



## ICs for Car Access Applications

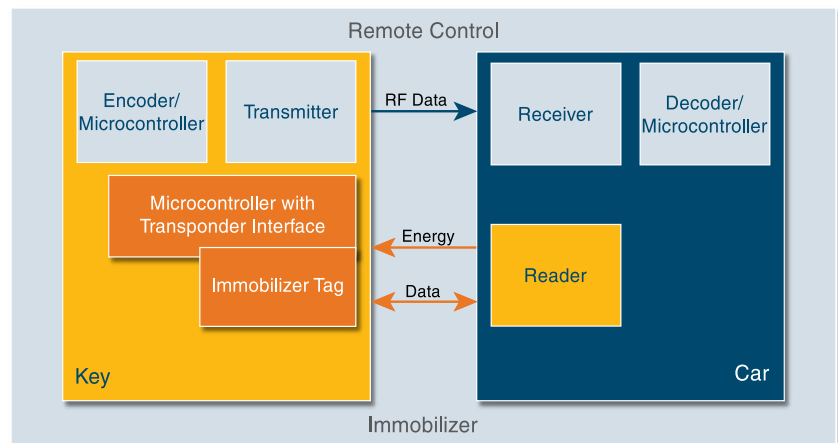


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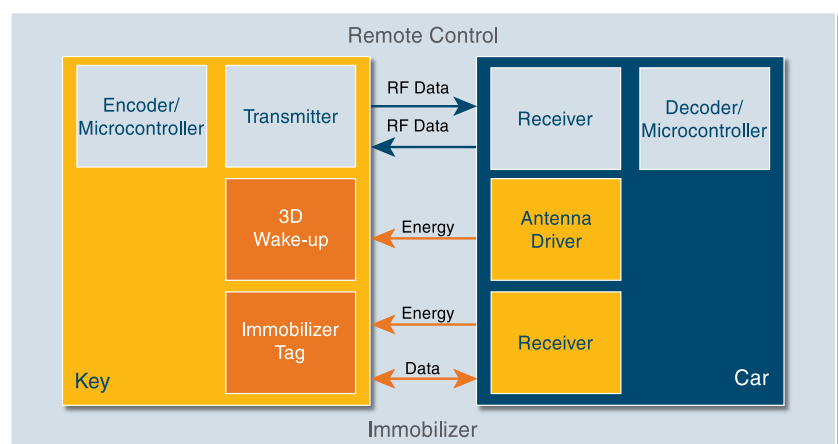
Atmel® has about 30 years of design expertise in automotive products. The company launched the first dedicated transmitter for remote keyless entry (RKE) applications in 1997. For car access applications, Atmel provides a wide range of innovative ICs. Customers can create their own designs using the low-power Atmel T575xC/ATA575xC radio transmitter IC family, a dedicated Atmel ATA581xC/2xC transceiver family, an Atmel ATA572xC/ATA574xC receiver IC family, and the Atmel AVR® microcontroller-based ATA577xC RF transmitter family. The Atmel car access portfolio includes all devices needed to design a complete solution.



Uni-directional RF link for the keyless entry function to open or lock car doors. The immobilizer system is built with a bi-directional LF link operating with the AUT64 crypto algorithm.



Bi-directional RF link for RKE functions as well as for the extremely secure duplex RF link in a Passive Entry Go (PEG) system. The LF link is used for the wake-up channel in a PEG system as well as for the immobilizer function to start the RF communication.



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## Transmitter ICs

Atmel Part Number	Description	Frequency Range (MHz)	System Suitability
ATA5771C ATA5773C ATA5774C	<p>Atmel AVR Microcontroller-based RF Transmitter Family</p> <ul style="list-style-type: none"> <li>• System-in-Package (SiP) Solutions Including AVR Microcontroller ATtiny44V and the RF Transmitter Family T5750C/53C/54C</li> <li>• Ideal for High-volume, Uni-directional RF RKE Keys Fobs</li> <li>• Small-outline, Tiny QFN24 Packages 5mm x 5mm Enable Design of Extremely Small, Cost-efficient Key Fobs</li> </ul>	868 to 928 315 433	RKE
ATA5749C	<p>Low-power RF Transmitter IC</p> <ul style="list-style-type: none"> <li>• Fully Integrated Fractional-N PLL</li> <li>• -0.5dBm to 12.5dBm Scalable Using Output Power Programming</li> <li>• Active Current Consumption 7.3mA at 5.5dBm</li> <li>• Polling Mode and Bit Check Carried Out by External Firmware</li> </ul>	315 433	RKE, PEG, Remote Start

