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Revision History

Revision	Date	Item/Section	Author/Department	Changes
1.0	2012-12-01	All pages	L. Doni/Quality	Initial Release
1.1	2013-31-01	2.1 and 1.1	L. Doni/Quality	Pin1 Orientation for tray and reel added Remark about anti static material added Picture of shield bag with tray, etc. added
1.2	2013-04-04	1.1, 2.1, 2.2	L. Doni/Quality	Added maximum warpage of tray Added more detailed information about reel dimensions Added information about humidity indicator etc. for reel
1.3	2013-07-06	2.1, 2.2	L. Doni/Quality	Added tape leader and trail dimensions Added surface resistivity
1.4	2014-29-08	1.2	T Haywood/Quality	Added desiccant and humidity indicator card to tray package section
1.5	2015-28-01	3	L. Doni/Quality	Added MSL level Added INAP395R to document
1.6	2015-13-08	3	K. Kuballa/Logistics	Added packing of multiple tray to document
1.7	2017-25-04	All pages	J. Tannenbaum/Logistics	Revision of layout, graphics, information, added labelling
1.8	2017-28-04	All pages	J. Tannenbaum/Logistics	Change type of barcode at customer specific label
1.9	2018-07-02	All pages	J. Tannenbaum/Logistics	Specified information of labelling
1.10	2018-13-09	1.2, 2.4	J. Tannenbaum/Logistics	Change in Inova Standard Label

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Scope of document

This document describes the packing details for tray (single tray and multiple trays) and tape and reel. The Moisture Sensitivity Level is also defined in the document. It is valid for the following products which have all a LQFP100 EP 14X14 package

Inova Device ID
INAP375T
INAP375R
INAP395R

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1. Tray

Tray size is 90 LQFP100 14x14 devices per tray.

