	Packing Specification APIX3 11x11 – ASE Chung-Li	Document: Q_packing_specification_IN AP5XXTAQ_RAQ_ASECL_ 1.0.docx Date: 2022-07-22 Page: 1 of 14
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Revision History

Revision	Date	Item/Section	Author/Department	Changes
1.0	2022-07-22	All pages	J. Tannenbaum/SCM	Initial Release

Scope of document

This document describes the packing details for tape and reel and tray. The Moisture Sensitivity Level (MSL) is also defined in the document.

It is valid for the following products which have all a QFN 11x11 package:

Inova Device ID	Partnumber Reel	Partnumber Tray	HDCP
INAP590TAQ	INAP590TAQ-R2	INAP590TAQ-T	x
INAP562TAQ INAP592TAQ	INAP562TAQ-R2 INAP592TAQ-R2	INAP562TAQ-T INAP592TAQ-T	x
INAP563TAQ INAP593TAQ	INAP563TAQ-R2 INAP593TAQ-R2	INAP563TAQ-T INAP593TAQ-T	x
INAP565TAQ INAP595TAQ	INAP565TAQ-R2 INAP595TAQ-R2	INAP565TAQ-T INAP595TAQ-T	x
INAP566TAQ INAP596TAQ	INAP566TAQ-R2 INAP596TAQ-R2	INAP566TAQ-T INAP596TAQ-T	x
INAP567TAQ INAP597TAQ	INAP567TAQ-R2 INAP597TAQ-R2	INAP567TAQ-T INAP597TAQ-T	x
INAP562RAQ INAP592RAQ	INAP562RAQ-R2 INAP592RAQ-R2	INAP562RAQ-T INAP592RAQ-T	x
INAP563RAQ INAP593RAQ	INAP563RAQ-R2 INAP593RAQ-R2	INAP563RAQ-T INAP593RAQ-T	x


	Packing Specification APIX3 11x11 – ASE Chung-Li	Document: Q_packing_specification_IN AP5XXTAQ_RAQ_ASECL_ 1.0.docx Date: 2022-07-22 Page: 2 of 14
---	---	---

Table of Content

1	Tray.....	3
1.1	Tray drawing.....	3
1.2	Packing of trays.....	4
1.3	Labeling of tray.....	6
2	Tape and Reel.....	7
2.1	Tape and Reel drawing.....	7
2.1.1	Tape leader and trailer dimensions.....	7
2.1.2	Carrier Tape.....	8
2.1.3	Cover Tape.....	9
2.1.4	Leader / Trailer.....	9
2.2	Packing of Reels.....	10
2.2.1	Tape and Reel.....	10
2.2.2	Moisture Barrier Bag of Reel.....	10
2.2.3	Cardboard of Reel / Reel inner box.....	11
2.3	Labeling of Reel.....	12
2.3.1	Label Information and content.....	12
2.3.2	Label position.....	13
3	Moisture Sensitivity Level of Device.....	14
3.1	Shelf Life in Sealed Bag.....	14
3.2	Shelf Life after Opening of Bag.....	14
3.3	Baking of devices.....	14
4	Inova HDCP parts.....	14

1 Tray

Tray size is 176 aQFN 11x11 devices per tray.

