swissbit®

Product Fact Sheet

Industrial CFast™ Card

F-240 Series
SATA II, UDMA6, TRIM, low power

swissbit®

64 GB

Industrial CFast™ Card

made in germany
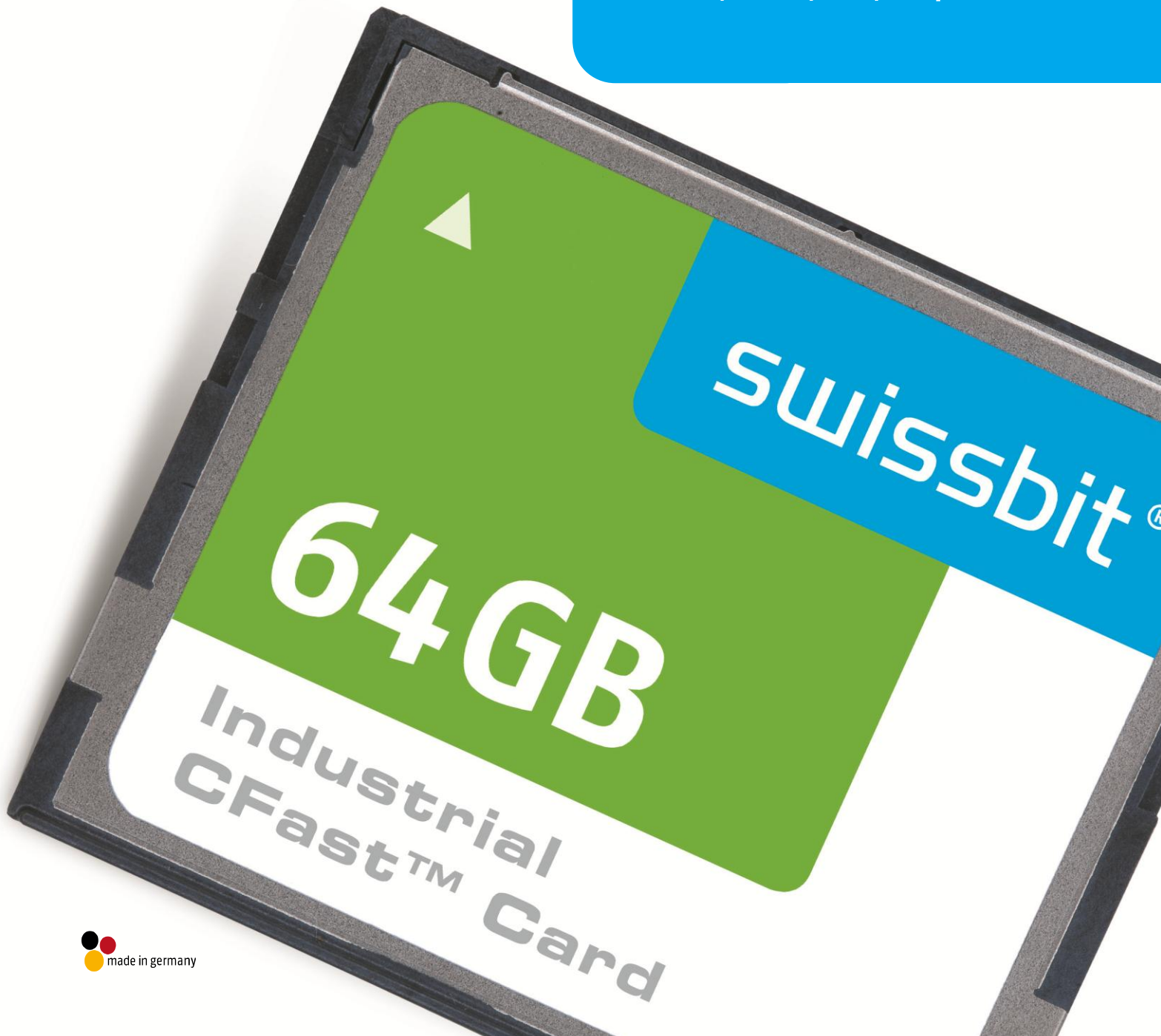
F-240 Series – Industrial CFast^{TM} Card with SATA interface

