1GLOBAL FOR THINGS SIM DATASHEET

Smart SIM for Seamless IoT Connectivity

1GLOBAL's secure IoT SIM not only connects your devices securely to our global network, each one is shipped with eSIM technology as standard.

Highlights:

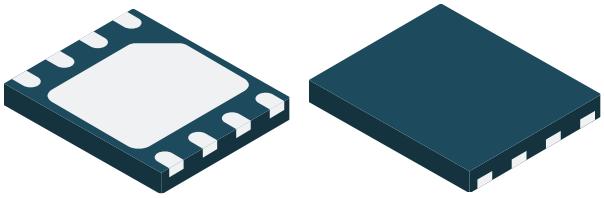
- Simple out of the box connectivity experience;
- Single contract for multi-country deployments with our global network and IoT platform;
- Simplify SIM logistics with a single SKU across the world;
- Better service management control with local operations and direct agreements with Tier 1 providers;
- Faster time-to-market with proven experience to deploy mobile services in new markets;
- Reliable global service focused on quality and fast delivery.

Technical Features:

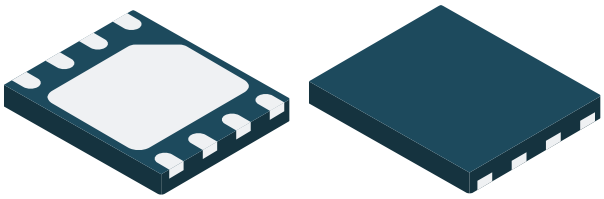
- Remote SIM provisioning compliant with GSMA M2M and SIMalliance specifications;
- Inbuilt bootstrap connectivity profile;
- Up to 10 operator profiles on a single eSIM;
- Compliant with 2G / 3G / 4G (LTE) / CDMA / NB-IoT / CAT–M networks;
- Network access applications supported: SIM / USIM / ISIM / CSIM;
- Power saving features;
- Secure element access control (ARF / PKCS#15);
- OTA capability over SMS, CAT-TP & HTTPS (including DNS);
- Multi-interfaces able to combine eSIM + eSE.

SIM Types

SKU	SIM-S-IO3-MFF2-2
Format	MFF2
Dimensions	5x6x1.27mm
Chip Manufacturer	ST Microelectronics
Chip Reference	ST33G1M2
SIM Vendor	ST Microelectronics
Low Power Support	Yes



SKU	SIM-S-IO3-MFF2-2-LP
Format	MFF2
Dimensions	5x6x1.27mm
Chip Manufacturer	ST Microelectronics
Chip Reference	ST33G1M2
SIM Vendor	ST Microelectronics
Low Power Support	Yes



SKU	SIM-S-IO3-TRI-2
Format	2FF/3FF/4FF
Dimensions	4FF: 12.3x8.8x.67mm
Chip Manufacturer	ST Microelectronics
Chip Reference	ST33G1M2
SIM Vendor	ST Microelectronics
Low Power Support	Yes

SKU	SIM-S-IO3-TRI-2-LP
Format	2FF/3FF/4FF
Dimensions	4FF: 12.3x8.8x.67mm
Chip Manufacturer	ST Microelectronics
Chip Reference	ST33G1M2
SIM Vendor	ST Microelectronics
Low Power Support	Yes

