

**2 Mb / 4 Mb Single Operating Voltage Serial Flash Memory  
With 104 MHz Dual or 100MHz Quad-Output SPI Bus Interface****FEATURES**

- **Single Power Supply Operation**
  - Low voltage range: 2.3 V - 3.6 V
- **Memory Organization**
  - IS25LQ020: 256K x 8 (2 Mbit)
  - IS25LQ040: 512K x 8 (4 Mbit)
- **Cost Effective Sector/Block Architecture**
  - 2Mb / 4Mb : Uniform 4KByte sectors / sixteen uniform 64KByte blocks
- **Serial Peripheral Interface (SPI) Compatible**
  - Supports single-, dual- or quad-output
  - Supports SPI Modes 0 and 3
  - Maximum 33 MHz clock rate for normal read
  - Maximum 104 MHz clock rate for fast read
  - Maximum 208MHz clock rate equivalent Dual SPI
  - Maximum 400MHz clock rate equivalent Quad SPI
- **Byte Program Operation**
  - Typical 10 us/Byte
- **Page Program (up to 256 Bytes) Operation**
  - Maximum 0.7ms per page program
- **Sector, Block or Chip Erase Operation**
  - Sector Erase (4KB)→150ms (Typ)
  - Block Erase (64KB)→500ms (Typ)
  - Chip Erase →0.5s (2Mb)
  - Chip Erase → 1s (4Mb)

**GENERAL DESCRIPTION**

The IS25LQ020/040 is 2 Mbit / 4 Mbit Serial Peripheral Interface (SPI) Flash memories, providing single-, dual or quad-output. The devices are designed to support a 33 MHz fclock rate in normal read mode, and 104 MHz in fast read (Quad output is 100MHz), the fastest in the industry. The devices use a single low voltage power supply, ranging from 2.3 Volt to 3.6 Volt, to perform read, erase and program operations. The devices can be programmed in standard EPROM programmers.

The IS25LQ020/040 are accessed through a 4-wire SPI Interface consisting of Serial Data Input/Output (SI), Serial Data Output (SO), Serial Clock (SCK), and Chip Enable (CE#) pins. The devices support page program mode, where 1 to 256 bytes data can be programmed into the memory in one program operation. These devices are divided into uniform 4 KByte sectors or uniform 64 KByte blocks.

**PRELIMINARY DATASHEET**

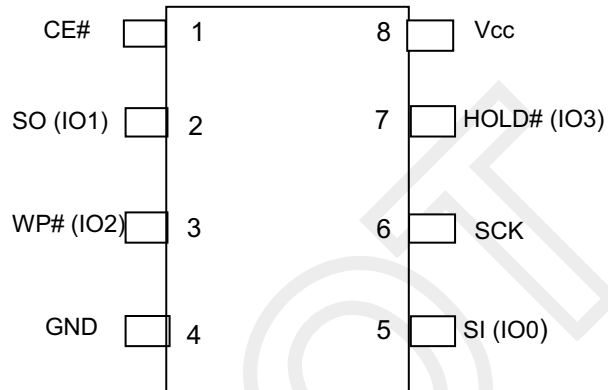
- **Low Power Consumption**
  - Max 12 mA active read current
  - Max 20 mA program/erase current
  - Max 50 uA standby current
- **Hardware Write Protection**
  - Protect and unprotect the device from write operation by Write Protect (WP#) Pin
- **Software Write Protection**
  - The Block Protect (BP3, BP2, BP1, BP0) bits allow partial or entire memory to be configured as read-only
- **High Product Endurance**
  - Guaranteed 100,000 program/erase cycles per single sector
  - Minimum 20 years data retention
- **Industrial Standard Pin-out and Package**
  - 8-pin SOIC 208mil
  - 8-pin SOIC 150mil
  - 8-pin VVSOP 150mil
  - 8-pin WSON (5x6mm)
  - 8-pin USON (2x3mm)
  - KGD (Call Factory)
  - Lead-free (Pb-free) package
  - Automotive Temperature Ranges Available
- **Additional 256-byte Security information one-time programmable (OTP) area**
- **Special protect function**
  - Safe guard function (Appendix 1)
  - Sector unlock function (Appendix



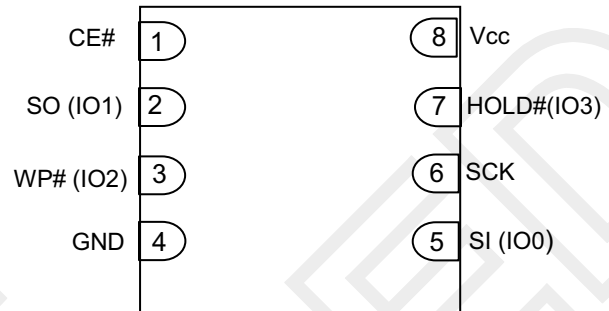
## IS25LQ020/040

The IS25LQ020/040 are offered in 8-pin SOIC 208mil, 8-pin VVSOP, 8-pin WSON and 8-pin USON.

