



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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## Contact us

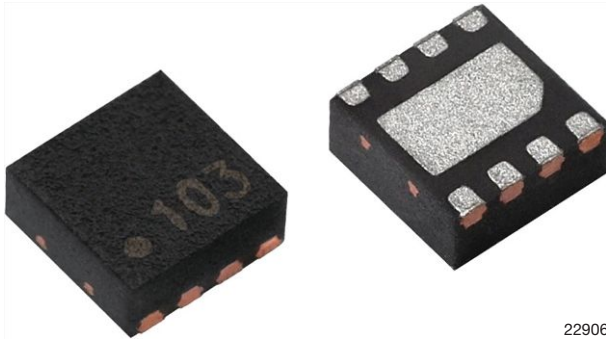
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## Preamplifier Circuit for IR Remote Control



22906

### DESIGN SUPPORT TOOLS

[click logo to get started](#)



### MECHANICAL DATA

#### Pinning:

1, 4, 5 = N.C., 2 =  $V_S$ , 3 = OUT, 6, 8 = GND, 7 = IN

### FEATURES

- Carrier-out-function: carrier frequency and burst length accurately correspond to the input signal
- AC coupled response from 20 kHz to 60 kHz; all data formats
- Small QFN package with 2 mm width
- Can be used with either a photodiode or an IR emitter in forward or reverse polarity
- AC coupled input is insensitive to DC photocurrents
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

### ESD

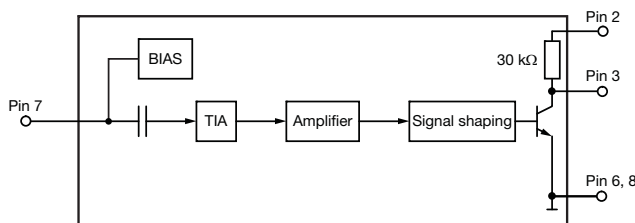
- To maximize the sensitivity, the TIA input pin has minimal ESD protection. Care should be taken never to touch or otherwise expose this pin to an adverse ESD source. The ESD protection conforms to Class 1B

### DESCRIPTION

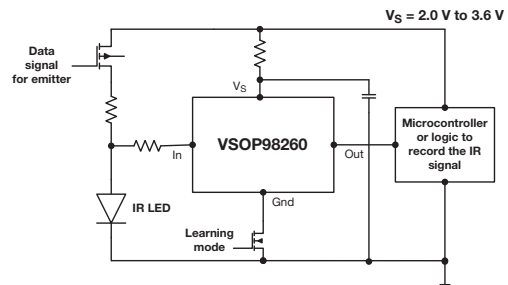
The VSOP98260 is designed for use in an IR learning application together with a photo PIN diode or IR LED as optical detector. It is compatible with all data formats for IR remote control. On the other hand it is immune to current caused by light sources such as tungsten bulbs or fluorescent lamps.

| PARTS TABLE       |        |   |
|-------------------|--------|---|
| Carrier frequency | 38 kHz | VSOP98260   |
| Package           |        | VSOP  |
| Pinning           |        | 1, 4, 5 = N.C., 2 = $V_S$ , 3 = OUT, 6, 8 = GND, 7 = IN |
| Dimensions (mm)   |        | 2.0 W x 2.0 H x 0.76 D                                  |
| Mounting          |        | SMD   |
| Application       |        | Code learning   |

### BLOCK DIAGRAM (simplified)



### APPLICATION CIRCUIT



Recommended to minimize the connection distance between the IR LED and the input of the VSOP98260, and if possible to shield this connection to Gnd.

### Note

- (1) For further information, see application note, "IC for Code Learning Applications"

| <b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |   |           |                       |                    |
|--|---|-----------|-----------------------|--------------------|
| PARAMETER  | TEST CONDITION                            | SYMBOL    | VALUE                 | UNIT               |
| Supply voltage   | Pin 2                                     | $V_S$     | -0.3 to +6            | V                  |
| Supply current   | Pin 2                                     | $I_S$     | 5                     | mA                 |
| Output voltage   | Pin 3                                     | $V_O$     | -0.3 to $(V_S + 0.3)$ | V                  |
| Output current   | Pin 3                                     | $I_O$     | 5                     | mA                 |
| Input voltage  | Pin 7                                     | $V_I$     | -0.3 to 3.3           | V                  |
| Input current  | Pin 7                                     | $I_I$     | 7                     | mA                 |
| Power dissipation  | $T_{amb} \leq 85\text{ }^{\circ}\text{C}$ | $P_{tot}$ | 10                    | mW                 |
| Operating temperature range  |   | $T_{amb}$ | -25 to +85            | $^{\circ}\text{C}$ |
| Storage temperature range  |   | $T_{stg}$ | -25 to +85            | $^{\circ}\text{C}$ |
| ESD stress, HBM  | Pin 2, pin 3, MIL-STD-883C                | $V_{ESD}$ | 2000                  | V                  |
|  | Pin 7, MIL-STD-883C                       | $V_{ESD}$ | 500                   | V                  |
| ESD stress, MM   | Pin 2, pin 3, MIL-STD-883C                | $V_{ESD}$ | 200                   | V                  |
|  | Pin 7, MIL-STD-883C                       | $V_{ESD}$ | 100                   | V                  |

**Note**

- Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect the device reliability.

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 5\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ , unless otherwise specified) |   |                  |                             |                    |                             |               |
|--|---|------------------|-----------------------------|--------------------|-----------------------------|---------------|
| PARAMETER  | TEST CONDITION  | SYMBOL           | MIN.                        | TYP.               | MAX.                        | UNIT          |
| Supply voltage   |   | $V_S$            | 2.0                         | -                  | 3.6                         | V             |
| Supply current (pin 2)   | $I_{IN} = 0, V_S = 5\text{ V}$  | $I_S$            | 0.55                        | 0.7                | 0.9                         | mA            |
| Output voltage low (pin 3)   | $I_{OL} = 2\text{ mA}$  | $V_{OL}$         | -                           | -                  | 100                         | mV            |
| Output voltage high (pin 3)  | $I_{OL} = 0$  | $V_{OH}$         | $V_S - 0.25$                | -                  | -                           | V             |
| Internal pull up resistor (pin 2, pin 3)   |   | $R_{PU}$         | -                           | 33                 | -                           | k $\Omega$    |
| Max. input DC current  | $V_{IN} > 0$  | $I_{IN-DCmax.}$  | 400                         | -                  | -                           | $\mu\text{A}$ |
| Min. signal detection current  | $I_{IN-DC} = 0, f_C = f_{BPF}$  | $I_{IN-min.}$    | -                           | 40                 | 80                          | nA            |
|  | $I_{IN-DC} = 100\text{ }\mu\text{A}, f_C = f_{BPF}$   | $I_{IN-min.}$    | -                           | 50                 | -                           | nA            |
| Output accuracy  | $f_C = 20\text{ kHz to }60\text{ kHz}$ ,<br>$I_{IN} = 80\text{ nA to }50\text{ }\mu\text{A}$ ,<br>testsignal see fig. 1, BER $\leq 2\%$ | N carrier pulses | input burst length -1 cycle | input burst length | input burst length +1 cycle | counts        |