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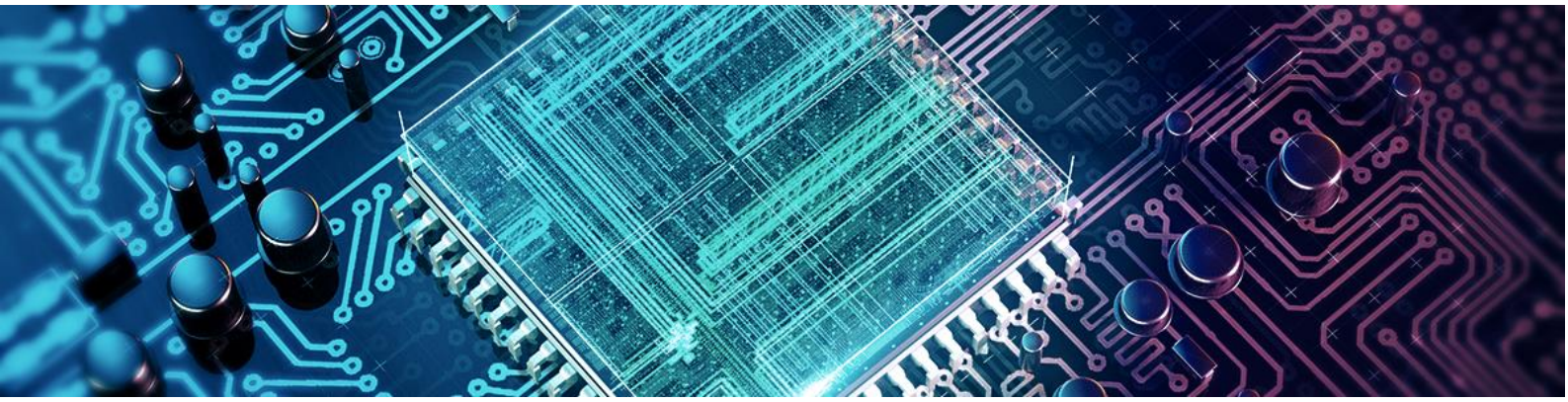

Hardware Features

Chip Type

Supplier	ST Microelectronics
Chip Codes	ST33G1M2M
Technology	80 nm
CPU	ARM 32-bit RISC SC300

Qualification

Common Criteria EAL5+
Industrial Qualification (JEDEC JESD47)

Electrical Characteristics

Supply voltage (All formats):
Class A (5 V), Class B (3 V), Class C (1.8 V)

Operational Temperature Characteristics

Temperature Range 4FF	-25° to +85°
Extended Range MFF2	-40° to +105°

Supported Clock Division Factors

F/D = 372 (F=372, D=1)	Yes
F/D = 64 (F=512, D=8)	Yes
F/D = 32 (F=512, D=16)	Yes
F/D = 16 (F=512, D=32)	Yes
F/D = 8 (F=512, D=64)	Yes

Memory Sizes

Total Flash size	1280K
Flash available to customer	380K / 512K (Ext)
RAM Total / For applets	30K / 7K

NVRAM characteristics

Endurance cycles (min) @25°	100K / 500K (Ext)
Data retention (min) @25°	10 Y / 25 Y (Ext)
Page/Sector erase time	3ms/6ms
Page write time	2.5ms

Cryptographic Features and Accelerators

Crypto-coprocessor	Yes
3DES engine	Yes
AES engine	Yes
True RNG	Yes
CRC	Yes
CPA /DPA Countermeasures	Yes

Form Factors

3 in 1 Plug-In SIM (2FF, 3FF and 4FF)	Yes
DFN8 (MFF2)	Yes
WLCSP	Yes

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Software Features

Platform

UICC	Release 12
Java Card	3.0.4
Global Platform Certified	2.2 (Amd. A,B,C,D,E)
SIMAlliance IPP	2.1
GMSA RSP SGP.02 M2M	3.2
Power Saving Features (PSM, eDRX)	ETSI R13

Supported Applications

USIM	Release 12
ISIM	Release 12
EAP	Release 12

Multiplication Features

Single SIM/ multiple USIMs / ISIMs	Yes
Number of Logical Channels	4

Supported Java Card APIs

UICC API	Release 12
USIM API	Release 12
ISIM API	Release 12
Global Platform API	2.2.1

Supported Protocols

T=0	Yes
T=1	Yes

Memory Management

Journaling File System	Yes (Option)
Dynamic Memory Management	Yes

Administration

Administrative Commands	Release 12

Remote Management

Remote File Management	Release 12
Remote Applet Management	Release 12
SMS Concatenation Size	configurable
BIP	Release 12
CAT_TP	Release 12
HTTPS Remote Management	Yes

Authentication Algorithms

2G COMP128-1,2,3	Yes
2G GSM-MILENAGE	Yes
3G MILENAGE	Yes
GBA Support	Yes
TUAK	Yes
ECC (NIST P-256, brainpoolIP256r1)	Yes
RSA (up to 2048 bits)	Yes

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MFF2 Pin Out

This package is compatible with the MFF2 package defined by ETSI 102 671 release 12.

