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Revision History

Revision (Rev. x.x)	Date	Originator (Dept. Abbr._Name)	Revision History (Describe what has been changed)
0.1	19.08.2016	Q Lothar Doni	Initial Release of preliminary version
1.0	29.03.2018	L Juliane Tannenbaum	Revision of layout, graphics, information, added labeling
1.1	13.09.2018	L Juliane Tannenbaum	Change in Inova Standard Label
1.2	27.05.2020	L Juliane Tannenbaum	Change in Inova Device ID
1.3	31.08.2020	L Juliane Tannenbaum	Change in Baking of devices, added further APIX3 devices, general revision of document
1.4	12.11.2020	L Juliane Tannenbaum	Removed device INAP564TAQ

Scope of this document

This document describes the packing details for tray and tape and reel. The Moisture Sensitivity Level is also defined in the document. It is valid for the following products which have aQFN151 11x11 package:

Inova Device ID
INAP590TAQ
INAP562/592TAQ
INAP563/593TAQ
INAP565/595TAQ
INAP566/596TAQ
INAP562/592RAQ
INAP563/593RAQ

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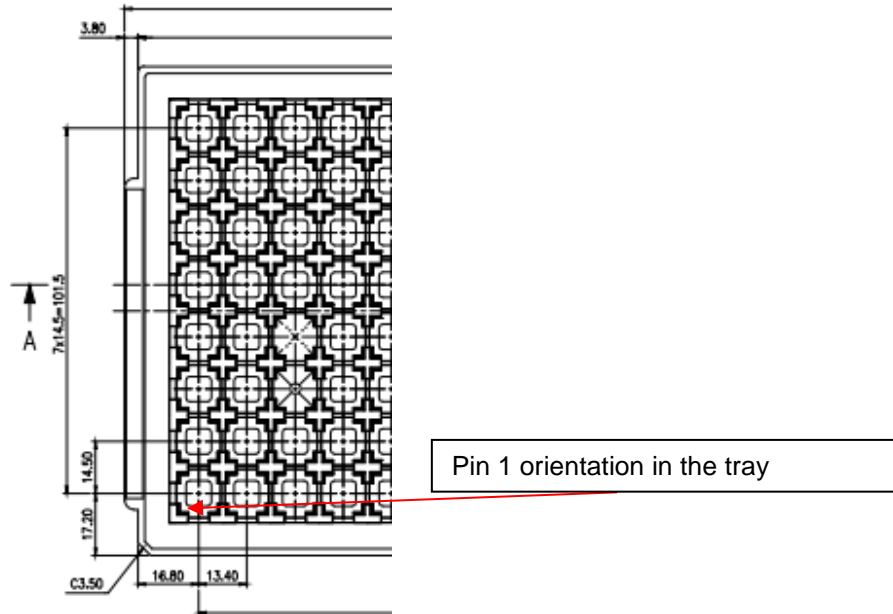


Figure 3 Pin 1 orientation in the tray

The warpage of the tray is $< 0.76\text{mm}$


1.2 Packing

Each single tray is marked with “-T” at the Inova Part-No. and have a content of 176 pcs.

Barcode Label is “Code 128”.

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

Tray and packing material are antistatic material. 2 desiccants and humidity indicator is packed in the dry bag. The tray is heat resistant up to 150°C for an exposure of up to 24h.

