

# Technical Note

## **HJ-FET & GaAs FET TAPING SPECIFICATION FOR $\mu$ -X (84, 84A, 84C) PACKAGES AND MOLD (S01, S02) PACKAGES**

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M8E 02.11-1

The mark <R> shows major revised points.

The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what:" field.

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## 1. INTRODUCTION

The recent productive technical matters in the process of constructing a print board and a thick film hybrid IC exist in saving time and power, and Q up.

As the effective methods to realize them, the automatic insert machine of electric devices and the automatic assembly machines can be used.

<R> NEC Electronics has been supporting  $\mu$ -X and mold package for HJ-FET and GaAs FET with low cost and high performance so that the customers can use them in more various applications. Now, we support Tape & Reel service which makes possible for the customers to use the automatic assembly machines.

The specification is shown following.....

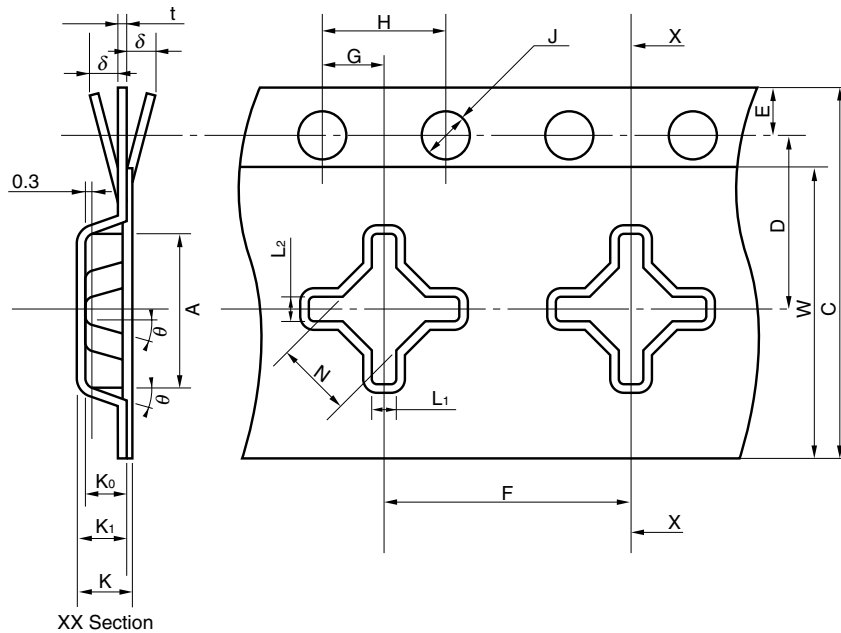
### 1.1 ADAPTED AREA

<R> This specification covers standards on tape packaging  $\mu$ -X GaAs FET, HJ-FET and on tape packaging mold GaAs FET, HJ-FET.

