ATA5291

PEPS Driver and Immobilizer Base Station

SUMMARY DATASHEET

General Features

- Integrated PEPS driver and transponder immobilizer base station
- Internal precision oscillator for carrier generation
- IC power supply voltage from 6V to 28V for PEPS operation
- IC power supply voltage from 4V to 28V for immobilizer operation
- Fast SPI interface (2Mbit/s) for data access and configuration
- Transparent data input and data output pins
- Data transmission and control buffers
- Flexible commands set with LOOP and CALL capability allowing for programmable polling mode without the need to re-load the data buffer. This mode does not require any host controller interaction.
- Flexible GPIO pin for control of peripherals independent of host
- Very low power-down current consumption
- QFN 7×7-48 with wettable flanks
- LF carrier frequency 125kHz

PEPS Driver Features

- 4 integrated PEPS drivers with programmable current up to 1A peak adjustable in 18 steps
- High accuracy PEPS drive current thanks to ±3% internal reference voltage
- Output driver stages are protected against electrical and thermal overload
- Integrated multiplexer to control 8 coils (4 internal and 4 external switches)
- Ability to support antennas with series capacitor far from or close to the IC while retaining all diagnostic capabilities
- Programmable carrier shaping (sinus, square wave, waveform from wavetable)
- On-off keying (OOK) modulation at continuous wave (CW) frequency /16, /32, /64
- Integrated boost converter with external boost transistor and current sense resistor for high LF-drive level

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

- Ability to connect two outputs to one coil with full 2A peak current capability
- Ability to drive two coils with 1A peak each at the same time
- Internal current measurement mode without external measurement resistor (R1 in application schematic) to increase isolation between coils

Immobilizer Base Station Features

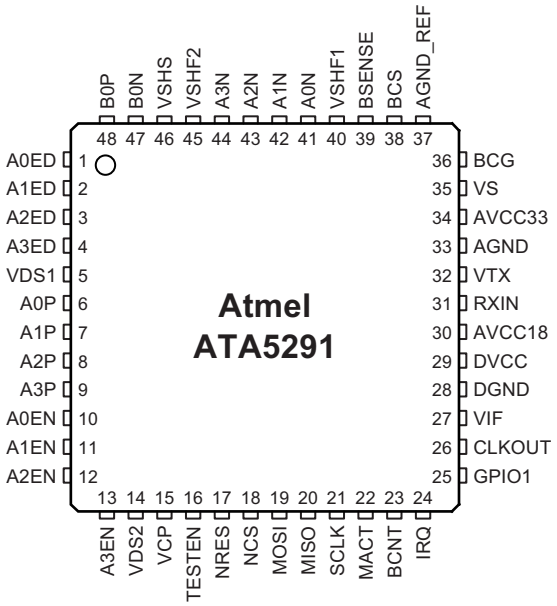
- High in-band receiver sensitivity of 7mVpp at tap point with tap voltage of 100Vpp
- Immobilizer driver with sinusoidal output signal for low harmonics
- Narrowband direct conversion digitized receiver for high noise immunity
- 64-byte immobilizer RX buffer to relieve real-time load from host
- Ability to operate with a separated immobilizer coil or with a coil shared between immobilizer and PEPS driver
- Immobilizer antenna current of up to 290mA peak
- Support of uplink/downlink of full duplex transponders (load modulation, physical layer)

1. General Description

The Atmel® ATA5291 is an integrated circuit combining a LF coil driver for passive entry/passive start (PEPS) and a base station. It can drive up to eight low-frequency antennas (i.e., coils) to provide a wake-up and initialization channel to the key fob. The immobilizer base station block can share one antenna coil with the LF coil driver block thus reducing the total antenna count and related overall system cost.

2. Pinning

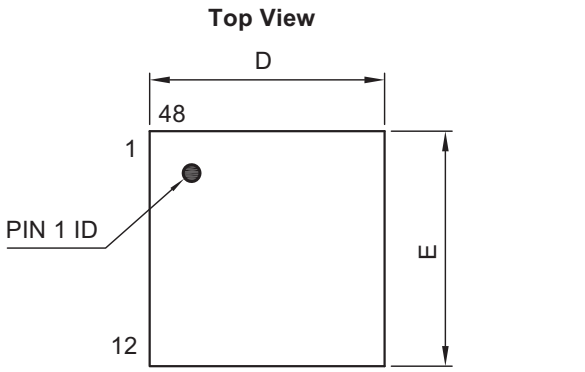
Figure 2-1. Pinning, QFN48 Package

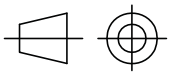


3. Ordering Information

Extended Type Number	Package	Remarks
ATA5291-GJQW	QFN48	7mm × 7mm, Pb-free, 4k, taped and reeled, wettable flanks

4. Packaging Information

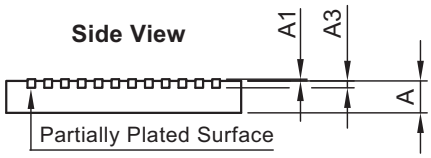


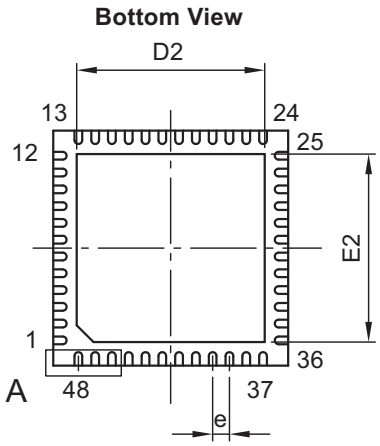


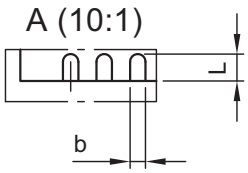
technical drawings
according to DIN
specifications

Dimensions in mm

Two Step Singulation process







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	6.9	7	7.1	
D2	5.5	5.6	5.7	
E	6.9	7	7.1	
E2	5.5	5.6	5.7	
L	0.35	0.4	0.45	
b	0.2	0.25	0.3	
e		0.5		

10/18/13

	TITLE	GPC	DRAWING NO.	REV.
Atmel **Package Drawing Contact:** packagedrawings@atmel.com	**Package: VQFN_7x7_48L** Exposed pad 5.6x5.6		6.543-5130.03-4	1

5. Appendix A: Acronyms and Abbreviations

BPLM – Binary pulse length modulation

NRZ – Non-return-to-zero modulation

OOK – On-off keying

PEPS – Passive entry/passive start

WUP – Wake-up pattern

6. 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
9374AS-RKE-11/15	• Initial release

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