1 Features

- Highly-integrated memory controller
  - SATA Rev 2.6 – 3Gbit/s (1.5Gbit/s compatible)
  - max. UDMA6 MDMA2, PIO4, supported
  - Hardware BCH-code ECC
    (24bit correction per double sector or
      6bit per sector)
  - Fix drive configuration
- Small form factor:
  - CompactFlash card sized Solid State Drive (SSD)
    with SATA interface
  - 42.8mm x 36.4mm x 3.3mm (max. 3.6mm)
- 7+17 pin (SATA+power) CFast connector
- 3.3V ± 5% power supply
- Very low Power, typical 140mA in transfer operation (CFAST Power level 0)
- Activity at LED1 and SATAlink LED output and LED2 pin
- write protect at connector I01 pin
- Special features
  - S.M.A.R.T. support with additional vendor information,
    interpretation with Swissbit life time monitoring tool
  - TRIM command
  - NCQ queue depth 32
  - HPA (Host protected area)
  - Security mode feature set
  - LBA48 command set
  - host initiated power management requests
  - write protection with vendor command
- Wear Leveling: active 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.
- Read disturb management (refresh data when flash often read)
- High reliability
  - Best available SLC NAND Flash technology
  - Designed for embedded market
  - MTBF > 2,500,000 hours
  - Data reliability: < 1 non-recoverable error per 10^{14} bits read
  - Number of connector insertions/removals: >10,000
- High performance
  - Up to 300MB/s burst transfer rate in SATA II – 3.0Gb/sec
  - Sustained Write performance: up to 120MB/s   (4channel)
  - Sustained Read Performance: up to 120MB/s   (4channel)
- Available densities
  - 2GByte up to 64GByte (SLC NAND Flash)
- 2 Temperature ranges
  - Commercial Temperature range   0 ... +70°C
  - Industrial Temperature range   -40 ... +85°C
- Life Cycle Management
- Controlled BOM
- RoHS compatible
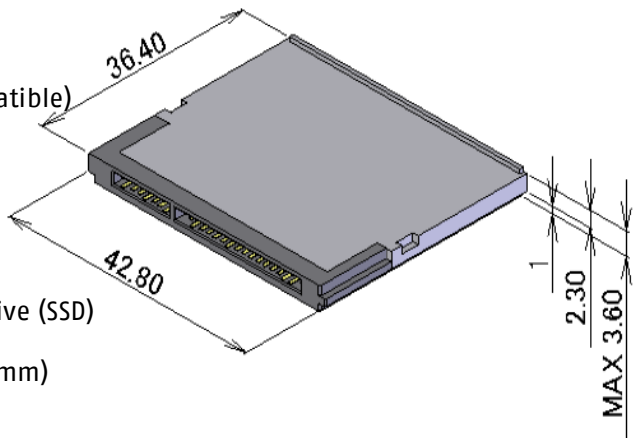
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Table 1: System Performance

System Performance	typ	max	Unit
Data transfer Rate (sATA burst)	3.0 (1.5)	3.0	Gbit/s
Sustained Read (typ. measured)	116	120	MB/s
Sustained Write (typ. measured)	114	120	

1. All values refer to 32GB card with Toshiba 4x TH58NVG6S2FTA20, SSD in UDMA mode 5, SATA 3.0Gbit/s, write/read data sequential.
2. Sustained Speed depends on flash type and number, file size, and burst speed

Table 2: Current consumption[1] at 3.3V ± 5%

Current Consumption (type)	3.3V	Unit
Read (typ/max)	170/250	mA
Write (typ/max)	180/250	
Idle Mode (typ/max)	85/100	

1. All values are typical at 25° C and nominal supply voltage and refer to 16GByte CFAST card.

Table 3: Environmental Specifications

Environmental Specifications	Operating	Non Operating
Temperature (commercial)	0 to 70°C	–40 to 85°C
Temperature (industrial)	–40 to 85°C	–50 to 95°C
Humidity (non-condensing)	85% RH, at 85°C	max. 95% RH, at 85°C
Vibration (peak –to–peak)	20G Peak, 10 to 2000Hz	
Shock	1500G, 0.5ms duration, half sine wave	
Connector Durability	10,000 mating cycles, without exceeding low–level contact resistance	

Table 4: Physical Dimensions

Physical Dimensions		Unit
Width	36.4	mm
Height	42.8	
Thickness	3.6	
Weight (typ.)	10	g

Table 5: CFast capacity specification

Capacity	Default_cylinders	Default_heads	Default_sectors _track	Sectors_drive	Total addressable capacity (Byte)
2GB	3,866	16	63	3,896,928	1,995,227,136
4GB	7,732	16	63	7,793,856	3,990,454,272
8GB	15,498	16	63	15,621,984	7,998,455,808
16GB	16,383*)	16	63	30,788,352	15,763,636,224
32GB	16,383*)	16	63	61,608,960	31,543,787,520
64GB	16,383*)	16	63	125,304,832	64,156,073,984

*) The CHS addressing is limited to about 8GB. Larger drives should be used in LBA mode.

Table 6: System Reliability and Maintenance

MTBF (at 25°C)	> 2,500,000 hours
Data Reliability	< 1 Non–Recoverable Error per 10^{14} bits Read

(1) Dependent on final system qualification data.

The CFA logo and CFast are trademarks of the CompactFlash Association.
For more information on the CFast interface, please visit Compact Flash Organization at www.compactflash.org
For more information on Serial ATA Revision 2.6, please visit Serial ATA International Organization at www.serialata.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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