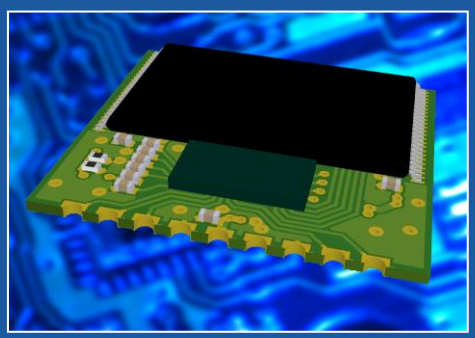
ART OF TECHNOLOGY

electronic component design

Solderable Memory Module

FOR INDUSTRIAL AND MEDICAL SYSTEMS



The Solderable Memory Module (SMM) is an alternative for SD cards for industrial and medical embedded systems. The module combines all the advantages of a SD/MMC card without the disadvantages (in particular the need for an additional card holder). Built with SLC NAND Flash and a Hyperstone Flash controller the module is about half the size of a conventional SD/MMC memory card, offers a controlled and transparent BOM and can be delivered with different memory capacities. It can even be supplied with customised software.

Challenge

Flash based memory is normally preferred when storing large volumes of data in embedded systems. Due to the simple interface and the small dimensions SD/MMC memory cards are often preferred (if there is enough space for the card holder).

When space is limited, or where there is a poor electrical contact due to the environmental conditions (vibration, corrosion etc.) NAND Flash components can be connected directly to the processor. In this case, special component-specific FTL software (Flash Transfer Layer) is required to ensure reliable operation. This is difficult due to the complexity of the FTL software especially on smaller processors.

The SMM has an SD/MMC memory card compatible memory controller providing FTL functionality and is the ideal choice for demanding industrial or medical embedded systems.

Solution

The SMM is a compact memory module for industrial and medical embedded systems, with an electrical SD/MMC interface which is soldered directly onto a printed circuit board. A controlled bill of material and close co-operation with the manufacturer ensures that hardware and firmware changes to the NAND Flash controller are always visible to the customer and customized functions can be provided on request.

Advantages

- Small form factor
- Automatic pick and place
- Simple to solder and control (visible solder joints)
- Vibration resistant (soldered)
- Mouldable for harsh environments
- SLC memory ensures high reliability and long life time
- Controlled and transparent BOM
- Standard software (customisable on request e.g. password protection, emergency deletion)

Technical data

- Capacity: 1GByte (other on request)
- Interface: 1 or 4bit SD/MMC, SPI
- FLASH memory: Micron SLC NAND
- FLASH controller: Hyperstone S6
- Operating voltage: 2.7 - 3.6V
- Power input: Read/Write typ. 35mA/max. 50mA, Sleep - 0.3mA (max)
- Writing speed: Up to 21MByte/s
- Reading speed: Up to 24Mbyte/s
- Temperature: Extended (-25°C - +85°C)
- Dimensions: 24 x 20 mm^2 with 2.1mm height (smaller versions possible)
- Package: Open SMD module with 2mm pitch
- Software Compatibility: Standard SD/MMC memory card
- Packing: Tubes (tape & reel on request)

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