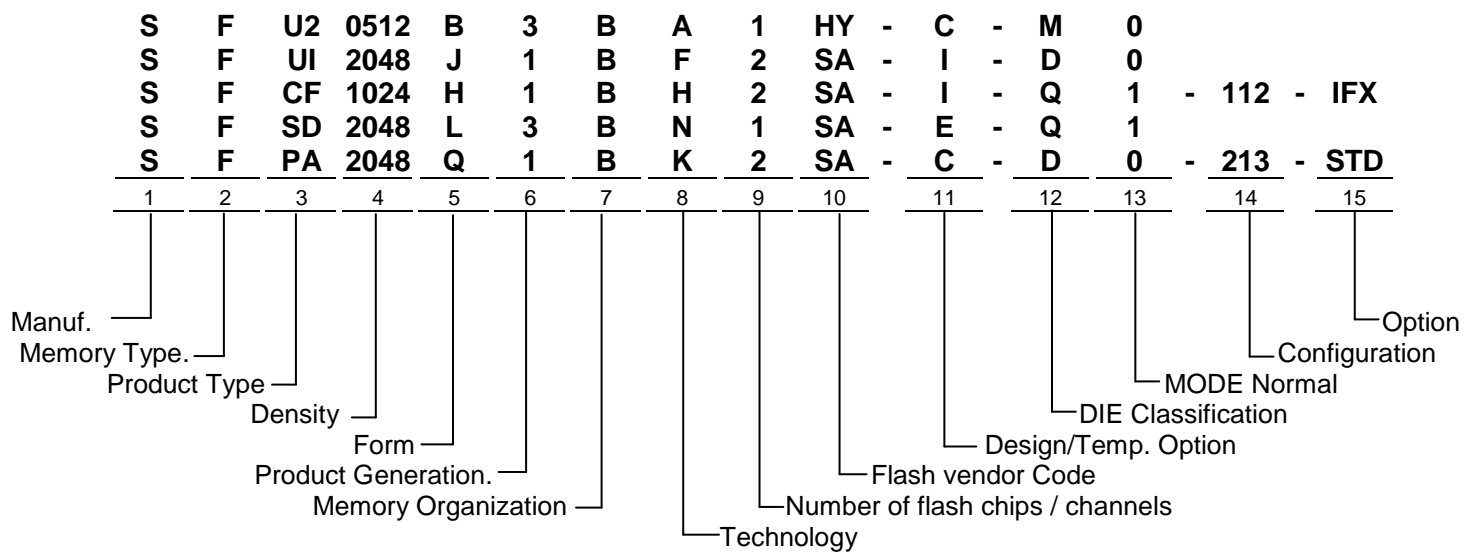


## Part Number



### 1. Manufacturer

Swissbit code	S
Bit4Flash	B
Fresenius	F

### 2. Memory Type

Flash	F
-------	---

### 3. Product Type

USB 1.1 Drive semi product*	U1
USB 2.0 Drive semi product*	U2
Compact Flash	CF
UFD internal	UI
SD, miniSD, microSD	SD
MMC	MM
PATA/IDE	PA
SATA	SA
CFast	CA
PCIe	PC

\*semiproduct means the housing and design options are not included, the UFD end product and their housing and software configuration are defined in the end product data sheet

#### 4. Density

16 MB	0016
32 MB	0032
64 MB	0064
128 MB	0128
256 MB	0256
512 MB	0512
1 GB	1024
2 GB	2048
3 GB	3072
4 GB	4096
8 GB	8192
16 GByte	16GB/016G
32 GByte	32GB/032G
64 GByte	64GB/064G
128GByte	128G
256GByte	256G
512GByte	512G

#### 5. PCB form

Vic1.1 + miniTWIST	A
<del>Twist</del> → BGA (embedded SSDs)	B
Slim	C
Vic2.0	D
Narrow	E
Double (not used)	F
Furuno → special SSD	G
Compact Flash / CFast	H
Car Stick → special UFD Module	I
UFD-Internal 2.54mm	J
UFD-Internal 2.00mm	K
SD card	L
M.2	M
MicroSD card	N
MMC	O
SSD 1.8"	P
SSD 2.5"	Q
Fresenius card → special SD/MMC	R
mSATA Full Size (MO-300)	U
slimSATA (MO-297A) short SATA	V

#### 6. Product Generation

Includes major PCB revision and hardware revision (Controller, Flash, ...)