1.1 Tray drawing

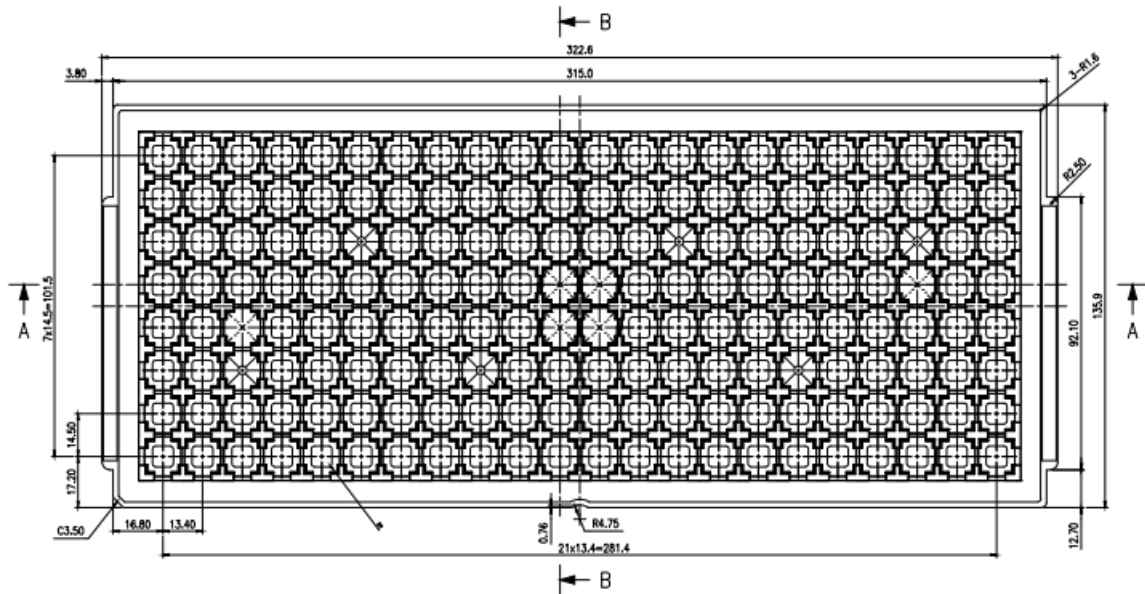


Figure 1 Outer dimension of tray

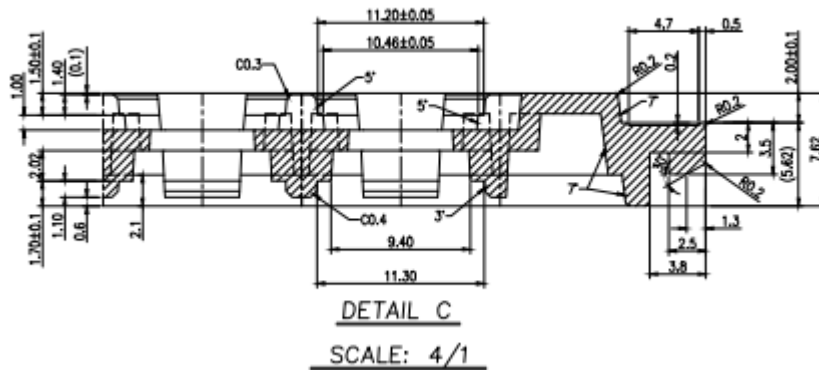


Figure 2 Dimensions of tray cup

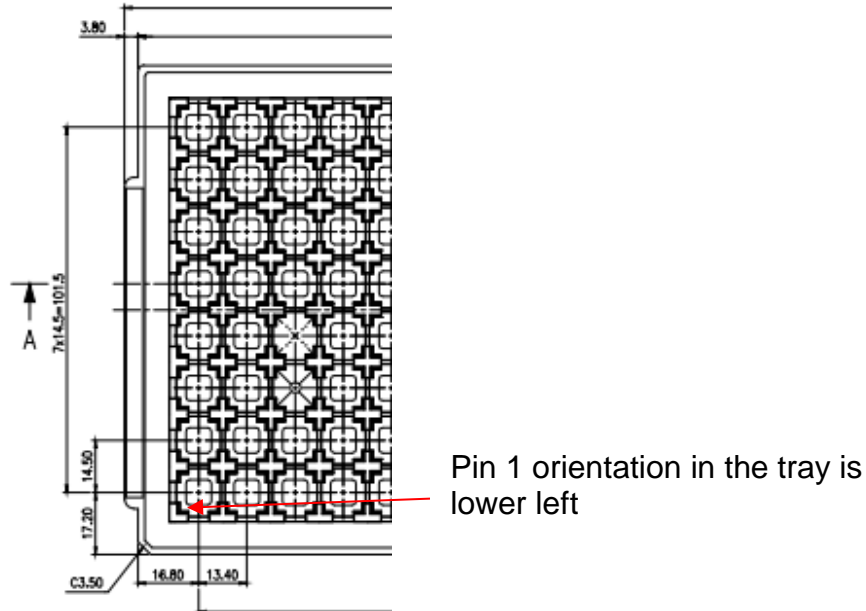


Figure 3 Pin 1 orientation in the tray


The warpage of the tray is < 0.76mm

1.2 Packing of trays

The parts and the trays are baked and dry sealed. The MSL is 3.

The tray and packing material are antistatic material. A desiccant and humidity indicator are packed in the drypack. The tray is heat resistant up to 125°C, and the Bag Seal Date is mentioned on the Caution Label of Moisture Barrier Bag (MBB).

The quantity of single tray is marked with “-T” at the Inova Part-No. The sales quantity of each tray is 176 pieces. Packing includes one tray and one cover tray sealed in MBB. Each cardboard allows content of 3 MBBs. The quantity of each cardboard is 528 pieces (3 x 176 pcs.).

