swissbit®

Product Data Sheet

# USB Flash Drive and Hardware Security Module

## PU-50n iShield HSM Series

USB 3.1 SuperSpeed, MLC

Extended Temperature Grade

Date: September 15, 2022
Revision: 1.00

durabit™

"the better MLC"

SECURED BY swissbit


aws Qualified Device AWS IoT Greengrass

Made in Germany

# Contents

# PU-50n iShield HSM Series – 8 GBytes
# USB Flash Drive and Hardware Security Module

## 1. Product Summary

- **Capacities:** 8 GBytes
- **Form Factor:** USB3.1 solid state flash drive with USB Type-A connector (24.0 mm x 12.1 mm x 4.5 mm)
- **Compliance:** USB 3.1 Gen 1 SuperSpeed specification compatible (backward compliance with USB 2.0/1.1)
- **Operating Temperature Range[1]:**
  - Extended: -25 °C to 85 °C
- **Performance:**
  - Read Performance: Sequential Read up to 100 MBytes/s, Random Read IOPS up to 2'500
  - Write Performance: Sequential Write up to 25 MBytes/s, Random Write IOPS up to 600
- **Operating Voltage:** 5.0 V ± 10%
- **Data Retention:** 10 Years @ Life Begin; 1 Year @ Life End

[1] Adequate airflow is required to ensure the temperature, as reported in the S.M.A.R.T. data, does not exceed the specified maximum operating temperature.

# 2. Product Features

## 2.1 Security Features

**Table 1: Security Feature List PU-50n iShield HSM**

| | |
|---|---|
|  | JCOP3 SECID P60 on SmartMX2 chip architecture[2] [3] – CC EAL 6+ certified |
|  | True random generator |
|  | RSA up to 2048 bits |
|  | ECC up to 384 bits |
|  | HW encryption using 3DES with 2 or 3 keys or AES up to 256 bits |
|  | Digital signature |

## 2.2 Security Use Cases

**Table 2: Use Cases List PU-50n iShield HSM**

| | |
|---|---|
|  | Secure & tamper-proof key storage for IoT applications |
|  | Supports PKCS#11 / PKCS#15 (IsoApplet pre-loaded) |
|  | Compatible with OpenSC |
|  | Qualified for AWS IoT Greengrass |

[2] The JCOP3 architecture is based on independent third party specifications, such as the Java Card specification 3.0.4 and the GlobalPlatform Card Specification 2.2.1

[3] The SmartMC2 chip is certified as Common Criteria EAL 5+

### *2.3 Memory related features*

**Table 3: Memory related Features List PU-50n iShield HSM**

| | Description |
|---|---|
|  | Wide Temperature Support |
|  | ESD & EMI Safe |
|  | Shock & Vibration |
|  | Life Time Monitor |
|  | Power Loss Protected |
|  | Wear Leveling |
|  | Data Care Managed |
|  | Longevity |
|  | WAF Reduction |

# 3. Ordering Information

**Table 4: Standard Product List**

| Product Type | Product Series | Capacity | Part Number |
|---|---|---|---|
| USB nano | PU-50n iShield HSM | 8 GBytes | SFU3008GC2PE2T0-E-GE-912-HS0 |

# 4. Product Description

The PU-50n iShield HSM is a plug-and-play USB security anchor that allows system integrators to upgrade existing AWS IoT Greengrass devices with a hardware security module, making it the perfect retrofit solution for finished hardware designs & in-field devices. The Pu-50n iShield HSM securely stores the device's private key and certificate so that they aren't exposed or duplicated in software. The product is available as a high-quality, robust & compact USB memory stick, which supports PKCS#11 and PKCS#15 and is compatible with an open source software stack (e.g. OpenSC). A Secure Element (CC EAL6+) is embedded into the PU-50n iShield HSM's hardware in COB (Chip-On Board) technology, making it tamper-proof and suited for harsh operating environments.

The PU-50n iShield HSM product allows easy operation with USB3 or USB2 Type-A sockets.

For outdoor use or in poorly ventilated systems the PU-50n iShield HSM is available in industrial temperature grade from -40°C to +85°C. Each individual industrial temperature grade drive is tested at these corners to verify the temperature resistance.