## 7. Memory Organization (Technology)

Flash Products x8 part I	AX
Flash Products x8 part II	BX
Security Product	PX

## 8. Technology (standard based on PCB marking specification)

The first character is encoded according field 7.

SM2246	SATA/CFast	AA
Hyperstone U8	UFD	AB
SM2685	SD Card	AC
OTi 6828 / 2168	Single channel	B0 -B3
PS3108-S8	SATA 8-channel	B4
SM323	Dual channel	BA
SM321Ax	Single channel	BB
UM2001	Dual channel	BC
Oti2169	Dual channel	BD
SM321Bx	Single channel	BE
SM324Bx	Dual channel	BF
Oti2172	Dual channel	BG
Hyperstone F2	CF Card	BH
SM222	CF Card	BI
SM225x	SATA/CFast	BJ
Hyperstone F3	CF Card	BK
Hyperstone S3	SD card	BL
Hyperstone S6	SD card	BN
Hyperstone S8	SD Card	BM
Hyperstone F4	CF card	BO
SM3252	Dual channel	BP
SM3251	Single channel	
Oti2165	Quad channel	BQ
SM224x	sATA	BR
WIBU Security	--	BS
T-Systems Security	SD Card	BT
Hyperstone A1	CF/PATA 2-channel	BU
Hyperstone A2	SATA 4-channel	BV
SM2683	SD Card	BW
Gemalto NFC Security Hyperstone S6	SD Card	BY
Certgate Security Hyperstone S6	SD Card	BZ
Phison PS 8210 with Security element	SD Single channel	PA
Hyperstone S8 with Security element	SD Card	PM
WIBU Security	--	PS

## 9. Number of Flash Chip

### 9.1 Number of chips for CFC and UFD

1 Flash	1
2 Flash	2
4 Flash	4
8 Flash	8
16 Flash	A

### 9.2 Number of channel for SD cards

1 channel	1
2 channel	2

## 10. Flash Code

Samsung	SA
Toshiba	TO
Micron Technologies	MT
Numonyx	NX
ST Microelectronics	ST
Hynix	HY
Intel	IT
Infineon	IN
Macronix	MA

## 11. Design / Temp. Option

Industrial Temp. Range -40°C – 85°C	I
Extended Temp. Range -25°C – 85°C	E
Standard Temp Range 0°C – 70°C	C
No option	X

## 12. DIE Classification

SLC MONO (single die package)	M
SLC DDP (dual die package)	D
SLC QDP (quad die package)	Q
SLC ODP (oct die package)	N
MLC MONO (single die package)	G
MLC DDP (dual die package)	L
MLC TDP (triple die package)	J
MLC QDP (quad die package)	H
MLC ODP (oct die package)	O

### 13. PIN Mode

old TSOP/LGA	Single nCE & R/nB	0
old TSOP/LGA	Dual nCE & R/nB	1
old TSOP/LGA	Quad nCE & R/nB	2
LGA / BGA	Single nCE & R/nB	A
LGA / BGA	Dual nCE & R/nB	B
LGA / BGA	Quad nCE & R/nB	C
TSOP	Single nCE & R/nB	S
TSOP	Dual nCE & R/nB	T
TSOP	Quad nCE & R/nB	U
TSOP	2 TSOP, single channel, single nCE & R/nB	O
TSOP	2 TSOP, single channel, dual nCE & R/nB	P
TSOP	2 TSOP, single channel, quad nCE & R/nB	Q
COB	Single nCE & R/nB	E
COB	Dual nCE & R/nB	F
COB	Triple nCE & R/nB	K
COB	Quad nCE & R/nB	G
COB	Octo nCE & R/nB	H

## 14. Configuration

### 14.1 USB Flash Drives

removable (default for USB stick)	1y1
fix (default for UFDi)	2y1

y= Firmware revision (controller dependent)

### 14.2 Compact Flash XYZ

Only examples

#### X → Disk Type

Removable/fix		PIO	DMA support	X
TRUE IDE Mode	PC Card Mode			
Removable		X	X	1
Fix		X	X	2
Fix		X	-	3
Removable		X	-	4
Fix	Removable	X	X	5
Fix	Removable	X	-	6