## 2. SPECIFICATION

### 2.1 TAPE DIMENSIONS

#### <R> 2.1.1 84, 84A, 84C PACKAGE

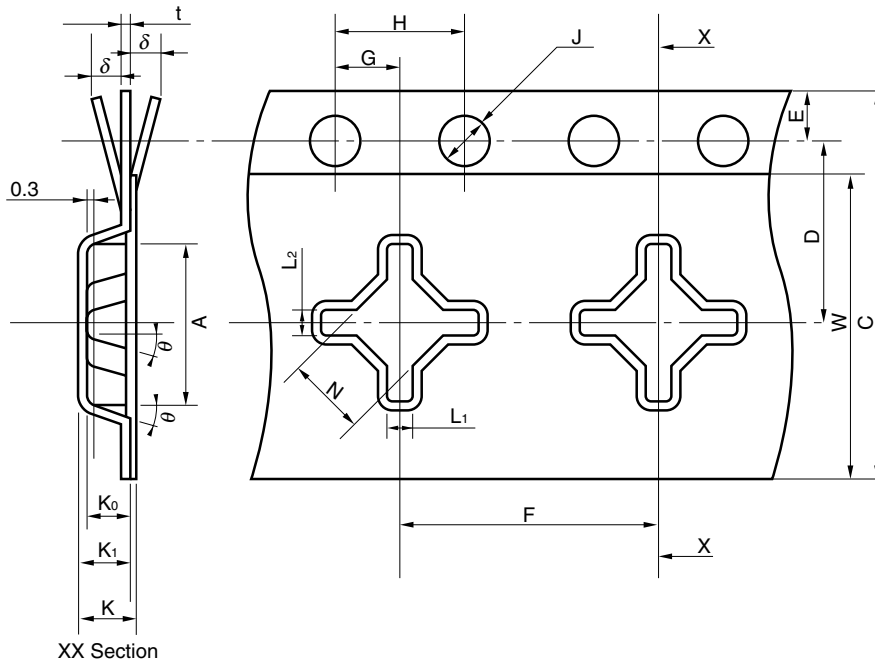


Item	Symbol	Size (mm)		Remarks
		84, 84A, 84C pkg		
Pocket	Length Width	A	$5.0 \pm 0.15$	At 0.3 mm above bottom.
	Depth	$K_0$	$1.5 \begin{smallmatrix} +0.1 \\ -0 \end{smallmatrix}$	Internal Area
	Pitch	F	$8.0 \pm 0.1$	Accumulated tolerance $+0.1$ MAX./10 pitch $-0.3$
	Taper	$\theta$	$14^\circ \pm 1^\circ$	At 0.3 mm above bottom.
Ceramic PART	Width	N	$2.4 \pm 0.1$	At 0.3 mm above bottom.
Lead PART	Pocket Width	$L_1$	$0.7 \begin{smallmatrix} +0.2 \\ -0 \end{smallmatrix}$	At 0.3 mm above bottom.
		$L_2$	$0.7 \begin{smallmatrix} +0.2 \\ -0 \end{smallmatrix}$	
Perforation	Diameter	J	$\phi 1.55 \pm 0.05$	
	Pitch	H	$4.0 \pm 0.1$	Accumulated tolerance $+0.1$ MAX./10 pitch $-0.3$
	Position	E	$1.5 \pm 0.1$	Distance between edge of tape and center of hole.
Distance Between Center Line	Length Direct.	G	$2.0 \pm 0.05$	Center lines of pocket and perforation.
	Width Direct.	D	$5.65 \pm 0.05$	Center lines of pocket and perforation.
Cover Tape	Width	W	$9.5 \begin{smallmatrix} +0.3 \\ -0 \end{smallmatrix}$	Thickness: 0.1 mm MAX.
Carrier Tape	Width	C	$12 \pm 0.1$	Warp: $\delta = 0.3$ mm MAX.
	Thick.	t	$0.3 \pm 0.05$	
	Depth	$K_1$	$1.60 \pm 0.1$	
Overall Thickness	K		$1.70 \pm 0.1$	Cover Tape and Carrier Tape Total.

