swissbit®
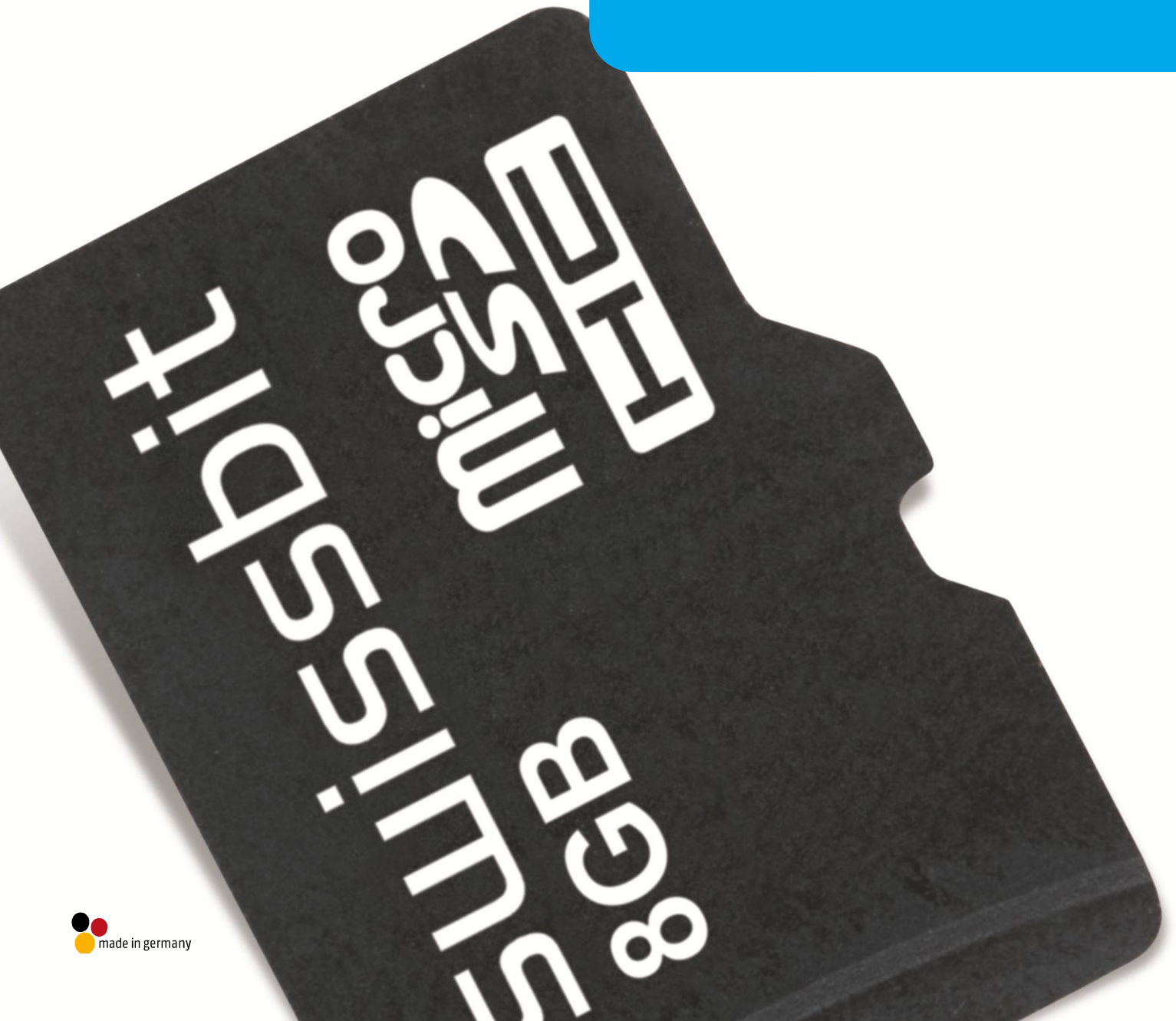
Product Fact Sheet

Industrial
MICRO SDHC Memory Card

S-400u Series
SD3.0 up to class 10 compliant
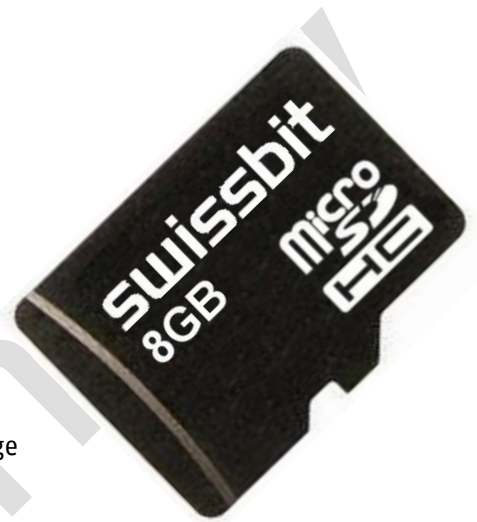
preliminary target spec

made in germany

S-400u Series
Industrial MICRO SDHC Memory Card – 4/8/16GByte MLC

Main Feature

- Fully compliant with MICRO SD Memory Card specification 3.0 & 2.0
    - SD mode and SPI mode supported
    - Target speed class value:
        - up to class 6   according SD2.0 specification
        - up to class 10   according SD3.0 specification
    - FAT32 preformatted

