Immobilizers Preview Detailed information Parametric search

Latest products

See also

- Find NXP's equivalent of a competitor's part number
- Ask a question in an online question form
- Find out more about our ordering process
- Search for replacement parts

Immobilization

NXP's transponders meet the security and performance requirements of modern vehicle immobilizer applications. Excellent device sensitivity (large distance) and short authentication time ensure easy application and outstanding system performance.

Products

The following transponders have been specifically designed for car immobilizers where (re)programming of the identification code or storage of additional data is required.

The PCF7936 (HITAG 2) is a programmable security transponder employing mutual authentication with encrypted data transmission. It is ideally suited for vehicle immobilizer applications which require encrypted data transmission between the basestation and transponder.

The PCF7931AS (read only) and PCF7930AS (read/write) are immobilizer transponder sticks which transmit data bi-directionally, in half duplex mode, between basestation and the transponder.

The PCF7935 (SECT) is a programmable security transponder employing challenge/response authentication and is ideally suited for vehicle immobilizer applications, where encrypted data transmission between basestation and transponder is required.

Product overview

Type number	PCF7930AS	PCF7931AS	PCF7935AS	PCF7936AS
Data periodically read out in read only mode	Yes	Yes	Yes	Yes
Non volatile user memory	768 bit	-	768 bit	128 bit
Operating frequency	125 kHz	125 kHz	125 kHz	125 kHz
Programmable read only operation	Yes	Yes	Yes	Yes
Programmable security transponder	-	-	Yes	Yes
64/32 bit mutual authentication	-	-	-	Yes
48/48 bit challenge/ response authentication	-	-	Yes	-
32 bit unique device identification number	Yes	Yes	Yes	Yes
Secret key	-	-	128 bit	48 bit
Fast authentication	-	-	-	39 ms
EEPROM read/write protection capabilities	Yes	Yes	Yes	Yes
Read only modes for downwards compatibility	Yes	Yes	Yes	Yes
Data retention	20 years	20 years	20 years	20 years
Extended temperature range	- 40 to +85 °C	- 40 to +85 °C	- 40 to +85 °C	- 40 to +85 °C
Leadless stick plastic package	SOT385	SOT385	SOT385	SOT385

To download technical documentation click here

Back to top

Download / Email

Print this information

Email this information

Back to top

PRODUCT PROFILE '7930XP/030612

- Stick–shaped Identification Transponder for use in contactless car immobilizer applications
- Read and write operation over full temperature range
- Non volatile memory of 1024 bits (768 bits user data, 256 bits control data)
- Periodically automatic data read out
- Data transmission and supply energy via RF link
- Write protection
- 7 byte password
- Resonance/operating frequency 125 kHz nominal
- 20 years non–volatile data retention
- At least 250000 erase/write cycles per byte for blocks 1 and 2, 50000 for following blocks
- Extended temperature range: –40°C to +85°C
- Contactless plastic stick SOT385

