

128 Megabit Single Operating Voltage Serial Flash Memory with 4Kbyte Uniform Sector

PRELIMINARY DATASHEET

FEATURES

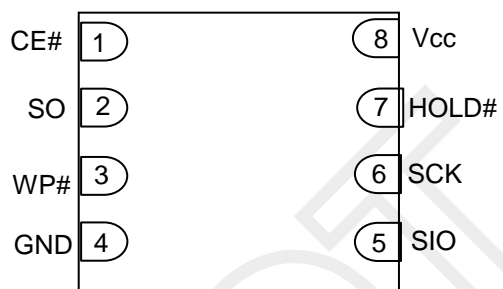
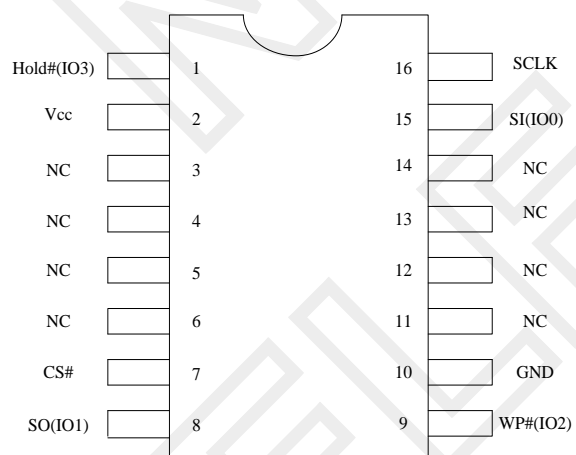
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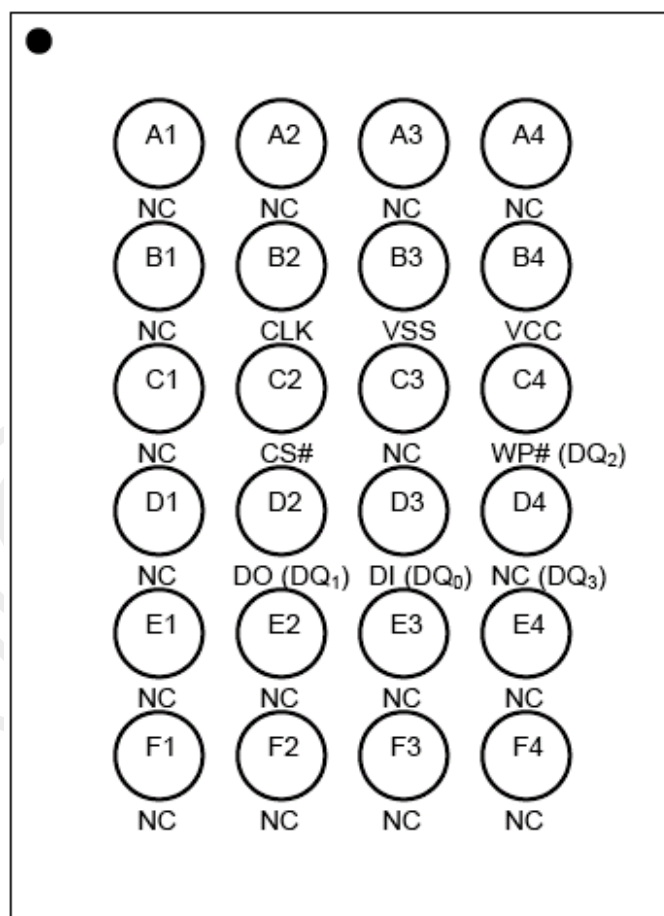
- Single power supply operation
 - Full voltage range: 2.70-3.60V
- **128 M-bit Serial Flash**
 - 128 M-bit/16,384 K-byte/65,536 pages
 - 256 bytes per programmable page
- **Serial Interface Architecture**
 - SPI Compatible: Mode 0 and Mode 3
 - Standard, Dual or Quad SPI
 - Standard SPI: CLK, CS#, DI, DO, WP#
 - Dual SPI: CLK, CS#, DQ₀, DQ₁, WP#
 - Quad SPI: CLK, CS#, DQ₀, DQ₁, DQ₂, DQ₃
- **High performance**
 - 104MHz clock rate for one data bit
 - 80MHz clock rate for two data bits
 - 50MHz clock rate for four data bits
- **Memory Organization**
 - 16,777,216 bytes
 - Uniform Sector Architecture
 - 256 blocks of 64-Kbyte
 - 4,096 sectors of 4-Kbyte
 - 65,536 pages (256 bytes each)
- **Low power consumption**
 - 12 mA typical active current
 - 1 μ A typical power down current
- **Uniform Sector Architecture:**
 - 2048 sectors of 4-Kbyte
 - 128 blocks of 64-Kbyte
 - Any sector or block can be erased individually
- **Software and Hardware Write Protection:**
 - Write Protect all or portion of memory via software
 - Enable/Disable protection with WP# pin
- **High performance program/erase speed**
 - Page program time: 1.3ms typical
 - Sector erase time: 60ms typical
 - Block erase time 300ms typical
 - Chip erase time: 30 seconds typical
- Lockable 512 byte OTP security sector
- Minimum 100K endurance cycle
- **Package Options**
 - 16 pin SOIC 300mil
 - 8 pin WSON (5x6 mm)
 - 8 pin WSON (6x8mm)
 - 24 ball BGA (6x8mm) (Call Factory)
 - KGD (Call Factory)
 - Automotive Grades Available
 - All Pb-free packages are RoHS compliant

GENERAL DESCRIPTION

The IS25CQ128 is a 128 Megabit (16,384K-byte) Serial Flash memory, with advanced write protection mechanisms. The IS25CQ128 supports the standard Serial Peripheral Interface (SPI), and a high performance Dual output as well as Quad I/O using SPI pins: Serial Clock, Chip Select, Serial DQ₀(DI), DQ₁(DO), DQ₂(WP#) and DQ₃(NC). SPI clock frequencies of up to 80MHz are supported allowing equivalent clock rates of 160MHz for Dual Output when using the Dual Output Fast Read instructions, and SPI clock frequencies of up to 50MHz are supported allowing equivalent clock rates of 200MHz for Quad Output when using the Quad Output Fast Read instructions. The memory can be programmed 1 to 256 bytes at a time, using the Page Program instruction.

The IS25CQ128 is designed to allow either single Sector/Block at a time or full chip erase operation. The IS25CQ128 can be configured to protect part of the memory as the software protected mode. The device can sustain a minimum of 100K program/erase cycles on each sector or block.

Figure 1. CONNECTION DIAGRAMS

8-Pin WSON

16-Pin SOIC


24 - Ball BGA

**Ordering Information**

Density	Frequency	Order Part Number	Package
128 Mb	104 MHz	IS25CQ128-JMLE	16 Pin SOIC 300mil
		IS25CQ128-JKLE	8 Pin WSON (5x6 mm)
		IS25CQ128-JLLE	8 Pin WSON (6x8 mm)
		IS25CQ128-JGLE	24-ball BGA (6x8 mm)
		IS25CQ128-JMLA*	16 Pin SOIC 300mil (Call Factory)
		IS25CQ128-JKLA*	8 Pin WSON (5x6 mm) (Call Factory)
		IS25CQ128-JLLA*	8 Pin WSON (6x8 mm) (Call Factory)
		IS25CQ128-JGLA*	24-ball BGA (6x8 mm) (Call Factory)
		IS25CQ128-JWLE	KGD (Call Factory)

A* = A1, A2, A3 Automotive Temperature Range