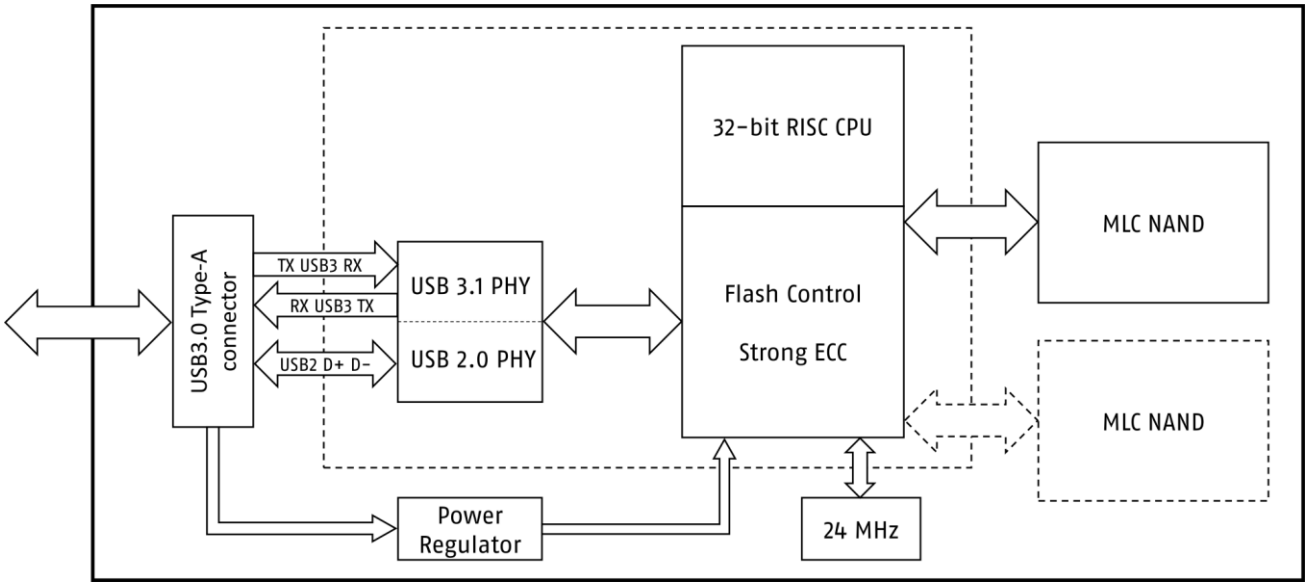
The PU-50n iShield HSM firmware includes data care management features which refresh storage areas that are not or only infrequently read. At high temperature storage these areas are prone to retention loss. The firmware monitors the state of the NAND blocks and refreshes those that show a high level of degradation, thus preventing uncorrectable errors. This is an important feature for USB flash drives that are used as read only boot media.

The PU-50n iShield HSM uses a high performance 32bit RISC USB controller to address different numbers of NAND dies. The PU-50n iShield HSM 8GB drive use two flash channels for best performance.

The PU-50n iShield HSM operates at 5V nominal with ±10% tolerance.

It supports USB 3.1 Gen 1 SuperSpeed and is fully backwards compatible to USB 2.0/1.1 High/Full Speed.

**Figure 1: PU-50n iShield HSM Functional Block Diagram**



## 4.1 Performance Specifications

The PU-50n iShield HSM read/write sequential and random CDM performance benchmarks are detailed in Table 5.

**Table 5: Read/Write Performance[4]**

| Capacity | Sequential Read (MBPS) | Sequential Write (MBPS) | Random Read 4k (IOPS) | Random Write 4k (IOPS) |
|---|---|---|---|---|
| 8 GBytes | 107 | 25 | 2,574 | 613 |

## 4.2 Current Consumption

The drive-level current consumption as a function of operating mode is shown in Table 6.

**Table 6: Current Consumption[5]**

| Drive Capacity | Sequential Read | Sequential Write | Random Read 4k | Random Write 4k | Idle | Slumber | Unit |
|---|---|---|---|---|---|---|---|
| 8 GBytes | 100 | 110 | 78 | 89 | 64 | 1.8 | mA |

[4] Use tab for each footnote (tab is set to 0.25cm per default).
[5] Use tab for each footnote (tab is set to 0.25cm per default).

## 4.3 Environmental Specifications

### 4.3.1 Recommended Operating Conditions

The recommended operating conditions for the PU-50n iShield HSM SSD are provided in Table 7.