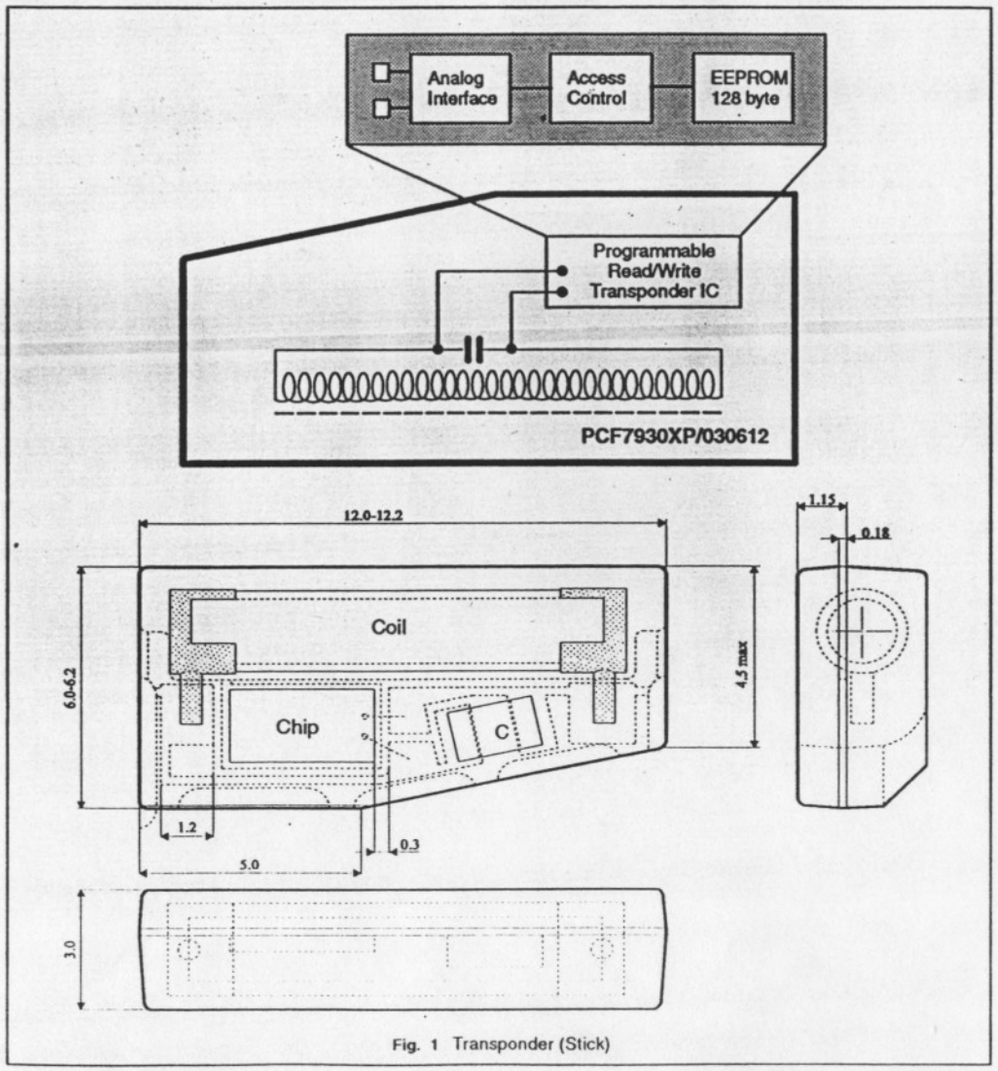


Fig. 1 Transponder (Stick)

PRODUCT PROFILE '7931XP/C

- Stick–shaped Identification Transponder for use in contactless car immobilizer applications
- Non volatile memory of 1024 bits (768 bits user data, 256 bits control data)
- Periodically automatic data read out
- Data transmission and supply energy via RF link
- Programmable Read–only operation
- 7 byte password
- Operating/resonance frequency 125 kHz nominal
- 20 years non–volatile data retention
- 100 erase/write cycles per byte with write protection
- Extended temperature range: –40°C to +85°C
- Contactless plastic stick SOT385

