD21-Rev3-4K	4-Kbyte EEPROM	W40 / D7 / CB4
CD21-Rev3-8K	8-Kbyte EEPROM	
CD21-Rev3-18K	15-Kbyte EEPROM	

High security features

- Security managed with various access modes: Pin, Session, Always, and Never.
- A cryptographic certificate controls the access to file modifications. The certificate is computed by the reader (using its built-in SAM) and the card during the transaction, using DES, DESX or TDES encryption.
- Calypso automatic recovery mechanism: all data modified in the card during a secure session are either completely done or not done at all.
- Powerful multi-application synchronization capability
- A special mechanism synchronizes modifications between the different applications managed by the card. Each command within the session uses its own secrets or delegates its security to the session security manager.

Memory organization

- Multi-application card
- Data organized in Files according to ISO/IEC 7816-4
- Tele-ticketing compliant with the EN 1545 standard data model
- The file structure may be chosen among many options (for example, 2 Calypso applications, 1 multi-purpose application with 9 contracts and an eTicket application)
- Complete CDLight and CD97 (BX) emulation possible
- Data is protected by diversified keys (up to 6 keys per directory)

Description

The CD21-Rev3 is a cost-effective, dual-interface (contact and contactless) secure microcontroller specifically designed for public transport applications, providing a high level of security, high speed transactions and easy capabilities of evolution for transport and multi-service applications.

The CD21-Rev3 is a Calypso Network Association product. The CD21-Rev3 is available with 4, 8 or 18 Kbytes of EEPROM.

Revision history

Table 1. Document revision history

Date	Revision	Changes
21-Sep-2010	1	Initial release.
26-Oct-2010	2	Changed document classification from Smartcard Restricted Distribution to Company Restricted Distribution.
11-Apr-2011	3	Added 4 Kbyte EEPROM device.
12-Jul-2011	4	Changed document classification from Company Restricted Distribution to Public.

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