



**Advanced Card Systems Ltd.**  
Card & Reader Technologies



## ACOS6-C Multi-Application & Purse Card (MAP Card)

**A Product Presentation**



# Rundown

1. Product Overview
2. Product Features
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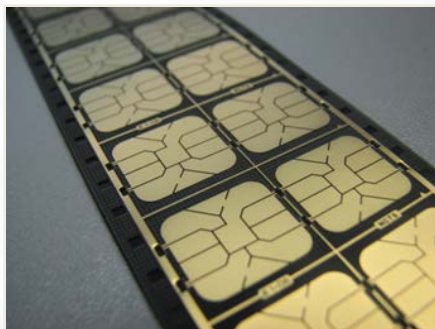
# Product Overview



# Product Overview

## ACOS6 (64KB EEPROM)

Multi Application Multi Purse [MAP] Smart Card



**Module**



**Full-size card**



**SIM-size card**

For further detail about ACOS6S, please visit:

<http://www.acs.com.hk/index.php?pid=product&id=ACOS6-SAM>



# Product Features



# What are the Key Features of ACOS6 / ACOS6-SAM

## Time-to-market

Flash chip: The COS can be developed and updated from time to time

## Unrivalled Security

Complies with ISO standards

## Perfect medium for Multi applications

With the ISO7816-4 file system, It is able to develop multi application with different security environment in one card

## High Portability

Can be used on different machines without compromising your security



## Best choice on E-Purse solution

- 1.) Flexibility of creating more than 1 Purse.
- 2.) Proprietary E-Purse command

## High-speed card

- 1.) Baud rate up to 223K bps
  - 2.) Cryptographic processor
- Meet the growing need for high security smart card application

## Enhanced Security Feature

ACOS6-SAM pair up with ACOS3/6 for session key generation

SM-MAC for authenticity and SM-ENC for Confidentiality



# Comparison Chart



# Comparison Chart

Category		ACOS3	ACOS3 Combi*	ACOS5/ CryptoMate	ACOS6	ACOS6-SAM
Product Code		ACOS3-B/D	ACOS3-G	ACOS5-B/ ACOS5T-A	ACOS6-C	ACOS6S-B
Modules						
ISO 7816 compliant 8-contact module		✓	✓	✓	✓	✓
Communication Speed						
Contact	9,600 bps (default)	✓	✓	✓	✓	✓
	14,400 bps	✓	✓		✓	✓
	28,800 bps	✓	✓		✓	✓
	115,200 bps	✓	✓	✓	✓	✓
	223,200 bps	✓	✓		✓	✓
Contactless	106kbps/ 212kbps/ 424kbps/848kbps		✓			
EEPROM Size						
User Memory (byte)		32/72K	8K	32K	64K	32K



Remark: ACOS3 Contactless card has the same contactless features of ACOS3 Combi card



# Comparison Chart

Category		ACOS3	ACOS3 Combi*	ACOS5/ CryptoMate	ACOS6	ACOS6-SAM
Product Code		ACOS3-B/D	ACOS3-G	ACOS5-B/ ACOS5T-A	ACOS6-C	ACOS6S-B
Protocol						
Contact	T = 0	✓	✓	✓	✓	✓
Contactless	T = CL		✓			
ISO standards						
Contact	ISO 7816 – 1/2/3	✓	✓	✓	✓	✓
	ISO 7816 – 4			✓	✓	✓
	ISO 7816 – 8/9			✓		
Contactless	ISO 14443-1/2/3/4		✓			
	ISO 14443 Type A		✓			



Remark: ACOS3 Contactless card has the same contactless features of ACOS3 Combi card

# Comparison Chart

Category	ACOS3	ACOS3 Combi*	ACOS5/ CryptoMate	ACOS6	ACOS6-SAM
Product Code	ACOS3-B/D	ACOS3-G	ACOS5-B/ ACOS5T-A	ACOS6-C	ACOS6S-B
File Systems					
Directory File			✓	✓	✓
Transparent (Binary File)	✓	✓	✓	✓	✓
Linear Fixed Record	✓	✓	✓	✓	✓
Linear Variable Record			✓	✓	✓
Cyclic File			✓	✓	✓
Security Keys					
User, Admin & Application Specified PIN Support	✓	✓	✓		
DES/ 3DES	✓	✓	✓	✓	✓
3KDES					✓
Customizable PIN & Key Codes				✓	✓