1.1 Tray Drawing

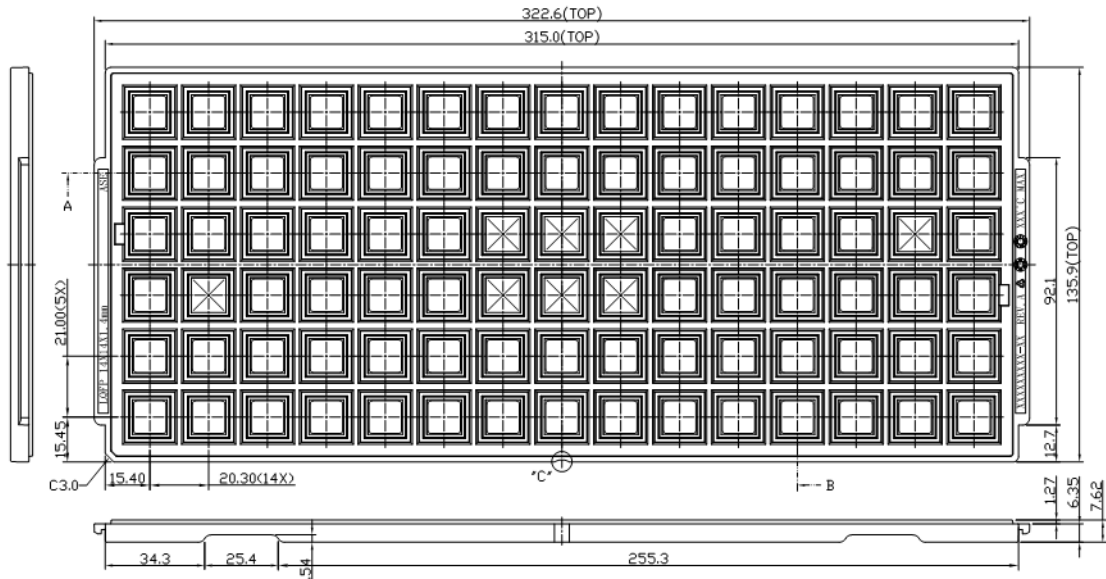


Figure 1 Outer dimension of tray

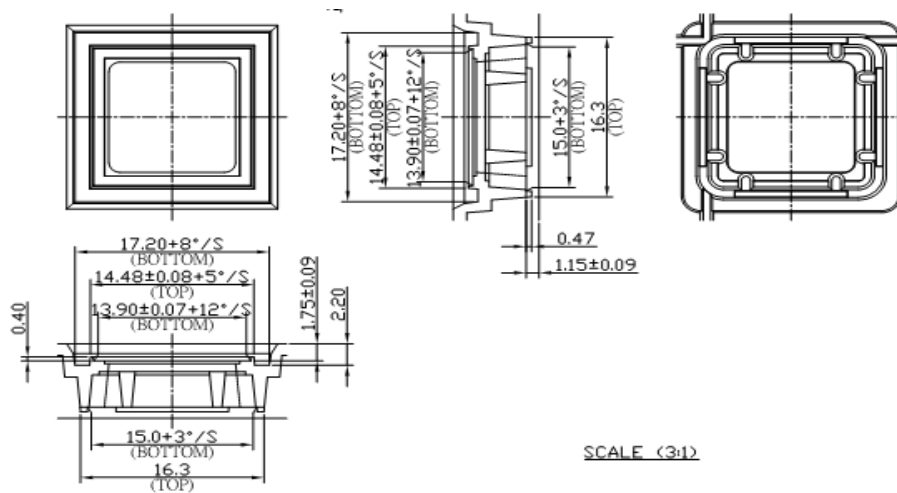
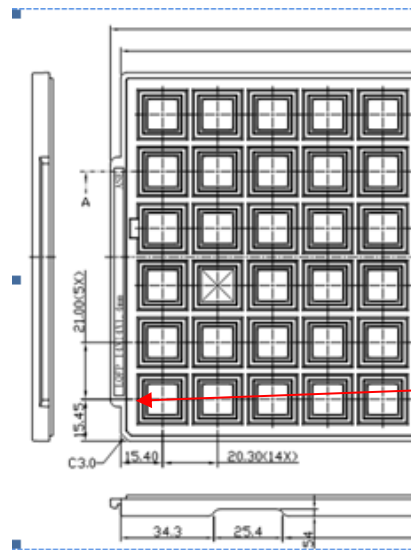


Figure 2 Dimensions of tray cup



Pin 1 Orientation of Tray

Figure 3 Pin 1 orientation of tray

The warpage of the trays is < 0.76mm

1.2 Packing/Labeling of trays

There are the following 2 types and quantities of tray packing:

- single tray -> quantity of 90 pieces
- multiple tray -> quantity of 900 pieces


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. A desiccant and humidity indicator is packed in the dry bag. The tray is heat resistant up to 125°C.

1.2.1 single tray

The quantity of single tray is marked with "-T" at the Inova Part-No. and the Quantity of 90 pieces. Each packing unit is labeled with the following information:

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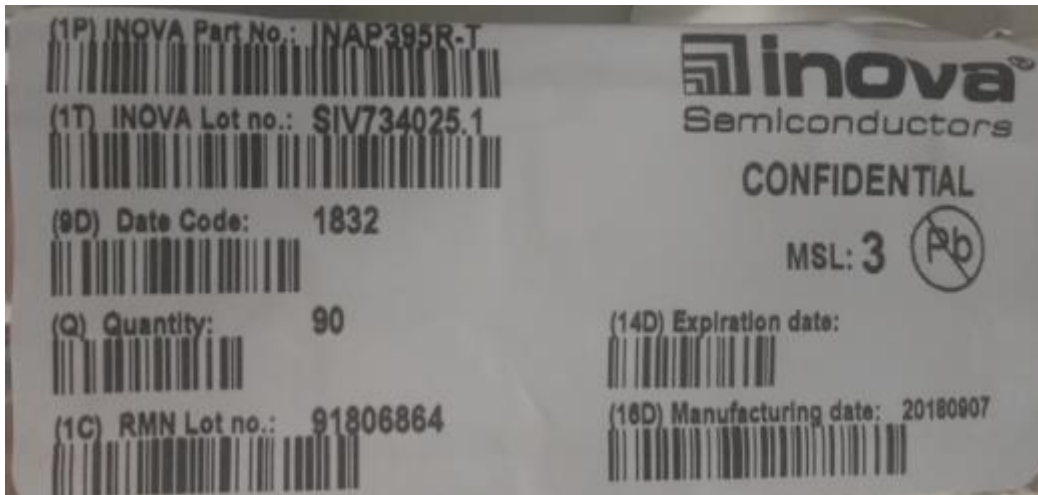



