



**Embossed tape and reel packaging**  
**nWP-024**  
**White Paper v1.0**

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# Chapter 1

## Revision history

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**Table 1: Revision history**

Date	Version	Description
June 2016	1.1	Added CIAA variant
May 2016	1.0	First release

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## Chapter 2

# Introduction

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This document outlines dimensions for the tape and reel packaging of components.

This document is applicable for:

- nRF24 Series
- nRF51 Series
- nRF52 Series
- nRF800x Series

The tape and reel configurations of these products meet the current industry standards described in *EIA-481: 8 mm through 200 mm Embossed Carrier Taping and 8 mm through 200 mm Punched Carrier Taping of Surface Mount Components for Automatic Handling*.

Embossed tape and reel is used for transporting and storing electric components and at the customers' manufacturing plants. The packing is designed to feed components into automatic pick-and-place machines for surface mounting on PCBs. The complete configuration consists of a carrier tape with pocket cavities holding the individual components that are sealed by a cover tape.

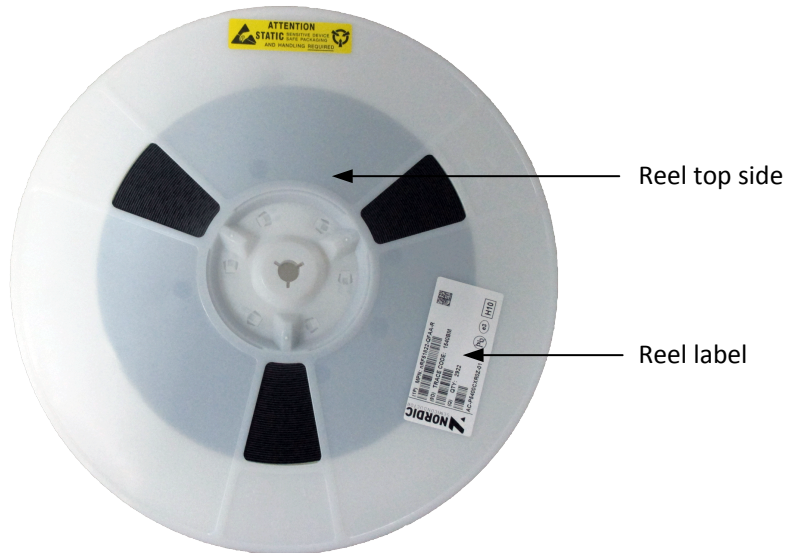
A typical loaded reel is shown in [Figure 1: Reel](#) on page 5. A typical reel and configuration components are illustrated in [Figure 2: Tape components](#) on page 6. The loaded reel is shipped with an HIC (Humidity Indicator Card) and a bag of desiccant gel according to the JEDEC standard JSTD-033.

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## Chapter 3

# Reel marking

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**Figure 1: Reel**

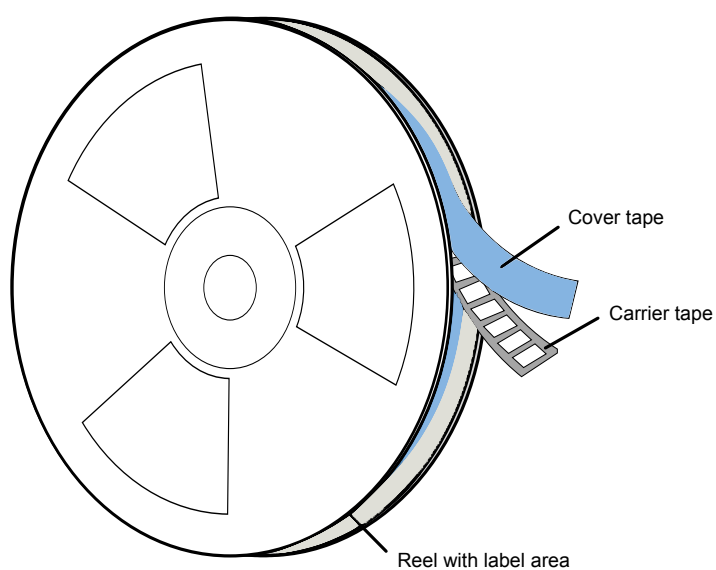
### 3.1 Reel

Reels containing sealed carrier tape follow the dimension requirements described in EIA-481. For the detailed dimensions of the reel, refer to this standard. The reels are made of polystyrene and can be recycled.

Most products come in one of two different sizes of reels indicated by the ordering code.