- High performance SD3.0/2.0 specification
    - SD burst up to 25MB/s
    - SD Normal speed 0...25MHz clock rate
    - SD High speed 25...50MHz clock rate
    - SD UHS-I SDR104
    - Flash burst up to 133MB/s
    - Up to 24MByte/sec sequential data rate (MLC)

- Power Supply: (Low-power CMOS technology)
    - 2.7...3.6V normal operating voltage
    - 2.0...3.6V basic communication (CMD0, 15, 55 ACMD41) voltage

- Standard MICRO SD Memory card form factor
    - 15.0mm x 11.0mm x 0.7mm

- Optimized FW Algorithmic
    - Patented 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
    - Write Endurance technology
      Due to intelligent wear leveling an even use of the entire flash is guaranteed, regardless how much "static" (OS) data is stored.
    - Read Disturb Management technology
      The read commands are monitored and the content is refreshed when critical levels have occurred
    - Auto Refresh for Data Retention enhancement
      The interruptible background process maintain the user data for Read Disturb effects or Retention degradation due to high temperature effects
    - Near miss ECC technology
      Minimize the risk of uncorrectable bit failure over the product life time. Each read command analyze the ECC margin level
    - Diagnostic features with Life Time Monitoring support

- High reliability
    - Designed for industrial market especially read intensive application like navigation, POS/POI, Medical and general boot medium use case:
        - Longevity, long life cycle, high data retention together with high temperature profile
    - Intensive write application should use the optional SLC portfolio
    - Number of card insertions/removals >20,000
    - Extended Temperature range –25° up to 85°C (Optional –40° up to 85°C)
    - SIP (System In Package) process for extreme dust, water and ESD proof

- Controlled BOM & PCN process

- Customized options like CID registers, CPRM keys, firmware incl. settings and marking by projects

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Swissbit reserves the right to change products or specifications without notice.

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Preliminary Revision: 0.31

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Order Information

Density	Part Number	Temp. Range	Flash Technology
4GB	SFSD4096N1BM1TO-E-GE-111-STD	-25°C to 85°C	MLC NAND Flash
8GB	SFSD8192N1BM1TO-E-LF-111-STD		
16GB	SFSD016GN1BM1TO-E-HG-111-STD		
4GB	SFSD4096N1BM1TO-I-GE-111-STD	-40°C to 85°C	
8GB	SFSD8192N1BM1TO-I-LF-111-STD		
16GB	SFSD016GN1BM1TO-I-HG-111-STD		

System Performance

System Performance (estimated target)		typ	max	Unit
Burst Data transfer Rate (max clock 50MHz)			25	MB/s
Sustained Sequential Read	MLC version	19	24	
Sustained Sequential Write	MLC version	10	11	

Current Consumption @3.3V	typ	max	Unit
Write	TBD	TBD	mA
Read	TBD	TBD	
Sleep Mode	TBD	TBD	

Physical Dimensions

Physical Dimensions	Value	Unit
Length	15.0±0.1	mm
Width	11.0±0.1	
Thickness	0.7 (1.0)±0.1	
Weight (typ.)	0.4	g

Recommended Temperature Conditions

Parameter	min	typ	max	Unit
Extended Operating Temperature	-25	25	85	°C
Industrial Operating Temperature	-40	25	85	°C
Storage Temperature	-40	25	100	°C

Humidity and ESD

Parameter	Operating	Non Operating
Humidity (non-condensing)	max 95%	
ESD according to IEC61000-4-2 Human body model ±4 kV 100 pf/1.5 kOhm Machine model ±0.25 kV 200 pf/0 Ohm	Non Contact Pads area: ±8 kV (coupling plane discharge) ±15 kV (air discharge) Human body model according to IEC61000-4-2	Contact Pads: ±4 kV, Human body model according to IEC61000-4-2

Durability

Parameter	Operating	Non Operating
Salt water spray	3% NaCl/35°C; 24h acc. MIL STD Method 1009	
Solar Exposure / Impermeability	1000W/m2 @ 400°C / IP67	
UV Light Exposure	UV: 254nm, 15Ws/cm2	
Insertions / Drop test	>10,000/ 1.5m free fall	
Bending / Torque / Bump	10N / 0.15Nm or ±2.5deg / 25g; 6ms; ±3 x 4000 shocks	
Shock / Vibration (peak -to-peak)	1000 g max. / 15G max.	
Minimum moving force of WP slider	0.4N	

For more information on SD Memory card Spec 2.0 or 3.0, please visit SD association (www.sdcard.org)

Why Swissbit?

Swissbit strives to create innovative technologies for future market opportunities utilizing a highly skilled in-house product research and development team. Swissbit maintains a marketing edge by continuing to manufacture world-class high quality memory products and providing customers with both high value and low cost of ownership achieved through efficient processes and procedures.

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