Figure 4 Label of a single tray (INAPXXXX-T)



Figure 5 ESD protective dry bag for a single tray

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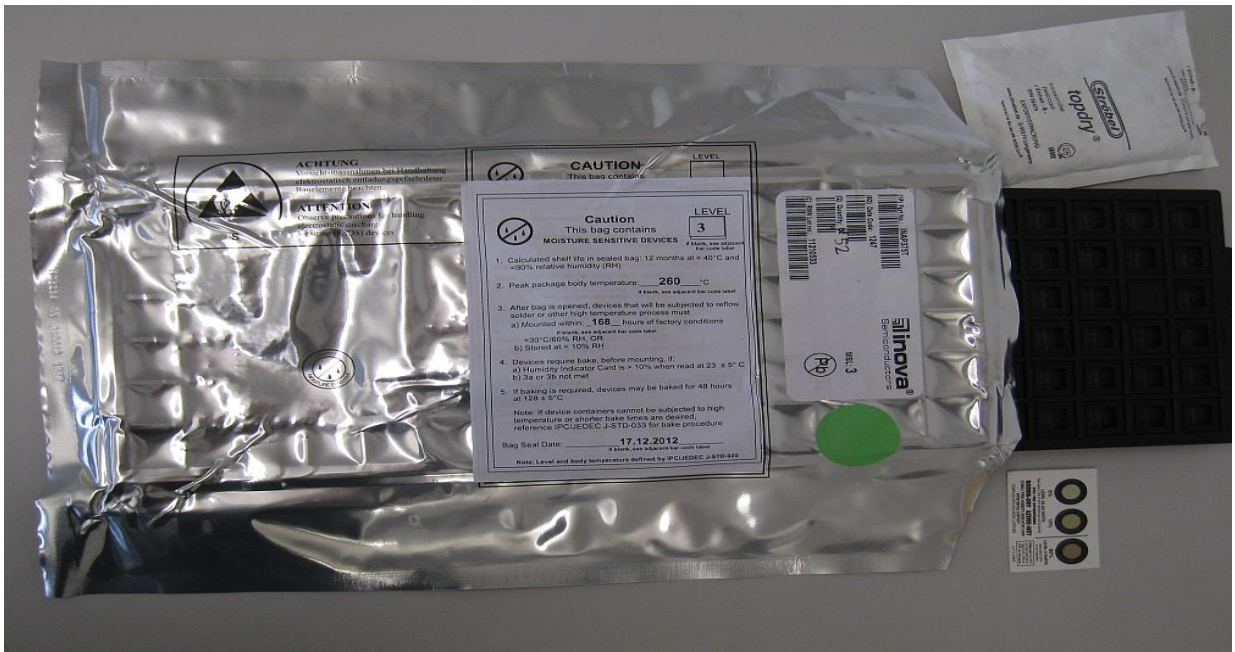


Figure 6 Opened ESD bag with contents

1.2.2 multiple tray

The quantity of a multiple tray is marked with “-T10” at the Inova Part-No. and the Quantity of 900 pieces. Each packing unit is labeled with the following information:










<p>(1P) INOVA Part No.: INAP395R-T10</p>  <p>(1T) INOVA Lot no.: SIV123456.1</p>  <p>(9D) Date Code: 1818</p>  <p>(Q) Quantity: 900</p>  <p>(1C) RMN Lot no.: 918012345</p> 	 <p>CONFIDENTIAL</p> <p>MSL: 3 </p> <p>(14D) Expiration date: 20190621</p>  <p>(16D) Manufacturing date: 20180621</p> 
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Figure 7 Label of tray (multiple trays – INAPXXXX-T10)


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Figure 8 ESD protective dry bag for multiple trays

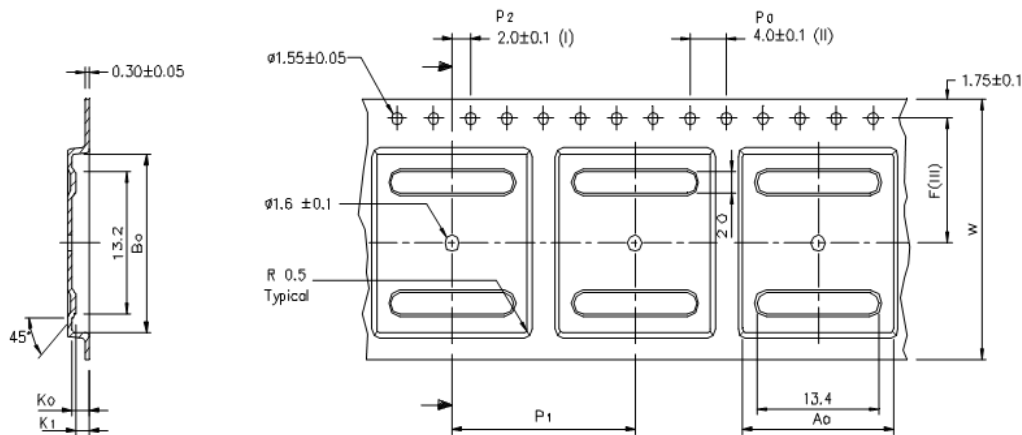


Figure 9 Opened ESD bag with contents for multiple trays

2. Tape and Reel

Reel size is 1000 LQFP100 14x14 devices per reel. A maximum of two different lotnumber or datecodes for each reel is possible.

2.1 Tape and Reel drawings



A ₀	16.50 +/- 0.1
B ₀	16.50 +/- 0.1
K ₀	1.90 +/- 0.1
K ₁	1.55 +/- 0.1
F	11.50 +/- 0.1
P ₁	20.00 +/- 0.1
W	24.00 +/- 0.3

Figure 10 Tape dimensions

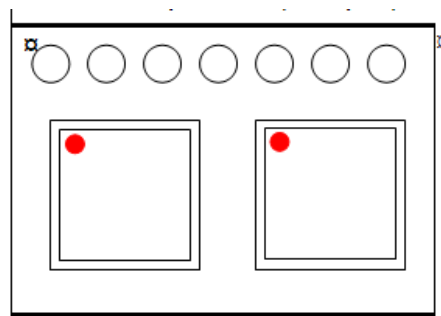


Figure 11 Pin 1 orientation in reel

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.

