my-d™ move lean

SLE 66R01L

Intelligent 512 bit EEPROM with Contactless Interface compliant to ISO/IEC 14443 Type A and support of NFC Forum™ Type 2 Tag Operation

Short Product Information

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my-d™ move lean - SLE 66R01L Short Product Information
The information in this document is subject to change without notice.

Revision History: Current Version 2010-05-10

Previous Release:

Page	Subjects (major changes since last revision)
	initial version

Features

Intelligent 512 bit EEPROM with Contactless Interface compliant to ISO/IEC 14443 Type A and support of NFC Forum™ Type 2 Tag Operation

Contactless Interface

- Physical Interface and Anticollision compliant to ISO/IEC 14443 Type A
  - Contactless transmission of data and supply energy
  - Operation frequency 13.56 MHz
  - Data rate 106 kbit/s in both direction
- Read and Write Distance up to 10 cm (influenced by external circuitry i.e. reader and inlay design)

64 byte EEPROM

- Organized in 16 blocks of 4 bytes each
- 48 bytes freely programmable User Memory
- 16 bytes of Service Area reserved for UID, Configuration, Locking Bytes and OTP Block
- Data Retention minimum 5 years[1)]
- Endurance minimum 10,000 erase/write cycles[1)]
- Programming time per block < 4 ms

Privacy Features

- Double Size UID (7 byte) according to ISO/IEC 14443 Type A [2)]
- One Time Programmable (OTP) memory area[2)]
- Locking mechanism for each block[2)]
- Block Lock mechanism[2)]

Data Protection

- Data Integrity supported by 16 bit CRC, parity bit, command length check
- Anti-tearing mechanism for OTP

NFC Forum™ Operation

- Compliant to NFC Forum™ Type 2 Tag Operation
- Support of Static Memory Structure according to NFC Forum™ Type 2 Tag Operation

Electrical Characteristics

- On-Chip capacitance 17pF $\pm$ 5%
- ESD protection minimum 2 kV
- Ambient Temperature -25℃ … +70℃ (for the chip)

1) Values are temperature dependent
2) Compliant to NFC Forum™ Type 2 Tag operation

1 Ordering and packaging information

Table 1 Ordering information

Type	Package	Total Memory / User Memory	Ordering code
SLE 66R01L C	wafer sawn / unsawn	64 / 48 bytes	on request
SLE 66R01L NB	NiAu Bumped (sawn wafer)		on request

For more ordering information about the form of delivery please contact your local Infineon sales office.