	Packing Specification APIX3 11x11 – ASE Chung-Li	Document: Q_packing_specification_IN AP5XXTAQ_RAQ_ASECL_ 1.0.docx Date: 2022-07-22 Page: 5 of 14
---	---	---

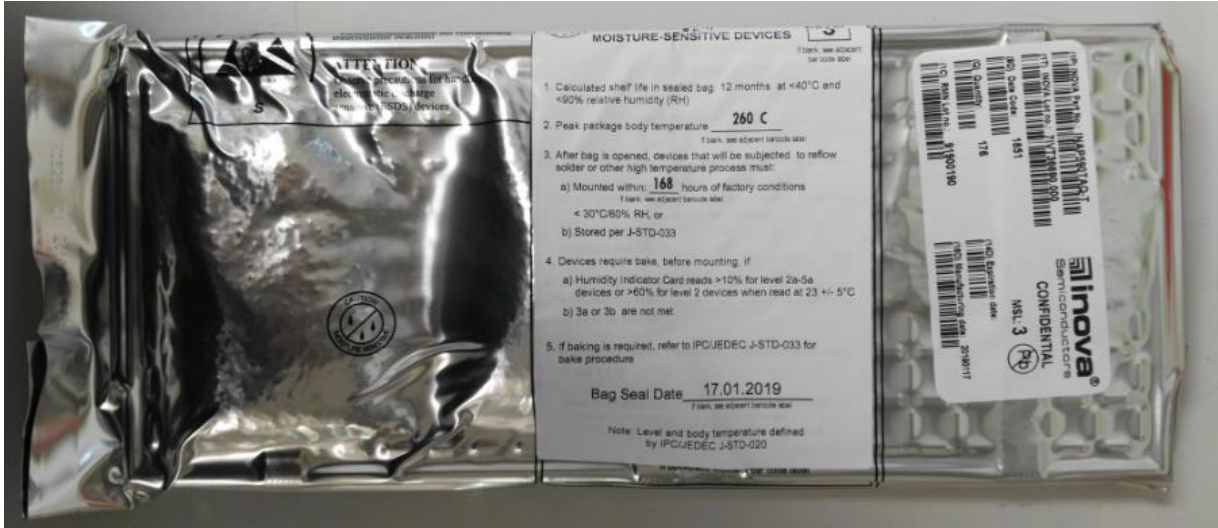



Figure 4 ESD protective drypack for a single tray

	Packing Specification APIX3 11x11 – ASE Chung-Li	Document: Q_packing_specification_IN AP5XXTAQ_RAQ_ASECL_ 1.0.docx Date: 2022-07-22 Page: 6 of 14
---	---	---

1.3 Labeling of tray

The Inova Standard Label is nonspecific. The code used is “Barcode 128”. The dimensions of the label are 105mm x 51mm. The Inova Standard Label is needed on each MBB and Cardboard. Each label includes the following information:

Table 1 Overview of label content

Data identifier	Description	Content / Example	Barcode
(1P)	Inova Part No.	Main product number: e.g. "INAP590TAQ-T"	✓
(1T)	Inova Lot-No.	Batch number (Lot#): e.g. "71VT36690.000"	✓
(9D)	Date Code	Date Code (Abbreviation on the Order: DC): e.g. "1851"	✓
(Q)	Quantity	Content of one packing unit: 176 pcs.	✓
(1C)	Lot no. (supplier)	Individual production lot Number from supplier	(✓)
(14D)	Expiration Date	<i>Leave this field empty for trays</i>	✓
(16D)	Manufacturing Date	Shrink-wrap date of Bag Seal layout: YYYYMMDD	✓
---	Picture1	Inova Logo (fix)	---
---	Picture2	"bleifrei" / "leadfree" (fix)	---
---	Picture3	"MSL3" (fix)	---
---	Picture4	"Confidential"*	---

**Print only needed for HDCP Parts (see page 15)*

Data identifier and description are not variable.



Figure 5 Label of a single tray (INAP590TAQ-T)

2 Tape and Reel

The reel size is 13" and it includes 2000 aQFN 11x11 devices per reel.

2.1 Tape and Reel drawing

2.1.1 Tape leader and trailer dimensions

Supplier: LASER TEK Taiwan Co., Ltd.

