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|  | <b>Packing Specification</b><br><b>INAP375xAQ</b><br><b>INAP378RAQ</b> | Document:<br>Q_packing_specification_INAP375xAQ_INAP378RAQ_1_3<br>Date: 2018-09-13<br>Page: 1 of 14 |
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## Revision History

| Revision<br>(Rev. x.x) | Date       | Originator<br>(Dept. Abbr._Name) | Revision History<br>(Describe what has been changed) |
|------------------------|------------|----------------------------------|------------------------------------------------------|
| 1.0                    | 30.01.2014 | Q Lothar Doni                    | Initial Release                                      |
| 1.1                    | 12.05.2017 | J. Tannenbaum/Logistics          | Revision of Layout, content                          |
| 1.2                    | 07.02.2018 | J. Tannenbaum/Logistics          | Added customer specific labeling                     |
| 1.3                    | 13.09.2018 | J. Tannenbaum/Logistics          | Change in Inova Standard Label                       |

## 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 all aQFN104 9x9 package

|                        |
|------------------------|
| <b>Inova Device ID</b> |
| INAP375TAQ             |
| INAP375RAQ             |
| INAP378RAQ             |

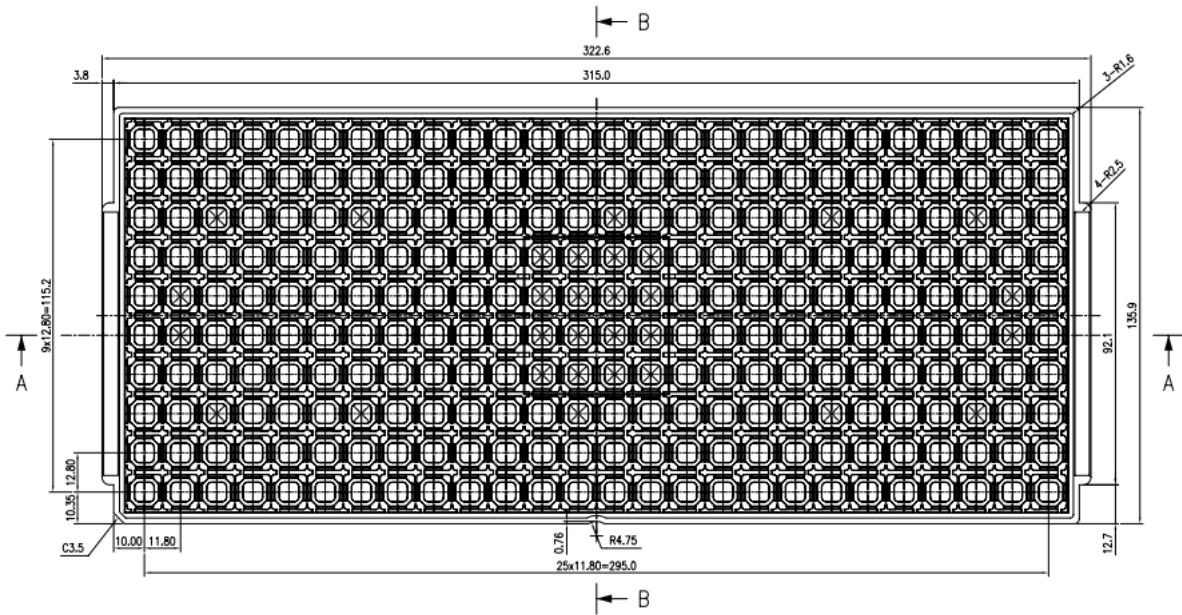
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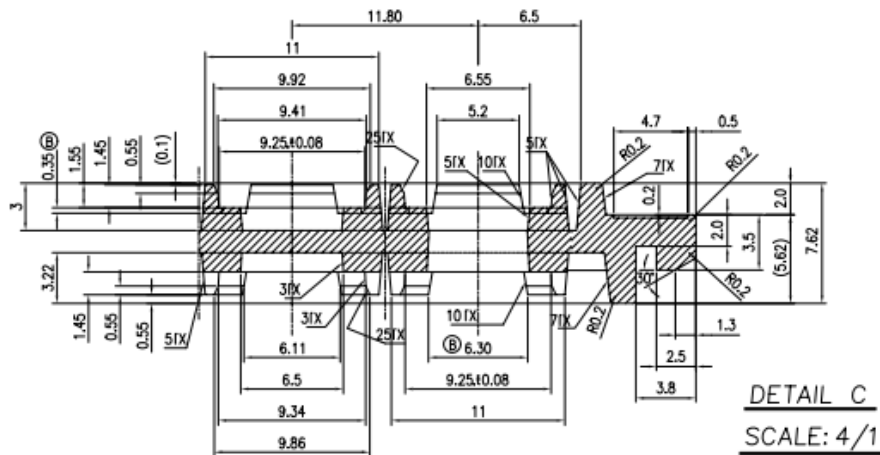
## 1. Tray