Figure 1. VFDFPN8 pinout (top view)

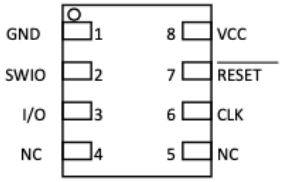
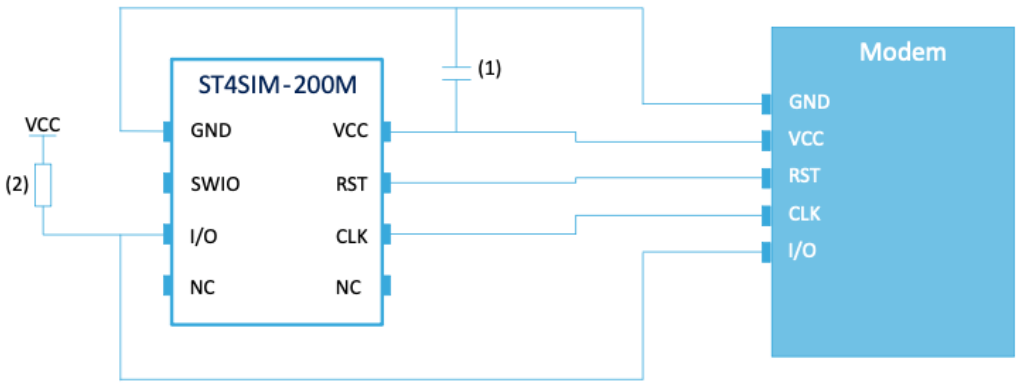


Table 1. Pin descriptions

Name	Description	Pin state
GND	Ground supply	-
SWIO	Not used	Input pull-up
$\overline{\text{RESET}}$	External reset	Input pull-down
I/O	Input/output	Pull-down then pull-up after card activation
CLK	External clock	Pull-down
VCC	Power supply	-
NC	Not connected internally	-

Figure 2. ST4SIM-200M PCB integration recommendations



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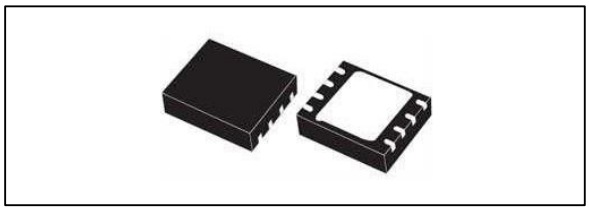
Packaging information