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Each packing unit is labeled with the following information:

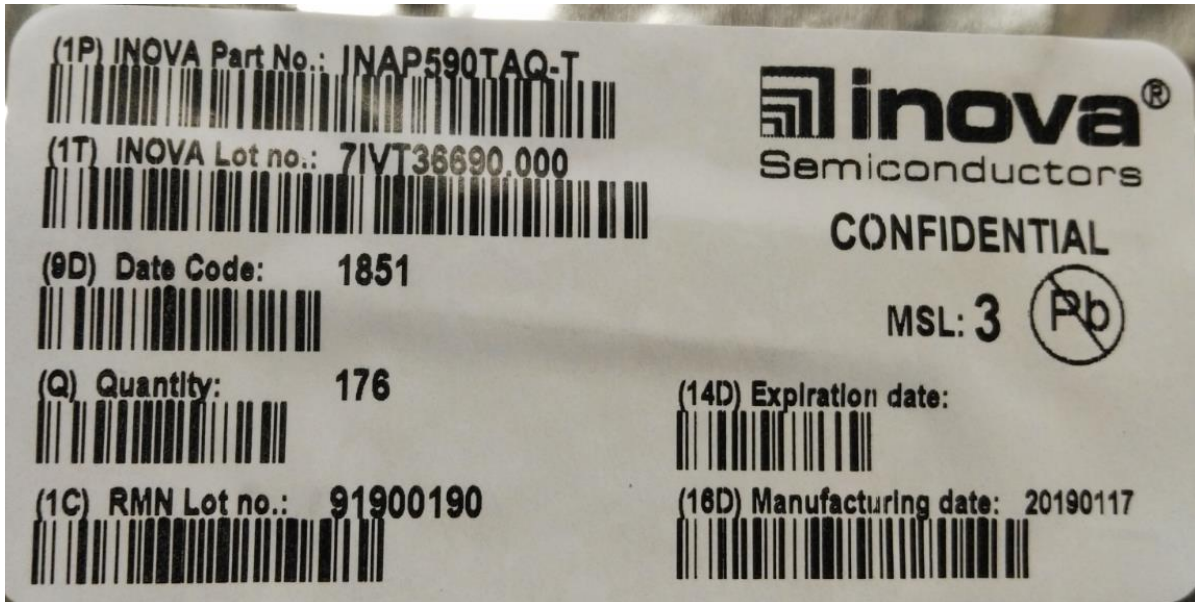


Figure 4 Label of a single tray (INAP5XXTAQ-T)

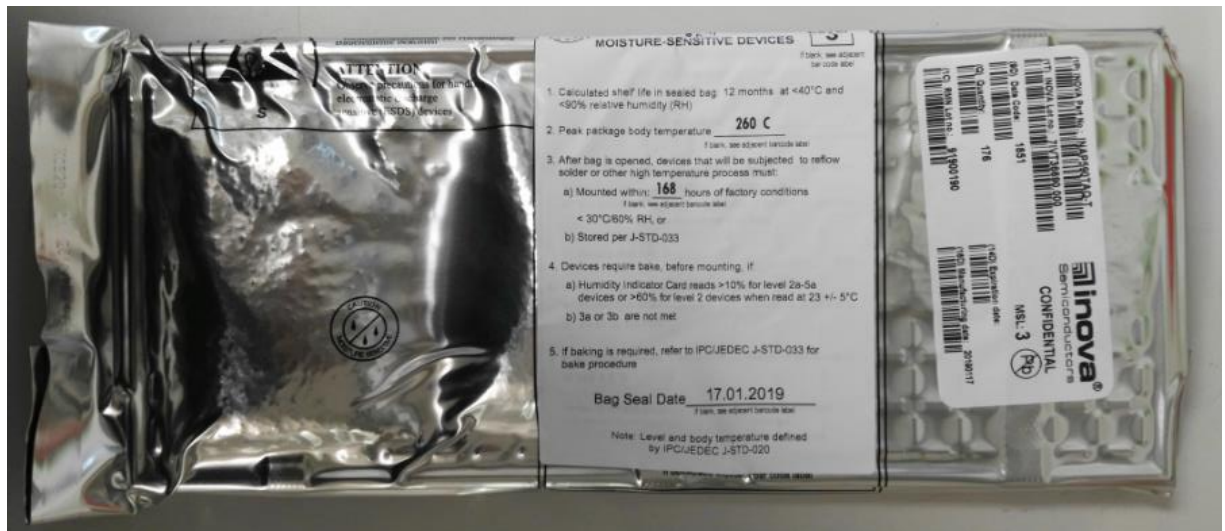


Figure 5 ESD protective dry bag for a tray



Figure 6 Opened ESD bag with contents

2. Tape and Reel

Reel size is 13" including 2000 aQFN 11x11 devices per reel. A maximum of two different lot numbers or datecodes for each reel are possible.