Tray size is 260 aQFN 9x9 devices per tray.

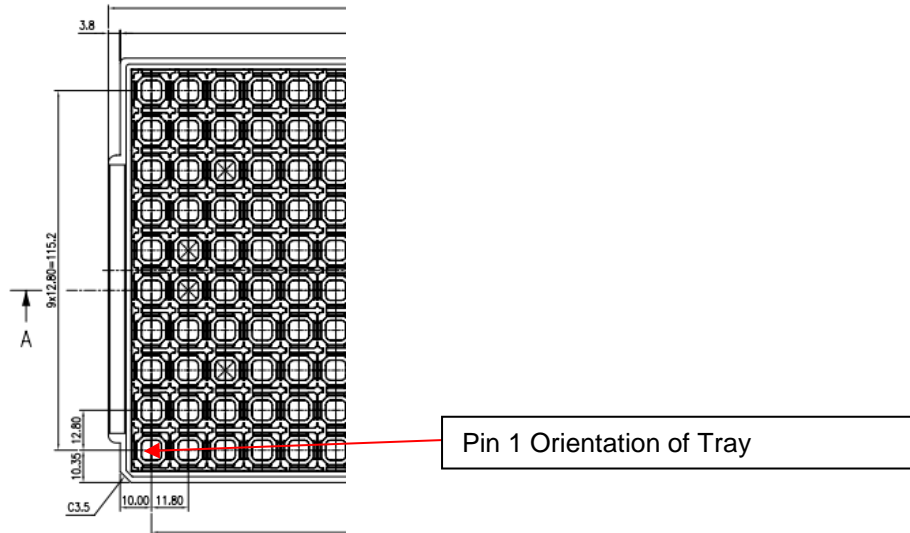
### 1.1 Tray Drawing



**Figure 1** Outer dimension of tray



**Figure 2** Dimensions of tray cup



**Figure 3** Pin 1 orientation of tray


The warpage of the trays is < 0.76mm

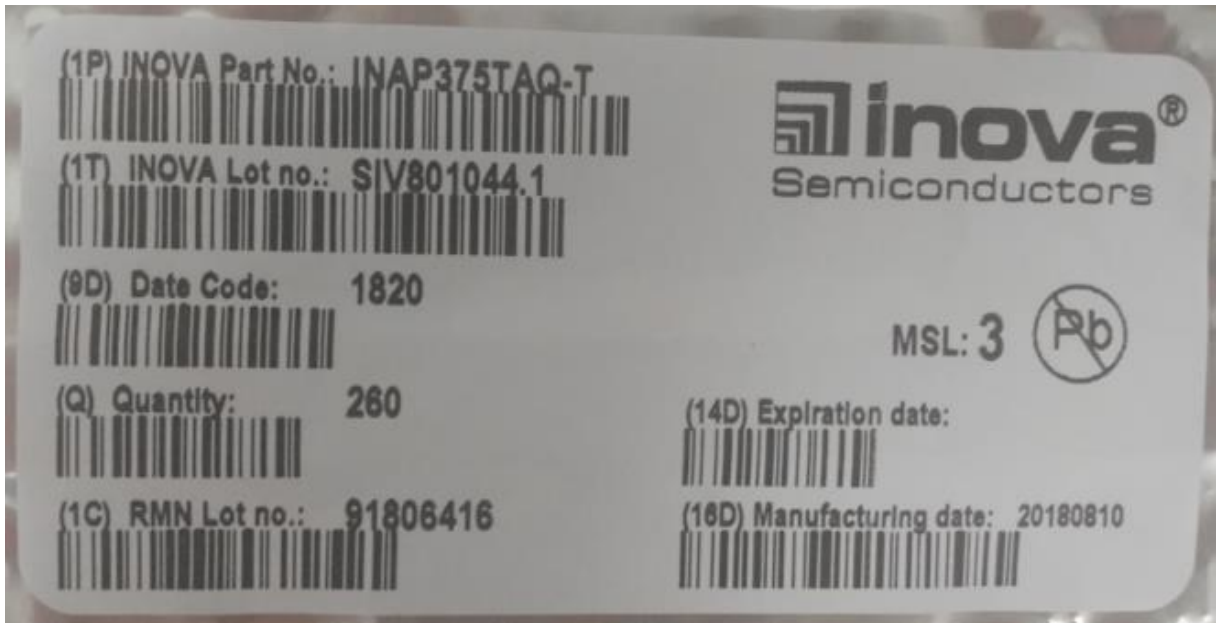
### 1.2 Packing/Labeling of trays

The parts and the trays are baked and dry sealed. MSL is 3. Each packing unit is labeled with Barcode 128. Box label is identical to dry bag label.

Tray and packing material are anti static material. A desiccant 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.

The quantity of single tray is marked with “-T” at the Inova Part-No. The Quantity of each packing unit is 260 pieces. Each packing unit is labeled with the following information:


|                                                                                   |                                                                        |                                                                                                         |
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**Figure 4** Label of a single tray (INAPXXXXXX-T) - Barcode 128



**Figure 5** ESD protective dry bag for a single tray

|                                                                                   |                                                                        |                                                                                                         |
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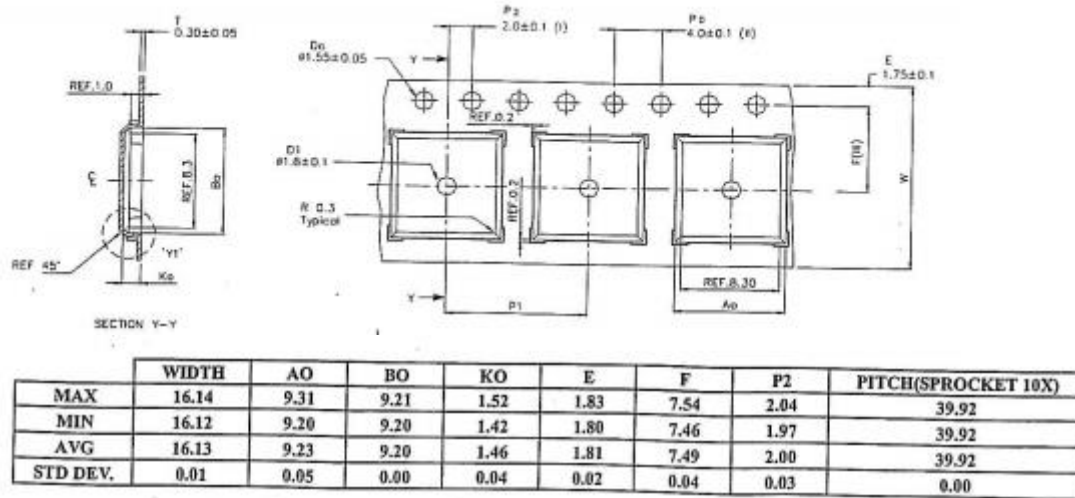


**Figure 6**      Opened ESD bag with content

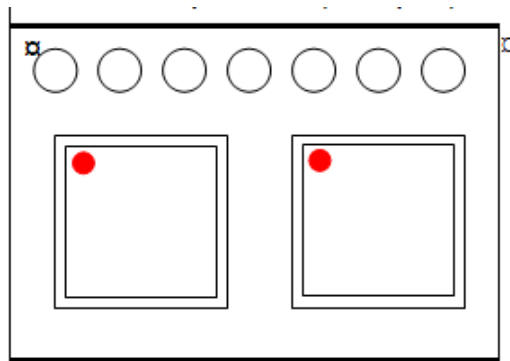
## 2. Tape and Reel

Reel size is 2000 aQFN 9x9 devices per reel. A maximum of two different lotnumber or datecodes for each reel is possible.