## Transceiver ICs

Atmel Part Number	Description	Frequency Range (MHz)	System Suitability
ATA5811C	• Industry's Lowest Current Consumption and Smallest Size	433.868	RKE, PEG, Remote Start
ATA5812C	• High Sensitivity and High Data Rate for Quick Reaction Time	315	
ATA5823C	• Adjustable Output Power up to +10dBm for Long-distance Operation	312.5-317.5	
ATA5824C	• High Selectivity, High Blocking, and Low Intermodulation Due to the Low-IF Architecture	312.5-317.5	
ATA5831	MCU-Based RF Transceiver ICs	433.92	RKE, PEG, Remote Start
ATA5832	• Industry's Lowest Power Consumption		
ATA5833	• High Sensitivity and High Output Power (< 14.5dBm Typ.) for Long-distance Operation • Can Be Configured via EEPROM		

## Receiver ICs

Atmel Part Number	Description	Frequency Range (MHz)	System Suitability
ATA5723C ATA5724C ATA5728C	UHF Receiver ICs <ul style="list-style-type: none"> <li>• Shortest Bill of Material Due to Highest Integration Level</li> <li>• 3 Pin-compatible Frequency Versions</li> <li>• RSSI Output</li> <li>• Low-cost 13MHz Crystal Usage Possible for all three Versions</li> <li>• Lowest Current Consumption Due to Polling Feature</li> <li>• ASK/FSK Modulation</li> </ul>	315 433 686	RKE, PEG Remote Start
ATA5745C ATA5746C	UHF Receiver ICs for Car Access and TPMS <ul style="list-style-type: none"> <li>• Extremely Fast Switching Rate Between RKE and TPMS Signals Typically &lt;1ms</li> <li>• Complete Functionality to Design a TPMS System (e.g., RSSI)</li> <li>• High System Sensitivity and Selectivity Achievable with a Low Number of External Components</li> <li>• Polling Mode and Bit Check Carried Out by External Firmware</li> </ul>	433 315	RKE, PEG, Remote Start
ATA5780N	<ul style="list-style-type: none"> <li>• Highly Sensitive UHF ASK/FSK Receiver</li> </ul>	310–318 418–477 836–928	RKE, Combi Key



## Antenna Driver ICs

Atmel Part Number	Description	Frequency Range (kHz)	System Suitability
ATA5279C	Six-fold Antenna Driver IC <ul style="list-style-type: none"> <li>• Enables Smaller and Less Expensive Designs</li> <li>• Increased Reliability</li> <li>• Superior EMC Behavior</li> <li>• Diagnostic Features, IC Protects Itself and System from Damage</li> </ul>	125	PEG

## Immobilizer ICs

Atmel Part Number	Description	Frequency Range (kHz)	System Suitability
TK5561	Read/Write Transponder <ul style="list-style-type: none"> <li>• Integrated LC Tank and Built-in Proprietary Crypto Algorithm</li> <li>• Low-power/Low-voltage CMOS</li> <li>• 9 x 32-bit EEPROM</li> </ul>	125	Immobilizer
ATA5580	AES-128 Immobilizer Transponder <ul style="list-style-type: none"> <li>• Read/Write Transponder for High Security Applications</li> <li>• AES-128 Hardware Encryption</li> <li>• 2Kbyte EEPROM</li> <li>• Atmel Open Immobilizer Protocol</li> </ul>	125	Immobilizer

