Replacement of a T5550/51/54 Tag by a T5557/ATA5567 Tag

T5550/51/54

Information Sheet

1. Introduction

A lot of customers are using the T5550/51/54 tag family for their RF-ID applications. Because of the change of technology in the near future, this family will replaced by the T5557/ATA5567. The T5557/ATA5567 has a T5550/51/54 compatible mode. This mode will support nearly all features of the T5550/51/54 family. Additionally, the customer has the benefit of using the extended mode of this tag which will provide a lot of additional features. There are some small differences between the T5550/51/57 family and the T5557/ATA5567, because Atmel has improved the communication between reader and tag and this will give a higher security level and an easier encoding of the data on the reader side. This information sheet aims to assist in the replacement of a T5550/51/57 application by the T5557/ATA5567.

2. Basics

If you replace the T5550/51/54 by the T5557/ATA5567 take care that you use the T5557/ATA5567 in the 5550 compatible mode. Make sure that bit 15 is set to 0. If this bit is set to 1 and the master key (bit 1..4) is set to the value 6h or 9h the extended mode will be entered with other configuration possibilities. Setting the bit 15 to 0 will prevent the tag entering the extended mode even if the master key is set to 6h or 9h (please refer to the datasheet T5557/ATA5567).

4745B–RFID–04/06

3. Differences Between T5550/51/54 and T5557/ATA5567

3.1 Block Terminator and Stop Bit

The T5557/ATA5567 does not support the block terminator feature and the stop code feature. The past has shown that the block terminators were used by customers to synchronize the reader in the block read mode. In the regular read mode the sequence terminator was used. Atmel has improved the handling of the sequence terminators and the reader could be synchronized even if the reader uses the direct block access command (see section "Sequence Terminator" below).

The stop operation code is not supported. This operation code "11" is now used for access to page one.

3.2 Sequence Terminator

Terminators were introduced to simplify the synchronization of the reader. In the regular read mode the sequence terminator is inserted at the start of each MAXBLK-limited read data stream. In the block read mode of the T5557/ATA5567 the sequence terminator is inserted before the transmission of the selected block. So the block terminator of the T5550/51/54 became obsolete.

3.3 Direct Block Access in Password Mode

If the T5557/ATA5567 is used in password mode, the direct access to a single block needs the valid 32-bit password. Without a password the tag will be always in regular read mode.

3.4 Reset Command

To reset the T5557/ATA5567, Atmel implemented a RESET command. This command is a "00" sent by the reader to the tag. After the RESET command the tag will enter the regular read mode.

3.5 Behavior After Programming a Block

There are additional differences in behavior after programming. In the regular read mode all tags have the same behavior, starting with block 1 and when the last block is reached (as defined by the MAXBLK parameters) reading restarts with block 1.

After writing data successfully into the memory of a T5550/51/54 the tag starts to transmit this in read mode. The following data depends on the relation of the address of the programmed block and the value of MAXBLK. If MAXBLK is equal or greater then the addressed block the following blocks will be read until reaching the MAXBLK and then starts again with block 1 (if MAXBLK equals the addressed block the following data starts with block 1; example: MAXBLK = 4, writing data block 4, after successfully programming the tag went into read mode with following data stream block4 block 1 block 2 .....).

In case the address of the programmed block is greater than MAXBLK, the written block will be read followed by the data until reaching the end of memory. After that, the tag is in the regular read mode, reading the blocks starting with block 1 until reaching MAXBLK and starts again with block 1.

After programming data successful into the T5557/ATA5567 the tag reads continuously this programmed block. To go into the regular read mode the tag must be reset.

3.6 Electrical Characteristics

Due the change of the technology used for the T5557/ATA5567 some electrical parameters have been changed. The supply current in read mode decreases to 3 µA (typical). The current for programming the tag decreases to 25 µA (typical). The programming time decreases to 5.7 ms typical.

4. Summary

Table 4-1. Overview of Differences

Configuration	T5550/51/54	T5557/ATA5567
Block terminator	Yes	No
Sequence terminator	Yes In the block read mode no sequence terminator	Yes In block read mode inserted before transmission of the selected block
Stop command “11”	Yes	No Command is used for access to page 1
Reset command “00”	No	Yes
Mode after programming a data block	Regular read mode	Tag read continuously programmed block
Supply current in read mode (typical)	5 µA	3 µA
Supply current in write mode (typical)	100 µA	25 µA
Programming time (typical)	18 ms	5.7 ms

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