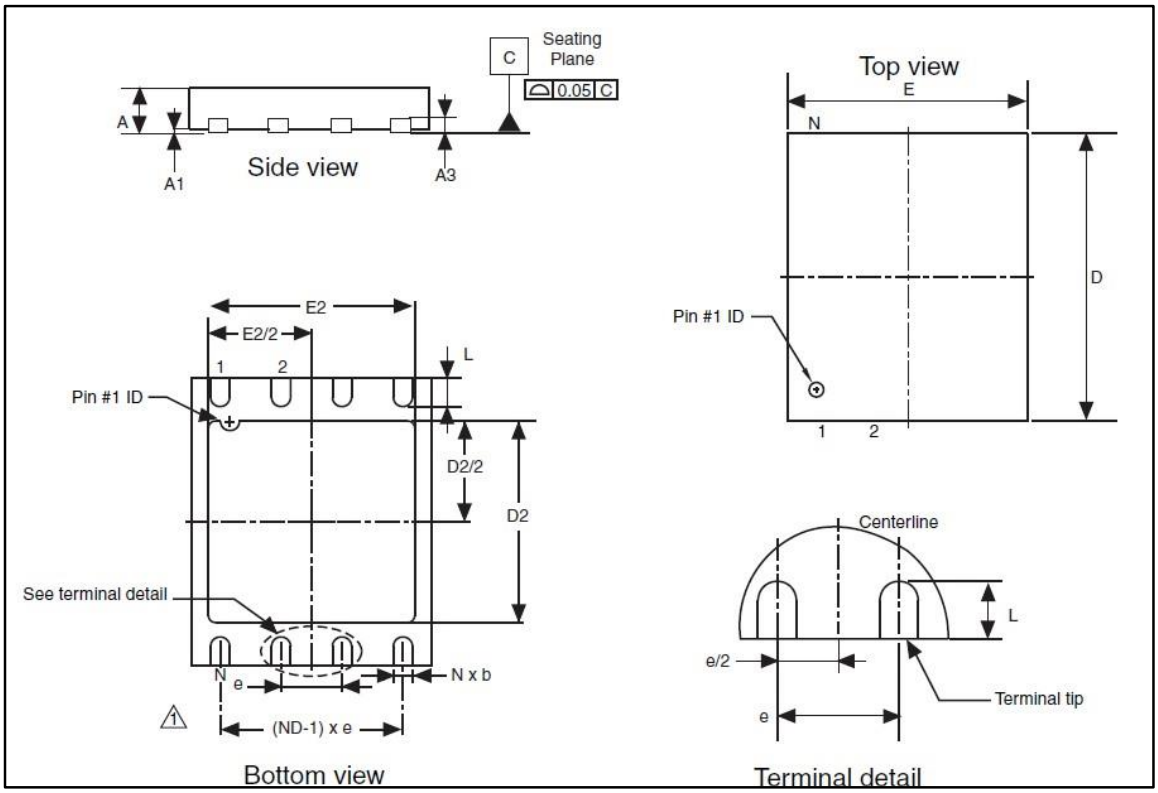
This section of the document defines the packaging requirements for M2M personalized products, based on the DFN8/MFF2 5 × 6 mm package.

Package silhouette



Package mechanical data

DFN8 5 × 6 mm (0.9 mm thickness) package outline



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5 × 6 mm, 0.9 mm thickness package mechanical data

Symbol	millimeters			inches[1]		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.800	0.900	1.000	0.0315	0.0354	0.0394
A1	0.000	0.020	0.050	0.0000	0.0008	0.0020
A3		0.200			0.0079	
b	0.350	0.400	0.480	0.0138	0.0157	0.0189
D	5.900	6.000	6.100	0.2322	0.2362	0.2401
D2	3.300	3.400	3.500	0.1299	0.1339	0.1378
E	4.900	5.000	5.100	0.1929	0.1969	0.2007
E2	4.100	4.200	4.300	0.1614	0.1654	0.1693
e		1.270			0.0500	
L	0.500	0.600	0.750	0.0197	0.0236	0.0295

1. Values in inches are converted from mm and rounded to 4 decimal digits.

Note: 1 'N' is the total number of terminals.
2 'ND' refer to the number of terminals on side D.
3 Max. package warpage is 0.05 mm.
4 Max. allowable burrs is 0.076 mm in all directions.
5 Pin #ID on top will be laser marked.

Tape and reel packaging

Surface-mount packages can be supplied with Tape and Reel packing. Typical reels diameter 13” (4000 devices).

Reels are in plastic, either antistatic or conductive, with a black conductive cavity tape.

The cover tape is transparent antistatic or conductive.

The STMicroelectronics Tape & Reel specifications are compliant to the EIA 481-A standard specification.

Packages on tape and reel

Package	Description	Tape width	Tape pitch	Reel diameter	Quality per reel
DFN 5 x 6	Flat package no. lead 5 x 6 mm	14 mm	8mm	13 in.	4000