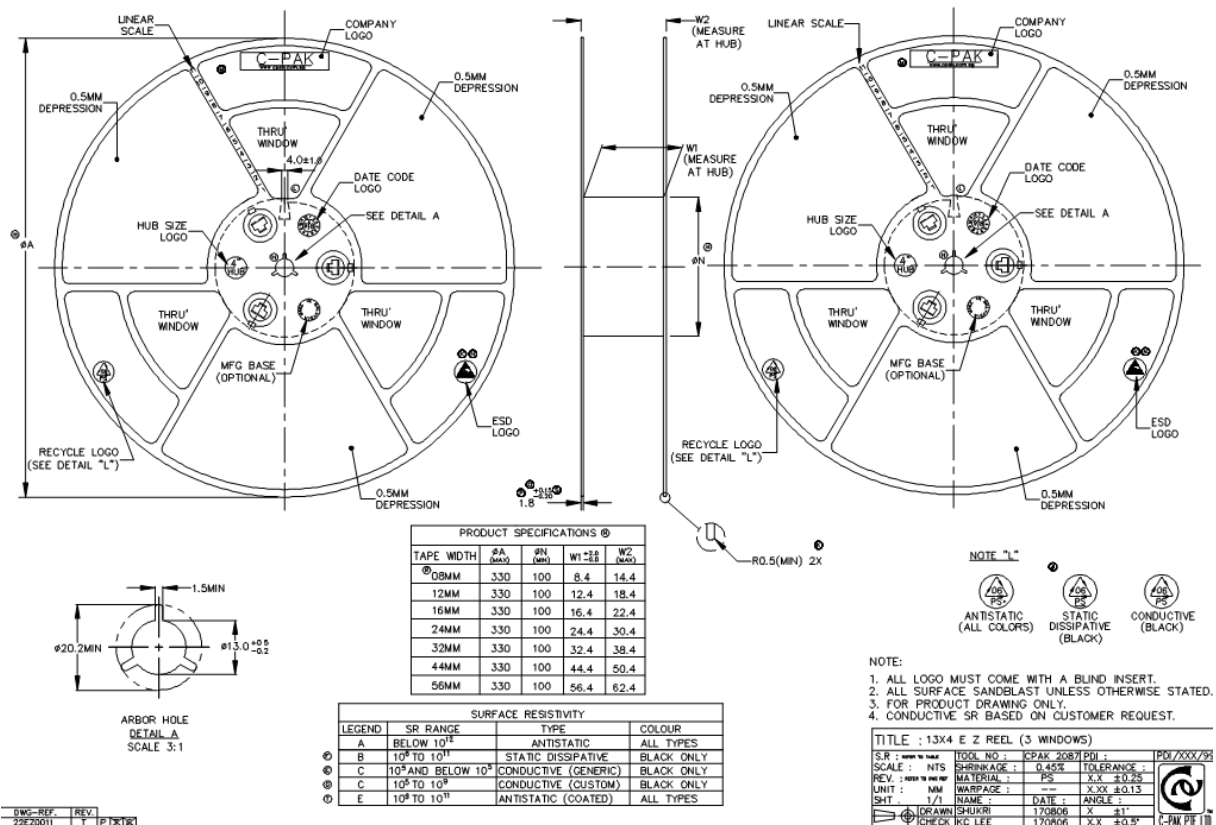


Figure 12 Reel dimensions

Tape Width	Reel Diameter	HUB Diameter	Reel Inside Width	Reel Outside Width	Reel Inside Width	Reel Inside Width
W mm	A mm	N mm	W1 mm	W2 mm (minimum)	W3 mm (maximum)	W3 mm (minimum)
24	330	100	24.4	30.4	24.4	26.4

Table 1 Reel dimension detailed

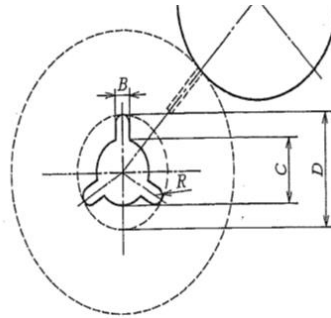


Figure 13 Reel hole Dimensions

Real Hole Dimension (mm)			
B	1.5	More than 1.5mm	2.0 mm ± 0.5mm
D	20.2	More than 20.2mm	21.0 mm ± 0.8mm
C	13	More than 13.0mm	13.0 mm ± 0.2mm
R	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

2.3 Packing

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

The content quantity of a reel for INAP375R/T and INAP395R always is 1000 parts.
 The reel has an own article number which ends with -R1 in the Inova part number
 (one reel with 1000 parts).