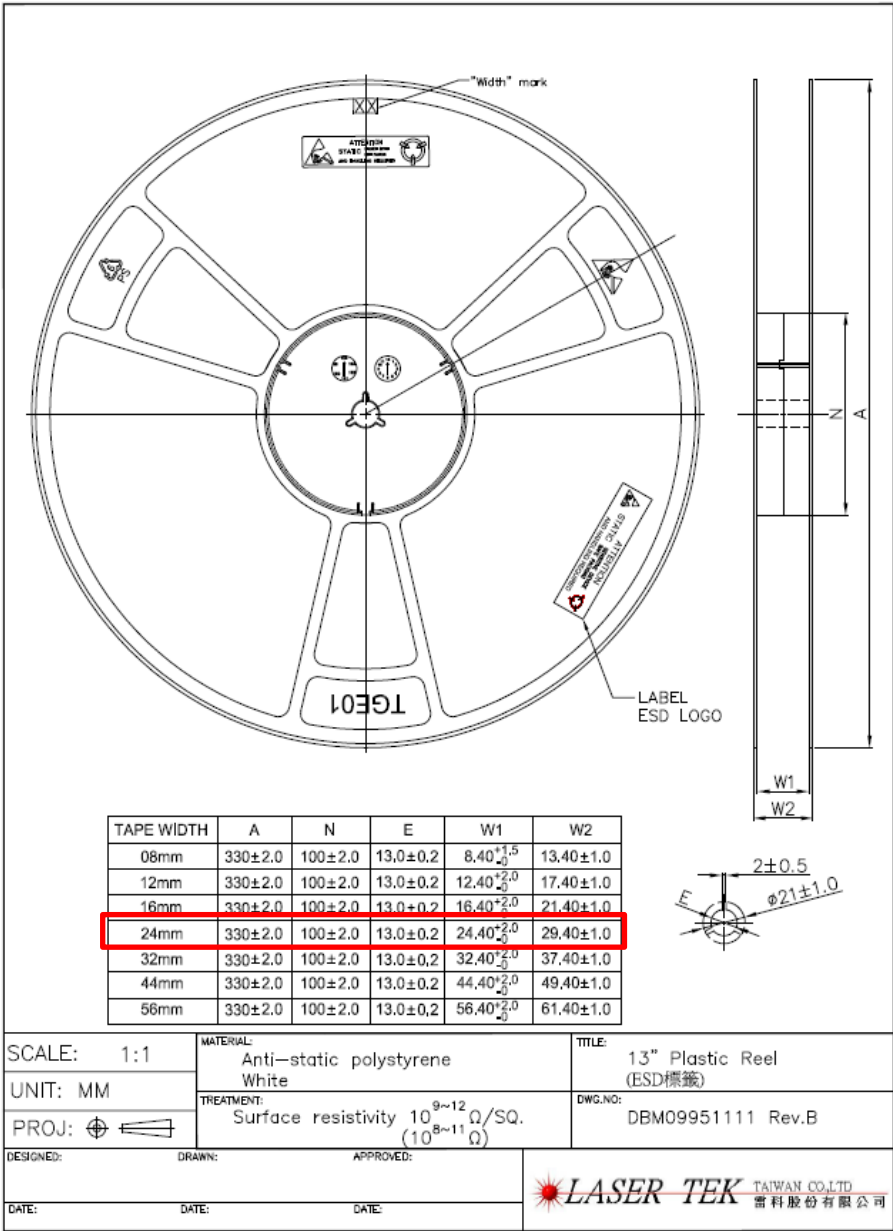


Figure 6 Reel dimensions

Table 2 Reel dimension detailed

Tape Width	A	N	E	W1	W2
24mm	330+-2.0	100+-2.0	13+-0.2	24.4 +2/-0	29.4 +-1.0

2.1.2 Carrier Tape

Supplier: U-PAK

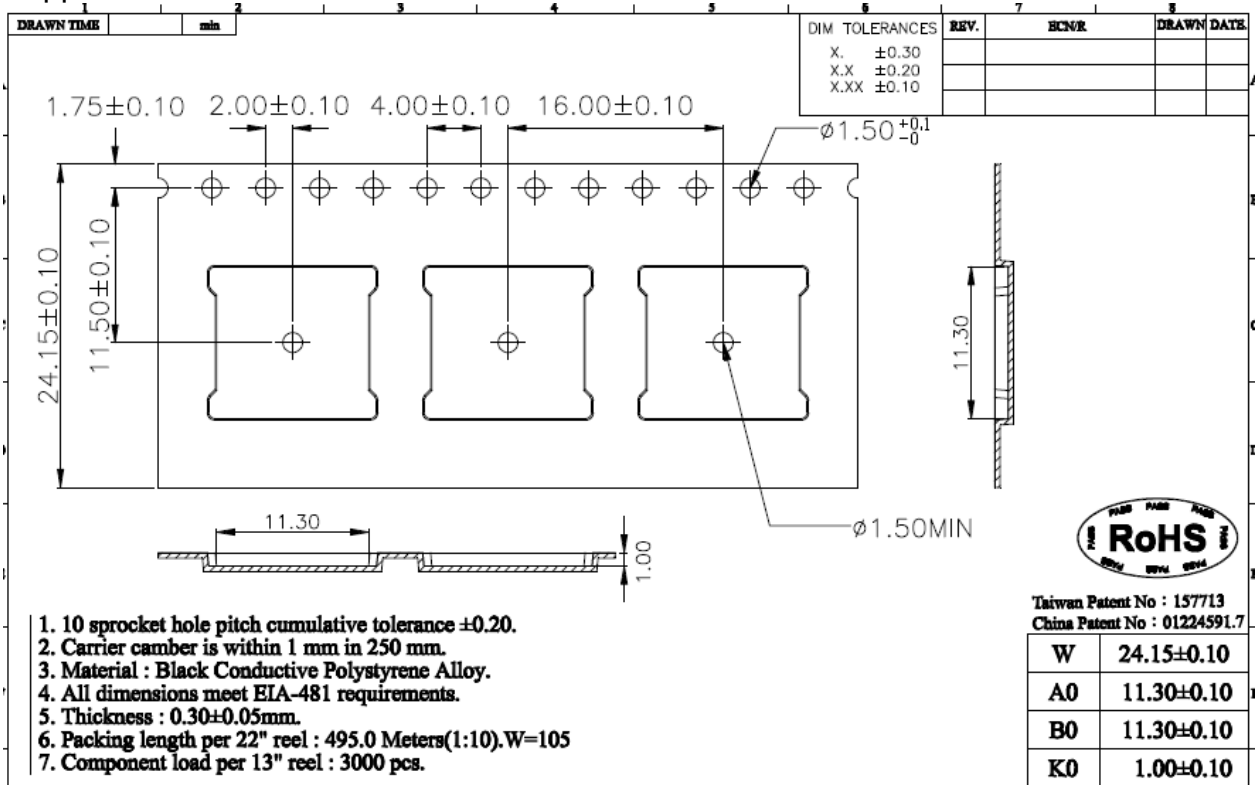


Figure 7 Tape dimensions

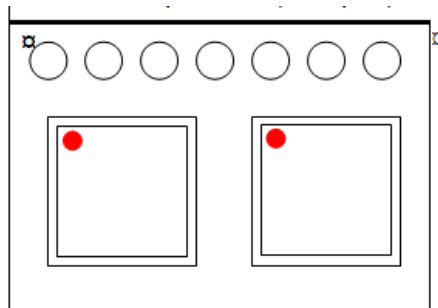
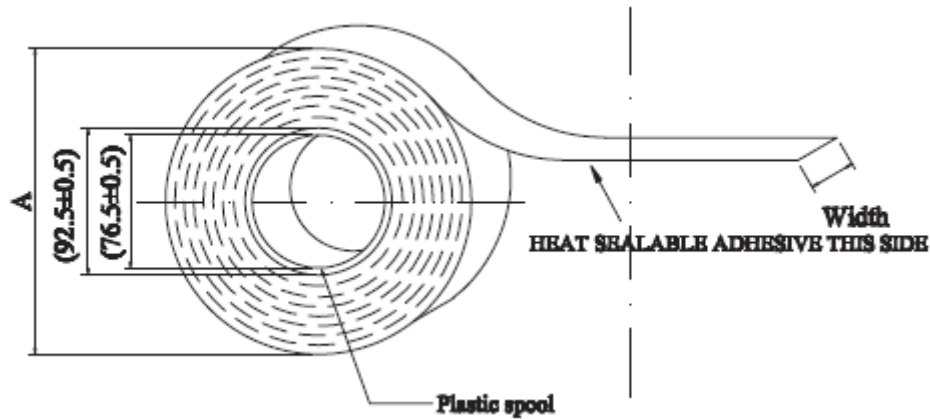


Figure 8 The Pin 1 orientation in the tape is upper left

2.1.3 Cover Tape

Supplier: U-PAK

Standard Carrier Tape WIDTH [mm]: 24



UPAK NO.	Width (mm)	Length (M)Min	Carrier width (mm)	Thickness (µm)	A (mm)
UP-175-092	9.2±0.1	300	12.0	48±5	165±5
UP-175-133	13.3±0.1	300	16.0	48±5	165±5
UP-175-213	21.3±0.1	300	24.0	48±5	165±5

Figure 9 Cover Tape drawing

2.1.4 Leader / Trailer

- There is a leader of **400mm**. The whole leader consists of empty compartments covered by tape.
- There is a trailer of **400mm**. The whole trailer consists of empty compartments covered by tape.

