
Embedded AVR Microcontroller Including RF Transmitter and Immobilizer LF Functionality for Remote Keyless Entry

DATASHEET

Features

- System solution for immobilizer and remote keyless entry functionality
- Optional integrated open source immobilizer software stack supports automotive immobilizer applications (CMMI certified)
- Integrated ultra-low power flash Atmel® AVR® (8-bit) microcontroller
- 2112-byte EEPROM
- 32-bit unique device identification number
- Available in small 5x5 QFN32 pin package

Contactless Transponder

- LF contactless transponder operation in passive and active modes
- Integrated codecs for enhanced LF communication range
- Ultra low-power AES-128 cryptographic engine for use of immobilizer and RKE applications
- Access protected area for two 128-bit secret keys for device authentication
- Optional one 128-bit transport key for initial configuration
- LF receiver data integrity check (CRC-4/CRC-8)

RF Transmitter

- Fully integrated fractional-N PLL, VCO and loop filter covering 315MHz and 433MHz (software programmable)
- Output power programmable from –0.5 to +12.5dBm
- Supports ASK and FSK modulation with data rate up to 40Kbit/s
- Extended battery lifetime due to fast start-up time, low operating voltage and low supply current

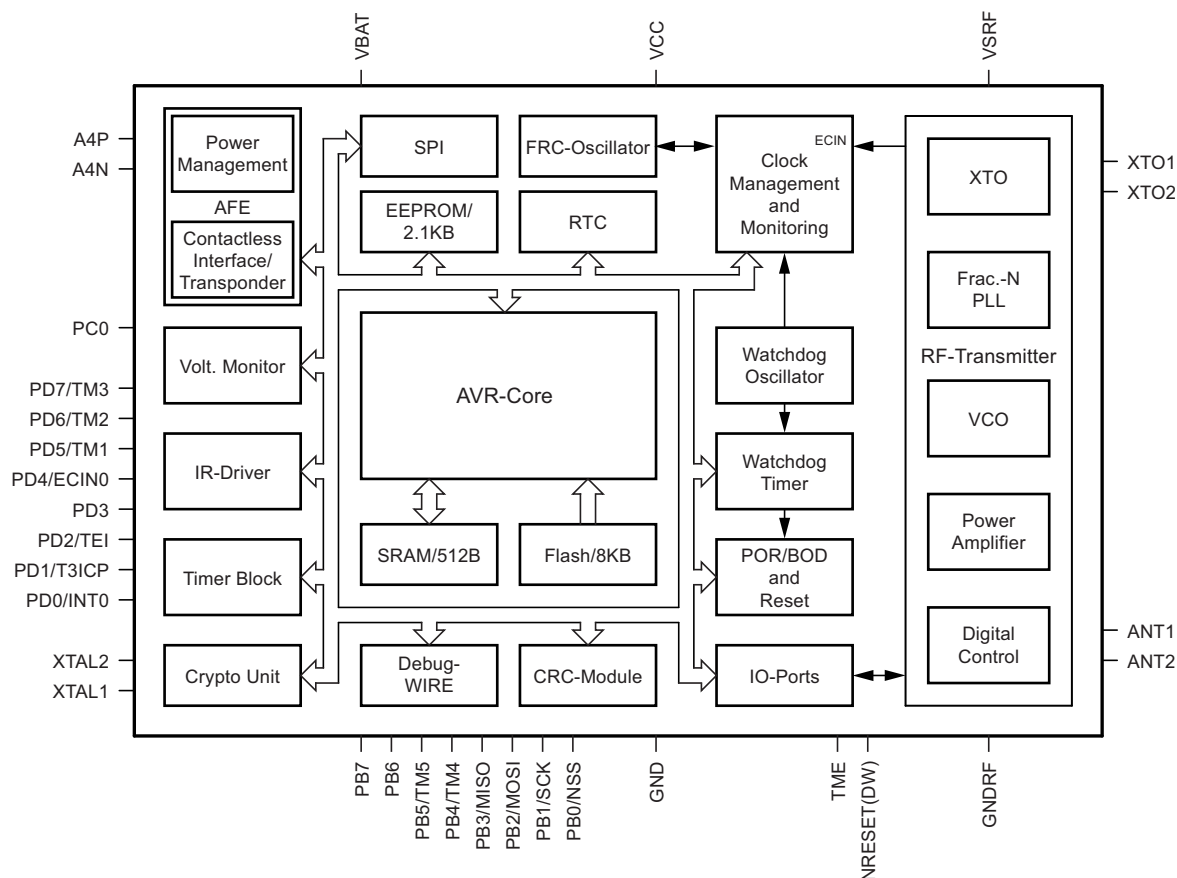
**This is a summary document.
The complete document is
available under NDA. For more
information, please contact
your local Atmel sales office.**