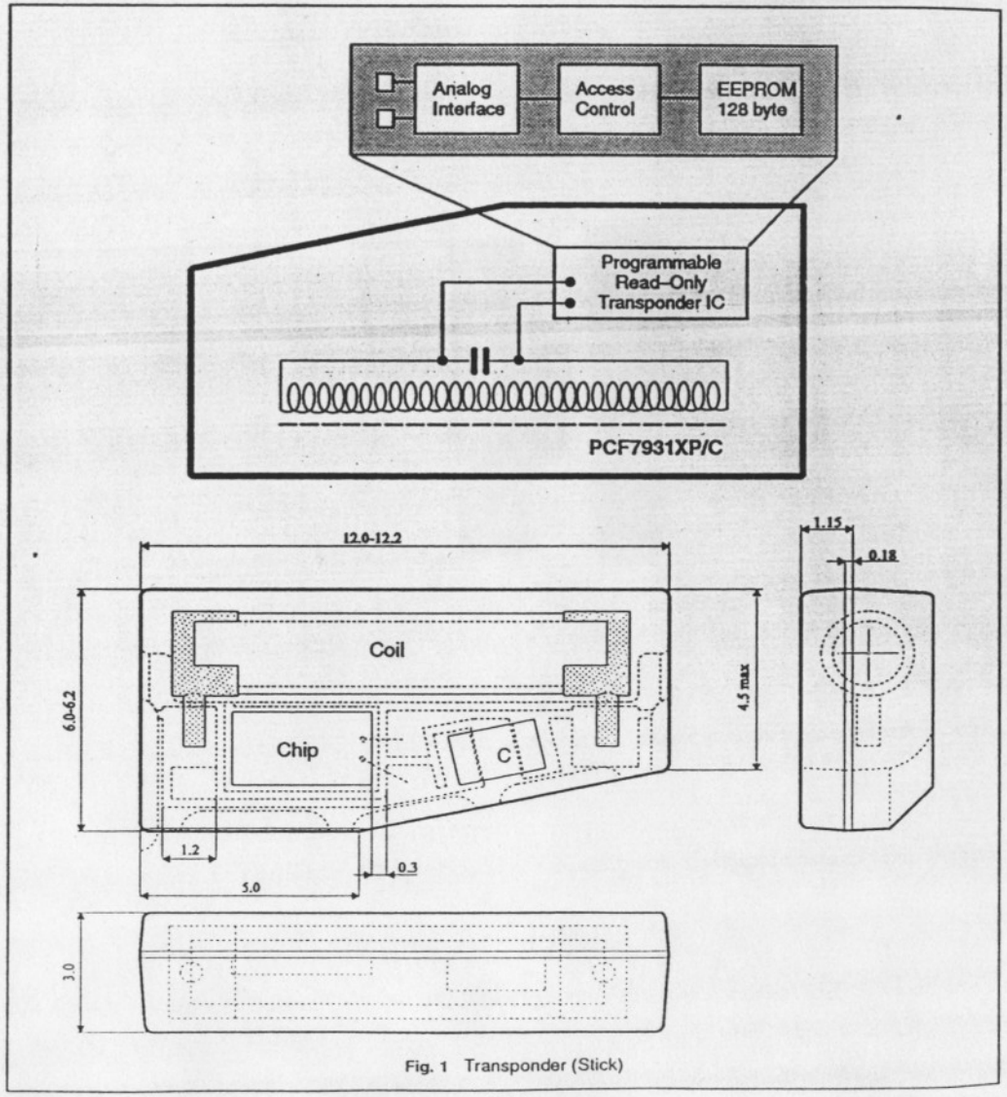
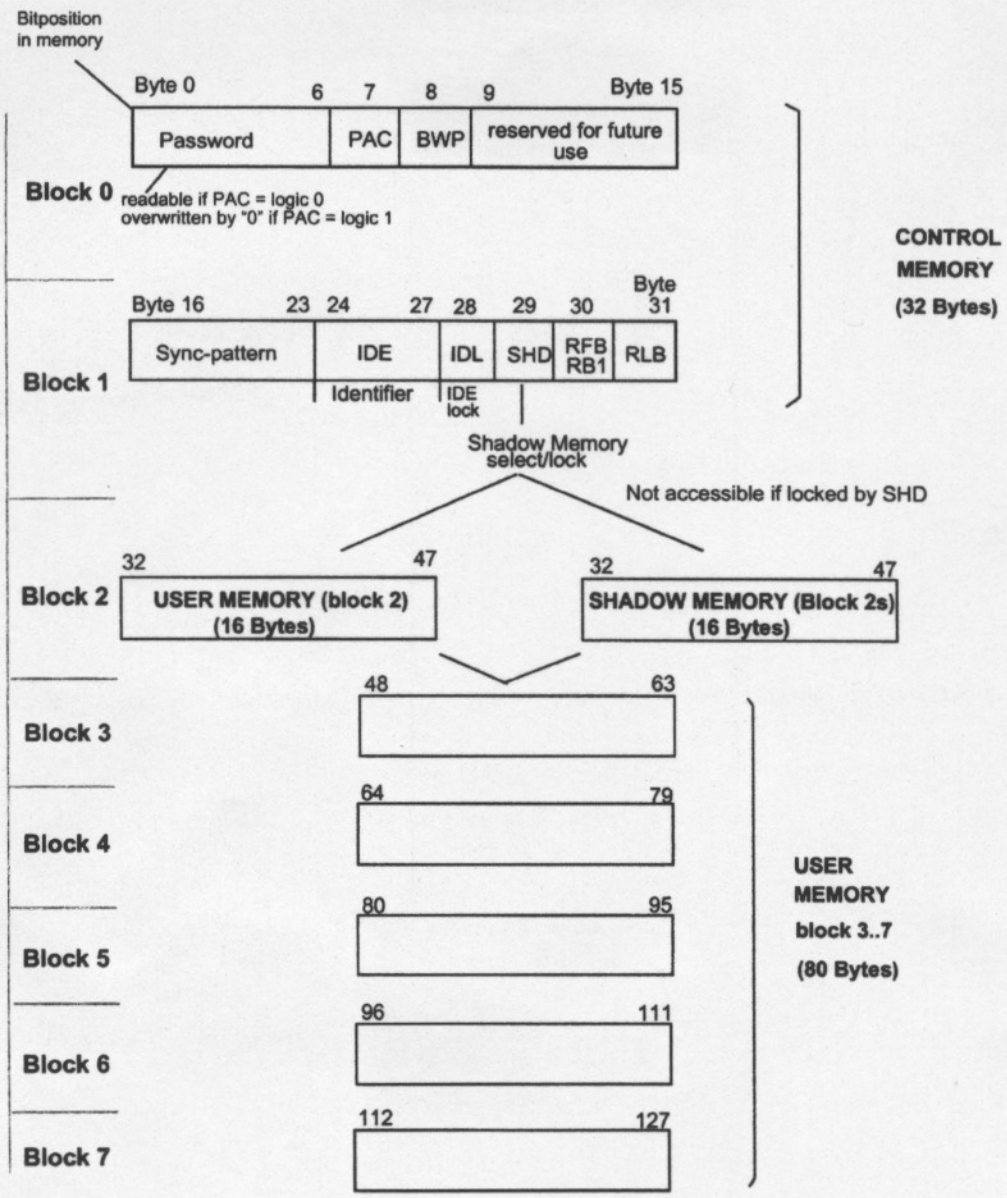