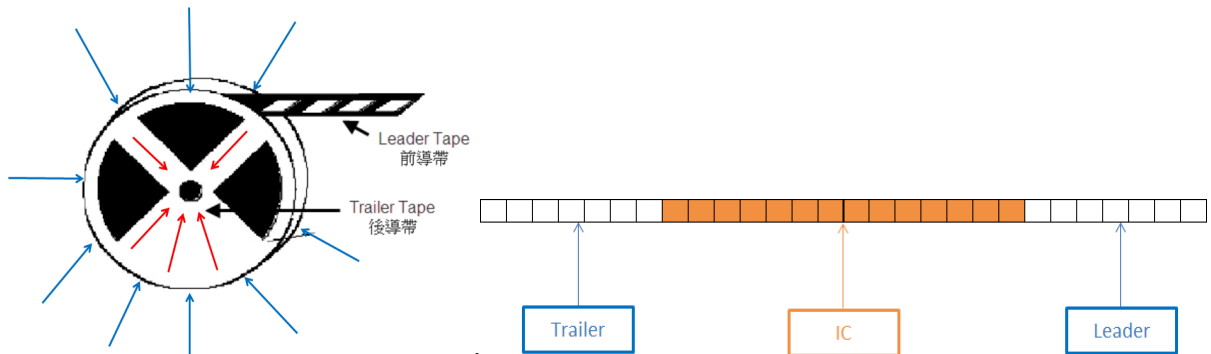



Figure 10 Trailer/Leader information

	Packing Specification APIX3 11x11 – ASE Chung-Li	Document: Q_packing_specification_IN AP5XXTAQ_RAQ_ASECL_ 1.0.docx Date: 2022-07-22 Page: 10 of 14
---	---	--

2.2 Packing of Reels

The content quantity of a reel for INAP5XXXAQ-R2 always is 2000 parts. The reel has an own article number which ends with –R2 in the Inova part number (one reel with 2000 parts). A maximum of 2 different wafer lots and date codes is allowed per reel. If a reel contains 2 different lot numbers and date codes, 2 labels need to be pasted on it.

2.2.1 Tape and Reel

The reel and packing material are of antistatic material. The packing also contains two desiccants and a humidity indicator card. The Inova Standard Label (see chapter 2.3) is pasted on it.

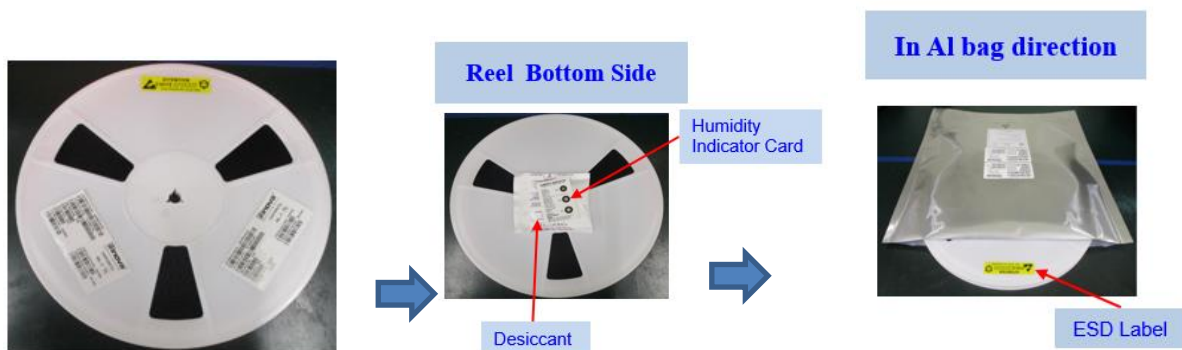


Figure 11 Tape and reel packing

2.2.2 Moisture Barrier Bag of Reel

The Inova Standard Label and the caution label data need to be pasted on the MBB. The caution label includes the MSL-Level (MSL3), temperature, and sealing date.