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Figure 14 Contents of dry bag for reel



Figure 15 ESD protective dry bag of reel



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Figure 16 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.

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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

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: e.g. "INAP375R-R1"	✓
(1T)	Inova Lot-No.	Batch number (Lot#): e.g. "SIV123456.1"	✓
(9D)	Date Code	Date Code (Abbreviation on the Order: DC): e.g. "1818"	✓
(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.

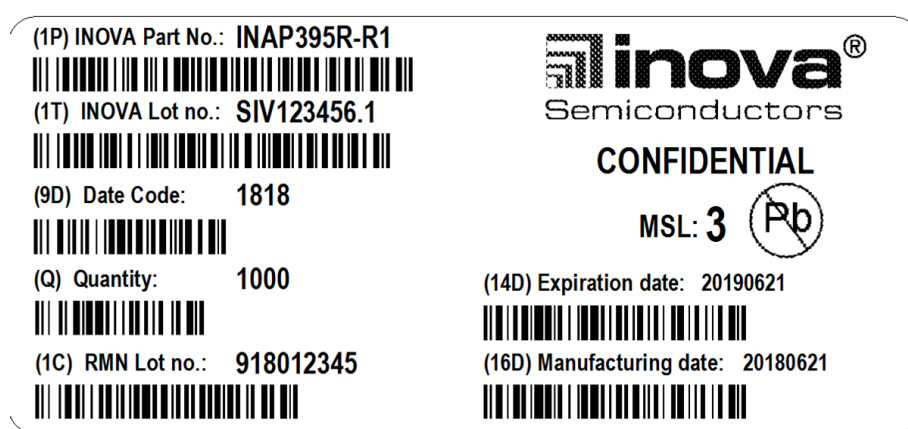



Figure 17 Example of Inova standard label with barcode 128

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2.4.1 Customer specific label

Customer specific label includes some specific information from Inova Customers. All label 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 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.)	Belegzeilenkey ([Kundennummer]-[Laufnummer]-[Positionsnummer]) z.B. "100999-2116-1"	✓
(1T)	Lot-No.	Batch number (Lot#): e.g. "SIV604012.1"	✓
(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.

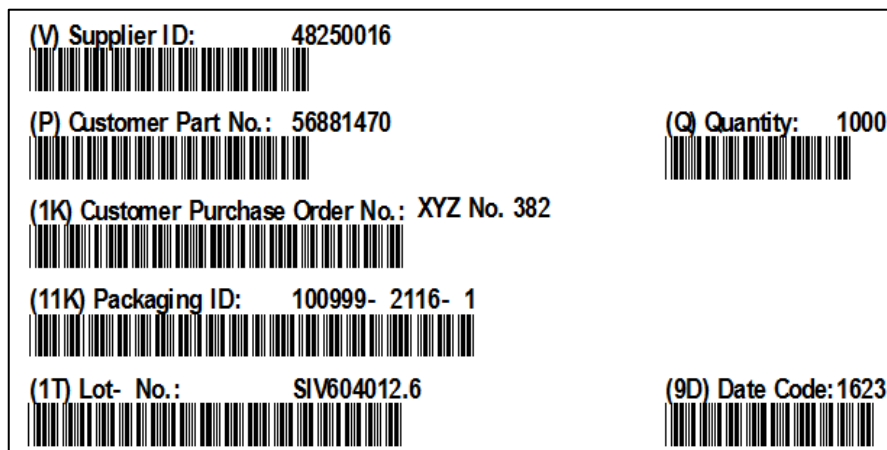



Figure 18 Example of customer specific label with barcode 39

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3. Moisture Sensitivity Level of Device

The moisture sensitivity level of the devices is as following

Device ID	MSL
INAP375T	3
INAP375R	3
INAP395R	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 $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$