Remark: ACOS3 Contactless card has the same contactless features of ACOS3 Combi card

# Comparison Chart

Category		ACOS3	ACOS3 Combi*	ACOS5/ CryptoMate	ACOS6	ACOS6-SAM
Product Code		ACOS3-B/D	ACOS3-G	ACOS5-B/ ACOS5T-A	ACOS6-C	ACOS6S-B
Cryptographic Capabilities						
DES/ 3DES		✓	✓	✓	✓	✓
3KDES					✓	
AES-128 bits				✓		✓
RSA-512, 1024, 2048 bits				✓		
SHA – 1,256, 512				✓		
Secure Messaging		✓	✓	✓	✓	✓
FIPS140-2 compliant Random Number Generator					✓	✓
Authentication (MAC)	With Terminal	✓	✓	✓	✓	✓
	With ACOS3/ACOS6				✓	✓
	With Mifare Ultralight C/ DESFire/ DESFire EV1					✓
EEPROM Endurance						
100,000 write/erase cycles		✓			✓	✓
500,000 write/erase cycles			✓	✓		

# Comparison Chart

Category	ACOS3	ACOS3 Combi*	ACOS5/ CryptoMate	ACOS6	ACOS6-SAM
Product Code	ACOS3-B/D	ACOS3-G	ACOS5-B/ ACOS5T-A	ACOS6-C	ACOS6S-B
Applications					
E-government E.g. National ID, Health Card, etc.			PKI Application, Multilevel secured access hierarchy	Multi-Purse in one application, Multilevel secured access hierarchy	
Logical & Physical Access Control E. g. Enterprise Security, Time attendance, etc.	Corporate Security/ Identification, Microsoft Windows Logon	Corporate Security/ Identification, Microsoft Windows Logon	Corporate Security/ Identification, Microsoft Windows Logon	Corporate Security/ Identification, Microsoft Windows Logon	Security Access Module (SAM)
Banking and Financial E.g. Online banking, insurance, stock trading, etc.	Network Security, Secure Messaging	Network Security, Secure Messaging	PKI Application, Network Security, Secure Messaging		Security Access Module (SAM), Secure Messaging
Loyalty and Retail E.g. Cashless retail payment, customer loyalty, etc.	E-Payment, Customer Loyalty	E-Payment, Customer Loyalty	E-Payment, Customer Loyalty	E-Payment, Customer Loyalty	Security Access Module (SAM)
Transportation E.g. Automatics fare collection, etc.					Security Access Module (SAM)



# Product Applications



# In What areas can we apply ACOS6?



Network Security



Secure Access Module  
(ACOS6-SAM)



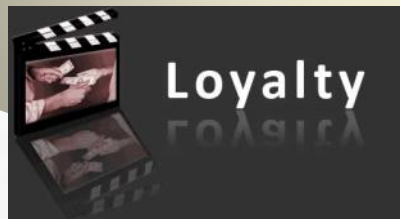
Corporate Security/  
Identification



E-Payment system



Physical Access  
Control



E-Loyalty



Cryptographic computation  
(ACOS6-SAM)