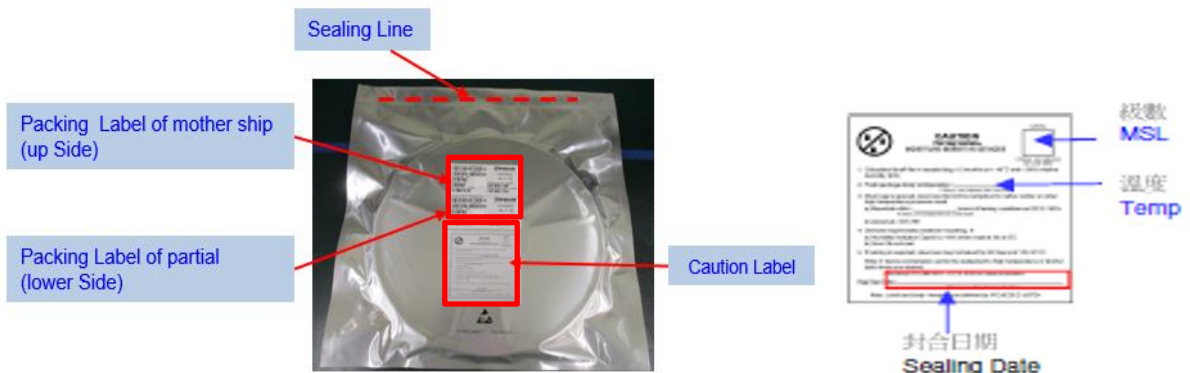


Figure 12 ESD protective MBB of reel with label of different Lots

2.2.3 Cardboard of Reel / Reel inner box

Each MBB needs to be packed into a cardboard / reel inner box. The cardboard needs to be sealed with an ESD-Label.