**Remarks 1.** The radius in the case of unspecified corners is 0.3 MAX.

**2.** This carrier is applied treatment of electrostatic prevention.

## 2.1.2 S01 PACKAGE

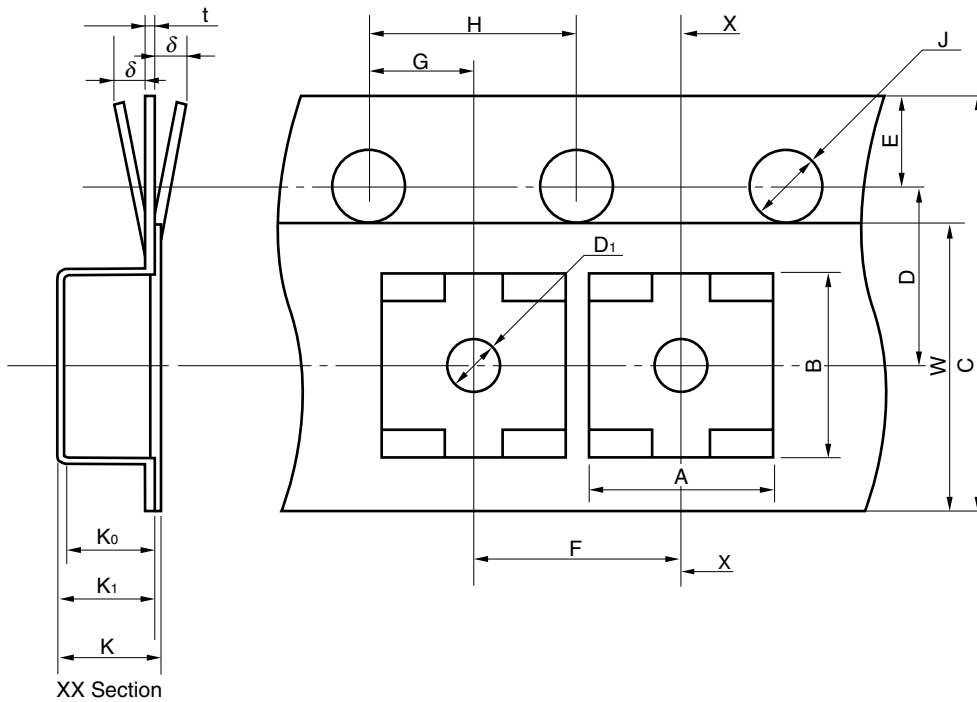


Item	Symbol	Size (mm)		Remarks
			S01 pkg	
Pocket	Length Width	A	$5.0 \pm 0.15$	At 0.3 mm above bottom
	Depth	$K_0$	$1.8 \pm 0.1$	Internal Area
	Pitch	F	$8.0 \pm 0.1$	Accumulated tolerance $+0.1$ $-0.3$ MAX./10 pitch
	Taper	$\theta$	$14^\circ \pm 1^\circ$	At 0.3 mm above bottom
Plastic PART	Width	N	$2.4 \pm 0.1$	At 0.3 mm above bottom
Lead PART	Pocket Width	$L_1$	$1.15 \pm 0.1$	At 0.3 mm above bottom
		$L_2$	$1.15 \pm 0.1$	
Perforation	Diameter	J	$\phi 1.55 \pm 0.05$	
	Pitch	H	$4.0 \pm 0.1$	Accumulated tolerance $+0.1$ $-0.3$ MAX./10 pitch
	Position	E	$1.75 \pm 0.1$	Distance between edge of tape and center of hole.
Distance Between Center Line	Length Direct.	G	$2.0 \pm 0.05$	Center lines of pocket and perforation.
	Width Direct.	D	$5.5 \pm 0.05$	Center lines of pocket and perforation.
Cover Tape	Width	W	$9.5^{+0.3}_0$	Thickness: 0.1 mm MAX.
Carrier Tape	Width	C	$12 \pm 0.2$	Warp: $\delta = 0.3$ mm MAX.
	Thick.	t	$0.3 \pm 0.05$	
	Depth	$K_1$	$1.90 \pm 0.1$	
Overall Thickness	K		$2.00 \pm 0.1$	Cover Tape and Carrier Tape Total.

**Remarks 1.** The radius in the case of unspecified corners is 0.3 MAX.

**2.** This carrier is applied treatment of electrostatic prevention.

<R> 2.1.3 S02 PACKAGE

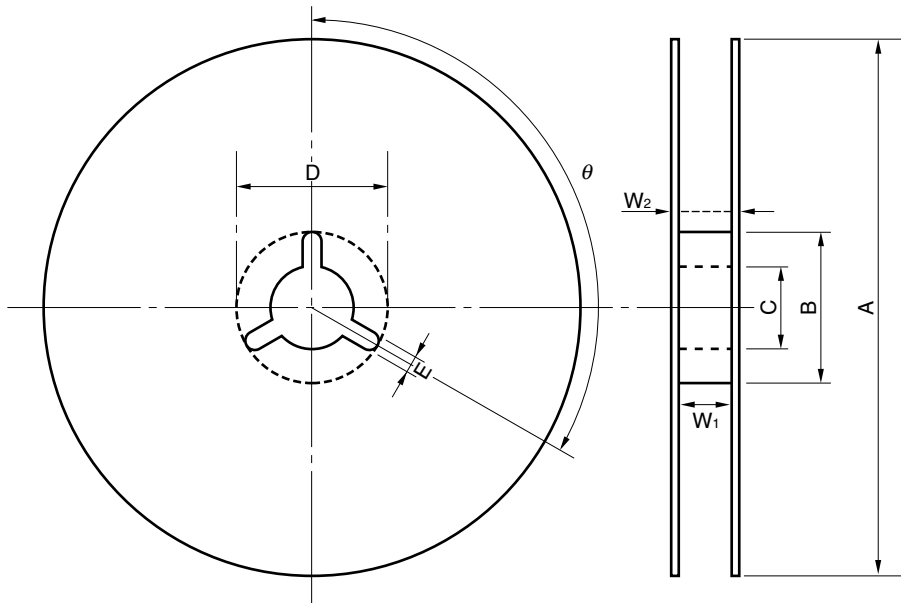


Item	Symbol	Size (mm)		Remarks
			S02 pkg	
Pocket	Length	A	3.5 ± 0.2	Pocket base
	Width	B	3.5 ± 0.2	Pocket base
	Depth	K <sub>0</sub>	1.55 ± 0.1	Internal Area
	Pitch	F	4.0 ± 0.1	Accumulated tolerance ± 0.2 /10 pitch
Air Hole	Diameter	D <sub>1</sub>	φ1.0	
Perforation	Diameter	J	φ1.55 ± 0.05	
	Pitch	H	4.0 ± 0.1	Accumulated tolerance ± 0.2 /10 pitch
	Position	E	1.75 ± 0.1	Distance between edge of tape and center of hole.
Distance Between Center Line	Length Direct.	G	2.0 ± 0.05	Center lines of pocket and perforation.
	Width Direct.	D	3.5 ± 0.05	Center lines of pocket and perforation.
Cover Tape	Width	W	5.5 <sup>+0.3</sup> <sub>-0.1</sub>	Thickness: 0.1 mm MAX.
Carrier Tape	Width	C	8.0 ± 0.2	Warp: δ = 0.3 mm MAX.
	Thick.	t	0.2 ± 0.05	
	Depth	K <sub>1</sub>	1.9 MAX.	
Overall Thickness	K		2.00 MAX.	Cover Tape and Carrier Tape Total.