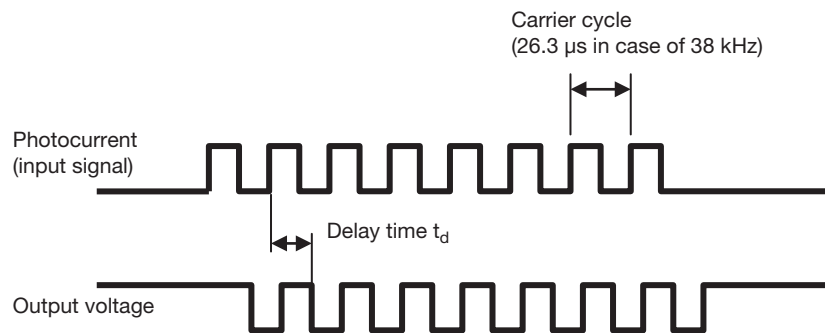
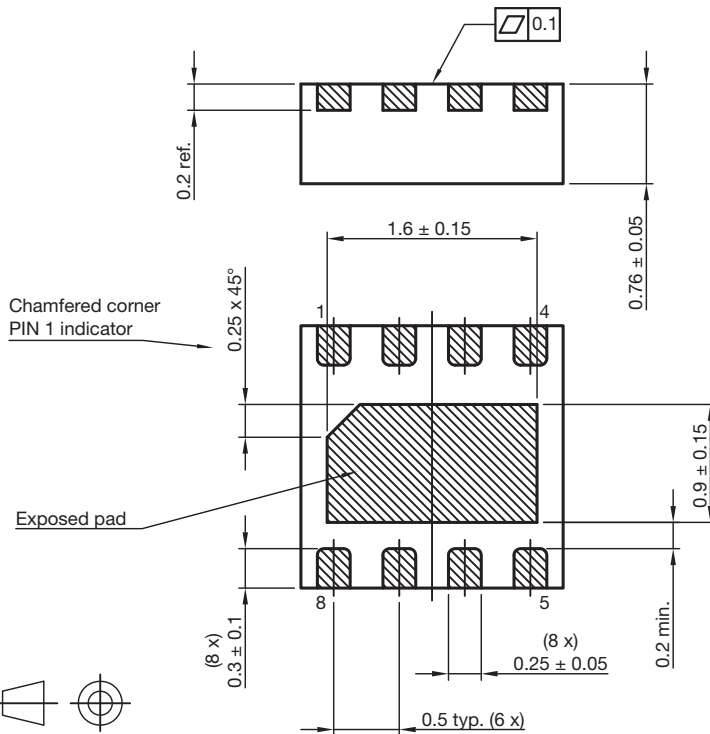
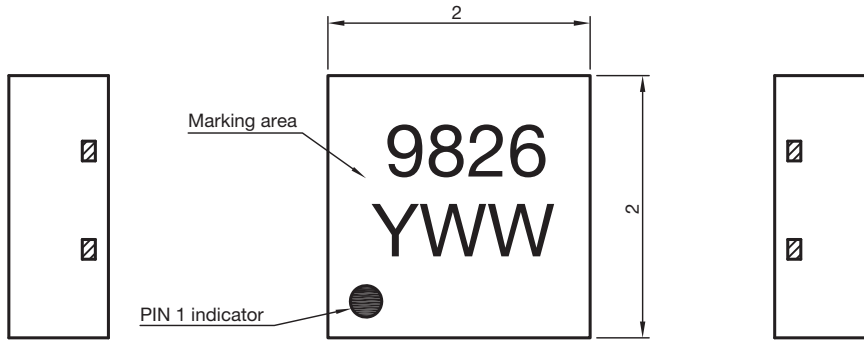


Fig. 1 - Testsignal



**PACKAGE DIMENSIONS** in millimeters

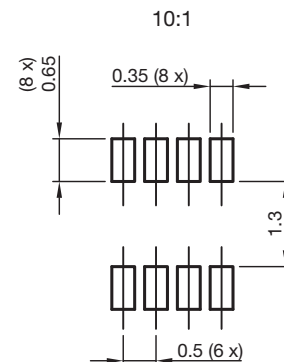


1. Coplanarity (0.1 mm) applies to the exposed pad as well as the exposed terminals.
2. Package dimension does not include mold flash, protrusions, burrs or metal smearing.

Pinning:

1. n.c.
2.  $V_S$
3. Out
4. n.c.
5. n.c.
6. GND
7. IN
8. GND

Proposed hole layout from component side (for reference only)



technical drawings according to DIN specifications

Not indicated tolerances  $\pm 0.1$

Drawing-No.: 6.550-5314.04-4  
Issue: -, 13.05.16



### ASSEMBLY INSTRUCTIONS

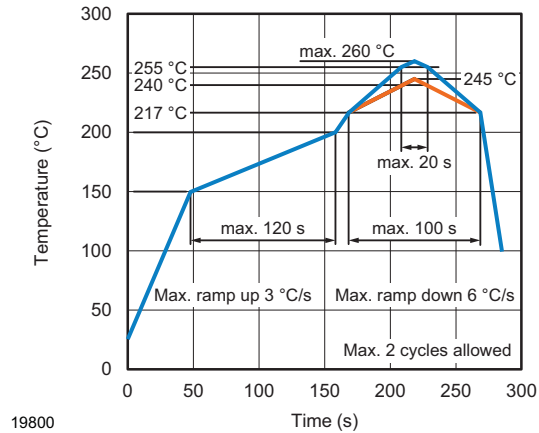
#### Reflow Soldering

- Set the furnace temperatures for pre-heating and heating in accordance with the reflow temperature profile as shown in the diagram. Exercise extreme care to keep the maximum temperature below 260 °C. The temperature shown in the profile means the temperature at the device surface. Since there is a temperature difference between the component and the circuit board, it should be verified that the temperature of the device is accurately being measured
- Handling after reflow should be done only after the work surface has been cooled off

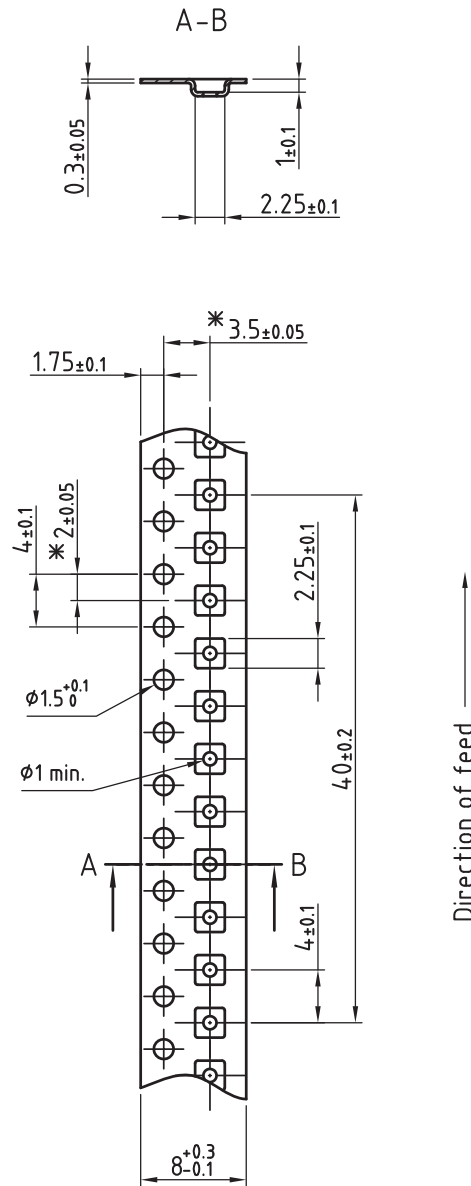
#### Manual Soldering

- Use a soldering iron of 25 W or less. Adjust the temperature of the soldering iron below 300 °C
- Finish soldering within 3 s
- Handle products only after the temperature has cooled off.

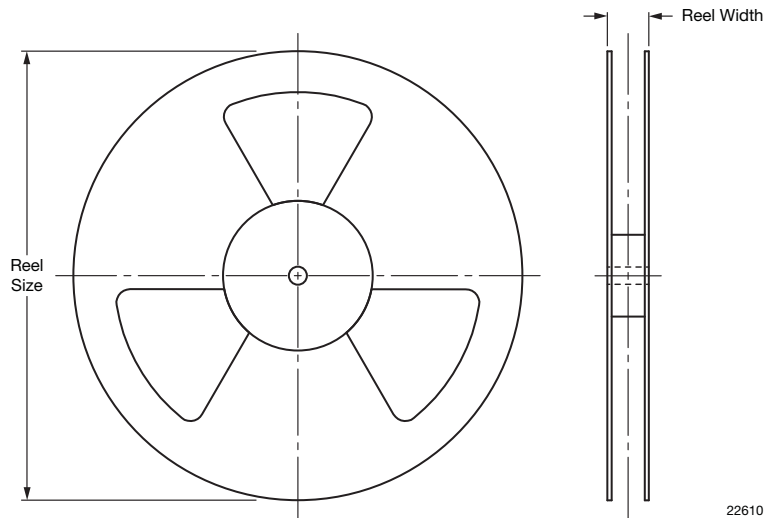
### VISHAY LEAD (PB)-FREE REFLOW SOLDER PROFILE



**TAPING VERSION VSOP DIMENSIONS** in millimeters



\* Measured from centerline of sprocket hole to centerline of pocket

**REEL DIMENSIONS** in millimeters


| REEL             |                 | TRAILER LENGTH (mm) | LEADER LENGTH (mm) | QUANTITY PER REEL |
|------------------|-----------------|---------------------|--------------------|-------------------|
| REEL SIZE (inch) | REEL WIDTH (mm) |                     |                    |                   |
| 7                | 8.4             | 160                 | 400                | 3000              |