**Table 2: Reel dimensions**

Ordering code	Description	Reel diameter [mm]
-R7	7" reel	177.8
-R	13" reel	330.2

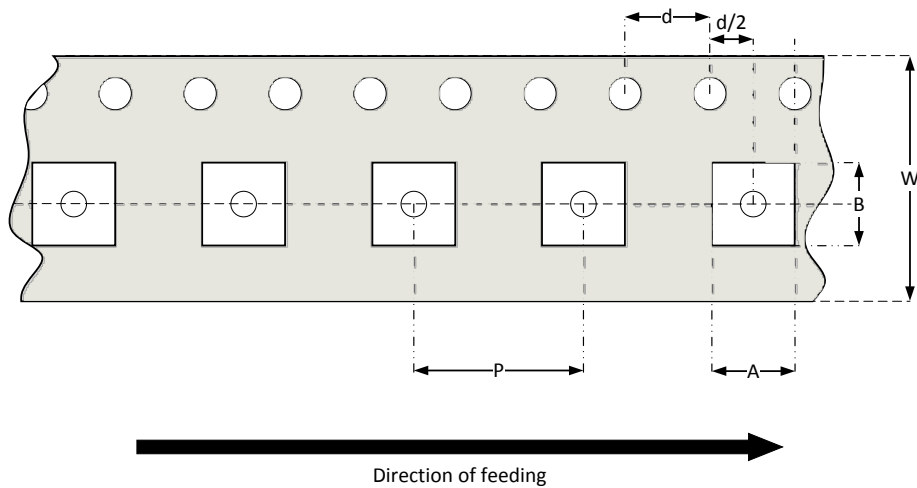


**Figure 2: Tape components**

## Chapter 4

# Carrier tape

Figure 3: Carrier tape dimensions on page 7 illustrates the basic dimensions of the carrier tape. Product/package specific dimensions are displayed in Table 3: Carrier tape dimensions on page 7, tolerances as listed in EIA-481. Device orientation is explained in Figure 4: Pin 1 orientation on page 8.



**Figure 3: Carrier tape dimensions**

P = Pitch between cavity centers

W = Width of carrier tape

A = Dimension of cavity adjusted for component width

B = Dimension of cavity adjusted for component length

d = Distance between sprocket holes, 4 mm

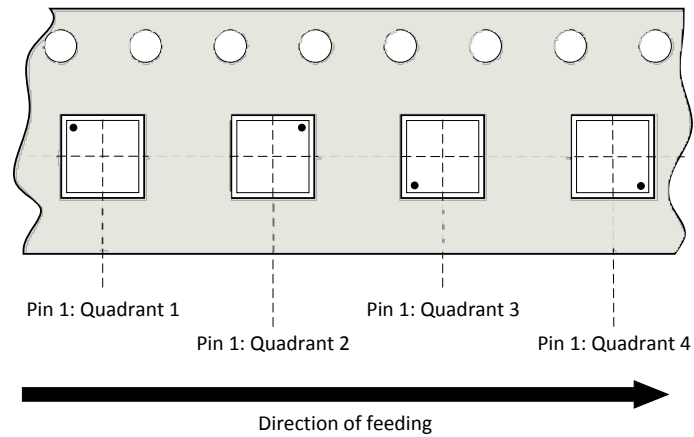
The center of the cavity is located in the middle between the sprocket holes.

Table of dimensions:

**Table 3: Carrier tape dimensions**

Product/ package	P [mm]	W [mm]	A [mm]	B [mm]	Pin 1 orientation
QFN 4 x 4	8.0	12.0	4.3	4.3	Quadrant 1
QFN 5 x 5	8.0	12.0	5.3	5.3	Quadrant 1
QFN 6 x 6	12.0	16.0	6.3	6.3	Quadrant 1
QFN 7 x 7	12.0	16.0	7.5	7.5	Quadrant 1
nRF51x22-CDAB	8.0	12.0	3.71	3.54	Quadrant 1
nRF51x22-CEAA	8.0	12.0	3.97	4.20	Quadrant 1
nRF51x22-CFAC	8.0	12.0	4.05	4.05	Quadrant 1
nRF51x22-CTAA	8.0	12.0	3.68	4.02	Quadrant 1
nRF51x22-CTAC	8.0	12.0	4.05	4.05	Quadrant 1

Product/ package	P [mm]	W [mm]	A [mm]	B [mm]	Pin 1 orientation
nRF52832-CIAA	8.0	12.0	3.17	3.44	Quadrant 1



**Figure 4: Pin 1 orientation**

#### Carrier tape description

- Minimum leader part (length from the tape edge of feeding side to the first component): 400 mm
- Material: conductive polystyrene



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## Chapter 5

# Cover tape

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- Tape sealing: hot sealing
- Pull strength limit: 20 - 120 gram (pull speed limit:  $300 \pm 10$  mm/min)

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## Chapter 6

# Green program statement

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In order to support our customers to comply with environmental requirements, Nordic has introduced "green" package technology in its products. "Green" means that our products are halogen free in addition to RoHS/REACH compliant (free of Bromine, Chlorine and Antimony based flame retardants). Statement can be found on our website [www.nordicsemi.com](http://www.nordicsemi.com).

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## Chapter 7

# Liability disclaimer

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Nordic Semiconductor ASA reserves the right to make changes without further notice to the product to improve reliability, function or design. Nordic Semiconductor ASA does not assume any liability arising out of the application or use of any product or circuits described herein.