**Remark** This carrier is applied treatment of electrostatic prevention.

<R> 2.2 DIMENSIONS ON REEL

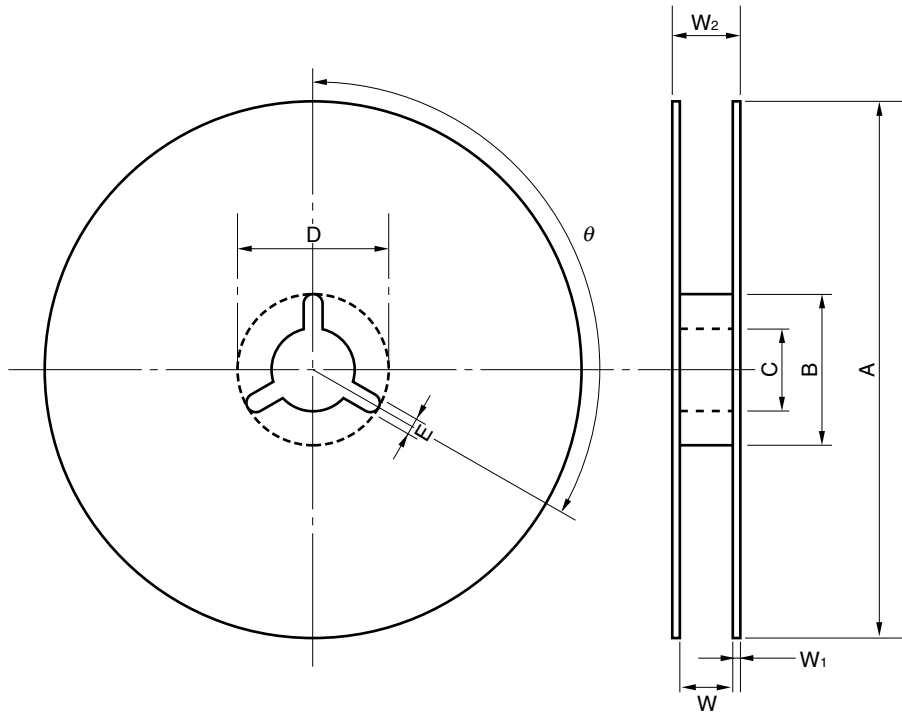
2.2.1 T1, T2



(Unit: mm)

Symbol	Size/Angle
A	$\phi 180 \begin{smallmatrix} +0 \\ -1.5 \end{smallmatrix}$
B	$\phi 60 \begin{smallmatrix} +1 \\ -0 \end{smallmatrix}$
C	$\phi 13 \pm 0.2$
D	$\phi 21 \pm 0.8$
E	$2 \pm 0.5$
W <sub>1</sub>	$13 \begin{smallmatrix} +1.0 \\ -0 \end{smallmatrix}$
W <sub>2</sub>	$17 \pm 1.0$
$\theta$	$120^\circ$

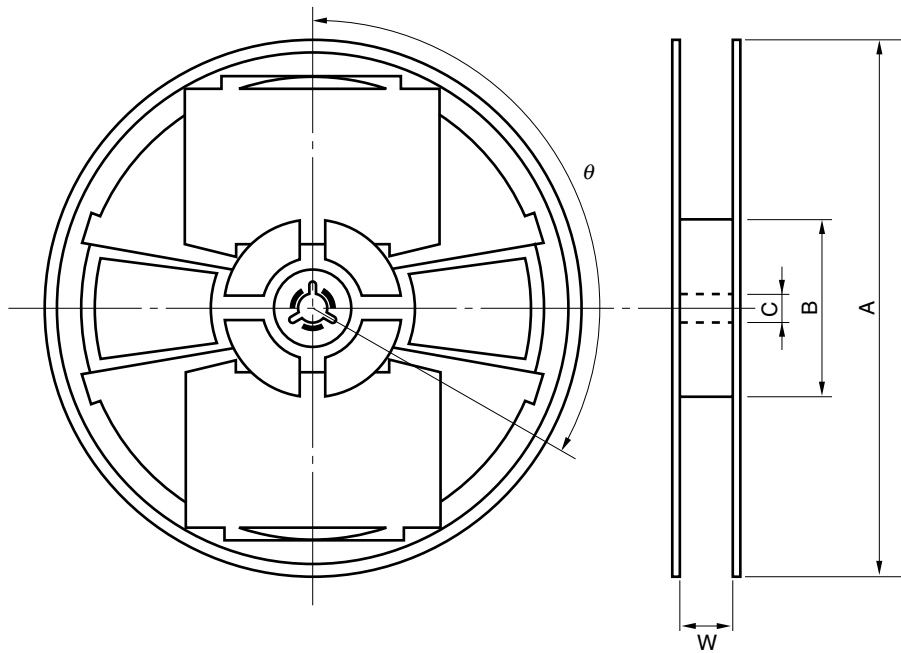
2.2.2 T1A, T2A, T1B, T2B



(Unit: mm)