**LABEL**
**Standard bar code labels for finished goods**

The standard bar code labels are product labels and used for identification of goods. The finished goods are packed in final packing area. The standard packing units are labeled

with standard bar code labels before transported as finished goods to warehouses. The labels are on each packing unit and contain Vishay Semiconductor GmbH specific data.

| VISHAY SEMICONDUCTOR GMBH STANDARD BAR CODE PRODUCT LABEL (finished goods) |              |              |
|--|--------------|--------------|
| PLAIN WRITTING   | ABBREVIATION | LENGTH       |
| Item-description   | -            | 18           |
| Item-number  | INO          | 8            |
| Selection-code   | SEL          | 3            |
| LOT-/serial-number   | BATCH        | 10           |
| Data-code  | COD          | 3 (YWW)      |
| Plant-code   | PTC          | 2            |
| Quantity   | QTY          | 8            |
| Accepted by  | ACC          | -            |
| Packed by  | PCK          | -            |
| Mixed code indicator   | MIXED CODE   | -            |
| Origin   | xxxxxxx+     | Company logo |
| LONG BAR CODE TOP  | TYPE         | LENGTH       |
| Item-number  | N            | 8            |
| Plant-code   | N            | 2            |
| Sequence-number  | X            | 3            |
| Quantity   | N            | 8            |
| Total length   | -            | 21           |
| SHORT BAR CODE BOTTOM  | TYPE         | LENGTH       |
| Selection-code   | X            | 3            |
| Data-code  | N            | 3            |
| Batch-number   | X            | 10           |
| Filter   | -            | 1            |
| Total length   | -            | 17           |



**ESD PRECAUTION**

Proper storage and handling procedures should be followed to prevent ESD damage to the devices especially when they are removed from the antistatic shielding bag. Electrostatic sensitive devices warning labels are on the packaging.

**VISHAY SEMICONDUCTORS STANDARD BAR CODE LABELS**

The Vishay Semiconductors standard bar code labels are printed at final packing areas. The labels are on each packing unit and contain Vishay Semiconductors specific data.



22645





## Tape and Reel Standards for Surface-Mount IR Receiver Modules

Vishay Semiconductor surface-mount IR receivers are packaged on tape and reel. The following specification is based on IEC publication 286, which takes the industrial requirements for automatic insertion into account.

Absolute maximum ratings, mechanical dimensions, optical and electrical characteristics for taped devices are identical to the basic catalog types and can be found in the specifications for untaped devices.

### PACKAGING

The tapes of components are available on reels. Each reel is marked with labels which contain the following information:

- Vishay
- Type
- Group
- Tape code, normally part of type name
- Production code
- Quantity

### MISSING COMPONENTS

Up to 3 consecutive components may be missing if the gap is followed by at least 6 components. A maximum of 0.5 % of the components per reel quantity may be missing. At least 5 empty positions are present at the start and the end of the tape to enable tape insertion.

**Tensile strength** of the tape: > 15 N

### NUMBER OF COMPONENTS

- A. Panhead: quantity per reel:
  - TT, top view package, 1190 pcs
  - TR, side view package, 1120 pcs
- B. Heimdall: quantity per reel:
  - TT, top view package, 2200 pcs
  - TR, side view package, 2300 pcs
- C. Heimdall without lens: quantity per reel:
  - WTT, top view package, 2200 pcs
  - WTR, side view package, 2300 pcs
- D. Belobog: quantity per reel:
  - TT1, top view package, 1800 pcs
- E. Belobog with shield: quantity per reel:
  - TT1, top view package, 1500 pcs
- F. Minimold DF1P: quantity per reel:
  - DF1P, 1100 pcs
- G. TVCastSMD TR1: quantity per reel:
  - TR1, side view package, 2000 pcs

### ORDER DESIGNATION

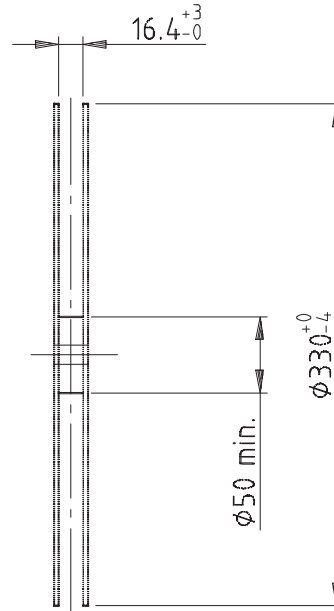
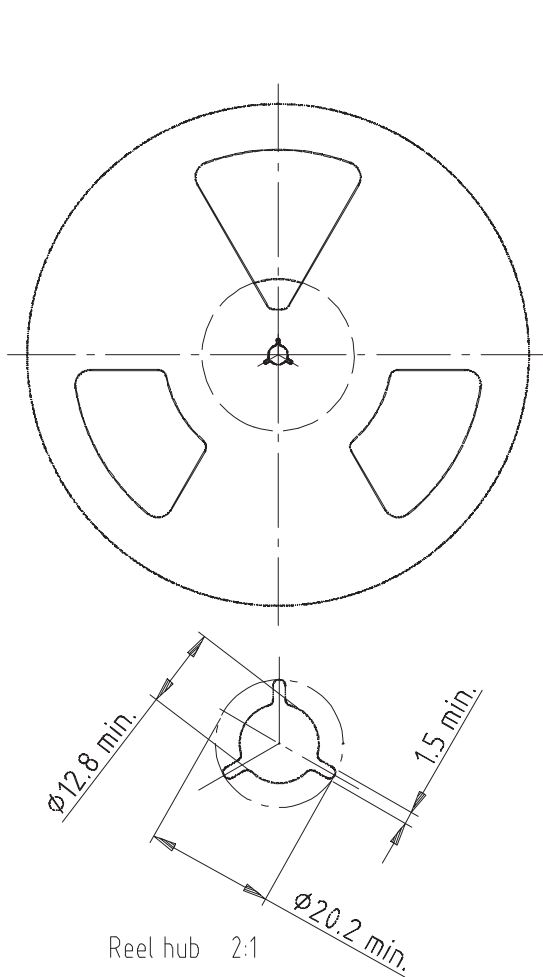
The type designation of the device is extended by TT or TT1 for top view or TR for side view.

#### Example:

- TSOP6238TR (reel packing)
- TSOP75238TR (reel packing)
- TSOP75338WTT (reel packing)
- TSOP57438TT1 (reel packing)
- TSOP57238HTT1 (reel packing)
- TSOP39438TR1 (reel packing)



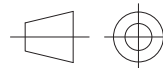
## REEL DIMENSIONS FOR PANHEAD, HEIMDALL, AND TVCASTSMD TR in millimeters



Form of the leave open of the wheel is supplier specific.