**Table 7: Recommended Operating Conditions**

| Parameter | Value |
|---|---|
| Extended Operating Temperature | -25 °C to 85 °C |
| Power Supply $V_{CC}$ Voltage | 5.0 V ± 10% |

### 4.3.2 Recommended Storage Conditions

The recommended storage conditions are listed in Table 8.

**Table 8: Recommended Storage Conditions**

| Parameter | Value |
|---|---|
| Extended Temperature | -25 °C to 100 °C |

### 4.3.3 Shock, Vibration and Humidity

The maximum shock, vibration and humidity conditions are listed in Table 9.

**Table 9: Shock, Vibration and Humidity**

| Parameter | Value |
|---|---|
| Non-Operating Shock | 1,500 g, 0.5 ms pulse duration, half-sine wave<br>(IEC 60068-2-27, JESD22-B110) |
| Non-Operating Vibration | 50 *g*, 10Hz – 2000Hz, 3 axes<br>(IEC 60068-2-6, MIL-STD-883 H M2007.3) |
| Humidity (Non-Condensing) | 85% RH 85 °C, 1000 hrs, max. supply voltage<br>(JESD22-A101) |

## 4.4 Regulatory Compliance

The PU-50n iShield HSM devices comply with the regulations / standards listed in Table 10.

**Table 10: Regulatory Compliance**

| Abbreviation | Regulation/ Standard |
|---|---|
| EMC | CE – 2014/30/EU<br>FCC – 47 CFR Part 15<br>UKCA – S.I. 2016 No. 1091 and S.I. 2012 No. 3032 |
| RoHS | 2011/65/EU with 2015/863/EU and 2017/2102/EU |
| REACh | 1907/2006/EU and 207/2011/EU |
| WEEE | 2012/19/EU |

## 4.5 Mechanical Specifications

The PU-50n iShield HSM uses a USB Type-A connector fully integrated into the metal housing.
Physical dimensions are detailed in Table 11. Figure 2 on page 13 illustrates the PU-50n iShield HSM dimensions.

**Table 11: Measured Physical Dimensions**

| Physical Dimensions | | Unit |
|---|---|---|
| Length | 24.00±0.2 | mm |
| Width | 12.10±0.10 | |
| Thickness (Max) | 4.50±0.10 | |
| Weight (Max Capacity) | 5 | g |

## 4.6 Reliability and Endurance

The Mean Time Between Failure (MTBF) is specified to exceed the value listed in Table 12. Data reliability with effective error tolerance and data retention at the beginning and end of life is also provided.

**Table 12: Reliability**

| Parameter | Value |
|---|---|
| MTBF (at 25 °C) | > 3,000,000 hours |
| Data Reliability | < 1 Non-Recoverable Error per $10^{16}$ Bits Read |
| Data Retention | 10 Years at Start (JESD47), 1 Year at EOL |

## 4.7 Drive Geometry Specification

The PU-50n iShield HSM drive geometry is set to report industry standard LBA settings per the IDEMA standard (LBA1-03). The values for each capacity are shown in Table 13.

**Table 13: Drive Geometry**

| User Capacity[6] | Total LBA | User Addressable Bytes |
|---|---|---|
| | Decimal | (Unformatted) |
| 8 GBytes | 15,663,104 | 8,019,509,248 |

[6] 1 GByte = $10^9$ bytes

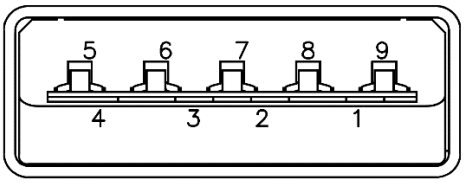
# 5. Electrical Interface

- < USB3 Type-A connector, 9pin
- USB 3.1 Gen1 SuperSpeed interface, USB2.0 high-speed and 1.1 full-speed compatible

**Table 14: Electrical pinout from device and host view.**

| Pin | Signal device view | Signal host view | Description host view |
|---|---|---|---|
| 1 | V_Bus | V_Bus | Operating voltage |
| 2 | D- | D- | Data signal pair |
| 3 | D+ | D+ | Data signal pair |
| 4 | GND | GND | Power Ground |
| 5 | SSTX- | SSRX- | Host receive - |
| 6 | SSTX+ | SSRX+ | Host receive + |
| 7 | GND | GND | Signal Ground |
| 8 | SSRX- | SSTX- | Host transmit - |
| 9 | SSRX+ | SSTX+ | Host transmit + |
| Shield | | | Connector shield |