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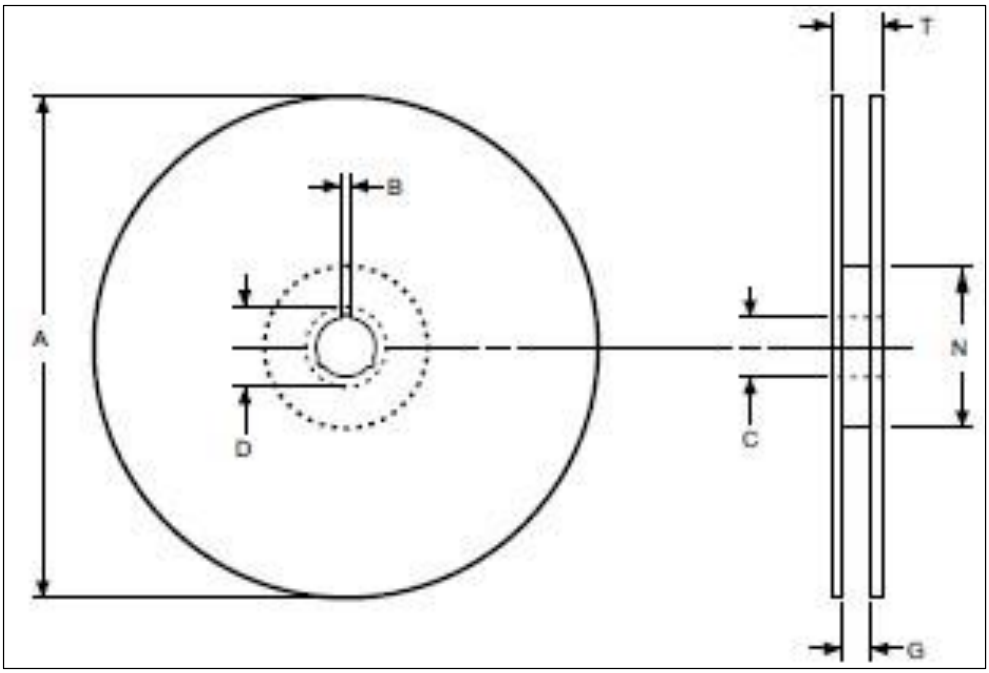
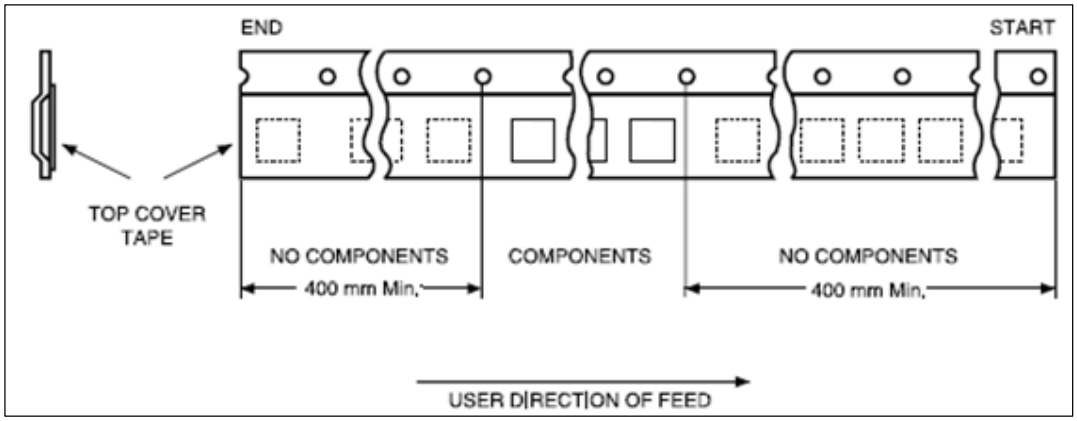
Reel diagram



Reel dimensions

Reel size	Tape size	A max	B min	C	D min	G max	N min	T max	Unit
13"	12 mm	330	1,5	13 ±0,25	20,2	12,6	100	18,4	mm