Pin description

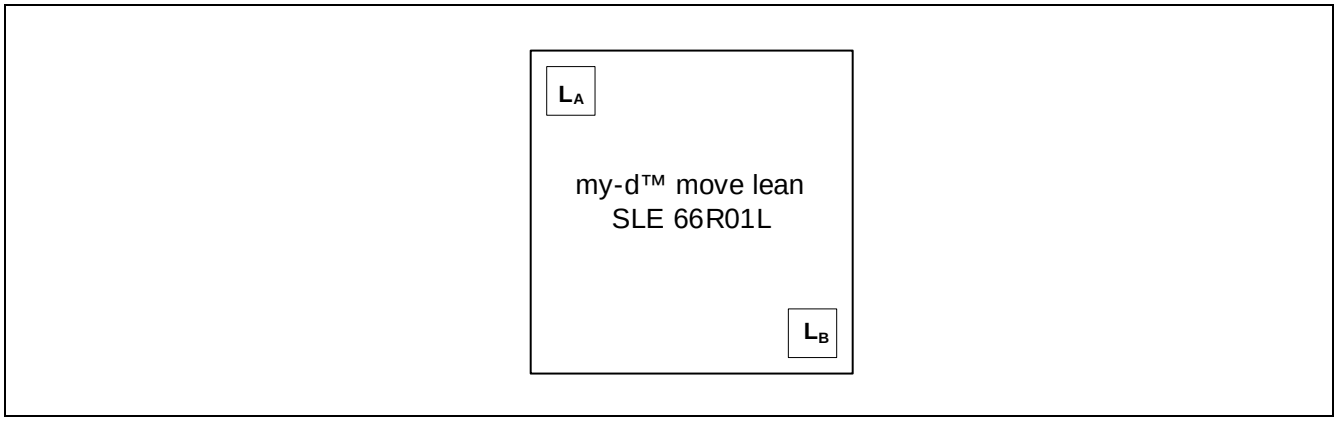

Figure 1 Pin configuration die

Table 2 Pin description and function

Symbol	Function
L_A	Antenna Connection
L_B	Antenna Connection

2 Scope of my-d™ move lean

The SLE 66R01L is part of the Infineon my-d™ product family and supports Infineon's transport and ticketing strategy. It is compliant to ISO/IEC 14443 Type A, to ISO/IEC 18092 and to NFC Forum™ Type 2 Tag Operation. The SLE 66R01L is designed for cost optimized transport applications and its implemented command set eases the usage of the SLE 66R01L in existing applications and infrastructures.

Typical ticketing transactions can be operated in less than 100 ms.

2.1 Application Description

The SLE 66R01L is designed to address the needs of a public transport system for a single fare or limited use ticket. Further applications are event ticketing such as access control to waterparks, leisure parks, football stadiums or concert halls.

2.2 Functional Block Diagram

The SLE 66R01L is made up of an EEPROM memory unit, an analog interface for contactless operation, a data transmission path and a control unit. The following diagram shows the main blocks of the SLE 66R01L.

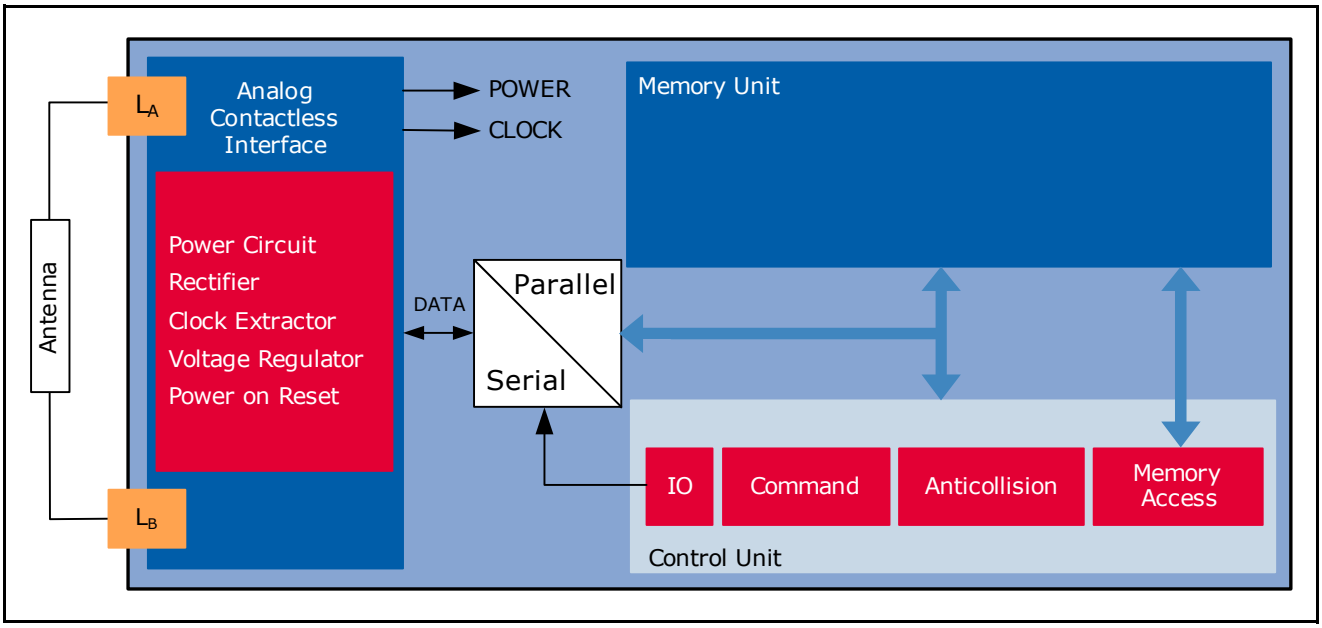

Figure 2 Block Diagram of the my-d™ move lean

The SLE 66R01L comprises the following three parts:

- **Analog Contactless Interface**
  - The Analog Contactless Interface comprises the voltage rectifier, voltage regulator and system clock to supply the IC with appropriate power. Additionally the data stream is modulated and demodulated.
- **Memory Unit**
  - The Memory Unit consists of 16 user blocks of 4 bytes each.
- **Control Unit**
  - The Control Unit decodes and executes all commands. Additionally the control unit is responsible for the correct anticollision flow.

2.3 Memory Principle

The total amount of addressable memory is 64 bytes.

It comprises

- 48 bytes of User Area reserved for User Data
- 16 bytes of Service Area reserved for UID, Configuration, Locking Bytes and OTP

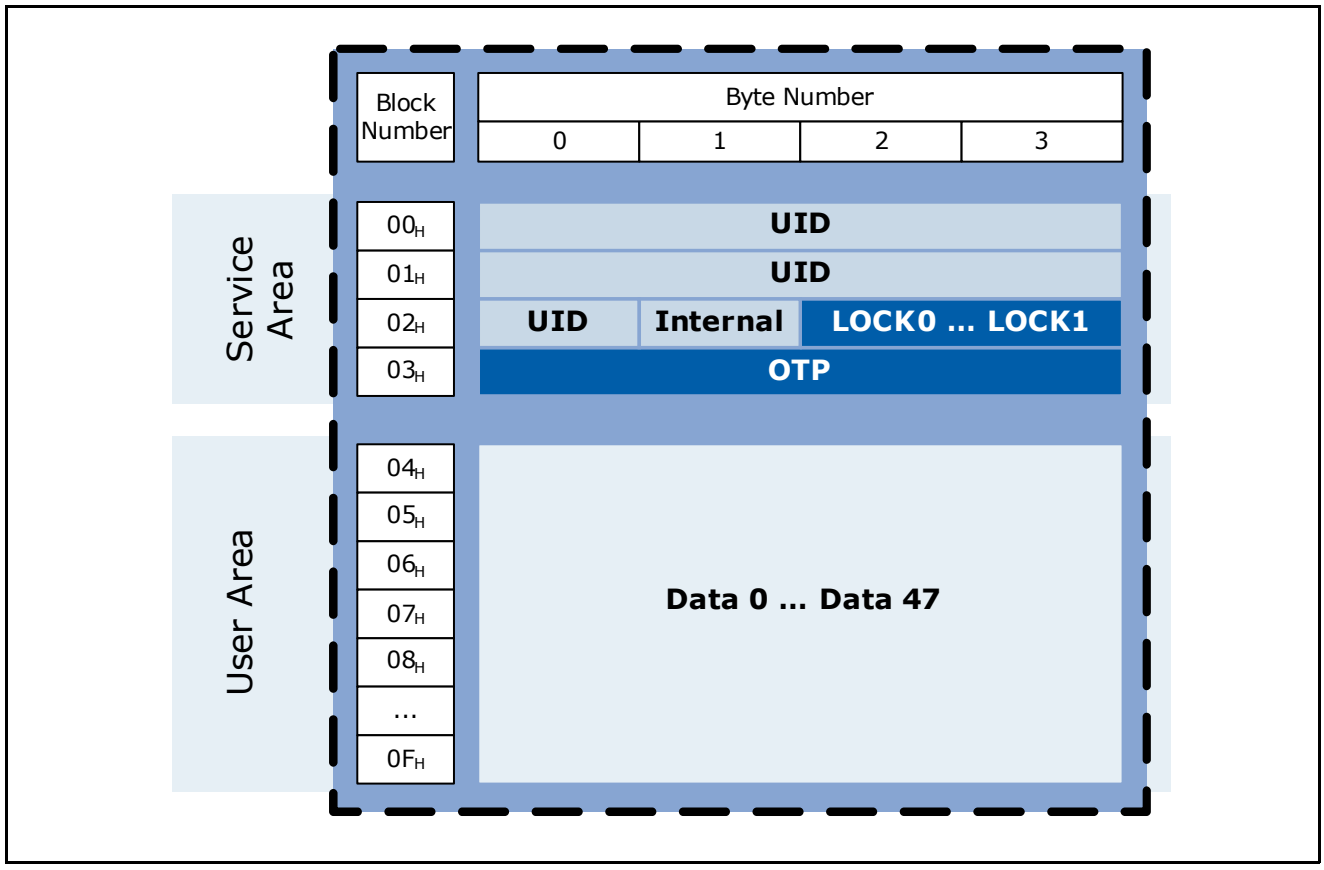

Figure 3 my-d™ move lean memory principle

2.4 Memory Principle for NFC Forum™ Type 2 Tag

The memory organization of the SLE 66R01L is configured according to the NFC Forum™ Type 2 Tag Operation specification.

The following figure illustrates an example of the SLE 66R01L as a NFC Forum™ Type 2 Tag compatible chip and enables the memory access with NFC Forum™ Type 2 Tag commands.