Symbol	Size/Angle
A	$\phi 330 \pm 2.0$
B	$\phi 100 \pm 1$
C	$\phi 13 \pm 0.2$
D	$\phi 21 \pm 0.8$
E	$2 \pm 0.5$
W	$13.5 \pm 1.0$
W <sub>1</sub>	(2.0)
W <sub>2</sub>	$17.5 \pm 1.0$
$\theta$	120°

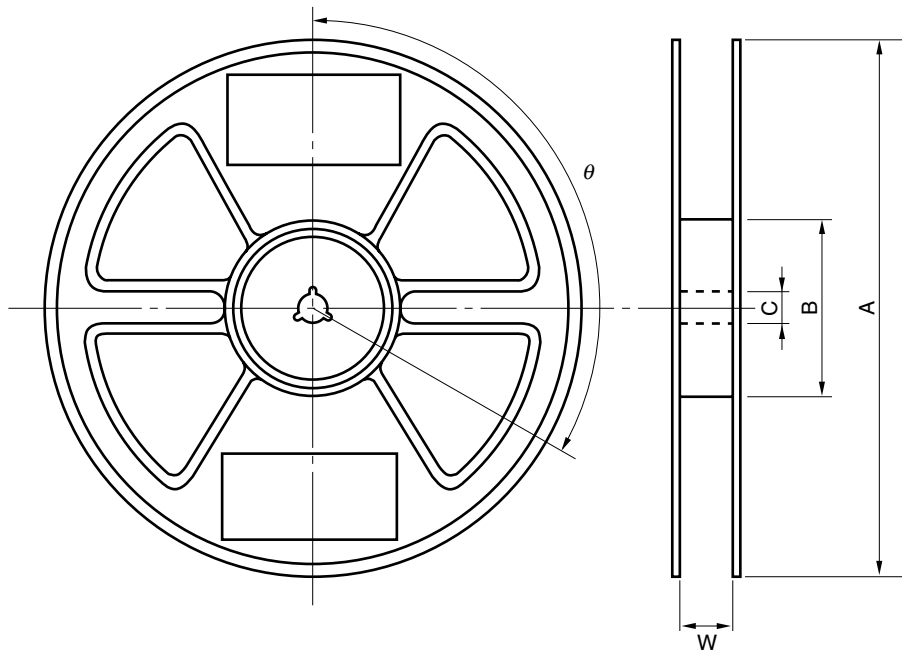
### 2.2.3 T1C



(Unit: mm)

Item		Symbol	Size/Angle
Flange	Diameter	A	$\phi 180^{+0}_{-1.5}$
	Spacing inside of both flanges	W	$9^{+1}_{-0}$
Hub	External diameter	B	$\phi 60^{+1}_{-0}$
	Spindle hole diameter	C	$\phi 13 \pm 0.2$
	Key slot position	$\theta$	120°