Leader and trailer



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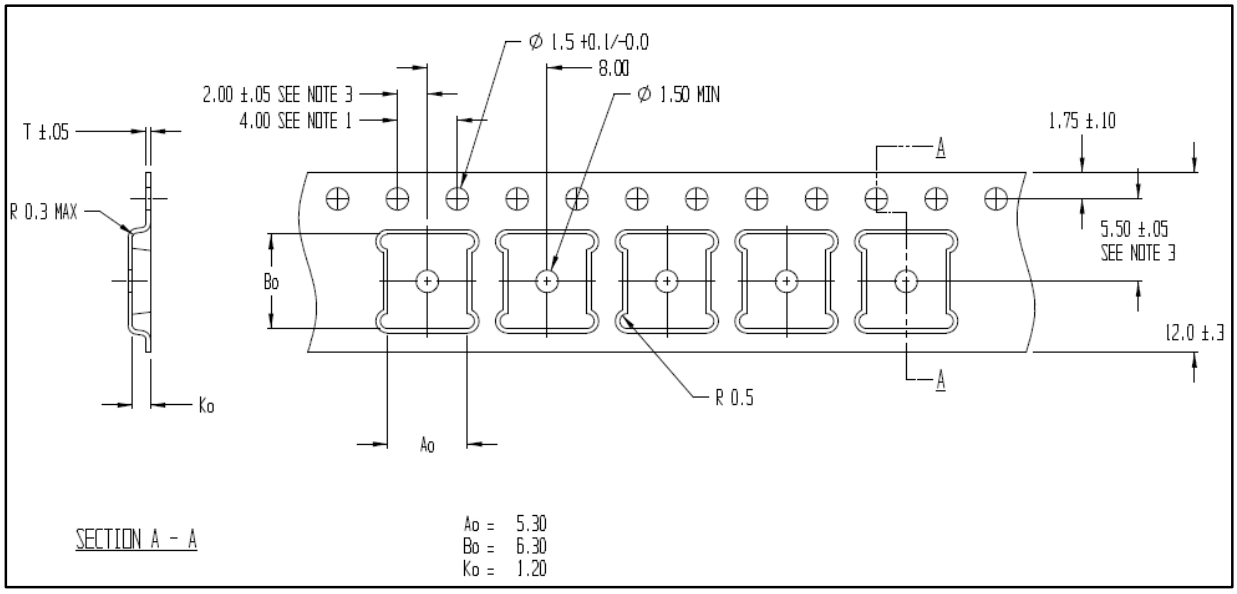
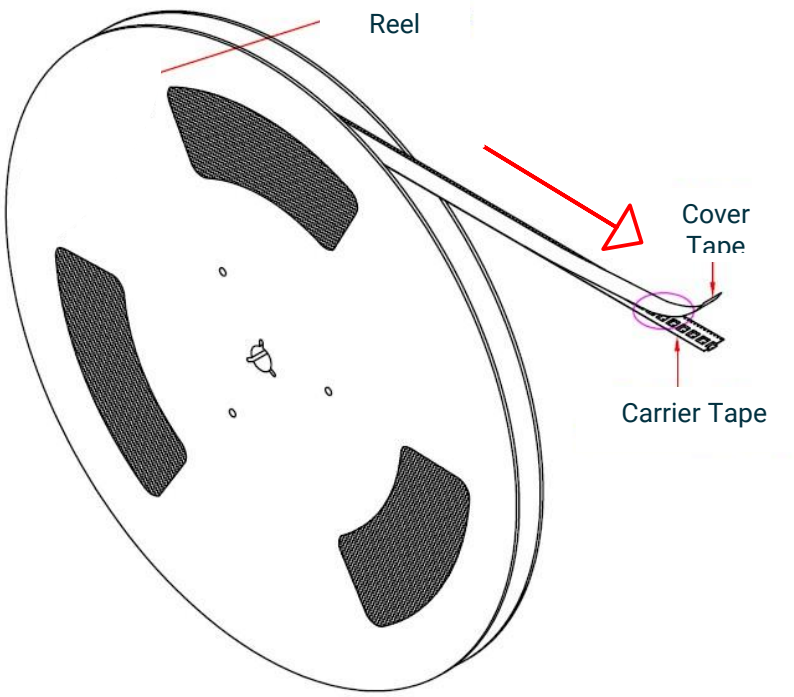
Embossed carrier tape



Component orientation



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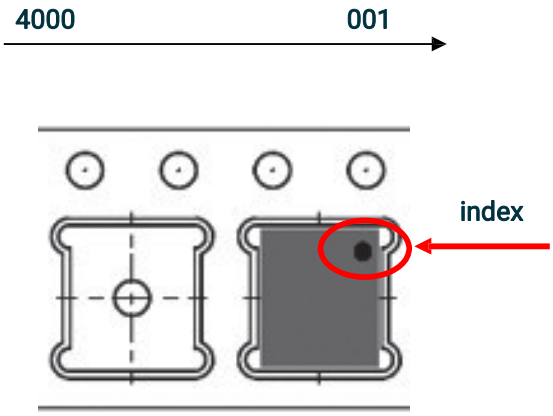

Identification reel

A dedicated label with logistic information shall be placed onto the reel.