### 2.1 Tape and Reel drawings



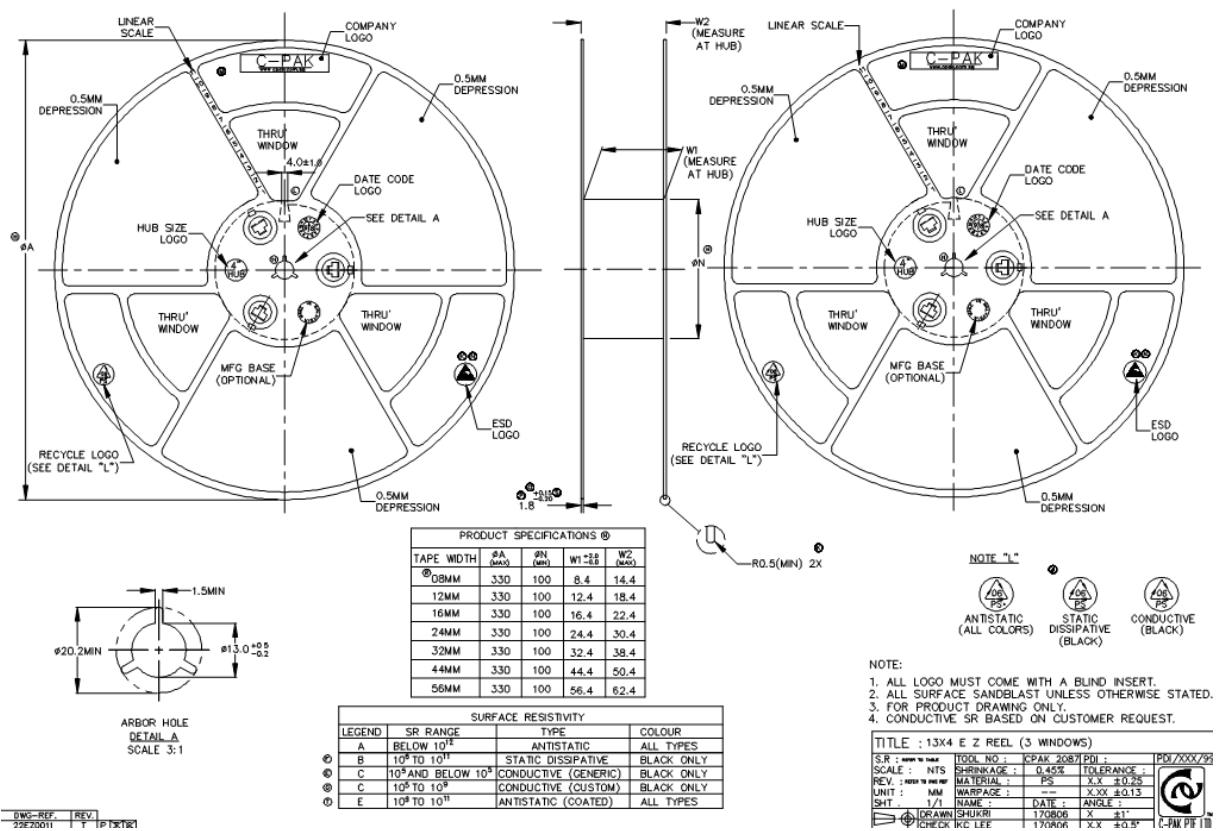
**Figure 7** Tape dimensions



**Figure 8** Pin 1 orientation in reel

**Tape leader and trailer dimensions**

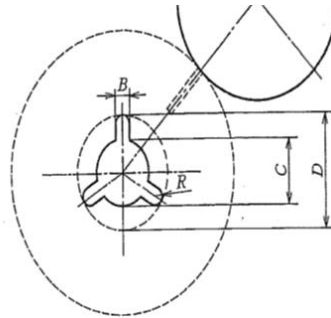
- There is a leader of 400mm. The whole leader consists of empty compartments covered by tape
- There is a trailer of 400mm. The whole trailer consists of empty compartments covered by tape.