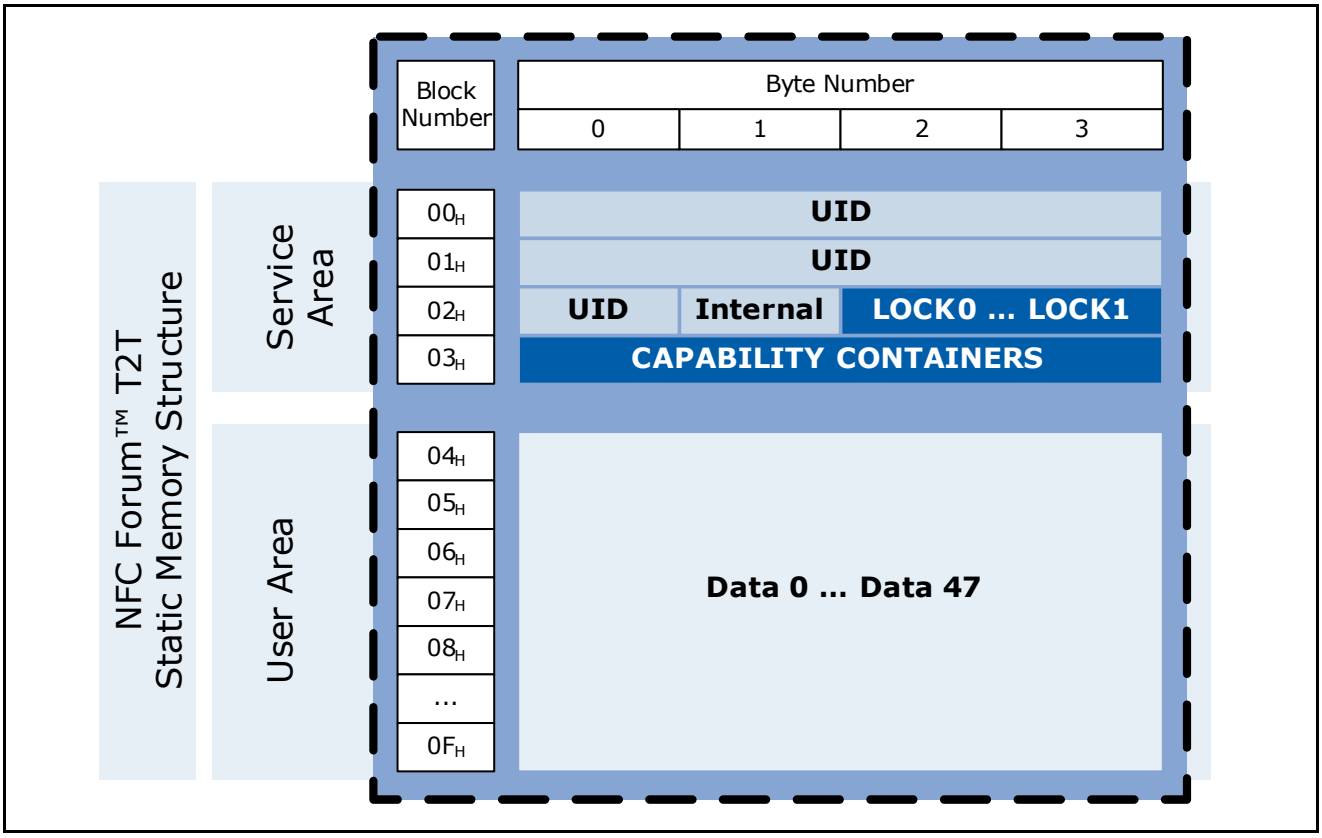

Figure 4 my-d™ move lean memory structure for NFC Forum™ Type 2 Tag

2.5 System Overview

The system consists of a host system, one or more SLE 66R01L tags or other ISO/IEC 14443 Type A compliant cards and an ISO/IEC 14443 Type A compatible contactless reader. Alternatively, since the SLE 66R01L can be configured to hold a NFC Forum™ Type 2 Tag memory structure, a NFC Forum™ device in card reader/writer mode can be used to operate the chip.