Dimension acc. to IEC EN 60 286-3

Tape width 16



technical drawings according to DIN specifications

Drawing-No.: 9.800-5052.V2-4

Issue: 1; 07.05.02

16734

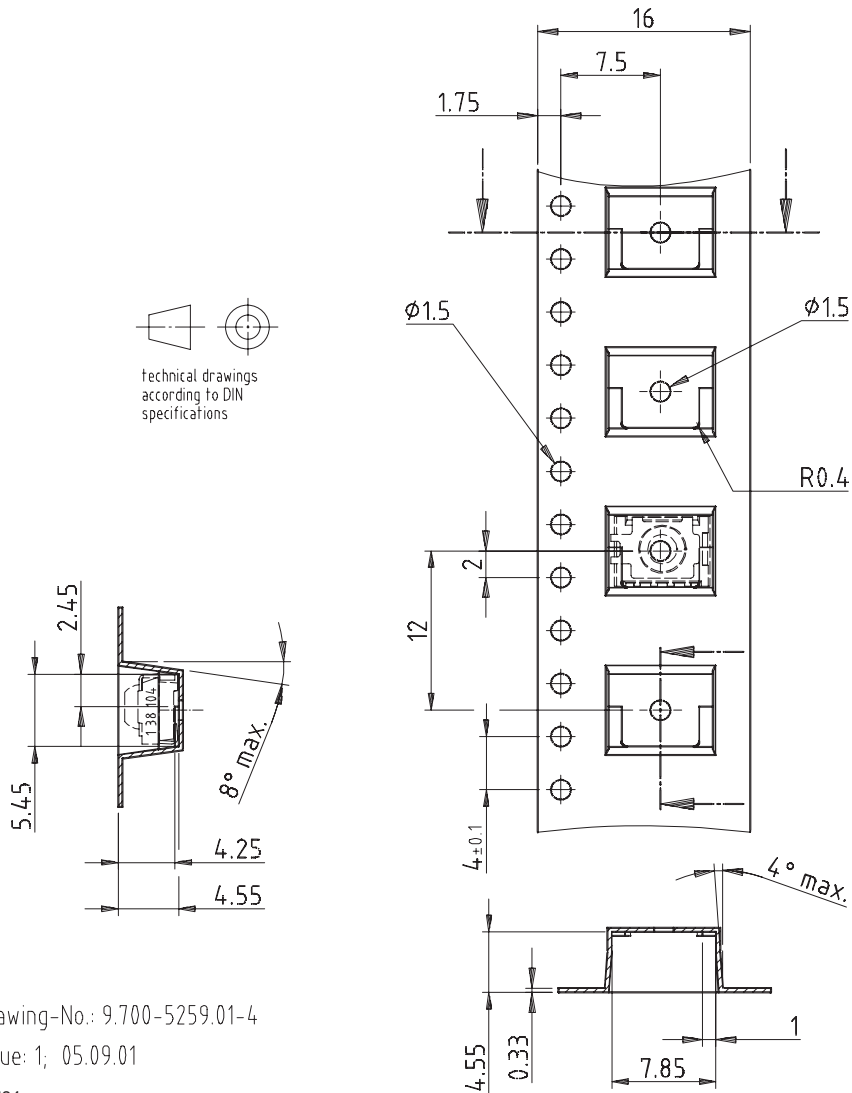
### Note

- The body structure of the reel can vary



## TAPING VERSION TSOP..TT (TOP VIEW) DIMENSIONS in millimeters

A. Panhead (TSOP36...TT, TSSP...TT, TSOP6...TT, TSOP16...TT, TSOP96...TT)



Drawing-No.: 9.700-5259.01-4

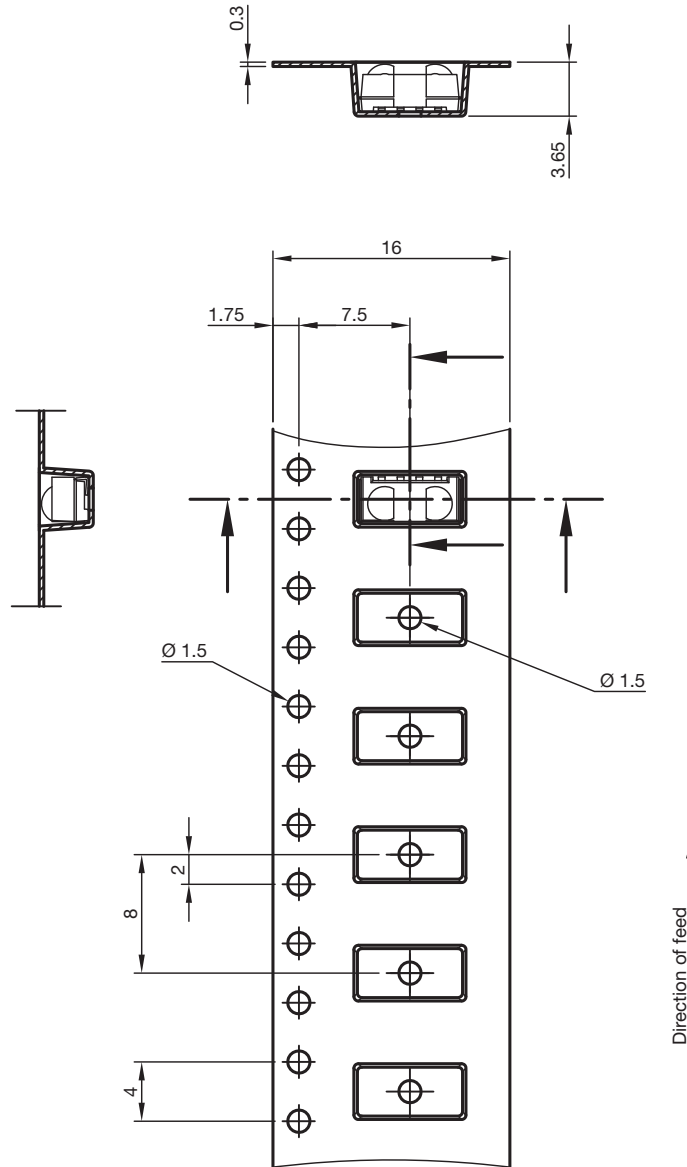
Issue: 1; 05.09.01

16584

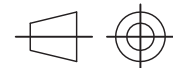


## TAPING VERSION TSOP..TT (TOP VIEW) DIMENSIONS in millimeters

B. Heimdall (TSOP75...TT, TSOP77...TT, TSSP77...TT, TSOP15...TT, TSOP95...TT)



Drawing-No.: 9.700-5338.01-4  
Issue: 4; 12.06.13

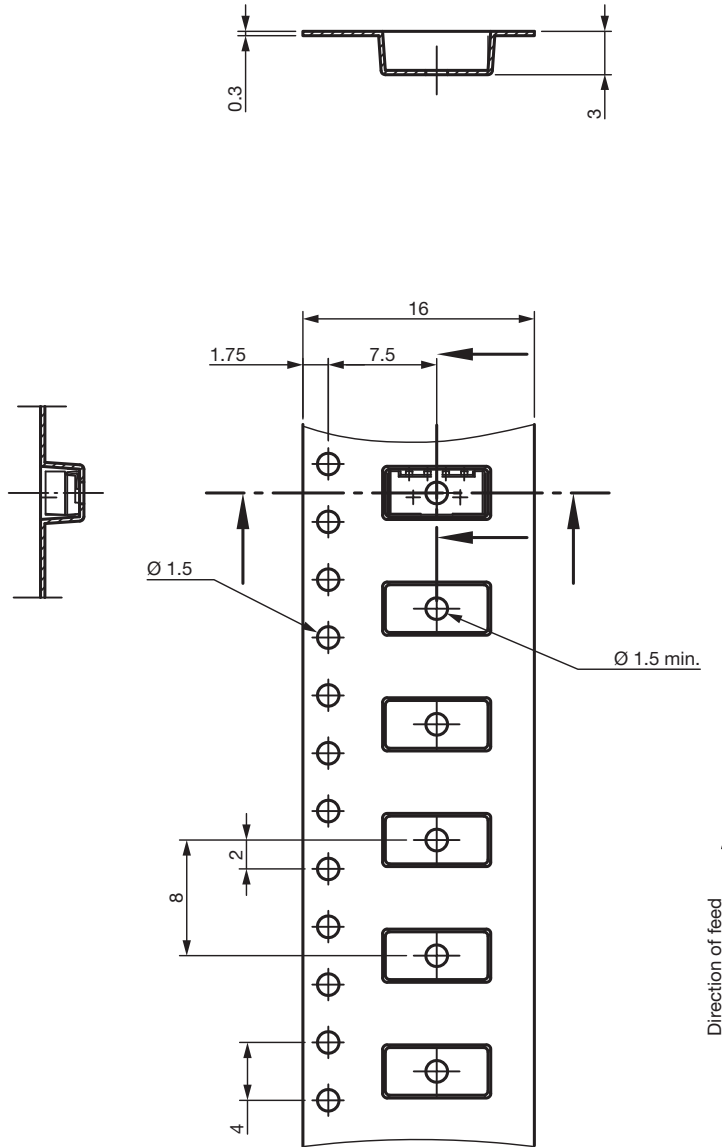


technical drawings  
according to DIN  
specifications

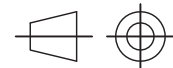