2.2.4 T1D

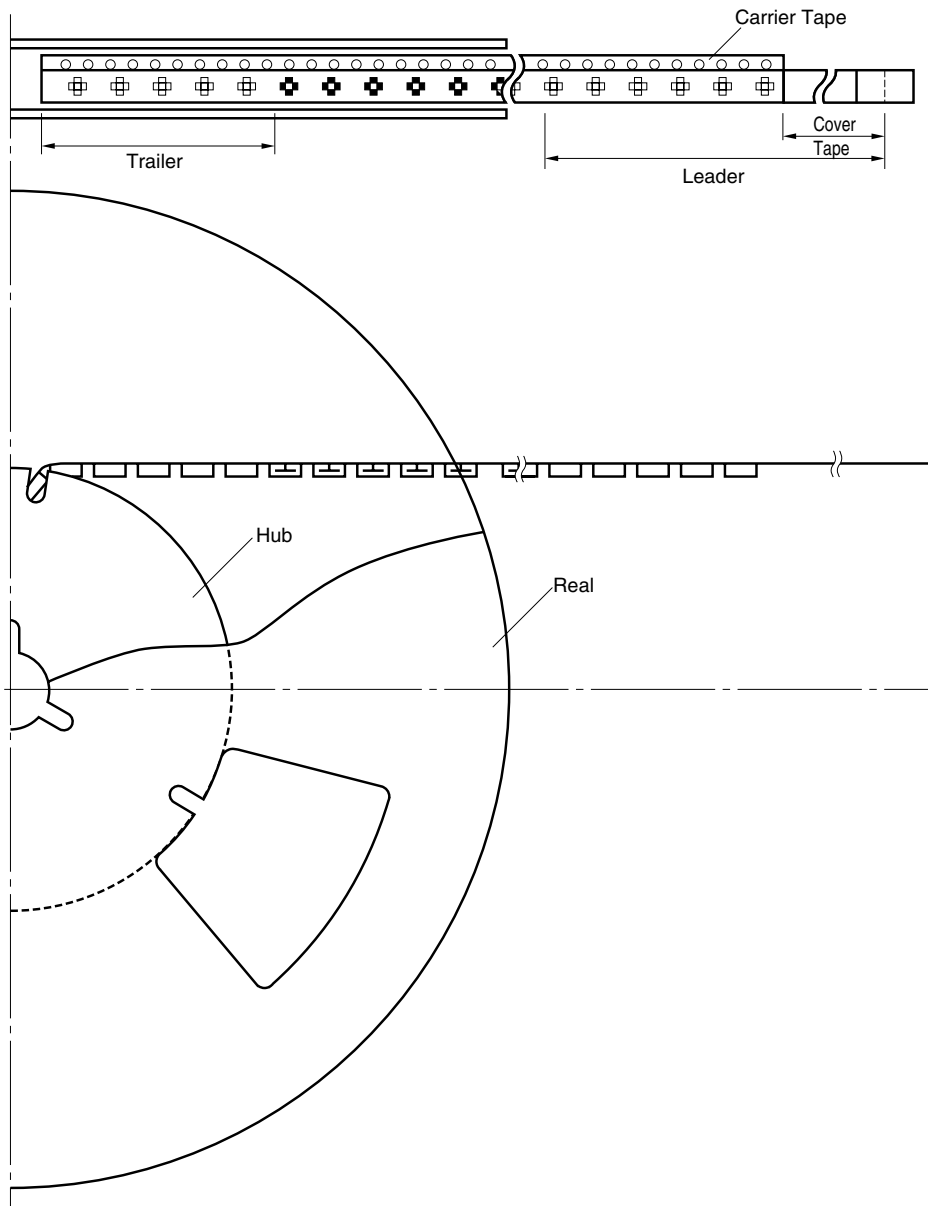


(Unit: mm)

Item		Symbol	Size/Angle
Flange	Diameter	A	$\phi 330 \pm 2.0$
	Spacing inside of both flanges	W	$9^{+1}_{-0}$
Hub	External diameter	B	$\phi 100 \pm 1.0$
	Spindle hole diameter	C	$\phi 13 \pm 0.2$
	Key slot position	$\theta$	120°

## 2.3 PACKAGING

### 2.3.1 LEADER AND TRAILER



	Item	Specification	Remarks
Leader	Cover Tape	Cover tape without carrier 200 mm MIN.	Tip taped to rool
	Carrier Tape	Empty pocket 10 MIN.	Take up direction as the above
Trailer	Carrier Tape	Empty pocket 17 to 20 pieces	

### **2.3.2 QUANTITY**

1 k pieces/reel (-T1, -T2)

5 k pieces/reel (-T1A, -T2A)

4 k pieces/reel (-T1B, -T2B)

<R> 2 k pieces/reel (-T1C)

<R> 10 k pieces/reel (-T1D)

### **2.3.3 SPLICING**

No carrier or cover tape is spliced.

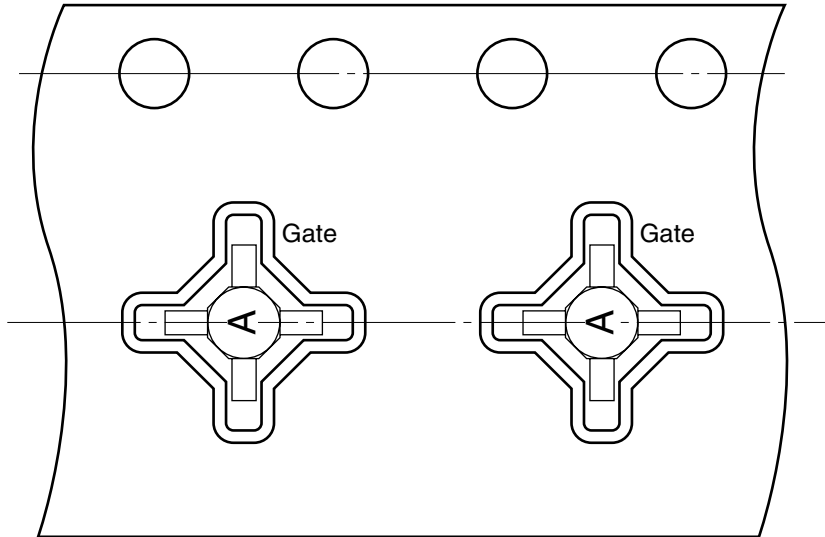
### **2.3.4 ELECTROSTATIC PREVENTION**

Electrostatic prevention measures have been implemented for both carrier and cover tape.

