

# High Reliability 3D TLC SD Memory Cards for Industrial Applications



## High speed write performance even under extreme circumstances and work loads

### Key Benefits

- Compliant to SD 6.1 specifications and SDHC/SDXC high speed mode, UHS-I
- Speed class 10/U3/V30/A2
- S-50(u) series offers up to 512GB 3D TLC flash, S-56(u) series 100% pSLC configured up to 128GB
- Temperature stability across the entire Industrial Temperature Range -40°C to 85°C and Extended Temperature Range -25°C to 85°C
- Optimized for random write performance and small random write endurance as found in industrial data logging applications
- Advanced power-off reliability technology

With "high reliability" at their core, the S-50 and S-56 series integrate state-of-the-art technologies, making them the first choice for demanding applications. Swissbit accomplishes this by combining leading-edge industrial grade 3D TLC NAND technology with a powerful controller and firmware optimized for maximum reliability.

The SD and microSD cards are available in capacities ranging from 16 to 512 GB and support an extended temperature range of -40 to +85 °C. The S-50 and S-56 series are based on high quality Kioxia 3D NAND.

This provides Swissbit customers with the greatest possible flexibility for the selection of the most suitable cards for specific requirements and applications.

Maximum reliability is also ensured by 120bit LDPC error correction, full page fail protection, read disturb management, background data refresh, data recovery following a sudden power loss, and sophisticated static and dynamic wear leveling. A molded SiP package with gold contacts completes the feature set, providing optimal protection against high mechanical stress and environmental influences even in harsh environments.

## Long-term availability and NAND architecture selection

With the offer of the S-50 and S-56 series, Swissbit maintains its commitment to supplying memory cards of the highest quality at competitive price while assuring long-term availability. This is further underlined by the fact that Swissbit offers NAND flash in its SD card portfolio from its strategic partner Kioxia who is dedicated to supporting industrial NAND flash.

With high performance and speed class 10/U3/V30/A2 the S-50/S-56 series is providing capacities up to 512GB and also as low as 4GB.

Due to full in-house manufacturing of both SD and MicroSD memory cards Swissbit is able to quickly respond to short-term market fluctuations and to deliver exceptional quality.

## Key Applications

- Data logging
- Industrial PCs
- HMI units
- POS / POI
- Medical systems
- Transportation

### S-50 / S-50u

### S-56 / S-56u

Type	SD Memory Card (SFHC / SDXC)	
Interface Data Transfer Mode	SD 6.1, UHS-I, speed class 10/U3/V30/A2 High reliability type	
Outline Dimensions	32 x 24 x 2.1 mm	
Flash Type	3D NAND TLC	3D NAND pSLC
Density Range	8 GB / 4 GB	4 – 512 GB / 5 – 160 GB
Data Retention	S-50: 16 – 512 GB / S-50u: 16 – 256 GB	S-56: 4 – 128 GB / S-56u: 4 – 64
Endurance	3k P/E Cycles	100k P/E Cycles
Operating Temperature	Extended: -25°C to +85°C Industrial: -40°C to +85°C	
Storage Temperature	-40°C to +85°C	
Performance	Seq. Read / Write up to 97 / 44 MBs Rand 4K Read / Write up to 4,570 / 1,940 IOPS	Seq. Read / Write up to 97 / 90 MBs Rand 4K Read / Write up to 4,950 / 1,800 IOPS
Voltage	2.7 – 3.6 V	

### About Swissbit

Swissbit AG is the leading European manufacturer of storage, security and embedded IoT solutions for demanding applications. As trusted partner Swissbit empowers the digital and connected world by reliably storing and protecting data in industrial, security and IoT applications.