## TAPING VERSION TSOP..TT (TOP VIEW) DIMENSIONS in millimeters

C. Heimdall without lens (TSOP75...WTT, TSOP77...WTT, TSSP77...WTT, TSOP15...WTT, TSOP95...WTT)



Drawing-No.: 9.700-5341.01-4  
Issue: 3; 06.10.15



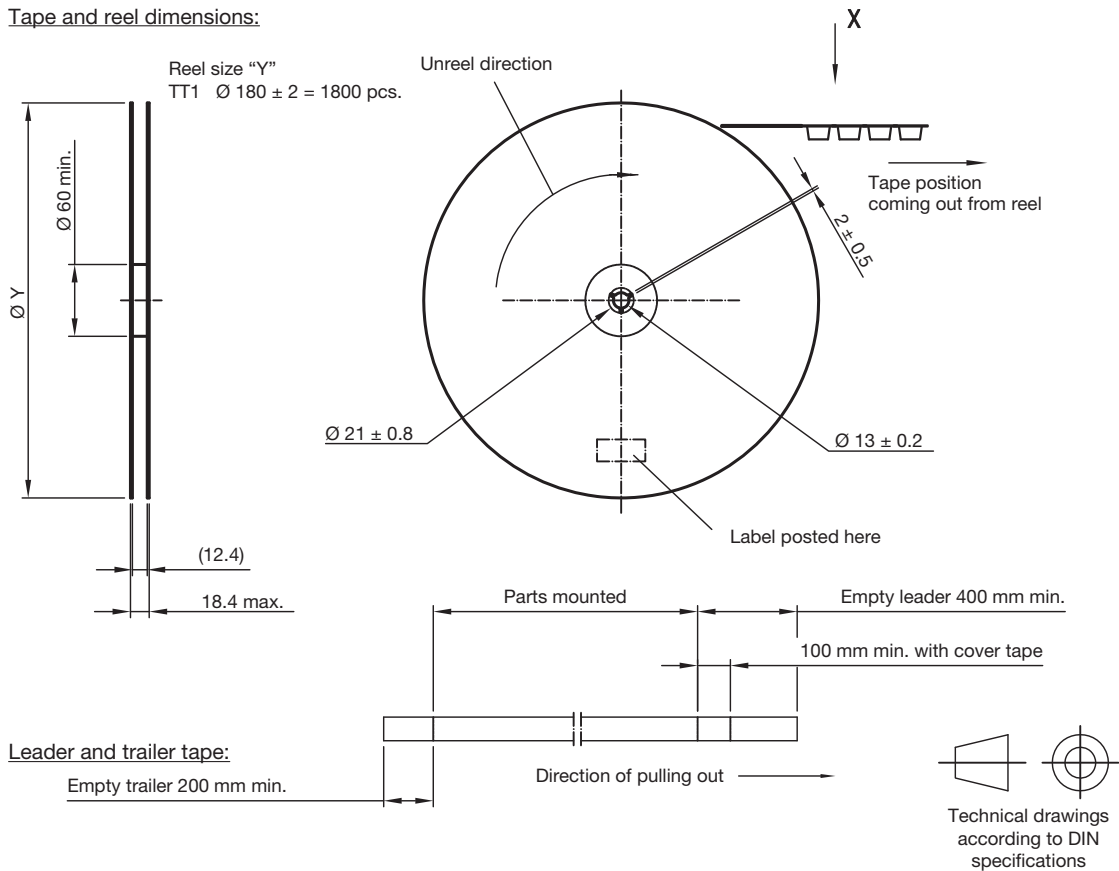
technical drawings  
according to DIN  
specifications



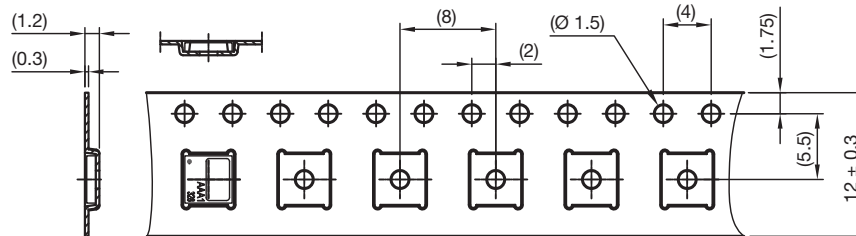
## TAPING VERSION TSOP..TT1 (TOP VIEW) DIMENSIONS in millimeters

D. Belobog (TSOP37...TT1, TSOP57...TT1, TSOP17...TT1, TSOP97...TT1)

Tape and reel dimensions:



X 2:1



Drawing-No.: 9.700-5347.01-4  
Issue: 2; 07.03.18

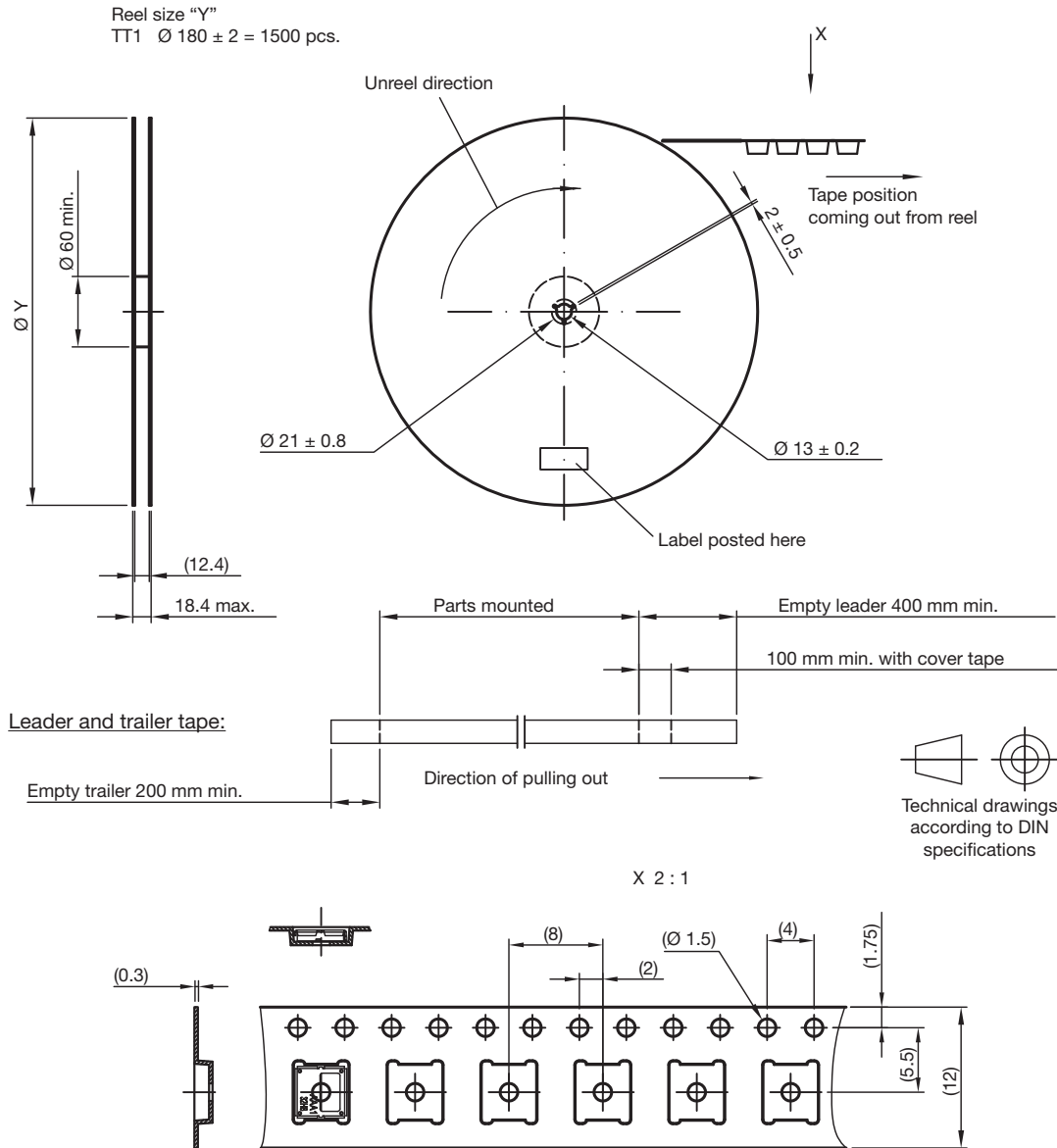
Not indicated tolerances  $\pm 0.1$



## TAPING VERSION TSOP..TT1 (TOP VIEW) DIMENSIONS in millimeters

E. Belobog with shield (TSOP37...HTT1, TSOP57...HTT1, TSOP17...HTT1, TSOP97...HTT1)

Tape and reel dimensions:



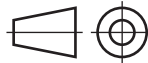
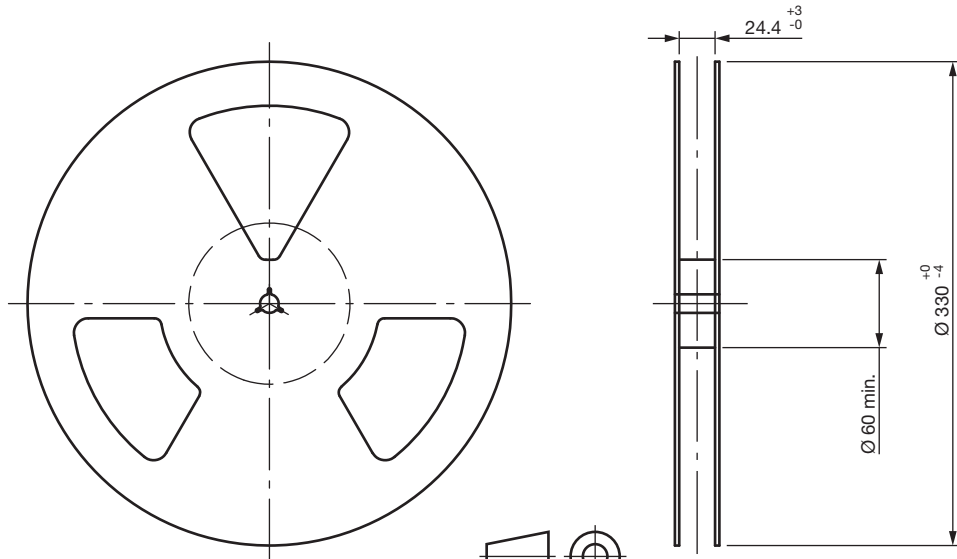
Drawing-No.: 9.700-5380.01-4  
Issue: 3; 07.03.18

Not indicated tolerances  $\pm 0.1$



### TAPING VERSION TSOP..DF1P (SIDE VIEW) DIMENSIONS in millimeters

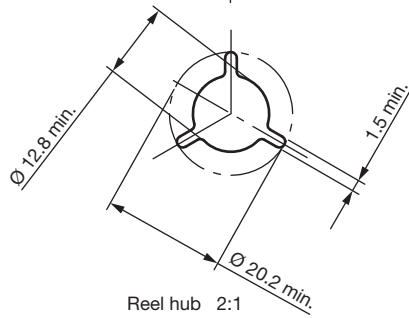
F. Minimold DF1P (TSOP33...DF1P, TSOP53...DF1P, TSOP13...DF1P, TSOP93...DF1P)



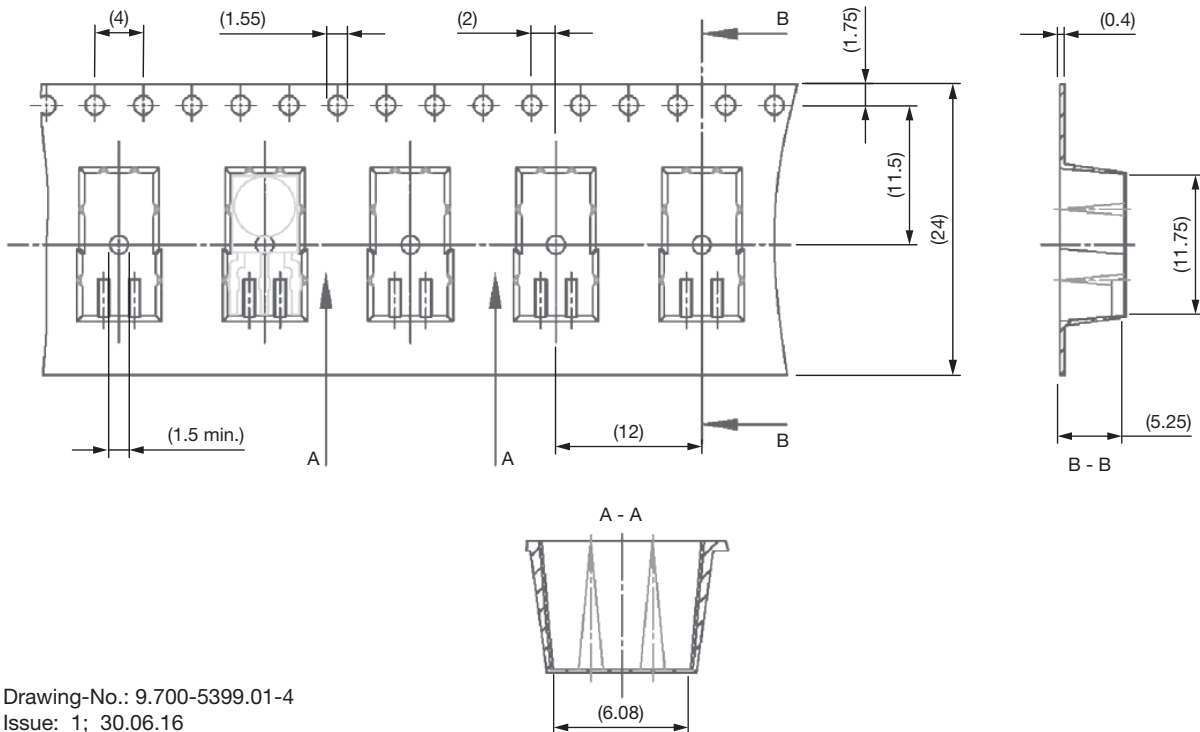
Technical drawing according to DIN specifications

Form of the leave open of the wheel is supplier specific. Dimensions according to IEC EN 60 286-3

Tape width: 24



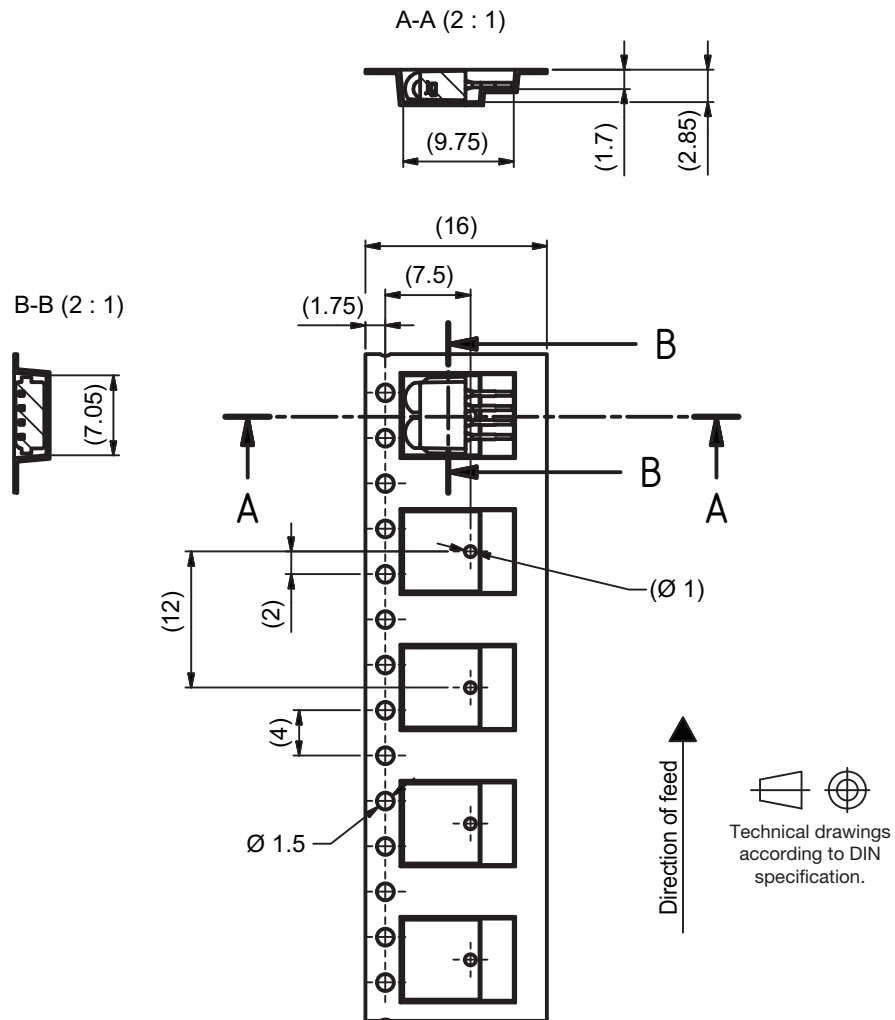
Drawing-No.: 9.800-5052.V3-4  
Issue: 1; 17.12.02