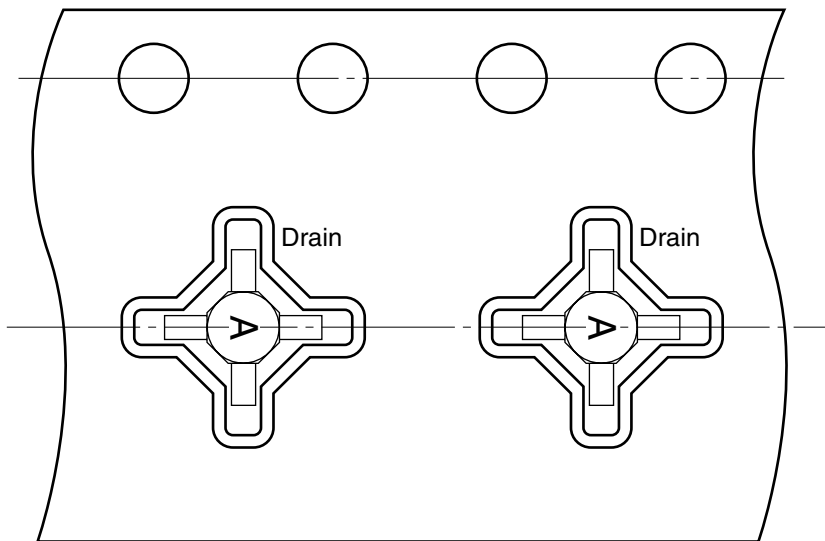
## 2.4 DEVICE ORIENTATION

As shown below.

### (1) -T1, -T1A, -T1B



### (2) -T2, -T2A, -T2B

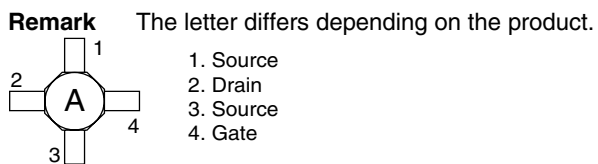


<R>

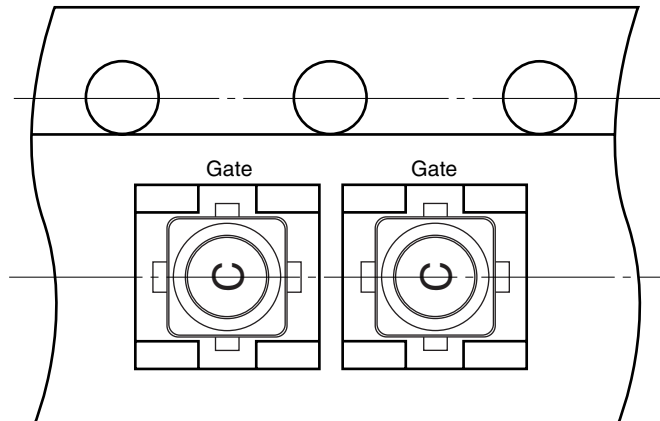
-T1, -T1A, -T1B: pin 4 (Gate) face the perforation side of the tape.

<R>

-T2, -T2A, -T2B: pin 2 (Drain) face the perforation side of the tape.

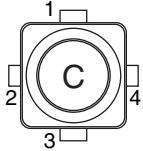


<R> (3) -T1C, -T1D



-T1C, -T1D: pin 4 (Gate) face the perforation side of the tape.

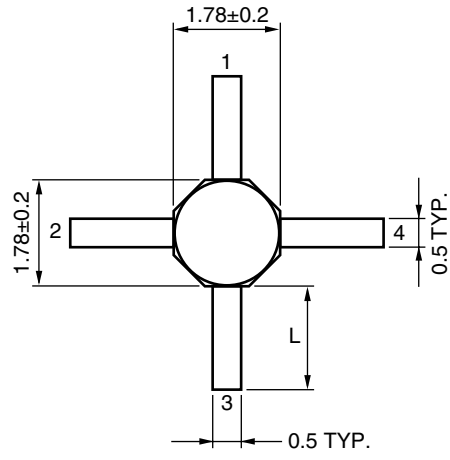
**Remark** The letter differs depending on the product.