**Figure 2: USB3 Type-A connector pinout**



# 6. Electrical Specification

**Table 15: Absolute Maximum Ratings**

| Parameter | Symbol | Min | Max | Unit |
|---|---|---|---|---|
| Power Supply Voltage | V_Bus | -0.5 | 6.0 | V |
| Voltage at D+ and D- | V_Data | -0.5 | 5.0 | |
| Voltage at USB3 pins | V_Data | -0.5 | 1.8 | |
| Commercial Operating Temperature | T_A | 0 | 70 | °C |
| Industrial Operating Temperature | | -40 | 85 | |

**Table 16: DC characteristics for SuperSpeed operation (T=25°C, V_Bus=5V)**

| Parameter | Symbol | Density | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Supply Voltage | V_Bus | all | 4.5 | 5.0 | 5.5 | V |
| Write current | I_WR | 8GB | | 100 | 110 | mA |
| | | 16GB | | 90 | 100 | |
| Read current | I_RD | 8GB | | 110 | 125 | |
| | | 16GB | | 100 | 110 | |
| Idle current | I_IDL | all | | 65[7] | 105 | |
| Suspend current | I_CCS | all | | 1.8 | 2.5 | |

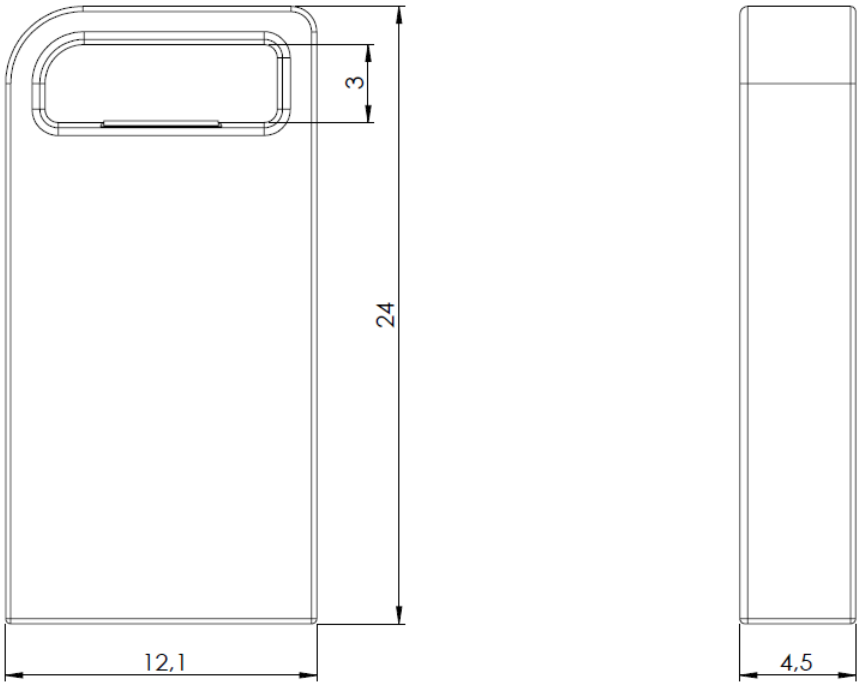
**Table 17: DC characteristics for High-Speed operation (T=25°C, V_Bus=5V)**

| Parameter | Symbol | Density | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Supply Voltage | V_Bus | all | 4.5 | 5.0 | 5.5 | V |
| Write current | I_WR | 8GB | | 65 | 70 | mA |
| | | 16GB | | 55 | 60 | |
| Read current | I_RD | 8GB | | 60 | 65 | |
| | | 16GB | | 60 | 65 | |
| Idle current | I_IDL | all | | 35[8] | 75 | |
| Suspend current | I_CCS | all | | 1.8 | 2.5 | |
| High Speed Idle Level | V_HSOI | all | -10 | | 10 | mV |
| High Speed Data Signaling LOW | V_HSOL | all | -10 | | 10 | |
| High Speed Data Signaling HIGH | V_HSOH | all | 360 | | 440 | |
| Chirp J Level (differential) | V_CHIRPJ | all | 360 | | 440 | |
| Chirp K Level (differential) | V_CHIRPK | all | -440 | | -360 | |

[7] Typically 5 minutes after power on the device performs a background data care management, that needs up to 180mA

# 7. Package Mechanical

Figure 3: Mechanical Dimensions in mm for PU-50n iShield HSM




All dimensions are in millimeters, tolerances as listed in Table 11 on page 9.

