SIEMENS

ICs for Chip Cards

SLE 4463

Intelligent 515-Bit Memory Chip with
Hardwired Security Features
for Payment Applications

Preliminary

Short Product Info 11.97

SLE 4463 Short Product Info **Revision History: Original Version 11.97**	
Previous Releases:	
Page	Subjects (changes since last revision)

Important: Further information is confidential and on request. Please contact:
Siemens Semiconductor Group in Munich, Germany,
Key Account Service Chip Card ICs and Identsystem ICs,
Tel.: +49 89 636-24362, Fax +49 89 636-22360

The supply of this component does not include a licence for its use in smart card applications. This licence is due to INNOVATRON Patents
137 Boulevard de Sébastopol, 75002 Paris, France, Fax +33 1 4013 3909

Published by Siemens AG, Bereich Halbleiter, HL CC Applications Group
Balanstr. 73, D-81541 München

Attention please!

As far as patents or other rights of third parties are concerned, liability is only assumed for components, not for applications, processes and circuits implemented within components or assemblies.

The information describes the type of component and shall not be considered as assured characteristics.

Terms of delivery and rights to change design reserved.

For questions on technology, delivery, and prices please contact the Semiconductor Group Offices in Germany or the Siemens Companies and Representatives world-wide (see address list).

Due to technical requirements components may contain dangerous substances. For information on the types in question please contact your nearest Siemens Office, Semiconductor Group.

Siemens AG is an approved CECC manufacturer.

Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport.

For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Components used in life-support devices or systems must be expressly authorized for such purpose!

Critical components[1)] of the Semiconductor Group of Siemens AG, may only be used in life-support devices or systems[2)] with the express written approval of the Semiconductor Group of Siemens AG.

1) A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.

2) Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.

Intelligent 515-Bit Memory Chip with Hardwired Security Features for Payment Applications

Features

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

  128 bit Identification Area consisting of
  - 16 bit Manufacturer code (mask-programmable ROM)
  - 112 bit for personalization data of card issuer (PROM)

  64 bit User Memory reloadable up to 2112 times (guaranteed 1920 times) (EEPROM)
  96 bit Erase Counter for User Memory (PROM/EEPROM)
  16 bit secret User Code (EEPROM)
  32 bit either secret Security Code or Data Area 3 in Standard User Mode (EEPROM)
  12 bit Data Area 1 (EEPROM)
  32 bit Data Area 2 (EEPROM)
  64 bit Response Counter
  64 bit secret Authentication Key

- **Secured memory access**
  Data change and reading of Security Code and User Code is only possible after correct code verification
  – Personalization Mode: Security Code
  – Security User Mode: Security Code
  – Standard User Mode: User Code

- **Counter with up to 135232 count units**
  – Operation of the User Memory in conjunction with the Erase Counter
  – Due to testing purposes a maximum of 122944 count units is guaranteed

- **High security authentication unit**
  – Random number as challenge
  – Calculation of up to 31 bit response within 60 ms at a clock frequency of 100 kHz
  – Response calculation with cipher block chaining
  – Authentication access and response calculation controlled by the Response Counter
  – Response Counter with up to 69904 count units (57616 units guaranteed)
  – Individual secret Authentication Key
  – Certification of the decreasing of the counter value
  – Signature of the data content

- **Memory access interface compatible with SLE 4404**
- **Supply voltage 5 V ±10 %**
- **Supply current < 10 mA**
- **EEPROM programming time 3 – 5 ms**
- **ESD protection typical 4000 V**
- **Endurance minimum 10^5 write/erase cycles / bit**[1)]
- **Data retention for minimum of 10 years**[1)]
- **Contact configuration and Answer to Reset in accordance to ISO standard 7816 (synchronous transmission)**

Type	Ordering Code	Package
SLE 4463	on request	Wire-Bonded Module
SLE 4463 C	on request	Chip

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

1. Pin Configuration

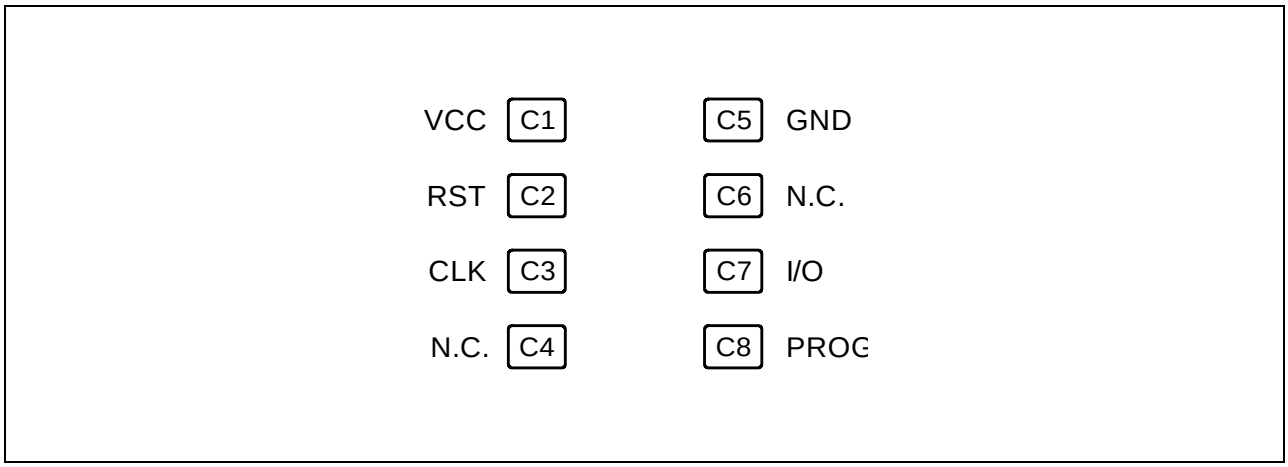

Figure 1 Pin Configuration (top view)

Pin Definitions and Functions

Card Contact	Symbol	Function
C1	VCC	Supply voltage
C2	RST	Control input (Reset Signal)
C3	CLK	Clock input
C4	N.C.	Not connected
C5	GND	Ground
C6	N.C.	Not connected
C7	I/O	Bidirectional data line (open drain)
C8	PROG	Control input (Programming Signal)

SLE 4463 is available as a wire-bonded module for embedding in plastic cards or as a die for customer packaging.