Drawing-No.: 9.700-5399.01-4  
Issue: 1; 30.06.16

## TAPING VERSION TSOP..TR (SIDE VIEW) DIMENSIONS in millimeters

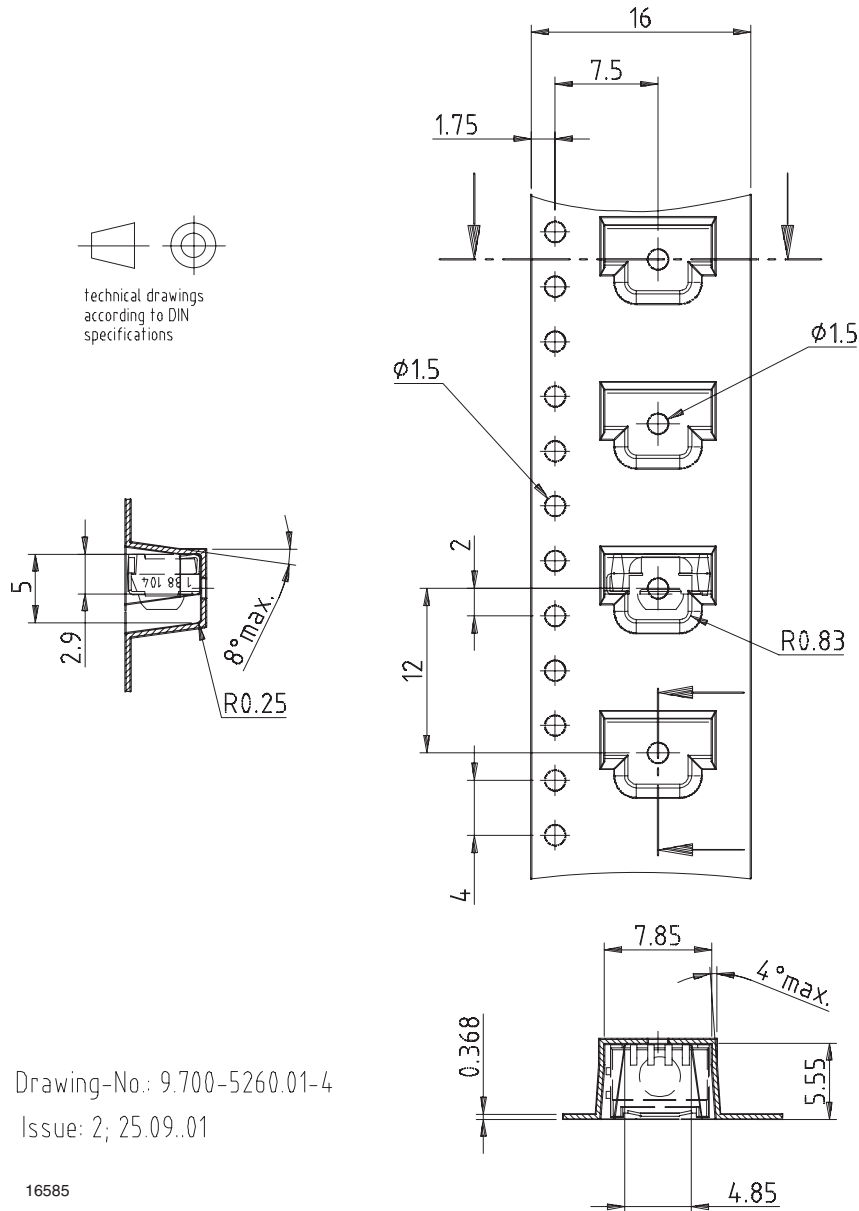
G. TVCastSMD TR1 (TSOP59...TR1, TSOP39...TR1, TSOP19...TR1, TSOP99...TR1)