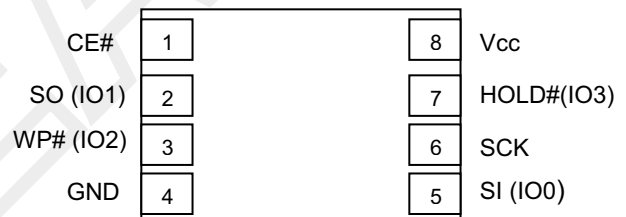
### CONNECTION DIAGRAMS



8-Pin SOIC/VVSOP



8-Pin WSON



8-Pin USON

**PIN DESCRIPTIONS**

| SYMBOL      | TYPE         | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CE#         | INPUT        | Chip Enable: CE# low activates the devices internal circuitries for device operation. CE# high deselects the devices and switches into standby mode to reduce the power consumption. When a device is not selected, data will not be accepted via the serial input pin (SI), and the serial output pin (SO) will remain in a high impedance state.                                                                                           |
| SCK         | INPUT        | Serial Data Clock                                                                                                                                                                                                                                                                                                                                                                                                                            |
| SI (IO0)    | INPUT/OUTPUT | Serial Data Input/Output                                                                                                                                                                                                                                                                                                                                                                                                                     |
| SO (IO1)    | INPUT/OUTPUT | Serial Data Input/Output                                                                                                                                                                                                                                                                                                                                                                                                                     |
| GND         |              | Ground                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Vcc         |              | Device Power Supply                                                                                                                                                                                                                                                                                                                                                                                                                          |
| WP# (IO2)   | INPUT/OUTPUT | Write Protect/Serial Data Output: A hardware program/erase protection for all or part of a memory array. When the WP# pin is low, memory array write-protection depends on the setting of BP3, BP2, BP1 and BP0 bits in the Status Register. When the WP# is high, the status register are not write-protected. When the QE bit of is set "1", the /WP pin (Hardware Write Protect) function is not available since this pin is used for IO2 |
| HOLD# (IO3) | INPUT/OUTPUT | Hold: Pause serial communication by the master device without resetting the serial sequence. When the QE bit of Status Register is set for "1", the function is Serial Data Input & Output (for 4xl/O read mode)                                                                                                                                                                                                                             |

**ORDERING INFORMATION:**

| Density | Frequency (MHz) | Order Part Number | Package                           |
|---------|-----------------|-------------------|-----------------------------------|
| 2M      | 104             | IS25LQ020-JNLE    | 8-pin SOIC 150mil                 |
|         |                 | IS25LQ020-JBLE    | 8-pin SOIC 208mil                 |
|         |                 | IS25LQ020-JVLE    | 8-pin VVSOP 150mil                |
|         |                 | IS25LQ020-JKLE    | 8-pin WSON (5x6mm)                |
|         |                 | IS25LQ020-JULE    | 8-pin USON (2x3mm)                |
|         |                 | IS25LQ020-JNLA*   | 8-pin SOIC 150mil (Call Factory)  |
|         |                 | IS25LQ020-JBLA*   | 8-pin SOIC 208mil (Call Factory)  |
|         |                 | IS25LQ020-JVLA*   | 8-pin VVSOP 150mil (Call Factory) |
|         |                 | IS25LQ020-JKLA*   | 8-pin WSON (5x6mm) (Call Factory) |
|         |                 | IS25LQ020-JULA*   | 8-pin USON (2x3mm) (Call Factory) |
|         |                 | IS25LQ020-JWLE    | KGD (Call Factory)                |
| 4M      | 104             | IS25LQ040-JNLE    | 8-pin SOIC 150mil                 |
|         |                 | IS25LQ040-JBLE    | 8-pin SOIC 208mil                 |
|         |                 | IS25LQ040-JVLE    | 8-pin VVSOP 150mil                |
|         |                 | IS25LQ040-JKLE    | 8-pin WSON (5x6mm)                |
|         |                 | IS25LQ040-JULE    | 8-pin USON (2x3mm)                |
|         |                 | IS25LQ040-JNLA*   | 8-pin SOIC 150mil (Call Factory)  |
|         |                 | IS25LQ040-JBLA*   | 8-pin SOIC 208mil (Call Factory)  |
|         |                 | IS25LQ040-JVLA*   | 8-pin VVSOP 150mil (Call Factory) |
|         |                 | IS25LQ040-JKLA*   | 8-pin WSON (5x6mm) (Call Factory) |
|         |                 | IS25LQ040-JULA*   | 8-pin USON (2x3mm) (Call Factory) |
|         |                 | IS25LQ040-JWLE    | KGD (Call Factory)                |

A\* = A1, A2, A3, Automotive Temperature Ranges

# Mouser Electronics

Authorized Distributor

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ISSI:

[IS25LQ040-JBLE-TR](#) [IS25LQ040-JBLE](#)