



# NXP IC solutions for contactless reader systems

## MIFARE™ reader ICs

NXP offers an extensive portfolio of innovative, cost-effective contactless reader ICs that support a broad range of applications, including public transport, eGovernment, payment (POS) terminals, access management, smart metering, logistics, and supply-chain management.

### Key features

- ▶ ISO / IEC 14443 and ISO / IEC 15693 compliant
- ▶ NFC Reader compliant
- ▶ MIFARE™ Crypto1 support
- ▶ Compatibility with all established NXP MIFARE and SmartMX smart card ICs
- ▶ Compatibility with NXP ICODE smart tag and label technologies
- ▶ Baud rate of up to 848 Kbit/s
- ▶ SO32 and HVQFN32 packages

### Key benefits

- ▶ Proven solutions from an industry leader
- ▶ Widest selection of options
- ▶ Very broad range of applications
- ▶ Backwards compatibility with previous generations
- ▶ Standards-based development

### MIFARE highlights

- ▶ NXP engineers invented and launched the first MIFARE card and reader solutions in 1994
- ▶ Since then, NXP has been first to market with more than ten breakthrough MIFARE innovations

- ▶ Today, more than 650 cities in more than 50 countries have adopted MIFARE solutions
- ▶ More than 1 billion cards, 800 million tickets, and 20 million readers have been sent to market
- ▶ [www.MIFARE.net](http://www.MIFARE.net) offers access to more than 800 card and reader makers and solution developers

NXP's contactless reader portfolio offers the most comprehensive selection on the market. The solutions are based on worldwide standards, including ISO/IEC 14443 and ISO/IEC 15693, and provide all the components necessary for a complete system.

The reader ICs are fully compatible with NXP's smart card IC technologies, including MIFARE Ultralight™, MIFARE Ultralight™ C, MIFARE 1K, MIFARE 4K, MIFARE Plus™, MIFARE DESFire™, MIFARE DESFire™ EV1, and SmartMX, and work with NXP's smart tag and label technologies, such as ICODE UID-OTP, ICODE SLI-S, and ICODE ILT.

NXP's leading-edge reader ICs are already being used in advanced applications around the world, such as road tolling, metering, POS terminals, access management, and more.

NXP continues to drive the market, with active involvement in regulatory bodies such as the FCC, CE, PayPass / EMVCo and ICAO. NXP also addresses environmental requirements, using technology and product innovation to contribute to a better environment.

### The MIFARE pedigree

NXP MIFARE interface platform is the industry standard for contactless ticketing solutions. With more than 20 million reader core components, 800 million ticket ICs and 1 billion card ICs sold, MIFARE is a proven and reliable technology, and

represents the largest installed base worldwide. Compliant with the ISO 14443A international standard, MIFARE ensures that today's infrastructure can easily be upgraded. It lets service providers expand their transportation networks and integrate additional services – such as payment systems for taxi fares, cinema and theatre tickets, loyalty programs, access management and parking – while reducing the total costs of operations. MIFARE evolves. NXP's latest innovations in MIFARE such as the MIFARE Ultralight C, MIFARE Plus and MIFARE DESFire EV1, bring your application to the next level of security, performance and convenience.

### NXP Contactless Reader Systems

ISO 14443    ISO 15693

Product Features	Reader ICs							Evaluation System				
	MF RC500	MF RC530	MF RC531	CL RC632	SL RC400	MF RC522	MF RC 523	MF EV700	SL EV400	CL RD 701	MF EV710	MF EV852
Product Family Name	"Micore I" family				"Micore II" family			"Pegoda"		10 x "Pegoda"		
Operating distance typ. [mm]	100	100	100	100	100	80	80	75	75	75	75	75
Antenna	-	-	-	-	-	-	-	yes	yes	yes	yes	Yes
FIFO depth [byte]	64	64	64	64	64	64	64	n.a.	n.a.	n.a.	n.a.	n.a.
Host interface	8-bit parallel	8-bit parallel, SPI	8-bit parallel, SPI	8-bit parallel, SPI	8-bit parallel	SPI, I <sup>2</sup> C, RS232	SPI, I <sup>2</sup> C, RS232	USB	USB	USB	USB; Ethernet, JTag (with additional connection board)	USB; Ethernet, JTag (with additional connection board)
RF Interface												
Analog interface	fully integrated	fully integrated	fully integrated	fully integrated	fully integrated	fully integrated	fully integrated	CL RC632	SL RC400	CL RC 632	RC523	RX852
Carrier frequency [MHz]	13.56	13.56	13.56	13.56	13.56	13.56	13.56	13.56	13.56	13.56	13.56	13.56
Modulation	100% ASK	100% ASK	10% & 100% ASK	10% & 100% ASK	10% & 100% ASK	100% ASK	10% & 100% ASK	10% & 100% ASK	10% & 100% ASK	10% & 100% ASK	10% & 100% ASK	10% & 100% ASK
Baudrate ISO 14443 [kbit/s]	106	106/212/424	106/212/424	106/212/424	-	106/212/424/848	106/212/424/848	106/212/424	-	106/212/424	106/212/424/848	106/212/424/848
Baudrate ISO 15693 [kbit/s]	-	-	-	1.66/26.5/53	1.66/26.5/53	-	-	1.66/26.5/53	1.66/26.5/53	1.66/26.5/53	-	-
Baudrate ISO 18000-6-B and EPC class 1 Gen2	-	-	-	-	-	-	-	-	-	-	-	-
Standards & Protocols												
NFC Reader	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
ISO 14443 A	yes	yes	yes	yes	-	yes	yes	yes	-	yes	yes	yes
ISO 14443 B	-	-	yes	yes	-	-	yes	yes	-	yes	yes	yes
ISO 15693	-	-	-	yes	yes	-	-	yes	yes	yes	-	-
MIFARE Classic protocol	yes	yes	yes	yes	-	Yes	yes	yes	-	yes	yes	yes
ICODE 1 protocol	-	-	-	yes	yes	-	-	yes	yes	yes	-	-
EPC protocol	-	-	-	yes	yes	-	-	yes	yes	yes	-	-
ISO 18000-6B	-	-	-	-	-	-	-	-	-	-	-	-
Security Features												
MIFARE Classic™	yes	yes	yes	yes	-	yes	yes	yes	-	yes	yes	yes
Exception Sensors	V, f	V, f	V, f	V, f	V, f	V, f	V, f	-	-	-	-	-
Additional Product Information												
Supply voltage digital [V]	5	3.3 or 5	3.3 or 5	3.3 or 5	5	2.5 ... 3.6	2.5 ... 3.6	5	5	5	5	5
Supply voltage analog [V]	5	5	5	5	5	2.5 ... 3.6	2.5 ... 3.6	-	-	-	-	-
Power down mode current, typ. [µA]	2	2	2	2	2	1	1	n.a.	n.a.	n.a.	n.a.	n.a.
Wake up time [µs]	1000	1000	1000	1000	1000	1000	1000	n.a.	n.a.	n.a.	n.a.	n.a.
Temperature range [°C]	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85	-25/+85	0/+70	0/+70	0/+70	0/+70	0/+70
Package	SO32	SO32	SO32	SO32	SO32	HVQFN32	HVQFN32	-	-	-	-	-
Approvals												
EMC	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	CE, FCC	CE, FCC	CE, FCC	CE, FCC	CE, FCC
Software Support	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

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**MIFARE.net**

www.nxp.com



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