

ICs for Chip Cards

Intelligent 221-Bit EEPROM Counter
for > 20000 Units with Security Logic and
High Security Authentication

SLE 443x Eurochip

SLE 443x Eurochip**Revision History:** **Original Version 01.96**

Previous Releases:

Page	Subjects (changes since last revision)

Important: For further information please contact:
Siemens Semiconductor Group in Munich, Germany,
Key Account Service Chip Card ICs

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Edition 01.96

This edition was realized using the software system FrameMaker.

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Features

- **221 bit EEPROM and 16 bit mask-programmable ROM**

104 bit user memory fully compatible with SLE 4406

- 64 bit Identification Area
- 40 bit Counter Area including 1 bit for personalization

133 bit additional memory for advanced features

- 4 bit Counter Backup (anti-tearing flags)
- 1 bit Initiation Flag for Authentication Key 2
- 16 bit Data Area 1 for free user access
- 48 bit Authentication Key 1
- either 64 bit Data Area 2 for user defined data or
- 48 bit Authentication Key 2

- **Counter with up to 33352 count units fully compatible with SLE 4406**

- Due to testing purposes a maximum of 21064 count units is guaranteed

- **Counter tearing protection**

- Backup feature activated at choice

- **High security authentication unit**

- Random number as challenge
- Individual secret Authentication Key 1
- Optional individual secret Authentication Key 2
- Calculation of up to 16 bit response

- **Transport Code protection for delivery**

- **Chip layout of security relevant areas protected against physical / electrical signal analysis**

- **Supply voltage $5\text{ V} \pm 10\%$**

- **Supply current $< 5\text{ mA}$**

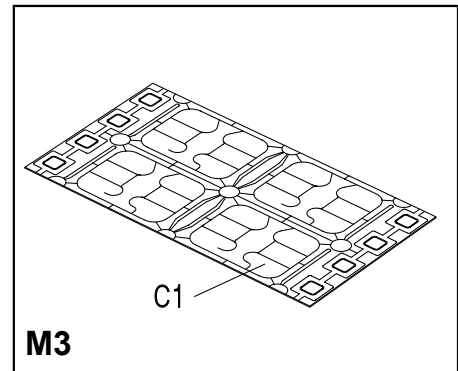
- **EEPROM programming time 5 ms**

- **ESD protection 4000 V**

- **Endurance minimum of 10^5 write / erase cycles per bit ¹⁾**

- **Data retention for minimum of 10 years ¹⁾**

- **Contact configuration and serial interface according to ISO standard 7816-3 (synchronous transmission)**



1) Values are temperature dependent, for further information please refer to your Siemens Sales Office

Type	Ordering Code	Package
SLE 443x M3.2	on request	Wire-Bonded Module M3.2
SLE 443x C	on request	Chip

1 Pin Configuration (top view)

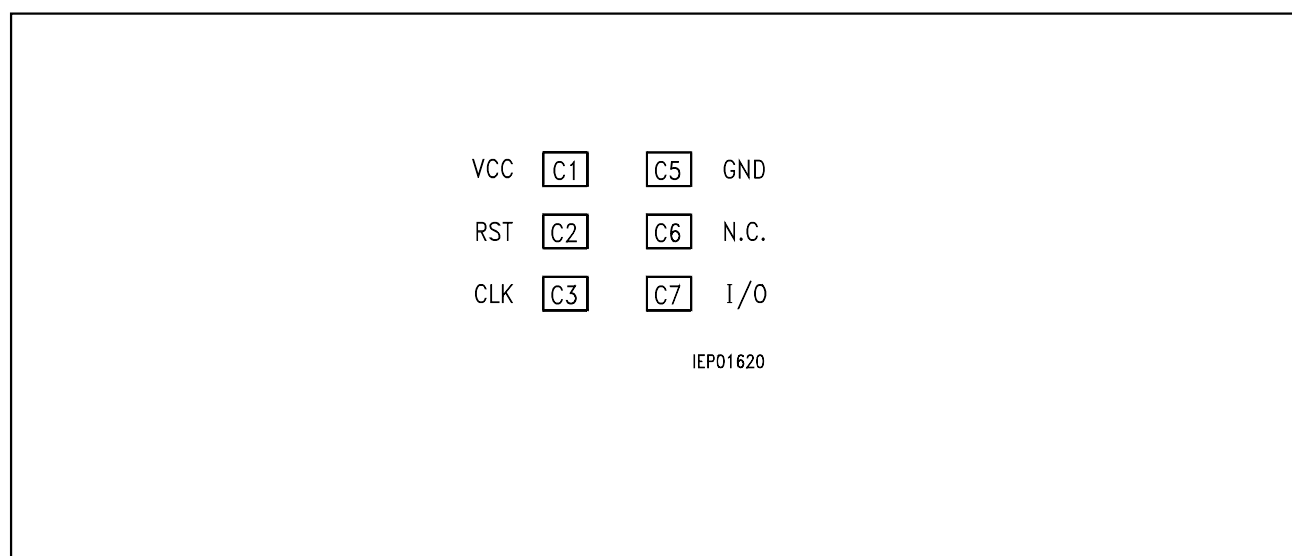


Figure 1

Pin Definitions and Functions

Parameter	Symbol	Test Condition
C1	VCC	Supply voltage
C2	RST	Control input (reset)
C3	CLK	Clock input
C5	GND	Ground
C6	N.C.	Not connected
C7	I/O	Bidirectional data line (open drain)

SLE 443x comes as a M 3 wire-bonded module for embedding in plastic cards and as a die for customer packaging.