**Figure 9** Reel dimensions

| Tape Width | Reel Diameter | HUB Diameter | Reel Inside Width | Reel Outside Width | Reel Inside Width | Reel Outside Width |
|------------|---------------|--------------|-------------------|--------------------|-------------------|--------------------|
| W mm       | A mm          | N mm         | W1 mm             | W2 mm (minimum)    | W3 mm (maximum)   | W3 mm (maximum)    |
| 16         | 330           | 100          | 16.4              | 22.4               | 18.4              | 22.4               |

**Table 1** Reel dimension detailed



**Figure 10** Reel hole Dimensions


| Real Hole Dimension (mm) |      |                  |                 |
|--------------------------|------|------------------|-----------------|
| <b>B</b>                 | 1.5  | More than 1.5mm  | 2.0 mm ± 0.5mm  |
| <b>D</b>                 | 20.2 | More than 20.2mm | 21.0 mm ± 0.8mm |
| <b>C</b>                 | 13   | More than 13.0mm | 13.0 mm ± 0.2mm |
| <b>R</b>                 | 0.75 | 0.5 * B          | 1.0 mm          |

**Table 2** Reel hole dimension detailed

## 2.2 Tape and Reel Surface Resistivity

Tape: Surface Resistivity ASTM D-257  $10^5$  ohms/sq  
 Surface Tape: Surface Resistivity ASTM D257  $\leq 10^{11}$  Ohms/ sq.  
 Reel: Below  $10^{12}$  ohms/sq



|                                                                                   |                                                                        |                                                                                                         |
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### 2.3 Packing

Reel and packing material are of anti static material.  
Packing also contains desiccant and humidity indicator card identical to trays.


The content quantity of a reel for INAP375RAQ/TAQ and INAP378RAQ/TAQ 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** Contents of dry bag for reel



**Figure 12** ESD protective dry bag of reel

|                                                                                   |                                                                        |                                                                                                          |
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**Figure 13** cardboard of reel

The cardboard has the dimensions: 35 cm x 35 cm x 4,5 cm (L x W x H) and it's closed with an ESD-Label.


## 2.4 Labeling

Two types of labels may be possible:

- Inova standard label with barcode 128 -> on each reel, drybag and cardboard

*Optional, if further information are required:*

- Inova semiconductors provide a customer specific label with barcode 39 -> on each drybag and cardboard

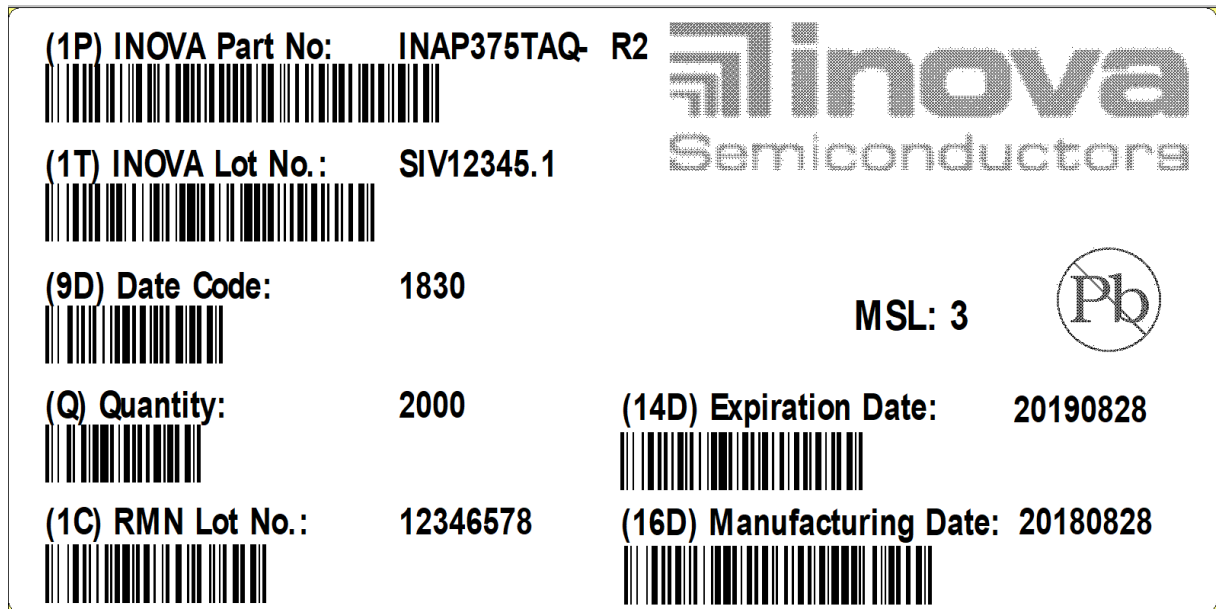
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### 2.4.1 Inova Standard label