Ultra-low-power AVR Microcontroller

- 8Kbyte flash program memory (including 2KB of immobilizer software stack)
- 2112-byte EEPROM – includes protected user data and device configuration data (64Bytes)
- Error correction code (ECC) engine protects flash and EEPROM
- 512Bytes of SRAM
- Four GP timers
 - T0: Flexible WD and interval timers
 - T1: 15-bit interval timer
 - T2: Asynchronous 8-bit timer/counter with output compare
 - T3: Asynchronous 8-bit timer/counter with output compare and input capture
- Power management unit
- System clock management and monitoring functions
- POR and brown-out detection
- Programmable voltage monitor
- RTC and two internal system clock RC oscillators with $f_1 = 125\text{kHz}$, $f_2 = 4\text{MHz}$
- SPI, TM/SSI, I²C digital interfaces; dW 1-wire debug IF with AVR development tools
- Very low power consumption:
 - Active: 50 μA (Sys_Clk at 125kHz)
 - Idle: < 70 μA (Sys_Clk at 1MHz)
 - Power-down: 0.8 μA
 - EE(wr): 50 μA
- Wide battery voltage range from 1.9 to 3.6V (in contact mode)
- –40 to +85°C operation temperature
- Automotive grade C compiler

1.2 Atmel ATA5795C Block Diagram

Figure 1-2. Atmel ATA5795C Block Diagram



1.3 Pin Configurations

Figure 1-3. Pin Out for QFN 32 Package

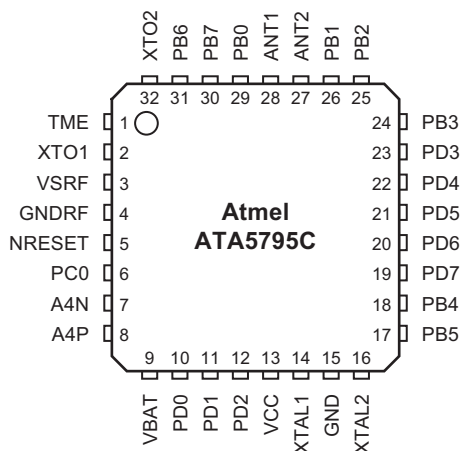


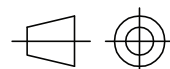
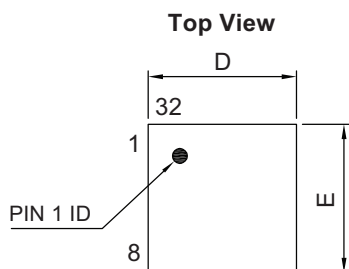
Table 1-1. Pin Description

