Payment

Meeting growing market demands for security and convenience.

www.infineon.com/payment
Mass transition to the EMV standard

Smart cards on the rise
Cashless payments continue to grow in popularity, also in emerging economies. A sizeable and growing percentage of all global transactions are already handled by payment cards. However, traditional magnetic strip cards suffer from a number of security challenges. Increasingly, the market is thus seeing a mass transition from magnetic stripe technology to microcontroller-based smart cards. These contain a security controller, which holds the information needed to process payments. They are protected by various security features based on robust, fraud-resistant chip architectures designed to international security standards.

Most important standards
The most widespread standard is the EMV Integrated Circuit Card Specification endorsed by Europay, MasterCard, Visa, JCB, American Express and China UnionPay. EMV is based on open specifications and supports global interoperability and compatibility of chip cards and readers for debit and credit card payments, whether they be contact-based or contactless. Other widely used payment standards include PBOC issued by the People’s Bank of China and RuPay launched by the National Payments Corporation of India (NPCI).

Meeting growing logistical and technical challenges
Although EMV smart cards offer significantly better protection against fraud and manipulation than magnetic stripe cards, this fast-expanding market presents banks and service providers with a number of logistical and technical challenges. Many countries, including large nations such as the US and China, are rapidly migrating to silicon. This means that hundreds of millions of secure and reliable payment cards must be deployed every year, supporting both contact-based and contactless modes. The market is also demanding faster contactless transaction times.

Meeting rising user expectations
In addition, user expectations for convenience and personalization services are rising. In particular, users are looking for converged functionality through multi-application cards that can pay for a bus ticket, buy clothes in a department store or clock up loyalty points. This is driving demand for dual-interface cards and infrastructure convergence. In addition, it is creating opportunities for new and enhanced services such as mobile payments in different form factors. To meet these fast-moving market trends, today’s security controllers must be:
- secure
- flexible
- fast and
- easy to use.
EMV migration success factors
Against this backdrop, silicon providers must support demand for static data authentication (SDA) technology based on symmetric encryption – especially for cost-sensitive, entry-level applications. At the same time, dynamic/combined data authentication (DDA/CDA) solutions are increasingly being deployed in payment applications requiring higher levels of fraud resistance.

And in a bid to meet rising demands for convenience and value-add features, a growing number of banks are gearing up to offer high-end contactless cards, for instance as payment stickers or combined payment and transport cards.

To succeed in the expanding multi-application space, manufacturers must meet growing demands for:
- convenience
- form factor diversification and
- open standards.
Shaping tomorrow’s payment market

As a leading provider of security chips for payment applications, Infineon is already defining tomorrow’s market. Leading-edge technologies such as SOLID FLASH™ and Coil on Module (CoM) provide compelling proof of Infineon’s innovative capabilities. In addition, Infineon is committed to non-proprietary open standards like CIPURSE™.

Fastest time to market

SOLID FLASH™ combines the advantages of a flexible Flash memory with a dedicated security concept. This ground-breaking technology underlines our technology leadership and commitment to excellence.

SOLID FLASH™ highlights

- Much faster time to market
- Simplified logistics with less capital tied up in inventory
- 50% acceleration in development cycles compared with ROM-based developments
- Secured locking mechanism certified according to Common Criteria and EMVCo

Easy transition from contact-based to contactless

Infineon’s Coil on Module (CoM) technology helps to accelerate the introduction of dual interface and contactless smart cards. The use of radio frequency (RF) is a huge improvement over the traditional physical link – a mechanical connection between the module and antenna – and improves the performance, robustness and reliability of the final product. It also paves the way for the new wave of cross-functional payment applications.

CoM is based on our extensive chip card package and contactless system expertise as well as our profound understanding of card manufacturer’s requirements.

CoM highlights

- Improved long-term robustness of dual interface (DIF) payment cards.
- Increased mechanical stability of card body thanks to significant reduction of milling geometry.
- Simplified card design and manufacturing, making manufacturing more efficient and up to five times faster.
- Fast serving of growing demand for contactless solutions without investment in new manufacturing equipment.
- Simplified stock management and increased flexibility in product design as different chip/package combinations can be used without card antenna adaptation.
- Compatible with aluminum-etched and wired card antenna technology.
- Increased manufacturing yield by elimination of direct antenna-to-module connection.
- Significant reduction of the ESD impact of DIF cards on contact POS readers.
Infineon has the broadest portfolio in the industry. This portfolio reflects our commitment to enabling, innovating and simplifying the global migration to the EMV standard. Trusted by all major market players, our proven offering covers the entire SDA, DDA, CDA and dual-interface application spectrum with a single and unique security microcontroller family – the SLE 77. A common footprint allows designers to leverage synergies within the family. The latest generation of SLE 77 was designed specifically to answer the rising performance demands of today’s contactless applications. In fact, SLE 77 accelerates transaction speeds by as much as 44 percent compared with 8-bit products currently available.