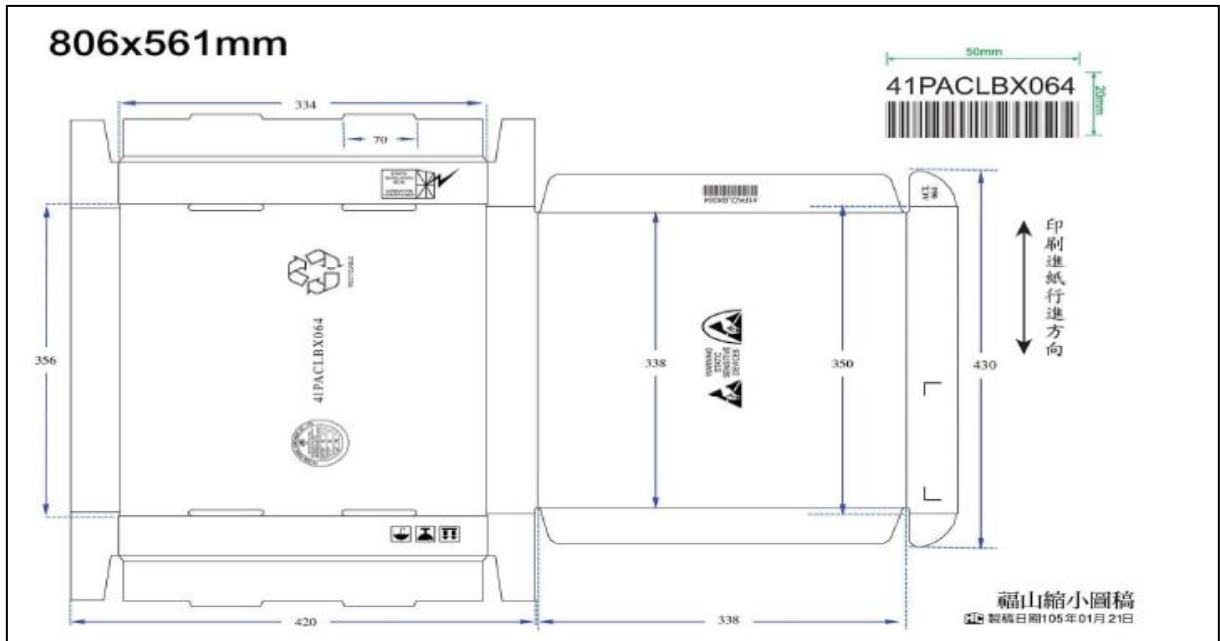


Figure 13 cardboard of reel

Table 3 Dimensions of cardboard

Length	356mm
Width	338mm
Height	48mm

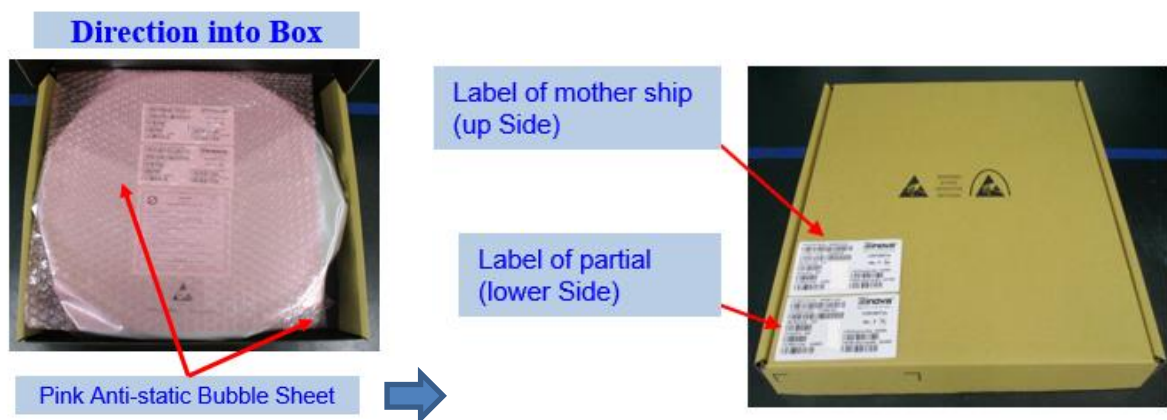



Figure 14 cardboard packing

	Packing Specification APIX3 11x11 – ASE Chung-Li	Document: Q_packing_specification_IN AP5XXTAQ_RAQ_ASECL_ 1.0.docx Date: 2022-07-22 Page: 12 of 14
---	---	--

2.3 Labeling of Reel

2.3.1 Label Information and content

The Inova Standard Label is nonspecific. The code used is “Barcode 128”. The dimensions of the label are 105mm x 51mm. Each label includes the following information:

Table 4 Overview of label content

Data identifier	Description	Content / Example	Barcode
(1P)	Inova Part No.	Main product number: e.g. "INAP590TAQ-R2"	✓
(1T)	Inova Lot-No.	Batch number (Lot#): e.g. "7IVP08657.000"	✓
(9D)	Date Code	Date Code (Abbreviation on the Order: DC): e.g. "2211"	✓
(Q)	Quantity	Content of one packing unit	✓
(1C)	Lot no. (supplier)	Individual production lot number from supplier	(✓)
(16D)	Manufacturing Date	Date of manufacturing – layout: YYYYMMDD	✓
(14D) *	Expiration date	Date of expiry - layout: YYYYMMDD	✓
---	Picture1	Inova Logo (fix)	---
---	Picture2	"bleifrei" / "leadfree" (fix)	---
---	Picture3	"MSL3" (fix)	---
---	Picture4	"Confidential"***	---


* 1 Year after Bag Seal Date

**Print only needed for HDCP Parts (see page 15)

Data identifier and description are not variable.



Figure 15 Inova Label of reel, MBB and outer box (barcode 128)

	Packing Specification APIX3 11x11 – ASE Chung-Li	Document: Q_packing_specification_IN AP5XXTAQ_RAQ_ASECL_ 1.0.docx Date: 2022-07-22 Page: 13 of 14
---	---	--

2.3.2 Label position

The Inova Standard Label is needed on each reel, MBB and cardboard. In case of 2 different production lots, 2 different labels for mother and child lot information are needed on reel, drypack, and cardboard.




Figure 16 Label on Reel (mother and child lot)



Figure 17 Label on MBB (mother and child lot)



Figure 18 Label on cardboard (mother and child lot)

	Packing Specification APIX3 11x11 – ASE Chung-Li	Document: Q_packing_specification_IN AP5XXTAQ_RAQ_ASECL_ 1.0.docx Date: 2022-07-22 Page: 14 of 14
---	---	--

3 Moisture Sensitivity Level of Device

The moisture sensitivity level of the devices is as following

Table 5 Overview of Moisture Sensitivity Level

Device ID	MSL
INAP5XXXAQ-R2	3
INAP5XXXAQ-T	3

3.1 Shelf Life in Sealed Bag

The shelf life of devices in sealed bags is 12 months when stored at <40°C and <90% RH.

3.2 Shelf Life after Opening of Bag

The shelf life after opening the sealed bag is 168 hours at <30°C and 60% RH.

3.3 Baking of devices

The devices need to be baked when

- The humidity indicator is $\geq 10\%$ at $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$
- The shelf life after opening the sealed bag has expired

If baking is required, refer to IPC/JEDEC J-STD-033 for the baking procedure in general.

For this device the maximum bake temperature and the bake time is:

- Tray: 125°C - 8 hours

4 Inova HDCP parts

Inova HDCP parts need a separate handling and “Confidential” print on each Inova Standard Label.

Table 6 HDCP affected parts

Inova Device ID	Partnumber Reel	Partnumber Tray
INAP590TAQ	INAP590TAQ-R2	INAP590TAQ-T
INAP592TAQ	INAP592TAQ-R2	INAP592TAQ-T
INAP593TAQ	INAP593TAQ-R2	INAP593TAQ-T
INAP595TAQ	INAP595TAQ-R2	INAP595TAQ-T
INAP596TAQ	INAP596TAQ-R2	INAP596TAQ-T
INAP597TAQ	INAP597TAQ-R2	INAP597TAQ-T
INAP592RAQ	INAP592RAQ-R2	INAP592RAQ-T
INAP593RAQ	INAP593RAQ-R2	INAP593RAQ-T