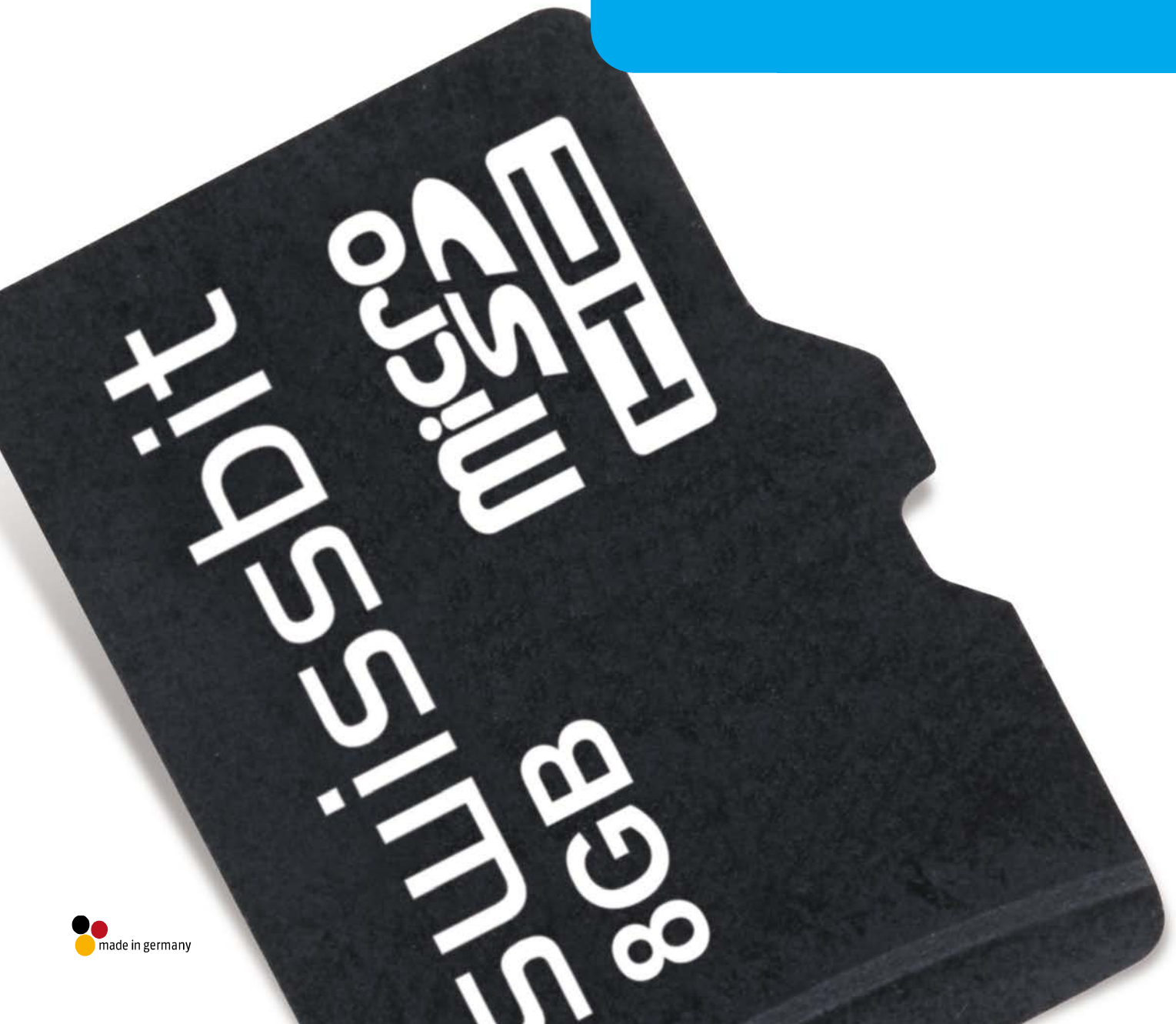
swissbit®

Product Fact Sheet

Industrial
MICRO SDHC Memory Card

S-40u Series
SPI, SDHC compliant

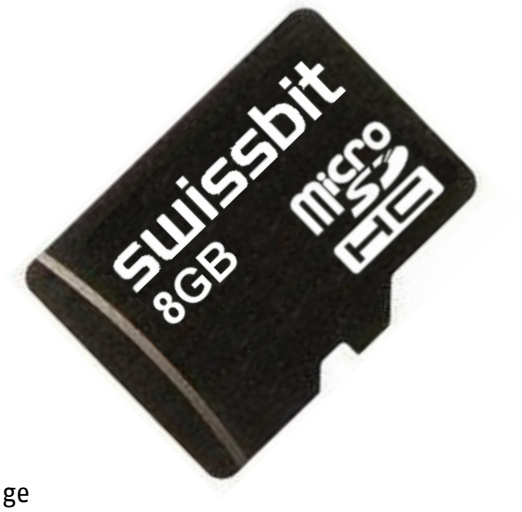


made in germany

S-40u Series

Industrial MICRO SDHC Memory Card – 4/8/16GByte MLC

Main Feature



- Fully compliant with SD Memory Card specification 2.0 and 3.0 and MICRO SD Memory Card Addendum 4.00
  - SD mode and SPI mode supported
  - Speed class 6 according SD3.0 specification
  - FAT32 preformatted
- High performance 3.0 specification
  - SD burst up to 25MB/s
  - SD Normal speed 0...25MHz clock rate
  - SD High speed 0...50MHz clock rate
  - Flash burst up to 90MB/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(1.0mm)
- Optimized FW algorithms especially for high read access and long data retention applications
  - 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
    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 and refresh data if necessary
  - Diagnostic features with Life Time Monitoring tool support
- High reliability
  - Designed for industrial market especially read intensive application like navigation, infotainment, POS/POI, Medical and general boot medium use case:
    - The product is optimized for long life cycle that require a good data retention because of high temperature mission profile.
  - Intensive write application should use the S-400 series cards
  - Number of card insertions/removals up to 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

Order Information

Density	Part Number	Temp. Range	Flash Technology
4GB	SFSD4096N1BM1T0-E-GE-111-STD	-25°C to 85°C	MLC NAND Flash
8GB	SFSD8192N1BM1T0-E-LF-111-STD		
16GB	SFSD016GN1BM1T0-E-HG-111-STD		
4GB	SFSD4096N1BM1T0-I-GE-111-STD	-40°C to 85°C	
8GB	SFSD8192N1BM1T0-I-LF-111-STD		
16GB	SFSD016GN1BM1T0-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	23	24	
Sustained Sequential Write	11	14	

Current Consumption @3.3V	typ	max	Unit
Write	60	80	mA
Read	40	60	
Idle	2	4	

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

*) high temperature storage without operation reduces the data retention, in operation the data will be refreshed, if data error issues were detected

Humidity and EMC

Parameter	Operating	Non Operating
Humidity (non-condensing)	max 95%	
ESD	**Non Contact Pads area:** ±15 kV (air discharge), according to IEC61000-4-2	**Contact Pads:** ±6 kV, according to IEC61000-4-2 **Non Contact Pads area:** ±8kV (indirect) contact discharge, 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.	

For more information on Micro SD Memory card Specification, 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.

Mouser Electronics

Authorized Distributor

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Swissbit:

SFSD016GN1BM1TO-I-HG-111-STD SFSD016GN1BM1TO-E-HG-111-STD SFSD8192N1BM1TO-E-LF-111-STD SFSD4096N1BM1TO-E-GE-111-STD SFSD4096N1BM1TO-I-GE-111-STD SFSD8192N1BM1TO-I-LF-111-STD