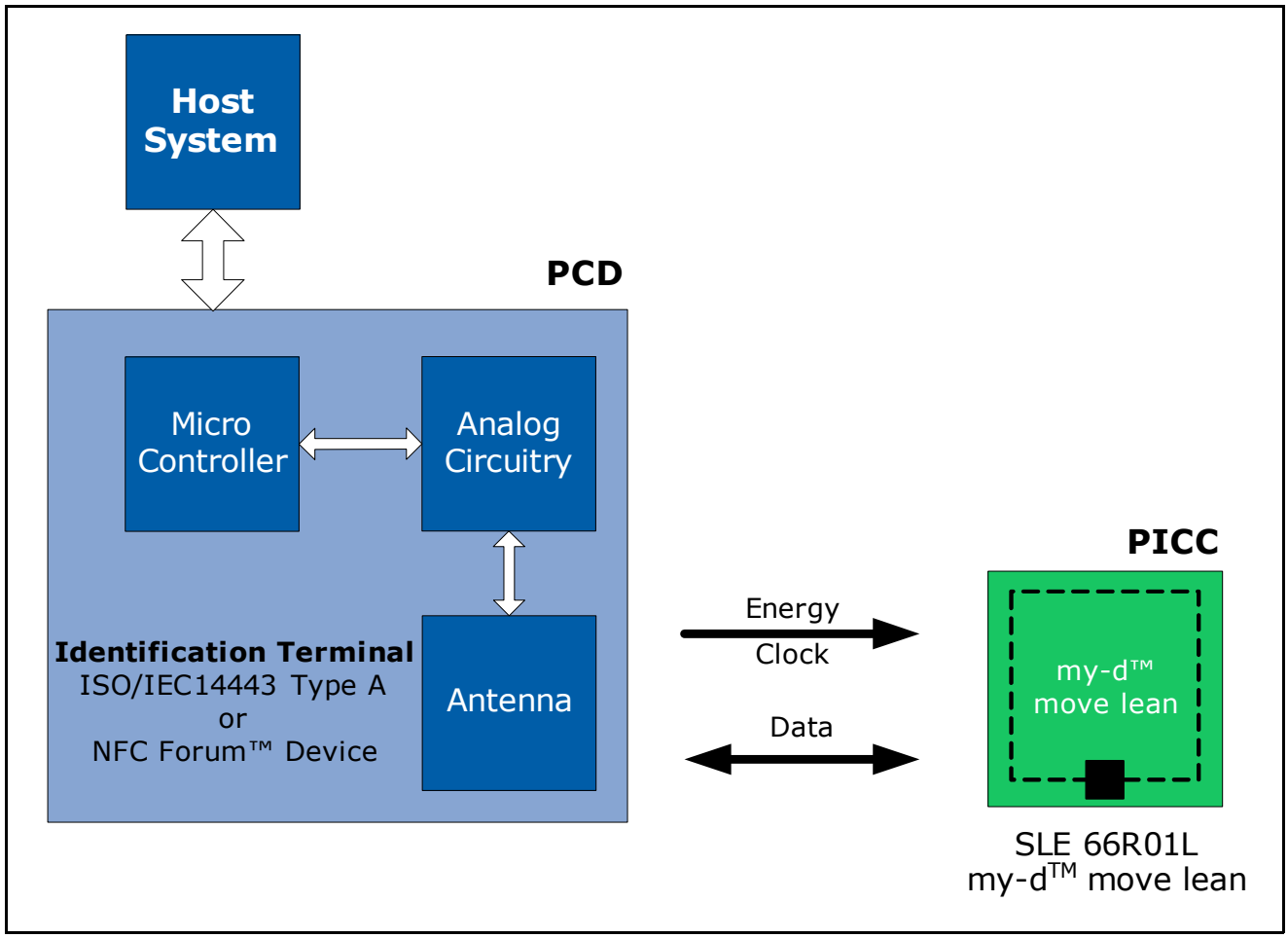

Figure 5 my-d™ move lean Contactless System Overview

2.6 UID Coding

To identify a SLE 66R01L chip the manufacturer code and a chip family identifier are coded into the UID as described in the **Table 3**. The chip family identifier can be used to determine the basic command set for the chip.

Table 3 UID Coding

UID Field	Value	Description
uid0	05_H	IC Manufacturer Code according to ISO/IEC 7816-6
uid1	$7x_H$	Chip Family Identifier Higher Nibble: 0111_b identifies SLE 66R01L Lower Nibble: part of the UID number

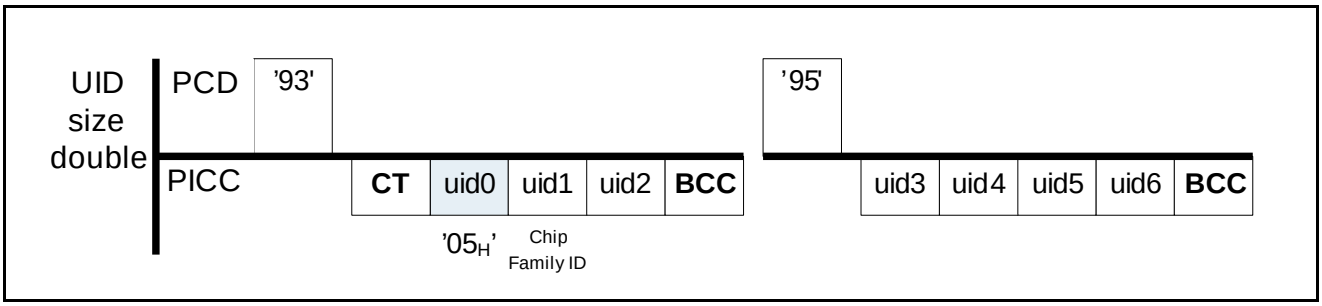

Figure 6 my-d™ move lean Double Size UID

2.7 Supported Standards

the SLE 66R01L supports the following standards:

- ISO/IEC 14443 Type A Parts 1, 2 and 3 tested according to ISO/IEC 10373-6 (PICC Test & Validation)
- ISO/IEC 18092
- NFC Forum™ Type 2 Tag Operation

2.8 Command Set

The IC is compliant to the ISO/IEC 14443 Type A standard.

A set of standard ISO/IEC 14443 Type A Part 3 commands is implemented to operate the chip.

Additionally NFC Forum™ Type 2 Tag commands and a my-d™ move lean specific command set is implemented.

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