Inova Standard label is nonspecific. The code using is “Barcode 128”. Each label includes the following information:

| Data identifier | Description        | Content / Example                                         | Barcode |
|-----------------|--------------------|-----------------------------------------------------------|---------|
| (1P)            | Inova Part No.     | Main product number:<br>e.g. "INAP375TAQ-R2"              | ✓       |
| (1T)            | Inova Lot-No.      | Batch number (Lot#):<br>e.g. "SIV12345.1"                 | ✓       |
| (9D)            | Date Code          | Date Code (Abbreviation on the Order: DC):<br>e.g. "1830" | ✓       |
| (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)                                              | ---     |

Data identifier and description are not variable.



**Figure 14** Example of Inova standard label with barcode 128

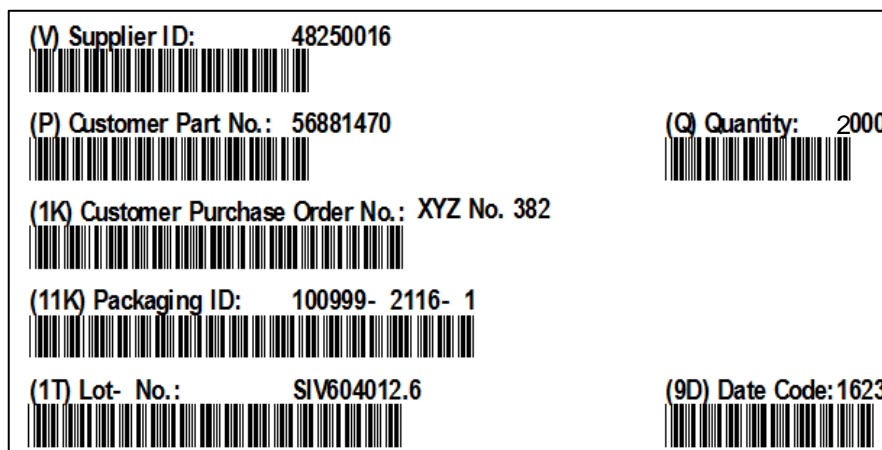
|                                                                                   |                                                                        |                                                                                                      |
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### 2.4.1 Customer specific label


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

| Data identifier | Description                            | Content / Example                                                                                                                    | Barcode |
|-----------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------|
| (V)             | Supplier ID                            | Supplier Number from Customer<br>e.g. "48250016"                                                                                     | ✓       |
| (P)             | Customer Part No.                      | Customer specific part number<br>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)<br>e.g. "XYZ No. 382" | ✓       |
| (11K)           | Packaging ID (unit identification No.) | Belegzeilenkey<br>([Kundennummer]-[Laufnummer]-[Positionsnummer])<br>z.B. "100999-2116-1"                                            | ✓       |
| (1T)            | Lot-No.                                | Batch number (Lot#):<br>e.g. "SIV604012.1"                                                                                           | ✓       |
| (9D)            | Date Code                              | Date Code (Abbreviation on the Order: DC):<br>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 level of the devices is as following

| Device ID  | MSL |
|------------|-----|
| INAP375TAQ | 3   |
| INAP375RAQ | 3   |
| INAP378RAQ | 3   |

**Table 3** 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 bake is required, the devices may be baked for 48hours at  $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$