# 8. ATA Pass-Through commands (Identify Device and S.M.A.R.T.)

## 8.1 ATA Pass-Through commands

Additional to the standard SCSI commands the device also supports the ATA Pass-Through commands.

Table 18: ATA PASS-TRHOUGH(x) commands

| SCSI command | OpCode | Description |
|---|---|---|
| ATA PASS-THROUGH(12) | A1h | Write and read ATA registers to send commands and read information |
| ATA PASS-THROUGH(16) | 85h | |

http://www.t10.org/ftp/t10/document.04/04-262r8.pdf

Table 19: ATA register addressing

| Offset address | Input | Output | Type | Identify device | e.g. SMART commands |
|---|---|---|---|---|---|
| 0 | Data | | Word | | |
| 1 | Feature | Error | Byte | xx | yyh* |
| 2 | Sector count | | Byte | xx | 01h |
| 3 | LBA_Low | | Byte | xx | xx |
| 4 | LBA_Mid | | Byte | xx | 4Fh |
| 5 | LBA_High | | Byte | xx | C2h |
| 6 | Drive/head | | Byte | E0h | E0h |
| 7 | Command | Status | Byte | ECh | B0h |

* see below

## 8.2 Identify Device

The Identify Device returns a identify sector compatible to ATA and SATA devices.
Here an example of the interpretation of this sector.

Table 20: Identify Device Information

| Word(s) | Default Value | | Total Bytes | Data Field Type Information |
|---|---|---|---|---|
| 0 | 0040h | | 2 | Standard Configuration Fixed (optional 848Ah for removable) |
| ... | ... | ... | ... | ... |
| 10-19 | aaaa* | | 20 | Serial number in ASCII (right-justified) |
| ... | ... | ... | ... | ... |
| 23-26 | XXXX* | | 8 | Firmware revision in ASCII (big-endian byte order in Word) |
| 27-46 | XXXX* | | 40 | Model number in ASCII (right-justified) |
| ... | ... | ... | ... | ... |
| 60-61 | XXXXh | | 4 | Total number of sectors addressable in LBA mode |
| ... | ... | ... | ... | ... |
| 82-84 | 0001h<br>4000h*<br>4000h* | | 2 | Command set: SMART feature set, service interrupt |
| ... | ... | ... | ... | ... |
| 85-87 | 000Xh<br>0000h*<br>4000h* | | 2 | Command set enabled: SMART feature set enabled/disabled |
| ... | ... | ... | ... | ... |
| 255 | XXA5h | | 2 | Integrity Word |

* Values depend on device configuration.

## 8.3 S.M.A.R.T. commands

The intent of the SMART command feature set is to protect user data and minimize the likelihood of unscheduled system downtime that may be caused by predictable degradation and/or fault of the device. By monitoring and storing critical performance and calibration parameters, SMART feature set devices attempt to predict the likelihood of a near-term degradation or fault condition. Providing the host system the knowledge of a negative reliability condition allows the host system to warn the user of the impending risk of a data loss and advise the user of the appropriate action.

All S.M.A.R.T. commands have the command code Boh. The different commands are selected by the Feature register.

**Table 21: S.M.A.R.T. Features Supported**

| Operation | Feature | Sect Count | LBA low | LBA mid | LBA high | DRV head | Com-mand |
|---|---|---|---|---|---|---|---|
| S.M.A.R.T. Read Data | Doh | 01h | xx | 4Fh | C2h | Eoh | Boh |
| S.M.A.R.T. Read Attribute Thresholds | D1h | 01h | xx | 4Fh | C2h | Eoh | Boh |
| S.M.A.R.T. Enable Operations | D8h | xx | xx | 4Fh | C2h | Eoh | Boh |
| S.M.A.R.T. Disable Operations | D9h | xx | xx | 4Fh | C2h | Eoh | Boh |
| S.M.A.R.T. Return Status | DAh | xx | xx | 4Fh | C2h | Eoh | Boh |

All commands are aborted, if the LBA signature is invalid.

### 8.3.1 S.M.A.R.T. Read Data (Doh)

When the drive receives the S.M.A.R.T. Read Data subcommand, it returns one sector (512 bytes) of data. See the following table for the data structure of this sector.

