swissbit®

Product Fact Sheet

Industrial microSD Memory Card

S-600u series

UHS-I Interface, SLC

Extended and Industrial Temperature Grade

Date: August 18, 2022
Revision: 1.01



Made in Germany

Product Summary

- **Capacities:** 512 MBytes, 1 GBytes, 2 GBytes
- **Form Factor:** Standard microSD Memory Card form factor – 15.0 x 11.0 x 0.7mm (1.0mm)
- **Compliance[1]:** Fully compliant with SD Memory Card specification 3.0
  - Speed class 10 and U1 according SD3.0 specification
  - Fully compatible with UHS-I/SDR104 hosts
  - SD2.0 SDHC backward compliant, default speed and high speed mode
  - FAT16
- **Environmental:** RoHS / REACH Compliant
- **Compatibility:** Support SD SPI mode
- **Performance (max. capacity):**
  - SD Default speed
  - SD High speed
  - SD UHS-I
  - Read performance: sequential read up to 35 MBytes/s
  - Write performance: sequential write up to 21 MBytes/s
- **Operating Temperature Range:**
  - Extended: -25 °C to 85 °C
  - Industrial: -40 °C to 85 °C
- **Storage Temperature Range:** -40 °C to 100 °C
- **Operating Voltage:** 2.7 ... 3.6V (Low-power CMOS technology)
- **Data Retention:** 10 Years @ Life Begin / 1 Year @ Life End
- **Reliability:**
  - Mean Time Between Failure (MTBF): > 3,000,000 hours
  - Number of insertions: up to 20,000
- **Shock/Vibration:** 1,500 *g* /50 *g*
- **Electromagnetic Compatibility Test:** Radiated Emission; Radiated Immunity; Electrostatic Discharge

Product Features

- Optimized FW algorithms especially for read/write access, highest random write performance and best endurance with long data retention
  - Designed for usage in applications with highest requirements regarding reliability like data logging, POS/POI, Medical and other demanding use-cases
  - Especially suitable for intensive read/write operations
  - Advanced power-off reliability technology
  - Wear Leveling technology
    Equal wear leveling of static and dynamic data. The wear leveling assures that dynamic data as well as static data is balanced evenly across the memory. With that the maximum write endurance of the device is guaranteed
  - The S-600u series is optimized for high read/write traffic for demanding industrial applications.
  - Read Disturb Management
    The read commands are monitored and the content is refreshed when critical levels have occurred
  - Data Care Management
    The interruptible background process maintain the user data for Read Disturb effects or Retention degradation due to high temperature effects

[1] The verification of host system and storage device compatibility is in customer's responsibility. Swissbit can provide guidance and support on request.

  - Near miss ECC technology
    Minimize the risk of uncorrectable bit failure over the product life time. Each read command analyzes the ECC margin level and refresh data if necessary
  - Diagnostic features with Life Time Monitoring tool support
- High reliability
  - SLC Flash
  - The product is optimized for long life cycle that requires good data retention because of high temperature mission profile.
  - Number of card insertions/removals 20,000
  - Industrial Temperature range -40° up to 85°C inclusive full cross temperature support[2]
  - SIP (System In Package) process for extreme dust, water and ESD proof
- Controlled "Locked" BOM & PCN process
- Manufactured in a TS 16949 certified factory
- Customized options like CID registers, CPRM keys, firmware incl. settings and marking on request
- In-field firmware update[3]
- Swissbit Device Manager (SBDM) Tool and SDK for SBDM (on request)

Why Swissbit?

Swissbit is focused on the design, development, manufacture, and support of leading edge memory and storage solutions for the worldwide OEM/ODM marketplace. As a global supplier, Swissbit recognizes and addressees the higher level of application requirements of today's industrial, Netcom, and automotive customers by providing best-in-class products and services, with uncompromised attention to driving overall value and quality.

[2] Cross temp. stability of 125 Kelvin: Feasible temperature difference between write/read of same data, e.g. write @-40°C, read @85°C.
[3] The support of In-Field FW update capabilities on host systems is recommended.