Fig. 1 Transponder (Stick)

PCF7930/31/35

Memory organisation

Memory structure



PAC	Password Active Flag	SHD	Memory Bank Select / Shadow Memory Lock
BWP	Block Write Protections	RFB	Read First Block
IDE	Identifier	RB1	Read Block 1
IDL	IDE Lock	RLB	Read Last Block

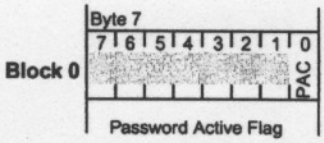
Control memory flags of block 0

- **Password (Bytes 0..6)**

The password is 56 bits long. If the pasword function has been ativated by the PAC flag, the pattern being written in this area must be transmitted by the base station with every program command.

- **Password Active Flag PAC (Byte 7)**

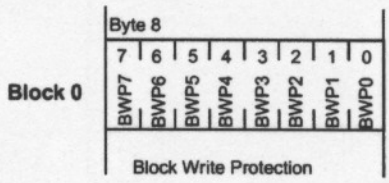
If PAC flag = 1 , date send to the transponder is checked for correctness of the password.



SYMBOL	BIT POSITION	NAME	FUNCTION
	7..1		reserved for future use
PAC	0	Password Active Flag	1 = Password active (transmitted as sequence of logic 0) 0 = Password inactive

- **Block write Protection BWP (Byte 8)**

Each block of the user date can be separatelu protected agains programming by setting the block write protection.



SYMBOL	BIT POSITION	NAME	FUNCTION
BWP7	7	Block Write Protection 7	1 = Block 7 protected; 0 = Block 7 programmable
BWP6	6	Block Write Protection 6	1 = Block 6 protected; 0 = Block 6 programmable
BWP5	5	Block Write Protection 5	1 = Block 5 protected; 0 = Block 5 programmable
BWP4	4	Block Write Protection 4	1 = Block 4 protected; 0 = Block 4 programmable
BWP3	3	Block Write Protection 3	1 = Block 3 protected; 0 = Block 3 programmable
BWP2	2	Block Write Protection 2	1 = Block 2, 2s protected; 0 = Block 2, 2s programmable
BWP1	1	Block Write Protection 1	1 = Block 1 protected; 0 = Block 1 programmable
BWP0	0	Block Write Protection 0	1 = Block 0 protected; 0 = Block 0 programmable

Control memory flags of block 1

- **Sync_pattern (Bytes 16..23)**

In these 8 bytes any type of data can be stored. If RB1 is enabled, the Sync_pattern is always the firs information that is transmitted from the transponder.

