microID™ Radio Frequency Identification Tags

MICROCHIP DELIVERS HIGH PERFORMANCE.

Only Microchip Technology Inc. manufactures world-class components for every application in the radio frequency identification (RFID) system. From the advanced, feature-packed microID™ family of RFID tags and high-endurance Serial EEPROMs to high-performance PICmicro®microcontrollers (MCUs) – Microchip has a full range of RFID solutions for your tag, peripheral and reader designs.

microID chips are available in two popular frequency bands: 13.56 MHz, where Microchip devices outperform all other ICs available in today's market, and 125 kHz, where Microchip can second-source most de facto standards at that frequency.

Flexibility and Shorter Production Cycles

The microID family can emulate almost any 125 kHz standard on the market today. It provides drop-in compatible solutions to the most commonly used 125 kHz tags and an upgrade path for virtually any 125 kHz or 13.56 MHz application with higher performance and new features. All microID family devices are programmed with serialized or unique custom codes. Factory programming (SQTP) for RFID tag manufacturers offers added security and convenience for customized tags to meet every application.

A SOLUTION FOR EVERY TAGGING APPLICATION

A wide variety of tag and reader solutions are available from OEM manufacturers such as: Checkpoint Systems, KNIT, Cool Tech, Poly-Flex Circuits and AmaTech.

The microID family of RFID tags is available in a large variety of configurations. The 125 kHz MCRF200 can be configured to match most existing communication protocols in today's marketplace using its unique configuration register.

The MCRF250 enables 125 kHz tagging applications with anti-collision capability for multiple object identification in the same reader field.

The MCRF202 offers a unique Sensor Input that, in addition to transmitting its unique ID code, is specially designed to detect the logic state of an external device, and alter its ID data transmissions based on that sensor input.

The MCRF355 is a read-only, high performance, low-cost solution for emerging RFID tag applications. With the lowest power consumption, longest read range, highest data rate and fastest anti-collision in the industry, microID 13.56 MHz devices enable emerging applications such as: airline baggage, parcel shipments, laundry, industrial, automotive, library, retail supply chain management, animal tagging and others.

The MCRF45X family is the premiere passive 13.56 MHz device specifically designed for item level tagging applications such as supply chain and inventory management. The MCRF45X can change multiple operational modes on the fly – in real time. Advanced modes include "tag talks first" (TTF) and "interrogator talks first" (ITF) modes as well as Normal (1.4 kHz) and Fast (25 kHz) interrogator transmission modes. All modes are controlled by a single interrogator command. This functionality enables complete flexibility and adaptability to changing environmental and operational conditions throughout the tagged object's lifetime. In addition, the MCRF45X features a world class anti-collision algorithm that allows single or multiple objects to be read or written to effectively in multiple tag environments.

All microID devices are available in bumped or bondable wafer format which makes them suitable for smart labels and flip-chip style assembly. Package options include: die, wafer, wafer-on-frame, bumped wafer-on-frame, PDIP, SOIC and COB modules.

microID IC PRODUCT OFFERING

Product	Carrier Frequency	Contactless Programming	Anti-collision	Memory	On-chip Capacitor
MCRF200	100-150 kHz	Contact	No	OTP	No
MCRF202	100-150 kHz	Contact	No	OTP	No
MCRF250	100-150 kHz	Contact	Yes	OTP	No
MCRF355	10-20 MHz	Contact	Yes	Read/ Write	No
MCRF360	10-20 MHz	Contact	Yes	Read/ Write	Yes
MCRF45X	10-20 MHz	Yes	Yes	Read/ Write	Yes

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MCRF200/ 202/ 250 microID FEATURES

Feature	Options
Array Size	96 or 128 bits (supports 48-, 64-, 96- or 128-bit standards)
Data Rate	Fc/ 16, 32, 40, 50, 64, 80, 100, 128
Data Encoding	NRZ, Bi-phase Differential, Bi-phase Manchester
Modulation	Direct, FSK/ 8/ 10, PSK1 & PSK2 (Fc/ 2 or Fc/ 4)
Sensor Input	MCRF202 only

MCRF355/ 360 microID FEATURES

Feature	Options
Array Size	154 bits
Air Interface	70 kHz data rate, ASK Manchester encoding, burst mode
Other	Asynchronous clock, 100pF resonance capacitor (MCRF360)

MCRF45X microID FEATURES

Feature	Options
Array Size	1K bit
Air Interface	70 kHz data rate, ASK Manchester encoding with CRC for reading
Other	RF field gaps and 1-of-16 PPM with CRC for writing & commands, Asynchronous clock, unique 32-bit ID, write protection feature, deterministic anti-collision algorithm, write in the presence of many

Resonance Capacitors	MCRF450	MCRF451	MCRF452	MCRF455
	None	single 100pF	dual 50pF	single 50pF

The microID *Developer's Kit (DV103005) includes everything needed to start a design.*

WORLD-CLASS RELIABILITY BUILT-IN

Microchip manufactures more than 500 million serial EEPROMs and microcontrollers per year using its proven and reliable process technology. This experience and leadership brings many complementary strengths to the RFID tag market, including low power consumption for extended read range and 200-year data retention for reliability. Most popular frequencies, modulation methods and encoding algorithms are available.

The MCRF450/ 7M COB Module.

QS-9000 and ISO 9001 Quality Systems Certified

Microchip has achieved QS-9000 and ISO 9001 Quality System certification for its worldwide headquarters, design and wafer fabrication facilities, reflecting its world-class manufacturing systems, product reliability and quality standards achieved through teamwork and continuous improvement. Field-programmable PICmicro 8-bit MCUs, Serial EEPROMs, related specialty memory products and development systems conform to the stringent quality standards of the International Standards Organization (ISO).

CUSTOMER SUPPORT

Microchip maintains a worldwide network of distributors, representatives, local sales offices, Field Application Engineers, Corporate Application Engineers and Independent Technical Support Centers (ITSC's). See our web site for the complete ITSC listing. Microchip's Internet home page can be reached at: www.microchip.com

THIRD PARTY SUPPORT NETWORK

A comprehensive listing of microID tag, reader and system OEM partners can be found at: www.microchip.com, RFID Devices, OEM Manufacturers.

COMPREHENSIVE DEVELOPMENT SYSTEMS

Supporting the design-in of all Microchip devices is the most complete set of hardware and software development tools in the industry. More than 259,000 Microchip development systems have been shipped since 1990.

microID Developer's Kits are easy-to-use tools for design engineers at all skill levels. The kits include all the hardware, software, reference designs and samples required to get started in RFID designs.

DEVELOPMENT TOOLS FOR RFID APPLICATIONS

MCRF200	DV103001	Contactless Programmer, FSK/ PSK/ ASK Readers, Design Guide, RF Lab Software, Samples
MCRF250	DV103002	Contactless Programmer, FSK Anti-collision Reader, Design Guide, RF Lab Software, Samples
MCRF200/ 250	PG103001	Contactless Programmer, Power Supply, Cables, RF Lab Software
MCRF355/ 360	DV103003	Contact Programmer, 13.56 MHz Reader, 13.56 MHz Design Guide, RF Lab Software, Samples
MCRF355/ 360/ 45X	DV103005	Contact Programmer, 13.56 MHz Read/ Write Interrogator, Antennas, 13.56 MHz Design Guide, RF Lab Software, Samples

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