Dry packaging of reel in moisture barrier bag

The reel is packed in a moisture barrier bag.

In the bag is inserted a humidity indicator card and desiccant bag.

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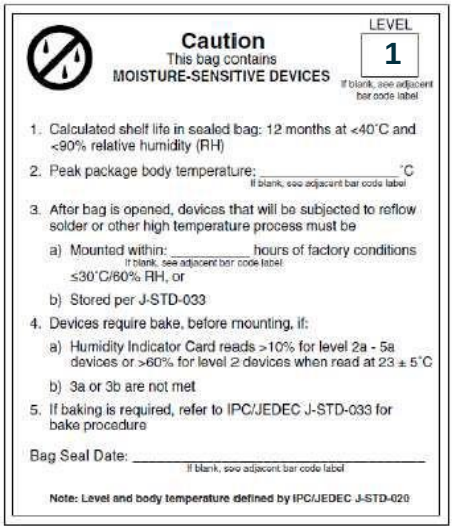
On the moisture barrier bag are stuck the labels:

1) Moisture sensitive caution label

2) A logistic label containing reel information (as per customer request)



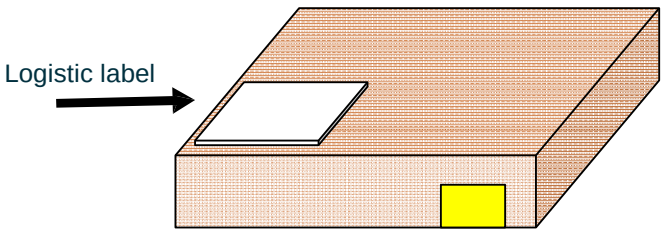
This package is qualified in compliance with JEDEC J-STD-020D and MSL 1 specifications.

Shipping box and packaging

The reel, shrunken inside the moisture barrier bag, shall be shipped in a dedicated shipping box. The packed reel is put in a cardboard box of dimensions 365x350x45 mm.

On the top is stuck a logistic label containing reel information (as per customer request)

The box shall be sealed with a security tape.



Packaging in the over box: **"**three shipping boxes = 12.000 pcs." - results in outer box max external dimensions:

- X: 395 mm
- Y: 375 mm

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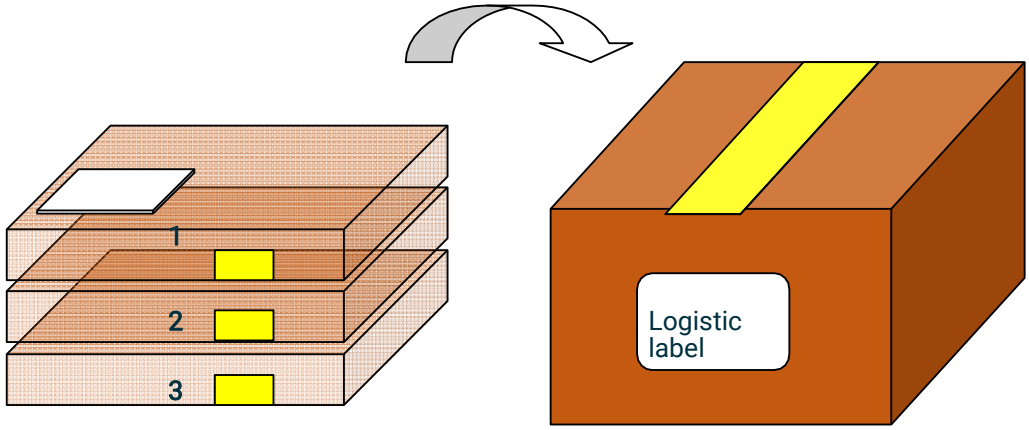
• H: 170 mm