#### Y → Firmware Revision for C-100 – SM222

FW	Y	comment
Standard firmware	1	F0911
BB-Readout Firmware	2	G0413
new Standard Firmware	3	G0517 (BB read out incl.)
Write Protect Firmware	4	G0809 (AGI)
Phoenix Firmware	5	G0125 (Word49 Bit11=1)

#### Y → Firmware Revision for C-300 – F3C

FW	Y	comment
Standard	1	Default 080611 → H2BK Default 080905 → H3BK
S.M.A.R.T. support	2	090529 091007a (H1BK-NX1)
More stable	3	100209
Write protect	4	080917 AGI write protect FW
New Standard	5	100511

#### Y → Firmware Revision for C-3x0 – F4A

FW	Y	comment
Standard	1	090904
Tosh, more stable, compat.	2	091110a
ZP1/AR1/AS1	3	110519/110125/110125
Standard/IPC	4	110301

#### Y → Firmware Revision for C-200 – F2

FW	Y	comment
Standard	1	080112 → H2BH / H3BH W070403A (RCH)

**Y → Firmware Revision for S-2x0 – S6 SD**

FW	Y	comment
Standard	1	080916
	2	090306
	3	091030
	4	100914/100107
	5	101201 1.08
(neu Tosh mit 2plane)	6	120514 1.03

**Y → Firmware Revision for M-1x0 – S6 MMC**

FW	Y	comment
Standard	1	100107
	2	100107
Standard/Bosch	3	101201 1.08/110809 1.05
SIE32 use all pages	4	110428 1.02

**Y → Firmware Revision for CFast F-100 - 2242**

FW	Y	comment
Standard	1	J0106A
	2	J0806D
	3	K1021 CFast

**Y → Firmware Revision for 2.5" SSD X-200 - 2242**

FW	Y	comment
Standard	1	J0806D
	2	K1020

**Y → Firmware Revision for mSATA X-200m and slimSATA X-200s - 2242**

FW	Y	comment
Standard	1	K0126
	2	K1020

**Z → max PIO-Mode / CIS -> Performance Index**

Max PIO Mode / CIS	Y	If DMA disable?
MDMA2, PIO4	1	max. PIO4
MDMA4, PIO6	2	max. PIO6
UDMA4, MDMA4, PIO6	3	max. PIO6
UDMA2, MDMA2, PIO6 *)	4	max. PIO6
	5	
UDMA6, MDMA2, PIO4	6	max. PIO4
UDMA6, MDMA4, PIO6	7	max. PIO6

\*) preliminary for ADP

### 14.3 SD-/ MICRO SD Memory Cards XYZ

#### X → Interface for SD

Interface	X	comment
Standard non UHS	1	-
UHS-I	2	-

#### Y → Firmware Revision SD

FW	Y	comment
Standard	1	-

#### Z → Features (speed) for SD/MMC

The following table applies if the interface value X: "1, Standard non UHS" is set

Feature	Z	comment
Standard	1	max 50/52MHz clock
only Low Speed	2	max 25/26MHz clock
only Low Speed, 12mA	3	max 25/26MHz clock

The following table applies if the interface value X: "2, UHS-I" is set

Feature	Z	MICRO SD	SD Card
Standard	1	max 104MHz clock	max 208MHz clock
2plane	2		

### 14.4 M.2 XYZ

#### X → Form type

X	Dimension	Assembly
1	2242	Single sided
2	2242	Double sided
3	2260	Single sided
4	2260	Double sided
5	2280	Single sided
6	2280	Double sided

#### Y → Firmware Revision

FW	Y	Comment
Standard	1	-

#### Z → tbd

tbd	Z	Comment
-	1	-



### 14.5 Security Products

The following table applies if in Field 7 value "P" is set:

Configuration [xyz]	x	y	z
010	No Smart Card controller	tbd	No Smart Card OS
111	IFX SLE78CLX800P	tbd	jTOP ID (SLJ52GCA080CL)
112	IFX SLE78CLX800P	tbd	jTOP ID (SLJ52GDL080CL)
211	NXP P60D144	tbd	TCOS ID 1.2
311	NXP P5CD081	tbd	TCOS ID ?
411	IFX SLE78CLX1280P	tbd	Starcos 3.5
511	IFX SLE78CX800P	tbd	Gemalto IDCore 40
611	IFX SLM97	tbd	WIBU Security
711	Nagravision	Tbd	Nagravision

x= Smart Card controller

y= Flash Controller firmware revision (controller dependent)

z= Smart Card OS

### 15. Customer/option

#### 15.1 Definition for BU Flash

Swissbit / Standard	STD
S.M.A.R.T. activated CFC	SMA
Infineon	IFX
WMS Gaming	WMS
Siemens VDO	VDO
Siemens UMTS	UMT
Toshiba PC	TOP
Siemens SD Card	SIE
Elau	ELA
Denon-Maranz	DM1
Arteixo Telecom	ART
Xmore	XMO
Kontron	KON
Zetex	ZET
Phoenix	PHO
Siemens A&D - CFC	A&D
DTW	DTW
Certgate	CGx
AGI	AGx
Datakamp	DAT
Dybuster	DYB
Siemens Sector Energy	SSE
ATRON	ATR
Snap ON	SOx
Numonyx	NXx
Siemens Enterprise & Com	SEN

Siemens HMI	SHM
Kyocera	KYx
Multimedia Games	MMG
Olympus	OLY
Furuno	FUR
ADP Gauselmann	ADP
Wibu	WIB
T-Systems	TCx
Mettler-Toledeo	MTx
Gemalto	GEM
RCH	RCH
LBA28	L28
Oscillator	OSC
Standard with coating	STC
3.3 voltage	3V3
Meggitt	MEG
Alcatel-Lucent	ALU
Beckhoff without lense (USB)	BOL
Helmholz	HLH
TomTom (Automotive TomTom)	AT1
VW, Audi (Automotive VW)	AV1
Bosch (Automotive Bosch)	AB1
3.3 voltage, pin 10 NC	3NC
3.3 voltage, keypin 2	3K2
Grounded hole, corrosion resistant	GCR
Anti-sulfur resistors	ASR

List is not exhaustive....

## 15.2 Definition for BU Security

The following table applies if in Field 7 value "P" is set.

Field 15 is filled by default with the first two consonants of the customer company name with a digit appended. If the first two consonants of two customer companies are not distinct other characters can be used.

Option/Customization	Name
CR0	Certgate
GM0	Gemalto
NG1	Nagravision
QL0	Qlabs
SC0	Secusmart SSC 3.0
SN0	Secunet
SW0	Swissbit Standard Edition
SW1	Swissbit Voice Edition
SW2	Swissbit Premium Edition
SW3	Swissbit Contactless Edition
SW4	Swissbit Data Protection
SW5	Swissbit FIPS Edition
WI0	WIBU Security

Rev	Description	Date	Who
1.0	Version 1	22.12.2003	G. Elsener
1.1	Additional Information: Position 11 & 12; LED Version C	10.02.2004	R. Griesemer
1.2	Additional Information: Position 5/6 & 9; PCB and Flash Code	15.06.2004	R. Griesemer
1.3	Additional Information: Bit4Flash; Micron as Flash Code; 4 Flash chips	06.01.2005	R. Griesemer
1.4	Additional Information about material complaints (RoHS, LeadFree, Pb) and 8 GB	28.01.2005	R. Griesemer
1.5	Additional mode of Design option about the connector	07.02.2005	R. Griesemer
1.6	Additional position of controller type down compatible	23.08.2005	Rogozia & Griesemer
1.7	SM321E, SM324, 8 Flash, cirrusWHITE+pitchBLACK LED option	06.01.2006	Rogozia
1.8	Add MLC information to DIE classification	21.04.2006	R. Griesemer
1.9	Add Compact Flash Product Information Remove Material Complaint, Add Customer, Add Temp. Range, Add Configuration	14.06.2006	R. Griesemer
2.0	Add CarStick, Modify Temp. Option, Add CFC customer	06.12.2006	R. Griesemer
2.1	Add new Firmware option Add customer	26.01.2007	M. Rogozia
2.2	Add UFD-Internal PCBs, Temperature Range, customer IND and TOP, LED options, SM223	07.06.2007	M. Rogozia
2.3	Add SFUI for the internal UFD	14.06.2007	R. Griesemer
2.4	CF options 5xx and 6xx, xx1/xx2 PIO6	21.06.2007	M. Rogozia
2.5	UFDI Temperature option C and I	09.08.2007	M. Rogozia
2.6	SD, miniSD, MicroSD, PATA/IDE, SATA, 4Hyperstone controller	18.09.2007	M. Rogozia
2.7	Extended Temperature range for CFC, Intel Flash, FW2=BB Firmware	03.10.2007	M. Rogozia
2.8	added MMC, SM222 Firmware revisions, UDMA4	12.02.2008	M. Rogozia
2.9	Update SD Channel; update customers	26.02.2008	R. Griesemer
3.0	Remove the UFD Design option, new temp option only	06.03.2008	R. Griesemer
3.1	SM3252, Product generation, technology	21.08.2008	M. Rogozia
3.2	Added Nymonix	22.12.2008	R. Griesemer
3.3	Added FW revisions	05.01.2009	R. Griesemer
3.4	F4, 3252, 3251	17.04.2009	M. Rogozia
3.5	CFAST, 8 Die Package, Smart Support	07.07.2009	M. Rogozia
3.6	Speed definition for index *-xx6-*	07.09.2009	R. Griesemer