# ICs for Car Access Application



## Car Access Key System Devices

Atmel Part Number	Description	System Suitability
ATA5790N	Atmel AVR-based Passive Entry Go System Device with 3D Wake-up and Immobilizer Functionality Open Standard Immobilizer Protocol Based on High-security AES-128	PEG, Immobilizer
ATA5791	Embedded AVR Microcontroller Including RF Transmitter and Complete LF Functionality	Passive Entry/Passive Start
ATA5795C	Atmel AVR-based Transmitter IC with Immobilizer Functionality	RKE, Immobilizer





## Car Access Components - Overview

Atmel Part Number	Frequency Range	Modulation	Description	Package
ATA5279C	105–155kHz	ASK/FSK	Six-fold LF Antenna Driver IC	QFN48
ATA5723C	315MHz	ASK/FSK	UHF Remote Control Receiver, 300kHz Bandwidth RSSI Pin Compatible to ATA5724C, ATA5728C	SSO20
ATA5724C	433MHz	ASK/FSK	UHF Remote Control Receiver, 300kHz Bandwidth, RSSI Pin Compatible to ATA5723C, ATA5728C	SSO20
ATA5728C	868MHz	ASK/FSK	UHF Remote Control Receiver, 600kHz Bandwidth, RSSI Pin Compatible to ATA5723C, ATA5724C	SSO20
ATA5745C ATA5746C	433MHz 315MHz	ASK/FSK	Transparent UHF Receiver IC with Fast RKE/TPMS Switching Rate, Suited to 1 to 20Kbits/s Manchester FSK with four Programmable Bit-rate Ranges, High FSK Sensitivity (–114dBm at 2.4Kbits/s), High Blocking Capability	QFN24
ATA5749C	315–433MHz	ASK/FSK	Low-current Fully Integrated Fractional-N PLL Transmitter with Scalable Output Power (–0.5 to 12.5dBm)	TSSOP10
ATA5756C ATA5757C	315MHz 433MHz	ASK/FSK	UHF Transmitter ICs with Low Settling Time and Active Current Consumption	TSSOP10
ATA5771C ATA5773C ATA5774C	868–928MHz 315MHz 433MHz	ASK/FSK	Atmel AVR Microcontroller-based RF Transmitter Family	QFN24
ATA5780N	310–318MHz 418–477MHz 836–928MHz	ASK/FSK	Highly Sensitive UHF ASK/FSK Receiver	QFN32
ATA5790N	125kHz	BPLM*/ QPLM**/ Manchester/ Biphase	Passive Entry Go (PEG) IC for the Key, Including an Embedded Ultra-low-power Atmel AVR 8-bit Microcontroller, an LF Hardware AES Module for Immobilization, and a 3D LF Receiver Module	QFN38
ATA5795C	125kHz 315–433MHz	BPLM/ QPLM/ Manchester/ Biphase ASK/FSK	Remote Keyless Entry (RKE) IC for the Key, Including an Embedded Ultra-low-power Atmel AVR 8-bit Microcontroller, the Dedicated RF Transmitter ATA5749C and the LF Hardware AES Module for Immobilization in a Single Package	QFN32

\*BPLM = Binary Pulse Length Modulation \*\*QPLM = Quad Pulse Length Modulation

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Atmel Part Number	Frequency Range	Modulation	Description	Package
ATA5811C ATA5812C	433.868MHz 315MHz	ASK/FSK	UHF Transceiver IC with Extremely Low Current Consumption and Small Size	QFN48
ATA5823C ATA5824C	312.5–317.5MHz 433–868MHz	ASK/FSK	UHF Multi-channel Half-/Full-duplex Transceiver with Low-Power Consumption	QFN48
ATA5830N	310–318MHz 418–477MHz 836–928MHz	ASK/FSK	Highly Sensitive UHF ASK/FSK Transceiver, Maximum Power-down Current 600nA	QFN32
T5750C T5753C T5754C	868–928MHz 310–330MHz 429–439MHz	ASK/FSK	UHF Transmitter IC with High Output Power and Wide Temperature Range (–40°C/F to +85°C/185°F, +125°C/257°F)	TSSOP8
TK5561	125kHz	Manchester/ Bi-phase	Read/Write Transponder with Encryption Algorithm	Plastic Package (PP)



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