Drawing-No.: GO-100220.10\_Z  
Issue B: 08.02.17

## TAPING VERSION TSOP..TR (SIDE VIEW) DIMENSIONS in millimeters

A. Panhead (TSOP36...TR, TSSP6...TR, TSOP6...TR, TSOP16...TR, TSOP96...TR)



Drawing-No.: 9.700-5260.01-4

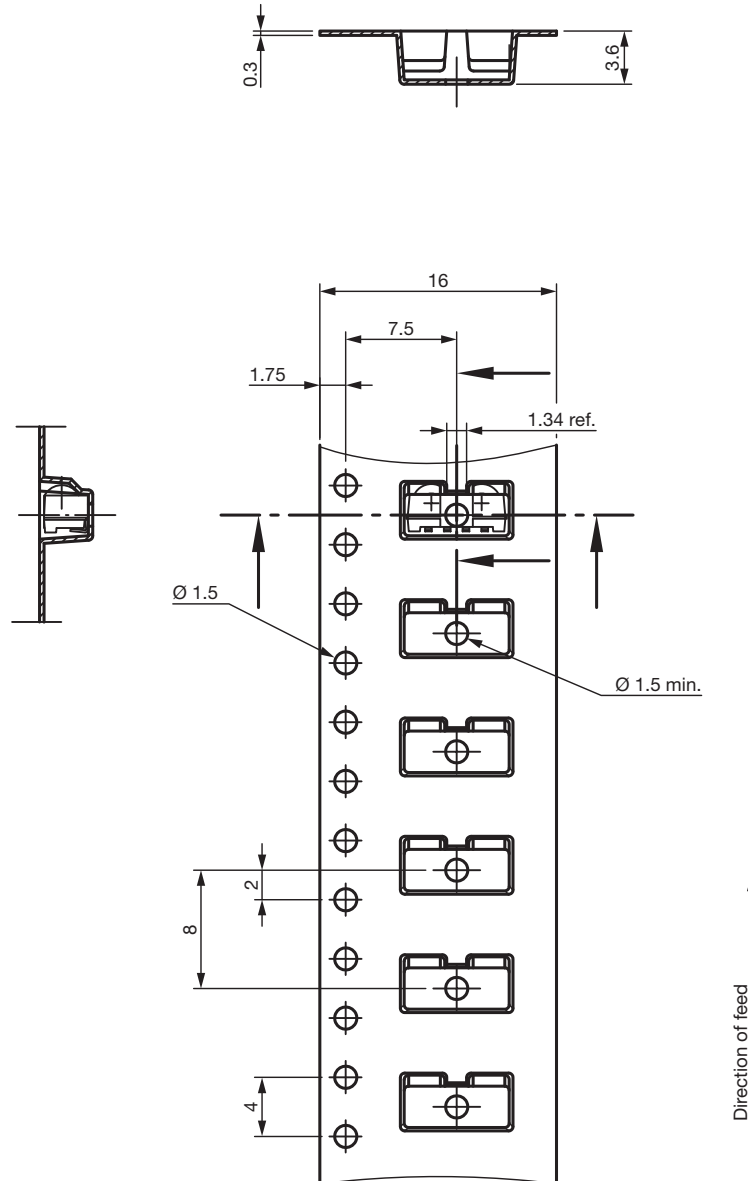
Issue: 2; 25.09..01

16585

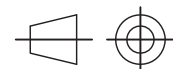


## TAPING VERSION TSOP..TR (SIDE VIEW) DIMENSIONS in millimeters

B. Heimdall (TSSP7...., TSOP75...TR, TSOP77...TR, TSSP7....TR, TSOP15...TR, TSOP95...TR)



Drawing-No.: 9.700-5337.01-4  
Issue: 2; 06.10.15

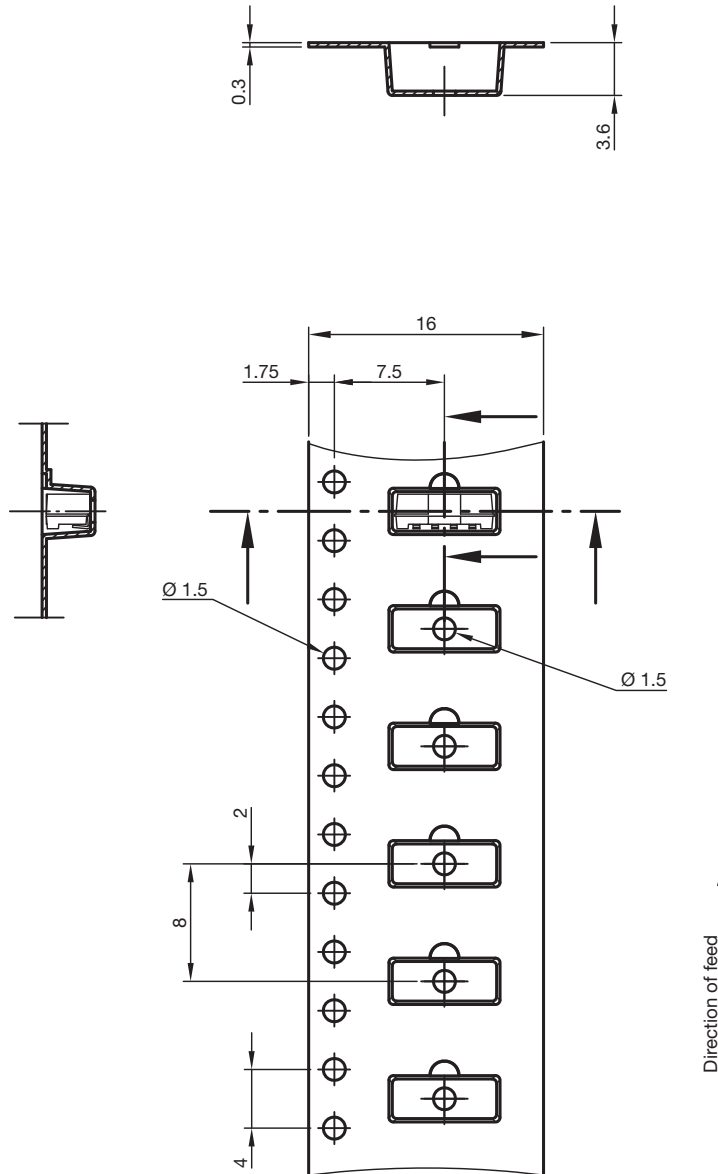


technical drawings  
according to DIN  
specifications



## TAPING VERSION TSOP..TR (SIDE VIEW) DIMENSIONS in millimeters

C. Heimdall without lens (TSOP75...WTR, TSOP77...WTR, TSSP...WTR, TSOP15...WTR, TSOP95...WTR)

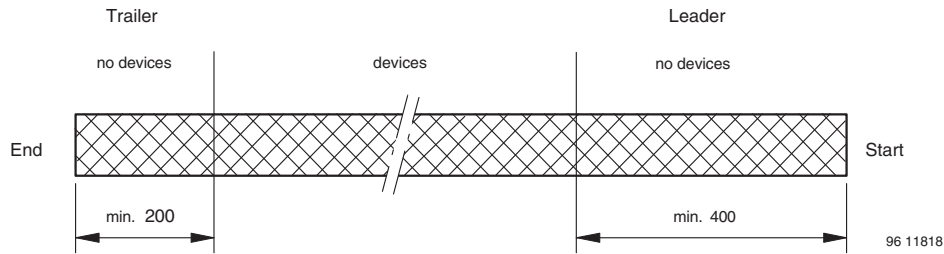


Drawing-No.: 9.700-5342.01-4  
Issue: 2; 12.06.13

technical drawings  
according to DIN  
specifications



### LEADER AND TRAILER DIMENSIONS in millimeters



### COVER TAPE REEL STRENGTH

According to DIN EN 60286-3

0.1 N to 1.3 N

300 mm/min.  $\pm$  10 mm/min.

165° to 180° peel angle

### LABEL

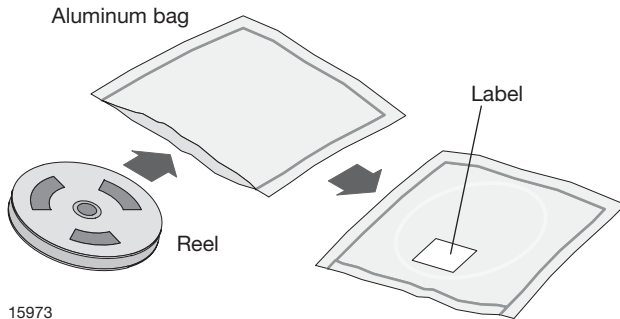
#### Standard bar code labels for finished goods

The standard bar code labels are product labels and used for identification of goods. The finished goods are packed in final packing area. The standard packing units are labeled with standard bar code labels before transported as finished goods to warehouses. The labels are on each packing unit and contain Vishay Semiconductor GmbH specific data.

| VISHAY SEMICONDUCTOR GmbH STANDARD BAR CODE PRODUCT LABEL (finished goods) |              |              |
|--|--------------|--------------|
| PLAIN WRITING  | ABBREVIATION | LENGTH       |
| Item-description   | -            | 18           |
| Item-number  | INO          | 8            |
| Selection-code   | SEL          | 3            |
| LOT-/serial-number   | BATCH        | 10           |
| Data-code  | COD          | 3 (YWW)      |
| Plant-code   | PTC          | 2            |
| Quantity   | QTY          | 8            |
| Accepted by  | ACC          | -            |
| Packed by  | PCK          | -            |
| Mixed code indicator   | MIXED CODE   | -            |
| Origin   | xxxxxxx+     | Company logo |
| LONG BAR CODE TOP  | TYPE         | LENGTH       |
| Item-number  | N            | 8            |
| Plant-code   | N            | 2            |
| Sequence-number  | X            | 3            |
| Quantity   | N            | 8            |
| Total length   | -            | 21           |
| SHORT BAR CODE TOP   | TYPE         | LENGTH       |
| Selection-code   | X            | 3            |
| Data-code  | N            | 3            |
| Batch-number   | X            | 10           |
| Filter   | -            | 1            |
| Total length   | -            | 17           |

### DRY PACKAGING

The reel is packed in an anti-humidity bag to protect the devices from absorbing moisture during transportation and storage.



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### RECOMMENDED METHOD OF STORAGE

Dry box storage is recommended as soon as the aluminum bag has been opened to prevent moisture absorption. The following conditions should be observed, if dry boxes are not available:

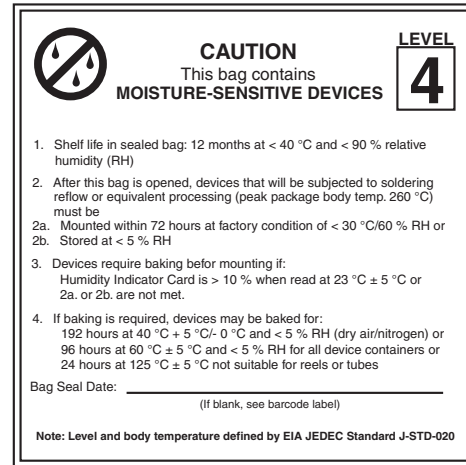
- Storage temperature 10 °C to 30 °C
- Storage humidity ≤ 60 % RH max.

After more than 72 h under these conditions moisture content will be too high for reflow soldering.

In case of moisture absorption, the devices will recover to the former condition by drying under the following condition:

- 192 h at 40 °C + 5 °C / - 0 °C and < 5 % RH (dry air / nitrogen) or
- 96 h at 60 °C + 5 °C and < 5 % RH for all device containers or
- 24 h at 125 °C + 5 °C not suitable for reel or tubes.

An EIA JEDEC® standard JSTD-020 level 4 label is included on all dry bags.



22522

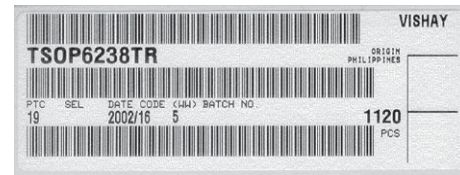
EIA JEDEC standard JSTD-020 level 4 label is included on all dry bags

### ESD PRECAUTION

Proper storage and handling procedures should be followed to prevent ESD damage to the devices especially when they are removed from the antistatic shielding bag. Electrostatic sensitive devices warning labels are on the packaging.

### VISHAY SEMICONDUCTORS STANDARD BAR CODE LABELS

The Vishay Semiconductors standard bar code labels are printed at final packing areas. The labels are on each packing unit and contain Vishay Semiconductors specific data.



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### OUTER PACKAGING

The sealed reel is packed into a pizza box.

| CARTON BOX DIMENSIONS in millimeters           |           |       |        |
|--|-----------|-------|--------|
|  |           |       |        |
|  | THICKNESS | WIDTH | LENGTH |
| Pizza box (SMD and heimdall) (taping in reels) | 50        | 340   | 340    |

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