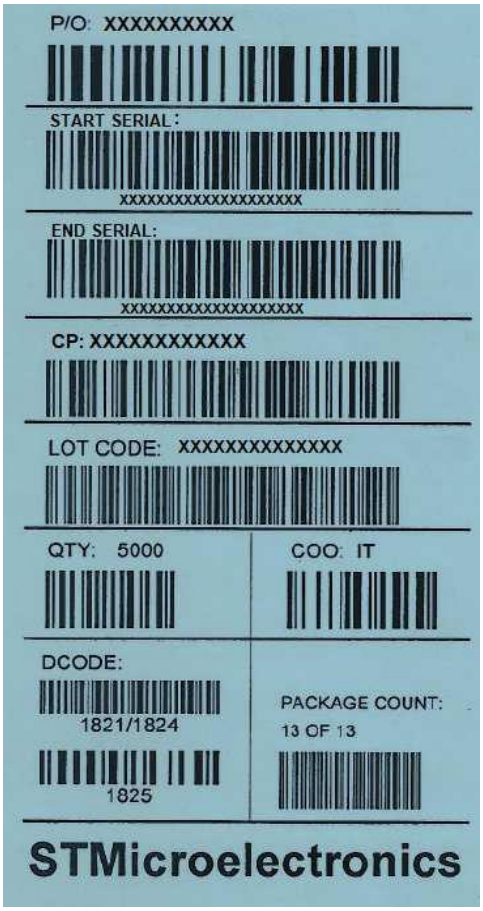


A dedicated outer box label with logistic information shall be placed centered to the front side of the outer box.

The outer boxes shall be sealed with a security tape.

Standard Label

The following label will be applied on the reel, moisture barrier bag, cardboard box and if necessary, also on the overbox:



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Date	Type	Print Format	Digit	Min Barcode degree
Purchase Order P/O	V	Numeric	10	NA
Purchase Order P/O	V	BarCode 128	10	D
Start Serial	V	Numeric	20	NA
Start Serial	V	BarCode 128	20	D
End Serial	V	Numeric	20	NA
End Serial	V	BarCode 128	20	D
CP Commercial Product	F	XXXXXXXXXXXX	NA	NA
CP Commercial Product	F	BarCode 128 XXXXXXXXXXXX	NA	D
Lot Code	V	XXXXXXXXXXXX	NA	NA
Lot Code	V	BarCode 128 XXXXXXXXXXXX	NA	D
QTY	V	Numeric	4	NA
QTY	V	BarCode 128	4	D
COO	F	IT	2	NA
COO	F	BarCode 128	2	D
Dcode	V	YYWW	4	NA
Dcode	V	YYWW BarCode 128	4	D
Package Count	V	Reel identification in relation to the total of the reel belonging to the order	6	NA
PAckage Count	V	BarCode 128 Reel identification in relation to the total of the reel belonging to the order	6	D

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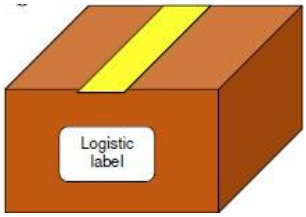
Note: V = variable data; F = fixed data

OVERBOX LABELS (the overbox can include max 3 box):



Date	Type	Print Format	Digit	Min Barcode degree
Purchase Order P/O	V	Numeric	10	NA
Purchase Order P/O	V	BarCode 128	10	D
Manufacturer	F	ST	2	NA
Manufacturer	F	ST	2	NA
Commercial Product	F	XXXXXXXXXXXX	NA	NA

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Commercial Product	F	BarCode 128 XXXXXXXXXXX	NA	D
QTY	V	Numeric	4-5	NA
QTY	V	BarCode 128	4-5	D
4L) MADE IN ITALY	F	FIXED STRING (4L) MADE IN ITALY	18	NA
ITALY	F	BarCode 128	13	D
Package Count	V	“0X” OF “0Y” where 0X indicates the box number, while 0Y indicates the total number of boxes. For example, if the production is 35,000 chips, there will be 3 boxes that will report respectively: 01 OF 03, 02 OF 03, 03, 0F, 03	6	NA
Package Count	V	BarCode 128 “0X” OF “0Y” where 0X indicates the box number, while 0Y indicates the total number of boxes	6	D

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