2.1 Tape and Reel drawings

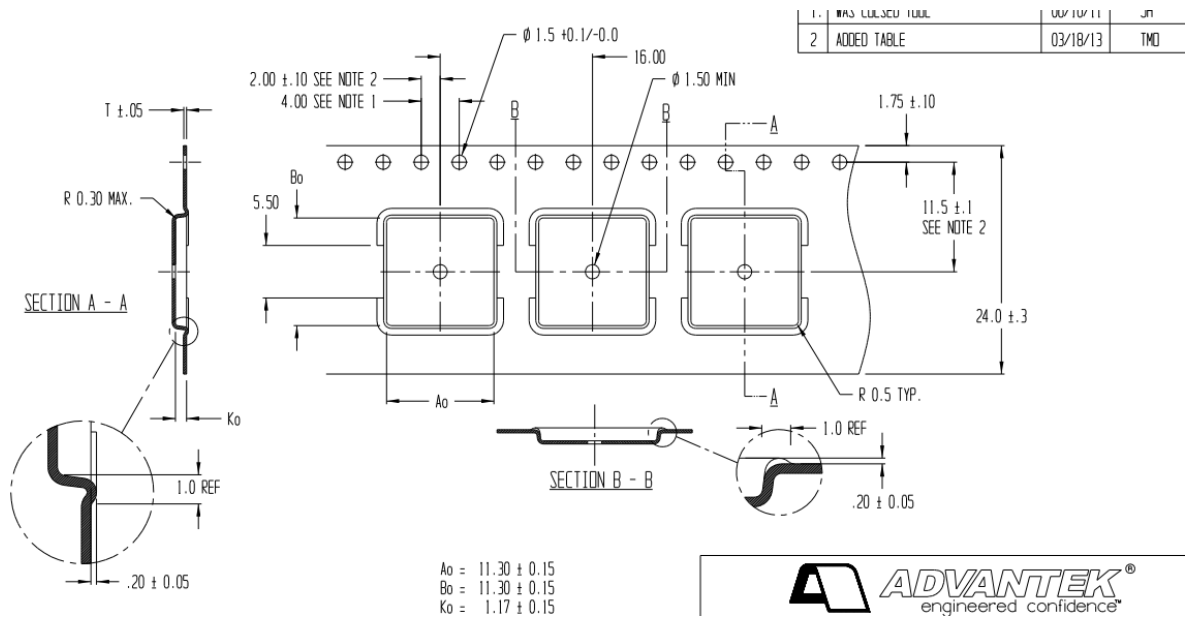


Figure 7 Tape dimensions

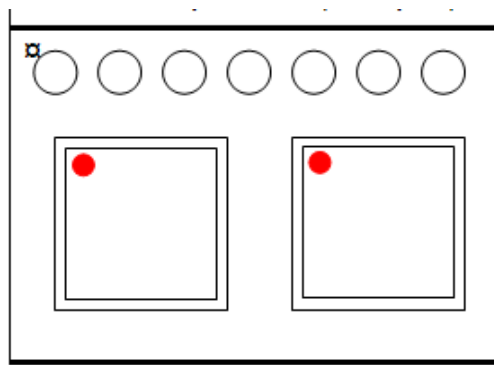


Figure 8 Pin 1 orientation in the reel

Tape leader and trailer dimensions

- 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.