3.7	4CE lines = "2"	07.01.2010	M. Rogozia
3.8	LGA/TSOP Flash = A,B,C..., 16 Flash =A, Special UFD module=I, different new custom definition	12.03.2010	Rogozia/Griesemer
3.9	C-300 FW3/5	07.09.2010	M. Rogozia
4.0	Manufacturer F, Special SSD (Furuno)G, special SD/MMC (Fresenius) R, Controller T,U,V	27.09.2010	M. Rogozia
4.1	PCB form U, mSATA Full Size	29.10.2010	T. Semrock
4.2	PCB form V, MiniSATA, PinMode E (COB)	17.12.2010	M. Rogozia
4.3	Add SMI SD MCU	06.12.2011	R. Griesemer
4.4	Add PinMod F & G (COB)	14.12.2011	R. Albrecht
4.5	Added new PIO/xDMA mode, new density 128/256GB, change description MiniSATA -> SlimSATA, PCB form "H" also for CFast, new description for MCU SM223x, firmware revisions added	13.02.2012	R. Bärtschi
4.6	Added Technology: Y & Z Gemalto & Certgate Added Option: CGx Certgate, GEM Gemalto	30.05.12	R. Albrecht
4.7	Technology "J" SM225x (SATA) instead of 223x CFC Speed "4" UDMA2/MDMA2/PIO6, SD Z=2 low speed USB fix/removable	11.01.2013	M. Rogozia
4.8	Added Controller Hyperstone S8 "M"	14.03.2013	G.Jungmann
4.9	Added BGA definition	10.04.2013	R. Bärtschi
5.0	Included BU Security Flash products, extend Technology digits	17.06.2013	H. Grobbel
5.1	Changed formfactor definition B from TWIST to BGA; added BU Security options	25.07.2013	R.Griesemer
5.2	Added 311 firmware to 14.3	22.08.2013	G. Jungmann
5.3	Added new pin mode options and added customers/options	05.11.2013	R. Bärtschi
5.4	Added Certgate BU security	19.11.2013	G.Jungmann
5.5	Added new Phison MCU (PS3108-S8)(Doc-Req 0019)	26.02.2014	R. Bärtschi
5.6	Added new Pin Mode	14.04.2014	H. Thober
5.7	Added new MCU SM2246 and new customer/option definition (Änd-Nr 0104)	24.06.2014	R. Bärtschi
5.8	Added new Security Product Configurats (010, 411, 511) in section 14.3 and new customer options (SW4, SN0, GM0) in section 15.2 (Change req. 0116)	08.07.2014	S. Beinlich
5.9	Added PCIe product type, M.2 PCB form, MCU U8, configuration SD-/ MICRO SD Memory Cards and M.2. Added customer option and BU Security option/customization. (Change req. 0276)	18.12.2014	R. Bärtschi
6.0	Added Macronix Flash (MA)(Doc-Req 0684)	29.07.2015	R. Bärtschi
6.1	Added SMI SD SM2685 (8. Technology), added 2Plan option and MHz declaration for SD Memory Cars (UHS), added triple DIE and nCE option and added new declarations for BU Security (Security chip, WIBU) (Doc-Req 0837)	26.11.2015	M. Breitler