Pin Number	Pin Name	Alternate Function 1	Alternate Function 2	Function	Comment
1	TME	-	-	Test mode enable	
2	XTO1	-	-	Connection for RF crystal	RF - pin
3	VSRF	-	-	Power supply voltage RF	RF - pin
4	GNDRF	-	-	Power supply ground RF	RF - pin
5	NRESET	dW	-	Reset input / debugWire interface	
6	PC0	-	-	I/O port	Port C0
7	A4N	-	-	Input pin for transponder AFE	
8	A4P	-	-	Input pin for transponder AFE	
9	VBAT	-	-	Power supply voltage for battery	
10	PD0	INT0	PCINT8	I/O port / external interrupt input 0	Port D0
11	PD1	T3ICP	PCINT9	I/O port / timer 3 external capture input	Port D1
12	PD2	TEI	PCINT10	I/O port / external timer input clock	Port D2
13	VCC	-	-	Power supply voltage for the microcontroller. A capacitor with capacitance C_{BUF} must be connected at this pin to buffer the voltage during field supply and block the microcontroller VCC.	
14	XTAL1	-	-	32kHz crystal oscillator input pin	
15	GND	-	-	Power supply ground	
16	XTAL2	-	-	32kHz crystal oscillator output pin	
17	PB5	TM5	PCINT5	I/O port / timer modulator pin 5	Port B5
18	PB4	TM4	PCINT4	I/O port / timer modulator pin 4	Port B4
19	PD7	TM3	PCINT15	I/O port / timer modulator pin 3	Port D7
20	PD6	TM2	PCINT14	I/O port / timer modulator pin 2	Port D6
21	PD5	TM1	PCINT13	I/O port / timer modulator pin 1	Port D5
22	PD4	ECIN0	PCINT12	I/O port / external clock input 0	Port D4
23	PD3	-	PCINT11	I/O port	Port D3
24	PB3	MISO	PCINT3	I/O port / SPI	Port B3
25	PB2	MOSI	PCINT2	I/O port / SPI	Port B2
26	PB1	SCK	PCINT1	I/O port / SPI	Port B1
27	ANT2	-	-	RF antenna 2	RF - pin
28	ANT1	-	-	RF antenna 1	RF - pin
29	PB0	NSS	PCINT0	I/O port / SPI	Port B0
30	PB7	-	PCINT7	I/O port	Port B7
31	PB6	-	PCINT6	I/O port	Port B6
32	XTO2	-	-	Connection for RF crystal	RF - pin

2. Ordering Information

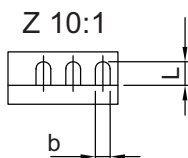
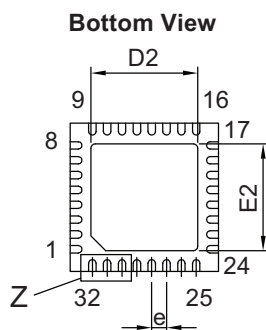
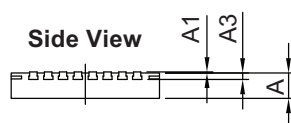
Extended Type Number	Package	Remarks
ATA5795C-PNQW	QFN32 - 5x5	Pb-free, 6k

3. Package Information



technical drawings
according to DIN
specifications

Dimensions in mm



COMMON DIMENSIONS (Unit of Measure = mm)				
Symbol	MIN	NOM	MAX	NOTE
A	0.8	0.85	0.9	
A1	0	0.035	0.05	
A3	0.16	0.21	0.26	
D	4.9	5	5.1	
D2	3.5	3.6	3.7	
E	4.9	5	5.1	
E2	3.5	3.6	3.7	
L	0.35	0.4	0.45	
b	0.2	0.25	0.3	
e		0.5		

05/20/14



Package Drawing Contact:
packagedrawings@atmel.com

TITLE
Package: QFN_5x5_32L
Exposed pad 3.6x3.6

GPC

DRAWING NO.
6.543-5203.01-4

REV.
1

4. Revision History

Please note that the following page numbers referred to in this section refer to the specific revision mentioned, not to this document.

Revision No.	History
9182ES-RKE-11/14	<ul style="list-style-type: none">• Section 2 “Ordering Information” on page 6 updated• Section 3 “Package Information” on page 6 updated
9182DS-RKE-04/14	<ul style="list-style-type: none">• Put datasheet in the latest template
9182CS-RKE-11/11	<ul style="list-style-type: none">• ATA5795 to ATA5795C renamed
9182BS-RKE-07/11	<ul style="list-style-type: none">• Document completely redesigned



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