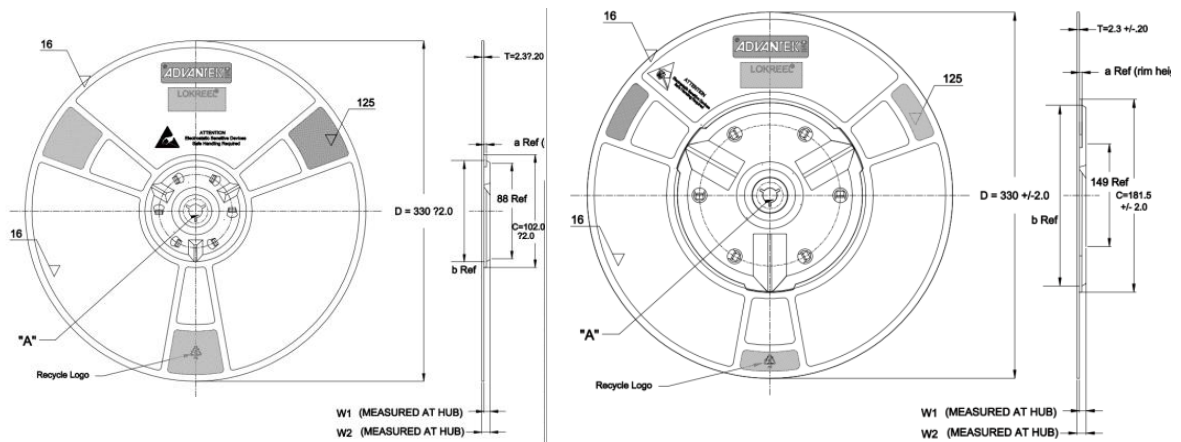


Figure 9 Reel dimensions

Tape Width W mm	Reel Diameter A mm	Reel Inside Width W1 mm	Reel Outside Width W2 mm (minimum)	Ref (rim height) a mm	Ref b mm
24	330	24.4	32.2	1.5	172

Table 1 Detailed reel dimensions

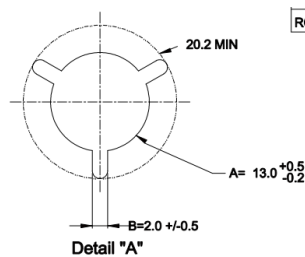



Figure 10 Detailed reel hole dimensions

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2.2 Tape and Reel surface resistivity

Tape: $\leq 10^{12}$ ohms/sq.
Surface Tape: $\leq 10^{12}$ ohms/ sq.
Reel: $\leq 10^{12}$ ohms/sq.

2.3 Packing

Reel and packing material are of antistatic material.
Packing also contains 3 desiccants and a humidity indicator card.

The content quantity of a reel for INAP5XXTAQ 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).



Figure 11 Content of dry bag for reel


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Figure 12 ESD protective dry bag for reel



Figure 13 Packing of one reel

The cardboard has the dimensions of 35 cm x 35 cm x 4.5 cm (L x W x H) and it's sealed with an ESD-Label.

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2.4 Labeling

Two types of labels may be possible:

- Inova Standard Label with barcode 128 -> on each reel, ESD bag and cardboard

Optional, if further information are required:

- Inova Semiconductors provides a customer specific label for Reel packing with barcode 39 -> on each drybag and cardboard

Type size minimum is 8.

The dimension of each label is 10.5cm x 5 cm (W x H)

2.4.1 Inova Standard Label

Inova Standard Label is nonspecific. The code used is "Barcode 128". Each label includes the following information:

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. "7IVP24595.000"	✓
(9D)	Date Code	Date Code (Abbreviation on the Order: DC): e.g. "1801"	✓
(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)	---

*only filled in Reel-Packing

Data identifier and description are not variable.