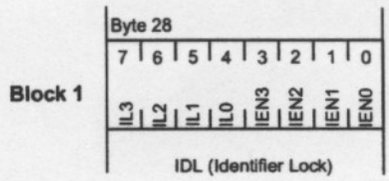
- **Identifier pattern IDE (Bytes 24..27)** / PCF7935 /

If the Identifier function is enabled by IDL this 4-byte pattern is transmitted after the power-up sequence. The IDE pattern is used by the calculation unit during Authentication Mode.

- **Identifier On/Off, Identifier Lock IDL (Byte 28)** / PCF7935 /

The lower nibble of this memory falg enables/disables the general Identifier function, i.e. The transmission of the IDE pattern at power-on reset and soft-reset. The flag is evaluated as "active" for two or more bits being 1, it is evaluated as "inactive" for less then two bits being 1.

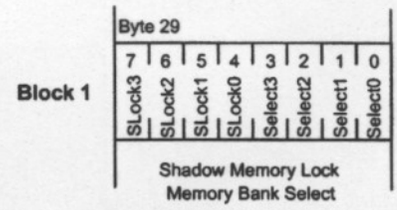
The higher nibble of this memory flag locks the IDE pattern area and the IDL flag irreversibly against any program access. Therefore the enable/disable status of IDE function is frozen together with the IDE pattern.



SYMBOL	BIT POSITION	NAME	FUNCTION
IL3..0	7 .. 4	IDE Lock	2,3 or 4 bits "1" = IDE pattern and IDL flag irreversibly write protected. 0 or 1 bits "1" = IDE pattern and IDL flag not protected; note 1.
IEN3..0	3 .. 0	IDE Enable	2,3 or 4 bits "1" = IDE function enabled, i.e. IDE transmitted according to specification. 0 or 1 bits "1" = IDE function disabled, i.e. IDE not transmitted; note 1

- **Shadow Memory Lock, Memory Bank Select SHD (Byte 29)** / PCF7935 /

This byte contains the two flags Select and Slock whitch control the access to the two different memory part of the SECT.

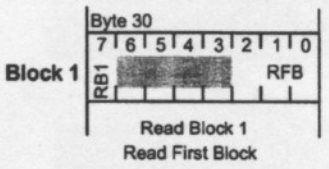


SLock	SELECT	
	0000	1111
0000	User Memory accessed	Shadow Memory accessed
1111	User Memory accessed	User Memory accessed

SYMBOL	BIT POSITION	NAME	FUNCTION
SLock3..0	7 to 4	Shadow Memory Lock	2,3 or 4 bits "1" = Shadow memory locked against read and write, not accessible. 0 or 1 bit "1" = Shadow memory can be accessed if Select = logic 1; note 1
Select3..0	3 to 0	Select Memory Bank	2,3 or 4 bits "1" = Shadow memory is accessed via the block address 2 if not locked (SLock = inactive) User memory is accessed via the block address 2 if Shadow Memory is locked (SLock = active). 0 or 1 bit "1" = User memory is accessed via the block address 2; note 1

- **Read Block1 RB1 / Read First Block RFB (Byte 30)**

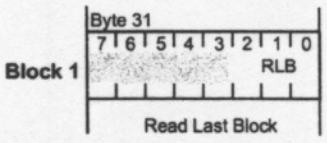
First block to be transmitted from transponde to the base station is given by RFB. Starting with RFB the last block will be reached by modulo counting. If RB1=1 block 1 is always sent before RFB.



SYMBOL	BIT POSITION	NAME	FUNCTION
RB1	7	Read Block 1	1 = Block 1 is transmitted before the RFB-RLB cycle. 0 = Block 1 is not transmitted before RFB-RLB cycle.
	6 .. 3		reserved for future use
RFB	2, 1, 0	Read First Block	Block address of first block in RFB-RLB cycle.

- **Read Last Block RLB (Byte 31)**

Last block to be transmitted from transponde to the base station is given by RLB. Starting with RFB the last block will be reached by modulo counting.



SYMBOL	BIT POSITION	NAME	FUNCTION
	7 to 3		reserved for future use
RLB	2, 1, 0	Read Last Block	block address of last block in RFB-RLB transmission cycle.