**Table 22: S.M.A.R.T. Data Structure**

| Byte(s) | Value | Description |
|---|---|---|
| 0-1 | 0010h | S.M.A.R.T. structure version |
| 2-361 | XXh | Attribute entries 1 to 30 (see Table 23) |
| 362 | 00h | Off-line data collection status (no off-line data collection started) |
| 363 | 00h | Self-test execution status byte (self-test completed) |
| 364-365 | 0000h | Total time, in seconds, to complete off-line data collection |
| 366 | 00h | Vendor specific |
| 367 | 00h | Off-line data collection capability (no off-line data collection) |
| 368-369 | 0003h | S.M.A.R.T. capabilities |
| 370 | 00h | No Error logging capability |
| 371 | 00h | Vendor specific |
| 372 | 00h | Short self-test routine recommended polling time, in minutes |
| 373 | 00h | Extended self-test routine recommended polling time, in minutes |
| 374-385 | 00h | Reserved |
| 386-387 | 0004h | SMART Version |
| 388-510 | XXh | Vendor specific |
| 511 | XXh | Data structure checksum |

### 8.3.2 S.M.A.R.T. Attribute Entry Structure

Each attribute entry (Bytes 2-361) consists of 12 bytes. See the following table for the data structure of each entry.

**Table 23: Attribute Entry**

| Offset Byte(s) | Value | Description |
|---|---|---|
| 0 | XXh | Attribute ID (see Table 24) |
| 1-2 | XXXXh | Flags (little-endian)<br>Bit0: Advisory (0) or Prefailure (1)<br>Bit1: Not used (0) or updated during normal operation (1) |
| 3 | XXh | Current value as a percentage 64h = 100% |
| 4 | XXh | Worst value as a percentage 64h = 100% |
| 5-10 | XXXXh | Raw value (little-endian) |
| 11 | 00h | Reserved |

### 8.3.3 S.M.A.R.T. Attributes

The drives support the S.M.A.R.T. attributes listed in the following table.
The Threshold values can be read out with the S.M.A.R.T. Read Attribute Thresholds command (D1h)
The first attributes (196, 213, 229) are "Pre-Fail" type, while all other are Advisory (Old Age).

**Table 24: S.M.A.R.T. Attributes**

| ID dec | ID hex | Value | Worst | Thres-hold | Attribute | Description | RAW values Offset 5-10 |
|---|---|---|---|---|---|---|---|
| 196 | C4h | X% | X% | 25 | Spare Block Count | Number of total available NAND spare blocks | Initial (offset 5-7) and current (offset 8-10) number of spare blocks |
| 213 | D5h | X% | X% | 25 | Spare Block Count worst channel | Spare block count for the NAND with the lowest number of remaining spare blocks | Initial (offset 5-7) and current (offset 8-10) number of spare blocks of the channel with the lowest current number of spare blocks |
| 229 | E5h | X% | X% | 2 | Total Erase Count | Estimated number of total NAND block erases | Estimated number of total NAND block erases |
| 203 | CBh | 100 | 100 | 0 | Total ECC Errors | All recorded ECC errors | Total number of ECC errors (correctable and uncorrectable) (offset 5-8) |
| 204 | CCh | 100 | 100 | 0 | Correctable ECC Errors | Total recorded ECC errors that were corrected during the life of the drive | Total number of correctable ECC errors (offset 5-8) |
| 199 | C7h | 100 | 100 | 0 | UDMA CRC Errors | Dummy attribute, included for legacy reasons | This value is fixed at 0. |
| 232 | E8h | 100 | 100 | 0 | Total Number of Reads | Total number of NAND READ commands | Total number of NAND READ commands |
| 12 | 0Ch | 100 | 100 | 0 | Power-On Count | Count of power-on events | Number of power cycles (offset 5-8) |
| 241 | F1h | 100 | 100 | 0 | Total LBAs Written | Total amount of data written to the drive | Total number of LBAs written to the disk, divided by 65536 |
| 242 | F2h | 100 | 100 | 0 | Total LBAs Read | Total amount of data read from the drive | Total number of LBAs read from the disk, divided by 65536 |
| 214 | D6h | 100 | 100 | 0 | Management Block status | Total number of times the management block has been updated | Management block write count (offset 5-8) |
| 194 | C2h | X°C | Max °C | 0 | Temperature Status | Device temperature in Celsius (°C) | Current (offset 5) /Min (offset 6) / Max temperature (offset 7) |

* These threshold values are changeable using the Write Attribute Thresholds command.