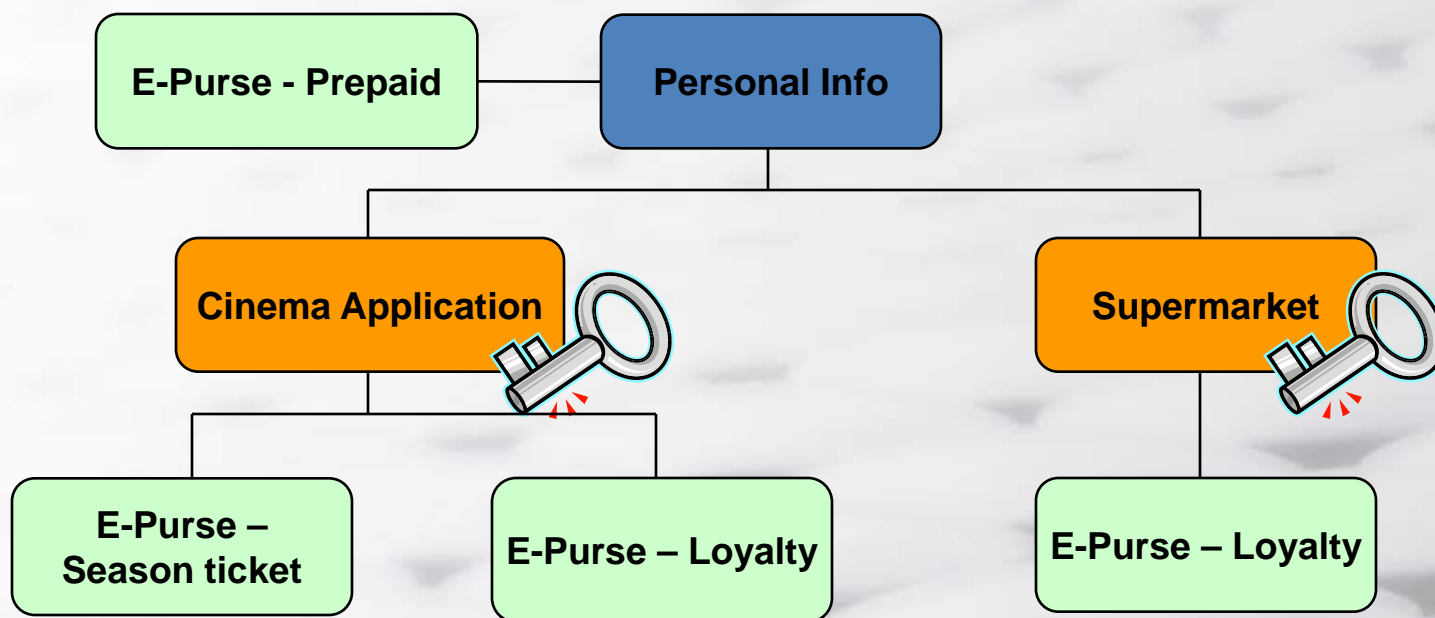
Multiple secure  
E-Purse



# ACOS6 Application sample

\* Every DF has a designated Security Environment (SE) file to defines the security condition of each application individually

\* Every transaction is secured by ACOS-6-SAM



# ACOS6S-B Secured Transaction Application sample

## Without ACOS6S-B

Information stored

E.g.:

- 1.) Personal Info
- 2.) Prepaid value



ACOS3/ACOS6/  
Other client cards

In supermarket



Smart Card Reader



Loyalty

In Cinema



Smart Card Reader

**2009 SEASON TICKETS**

Season ticket

+



Loyalty

acs

# ACOS6 Secured Transaction Application sample

## With ACOS6S-B

Information stored

E.g.:

- 1.) Personal Info
- 2.) Prepaid value



ACOS3/ACOS6/  
Other client cards

- Secure messaging
- Mutual authentication
- Generate session key



ACOS6S-B

- Store master keys
- Generate Diversity Key
- Perform cryptographic functions

In supermarket



Smart Card Reader



Loyalty

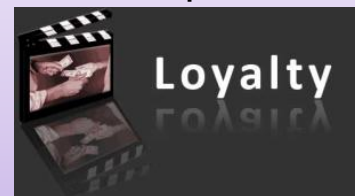
In Cinema



Smart Card Reader

2009 SEASON TICKETS

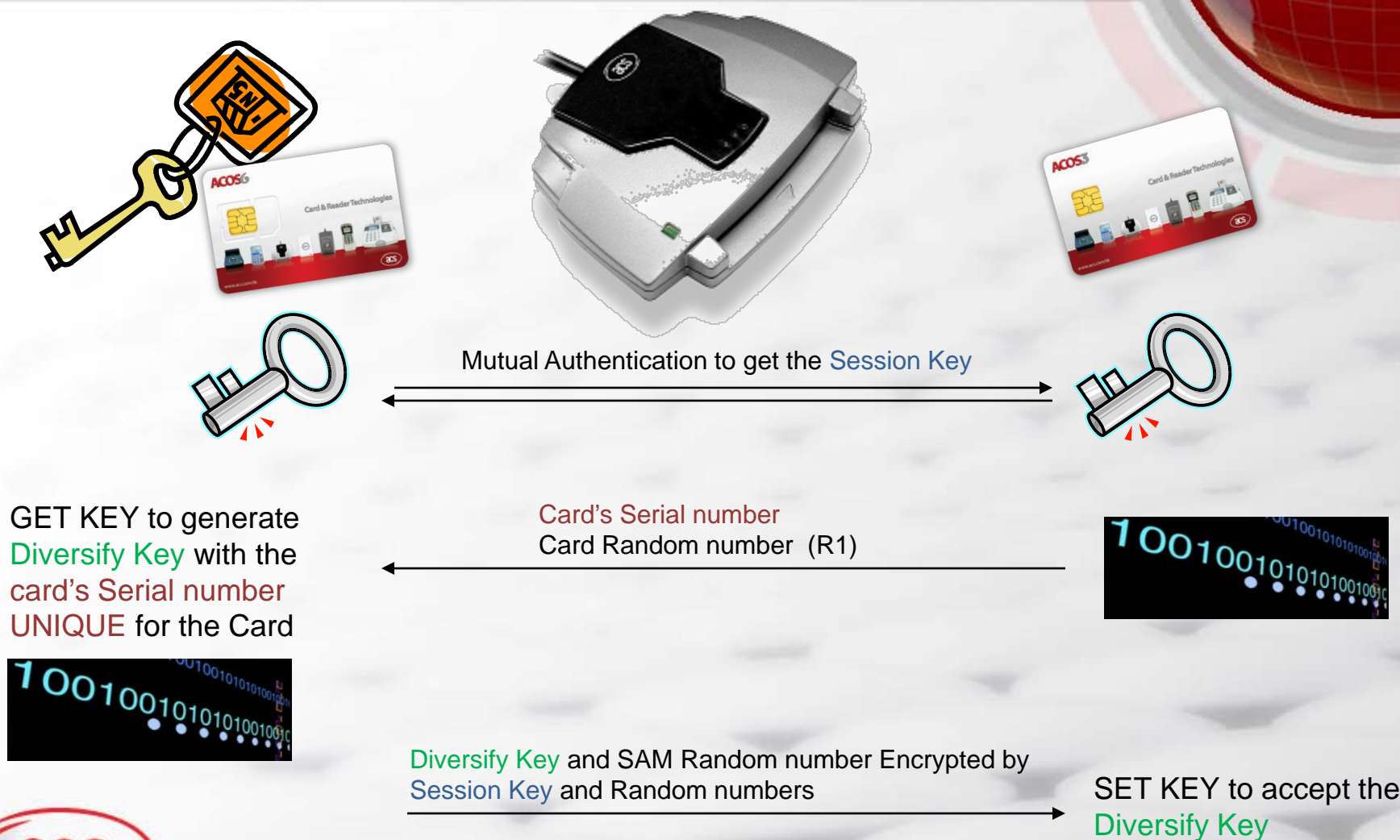
Season ticket  
+



Loyalty

acs

# ACOS6 / ACOS6-SAM Key Diversification





# Related Products





# ACOS6S-B Related Product

## ACOS6 Software Development Kit (SDK)

- Develop your own Multi-Application & Purse applications yourself



### For Developers

To develop multi-application and purse applications in:

- ACOS3 Smart card
- ACOS6 Smart Card
- ACOS6 SAM card

For further details about the SDK, please visit:

ACOS6 SDK: <http://www.acs.com.hk/index.php?pid=product&id=ACOS6-SDK>





# Ordering Information

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Products	Description
ACOS6-C1AACSA3060	Multi-Purse cards with 64KB EEPROM, glossy, PVC
ACOS6-C2AACSA3060	Multi-Purse cards with 64KB EEPROM, plunge SIM size, glossy, PVC
ACOS6S-B2AACSA4080	Micro-processor based secure access module cards with 32KB EEPROM, plunge SIM size, glossy
SDK-ACOS6/02	ACOS6 Software Development Kit Including tools and manuals

New code vs. old code:

ACOS6-C1AACSA3060: ACOS6-64-GP/3060

ACOS5-C2AACSA3060: ACOS6-64-SIM/3060

SDK-ACOS6/02: SDK-ACOS6



# Thank You!!!

*More information on:*

*<http://www.acs.com.hk/index.php?pid=product&id=ACOS6>*