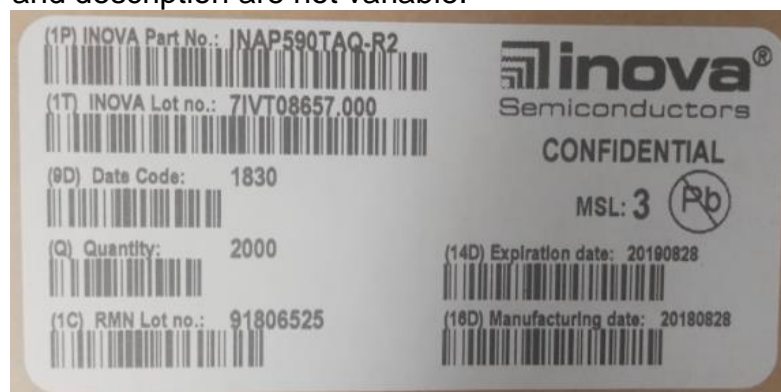



Figure 14 Example of Inova standard label with barcode 128

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2.4.1 Customer Specific Label

Customer specific label includes some specific information from Inova's customer. All labels have the same layout. The code used is "Barcode 39". The content can be different.

Data identifier	Description	Content / Example	Barcode
(V)	Supplier ID	Supplier Number from Customer: e.g. "48250016"	✓
(P)	Customer Part No.	Customer specific part number: e.g. "56881470"	✓
(Q)	Quantity	Content of one packing unit	✓
(1K)	Customer Purchase Order No.	Customer Purchase Order Number and Date (find in document head of order acknowledgement/delivery note/invoice): e.g. "XYZ No. 382"	✓
(11K)	Packaging ID (unit identification No.)	Ongoing Packaging ID Number for identification of each delivery: e.g. "100999-2116-1"	✓
(1T)	Lot-No.	Batch number (Lot#): e.g. "SIV604012.6"	✓
(9D)	Date Code	Date Code (Abbreviation on the Order: DC): e.g. "1623"	✓

Data identifier and description are not variable. The labels can be peeled-off due to sandwich paper technology.

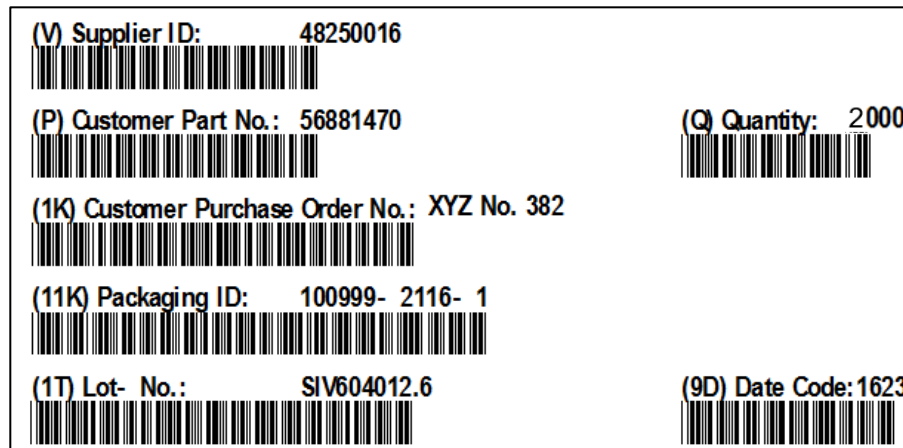



Figure 15 Example of customer specific label with barcode 39

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3. Moisture Sensitivity Level of device

The Moisture Sensitivity Levels are shown in the following table:

Inova Device ID	MSL
INAP590TAQ	3
INAP562/592TAQ	3
INAP563/593TAQ	3
INAP565/595TAQ	3
INAP566/596TAQ	3
INAP562/592RAQ	3
INAP563/593RAQ	3

Table 2 Overview of Moisture Sensitivity Level

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 bake procedure in general.

For these devices the maximum baking temperature and the baking time are:

- Tray: 125°C - 8 hours
- Reel: 40°C – 8 days