### 8.3.4 S.M.A.R.T. Read Attribute Thresholds (D1h)

When the drive receives the S.M.A.R.T. Read Attribute Thresholds subcommand, it returns one sector (512 bytes) of data similar as S.M.A.R.T. Read data sector, but with the threshold value in offset 1 of each attribute (see Table 24).

### 8.3.5 S.M.A.R.T. Enable Operations (D8h)

This command enables access to the S.M.A.R.T. capabilities of the drive. The state of SMART (enabled or disabled) is preserved across power cycles.

### 8.3.6 S.M.A.R.T. Disable Operations (D9h)

This command disables access to the S.M.A.R.T. capabilities of the drive. The state of SMART (enabled or disabled) is preserved across power cycles.

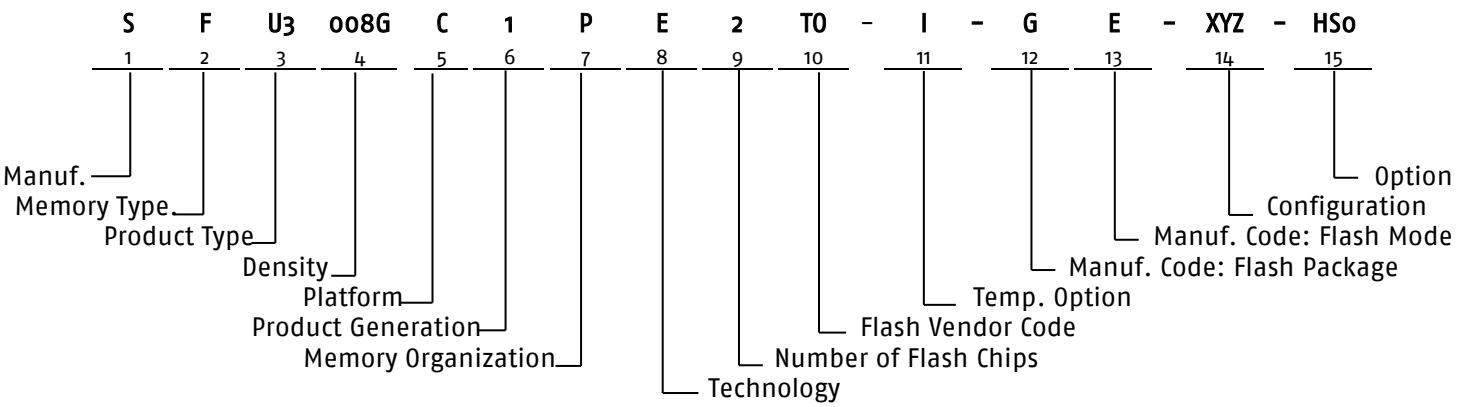
### 8.3.7 S.M.A.R.T. Return Status (DAh)

**Table 25: S.M.A.R.T. Return Status**

| Operation | Feature | Sect Count | LBA low | LBA mid | LBA high | DRV head | Com-mand |
|---|---|---|---|---|---|---|---|
| Command S.M.A.R.T. Return Status | DAh | xx | xx | 4Fh | C2h | Eoh | Boh |
| **Response** | | | | | | | |
| S.M.A.R.T. Return Status OK | xx | xx | xx | 4Fh | C2h | xx | xx |
| S.M.A.R.T. Return Status Pre-FAIL* | xx | xx | xx | F4h | 2Ch | xx | xx |

* If a threshold exceeded condition exists for either the Spare Block Count Worst Channel attribute or the Erase Count attribute, the device will set the Cylinder Low register to F4h and the Cylinder High register to 2Ch. In this case the drive should be replaced soon.

# 9. Part Number Decoder




## 9.1 Manufacturer

| | |
|---|---|
| Swissbit code | S |

## 9.2 Memory Type

| | |
|---|---|
| Flash | F |

## 9.3 Product Type

| | |
|---|---|
| USB 3.1 Flash Drive | U3 |

## 9.4 Density

| | |
|---|---|
| 8 GBytes | 008G |

## 9.5 Platform

| | |
|---|---|
| USB COB Inlay | C |

## 9.6 Product Generation

| | |
|---|---|
| First generation | 1 |
| Second generation | 2 |

## 9.7 Memory Organization

| | |
|---|---|
| Security Product | P |

## 9.8 Technology

| | |
|---|---|
| U-5xx platform UFD | E |

## 9.9 Number of Flash Chips

| | |
|---|---|
| 1 Flash | 1 |
| 2 Flash | 2 |
| 4 Flash | 4 |

## 9.10 Flash Code

| | |
|---|---|
| Kioxia (Toshiba) | T0 |

## 9.11 Temperature Option

| | |
|---|---|
| Extended Temperature Range: -25 °C to 85 °C | E |

## 9.12 Die Classification

| | |
|---|---|
| MLC MONO (single die package) | G |
| MLC DDP (dual die package) | L |
| MLC QDP (quad die package) | H |