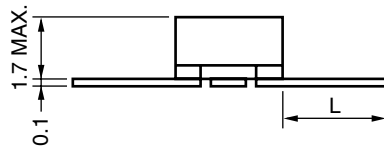
1. Source
2. Drain
3. Source
4. Gate

## 2.5 PACKAGE DIMENSIONS (UNIT: mm)

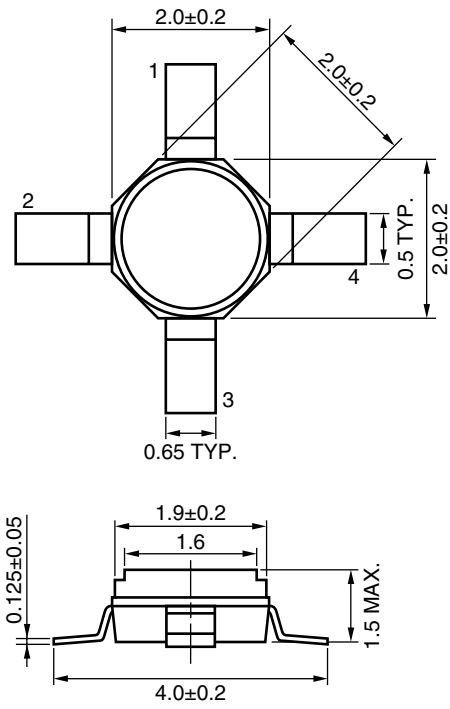
<R> 84, 84A, 84C Package



$L = 1.0 \pm 0.2$  (All leads)

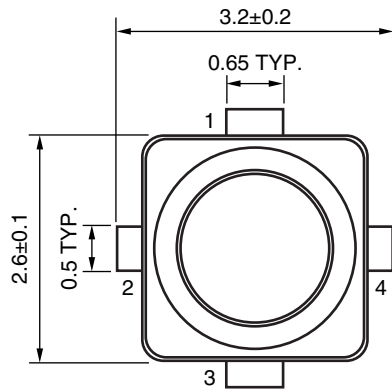


# S01 Package

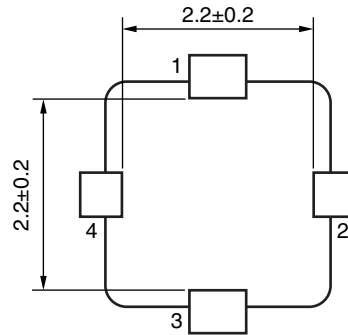


<R> S02 Package

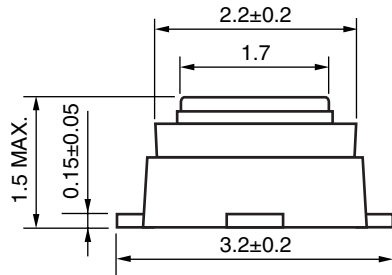
(Top View)



(Bottom View)



(Side View)



<R> **3. MECHANICAL DATA**

	Item	Data	Remarks
	Carrier tape width		
COVER TAPE ADHESION	12 mm	0.1 to 1.3 N	<p>165° to 180°</p> <p>Cover tape</p> <p>F</p> <p>Carrier tape</p> <p>Direction of tape ←</p> <p>Peeling speed: 300±10 mm/min</p>
	8 mm	0.1 to 1.0 N	
TAPE BEND STRENGTH		–	When tape is rolled with 15 mm radius, no device should pop out.

**Caution** Carrier tape and cover tape are bonded with thermocompression.

**4. PACKING**

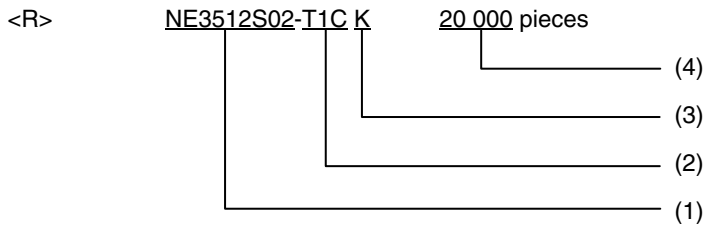
1 to 10 reel/carton. Type no. (Ordering name and Idss classification), quantity, lot code and NEC are marked or labeled.

## 5. ORDERING INFORMATION

### 5.1 ORDERING INFORMATION

- (1) Type no.
- (2) Ordering group
- (3) Icss classification (Each reel has only one Icss classification)
- (4) Quantity

(EXAMPLE)



### <R> 5.2 ORDERING GROUP CLASSIFIED BY SUPPLYING FORM

The ordering groups are specified in the table below.

Ordering Group	Supplying Form	Quantity
-T1 -T2	Tape & Reel (The number specifies the taping direction.)	1 k pieces/reel
-T1A -T2A	Tape & Reel (The number specifies the taping direction.)	5 k pieces/reel
-T1B -T2B	Tape & Reel (The number specifies the taping direction.)	4 k pieces/reel
-T1C	Tape & Reel (The number specifies the taping direction.)	2 k pieces/reel
-T1D	Tape & Reel (The number specifies the taping direction.)	10 k pieces/reel

The order name consists of a combination of the ordering group and the supplying form.

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