Typical payment transaction time is dramatically reduced by a powerful core architecture

Full lineup with SLE 77

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<th>Contact-based DDA/CDA</th>
<th>Contactless and dual-interface</th>
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<td>High-performance 16-bit 90 nm security controllers</td>
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<td>RSA functionality</td>
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<td>Optimized for payment applications such as VSDC, M/Chip, PBOC</td>
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<td>Optimized for low energy consumption</td>
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<td>Ready for multi-application and public transport cards</td>
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<td>Fast personalization capabilities</td>
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<td>Supporting Type A, B and C (Felica™)</td>
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<td>Short lead times thanks to SOLID FLASH™</td>
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<td>Optimal fit for our easy-to-use inductive coupling technology (CoM)</td>
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Following the broadline approach, our comprehensive SLE 77 portfolio addresses all market segments, ranging from black-line packages for contact-based solutions to CoM packages for the most advanced dual interface cards.

Perfect fit for multi-application cards

SLE 77 is the solution of choice for multi-application cards. It builds on our SOLID FLASH™ technology to accelerate time to market even when integrating new applications and services. It is also designed for seamless interoperability thanks to support for open standards and all contactless transmission protocols. Last but not least, it bundles the experience we have gained in contactless performance under the most demanding operating conditions over the last decade to deliver exceptional levels of robustness.
The right partner, today and for many tomorrows to come

Market pioneer
Based on our core competencies in the fields of security, contactless communication and integrated microcontroller solutions (embedded control), our extensive portfolio of semiconductor-based security products for chip card and security applications is actively helping to increase security in an increasingly connected world. For over 25 years – from day one in fact – we have been shaping the chip card industry with hardware-based security innovations. In fact, we have been global market leader for 15 consecutive years. Innovative technologies such as SOLID FLASH™ and our award-winning Coil on Module package provide continued proof of our ground-breaking innovative capabilities.

Global partnerships and support
Building on the global reach of our worldwide support organization, we have also formed an exceptional and established network of partnerships and alliances with players in the banking and credit card industry as well as with industry and certification bodies such as EMVCo, MasterCard, Visa, Global Platform, BCTC, NFC Forum, Smart Card Alliance, Multos Consortium and OSPT Alliance.

Understanding our customers’ needs
Through these long-standing relationships, we have developed a profound understanding of global and regional requirements for payment solutions. These close ties have fostered the trust that enabled us to secure major market shares around the world. Our local technical and marketing experts work closely with our customers to find the right solution for each market segment and application challenge. Our customers value our in-depth experience, technical support capabilities and strong commitment to innovation – not to mention the choice that comes with the world’s largest, most diversified one-stop offering. They also appreciate our speed and agility – demonstrated through fast delivery times and benchmark time-to-market.

Impressive track record
Our broad and expanding footprint of successful reference projects illustrates our customers’ trust in our leading and established platforms and tools. To date, we have already sold more than 3 billion chips for payment applications. Our customers know they can rely on an unbroken supply track record and the experience we have gained leading the payment market for more than ten years.
Mobile payment is rapidly growing in popularity. Infineon already offers a full product range for this expanding segment and is developing future-proof solutions in anticipation of evolving needs.

The flexibility of open standards

We are committed to open, non-proprietary, interoperable solutions capable of supporting the growing demand for multi-functional cards and infrastructure convergence. Which is why all of our contactless SLE 77 products support the open CIPURSE™ standard for secure, cost-effective handling of payment, access and ticketing applications.

CIPURSE™ highlights

- Provides a secure and flexible solution for public transport and multi-application schemes
- Promotes vendor neutrality, cross-vendor system interoperability, lower technology adoption risks, higher quality and improved market responsiveness
- Is non-discriminatory and compliant with public procurement rules
- Supports all globally accepted ISO standards (Type A, B and Felica)

A selection of Infineon’s payment projects worldwide

<table>
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<tr>
<th>EMV SDA</th>
<th>EMV DDA/CDA</th>
<th>CTL/DIF, EMVCo &amp; NON-EMVCo</th>
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Ask Infineon. Get connected with the answers.

Infineon offers its toll-free 0800/4001 service hotline as one central number, available 24/7 in English, Mandarin and German.

Our global connection service goes way beyond standard switchboard services by offering qualified support on the phone. Call us!

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- China, mainland .... 4001 200 951 (Mandarin/English)
- India ..................... 000 800 4402 951 (English)
- USA ....................... 1-866 951 9519 (English/German)
- Other countries ...... 00* 800 951 951 951 (English/German)
- Direct access ........... +49 89 234-0 (interconnection fee, German/English)

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