## 9.13 Pin Mode

| | |
|---|---|
| Single nCE and Single R/nB | E |
| Dual nCE and Dual R/nB | F |
| Quad nCE and Quad R/nB | G |

## 9.14 Configuration XYZ

### X = Smart Card Controller

| Smart Card Controller | X |
|---|---|
| NXP JCOP3 | 9 |

### Y = Firmware Extension

| FW Extension | Y |
|---|---|
| No Data Protection mode | 1 |
| durabit™ Data Protection mode | 2 |

### Z = Optional

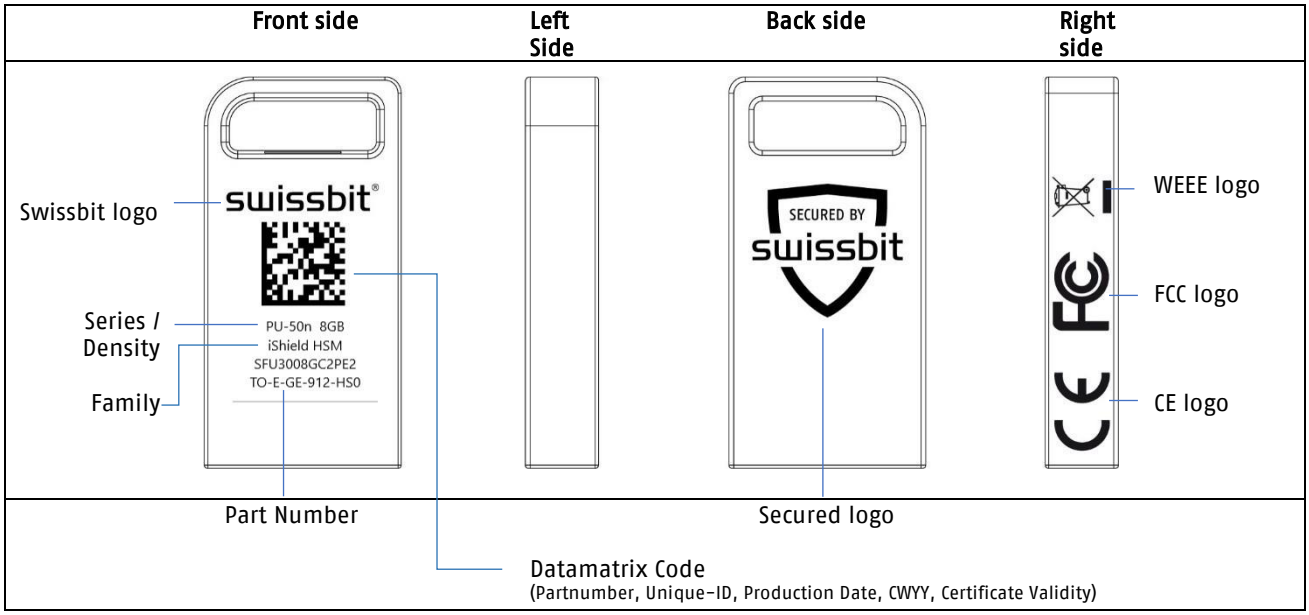
| Optional | Z |
|---|---|
| Standard | 1 |
| iShield HSM | 2 |

## 9.15 Option

| | |
|---|---|
| Swissbit Standard Edition (SE) | SW0 |
| Swissbit Premium Edition (PE) | SW2 |
| iShield HSM configuration | HS0 |

# 10. Marking Specification

Figure 4: PU-50n iShield HSM product marking



# 11. Revision History

Table 26: Document Revision History

| Date | Revision | Description | Revision Details |
|---|---|---|---|
| 15-Sep-2022 | 1.00 | Initial release | Doc. Req. no. 5708 |