

Packaging and Order Information

PACKAGING SURVEY

TABLE 1 - PACKAGING OPTIONS OF DETECTOR AND EMITTER DEVICES					
PACKAGE FORM	SERIES	PACKAGING OPTION			
		BULK	TAPE	BLISTER TAPE	TUBE
Metal can	BPW./TS.	X			
Side view lens	TEKT5400S	X	X		
SMD	TEM./TSM./VEM./VSM.			X	
Top view mold	BP104 BPW34	X			
	BP104S BPW34S				X
Other leaded packages	BP./TE./TS.	X	X		

MOISTURE PROOF PACKAGING

The reel is packed in a moisture proof aluminum bag to protect devices from absorbing moisture during transportation and storage.

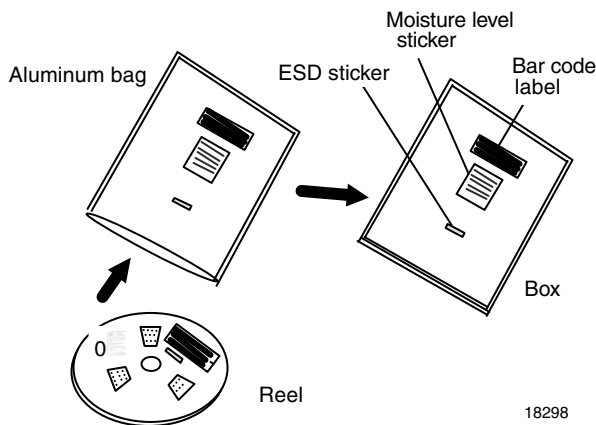


Fig. 1 - Moisture Proof Packaging

RECOMMENDED METHOD OF STORAGE

Dry box storage is recommended as soon as the dry 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 storage longer than the specified floor life (see table 2), moisture content will be too high for reflow soldering. In case of moisture absorption, the devices will recover to their former condition by drying using conditions according to the individual moisture sensitivity level (MSL) specified on a sticker affixed to the dry bags (e.g. figure 2, MSL 2a).

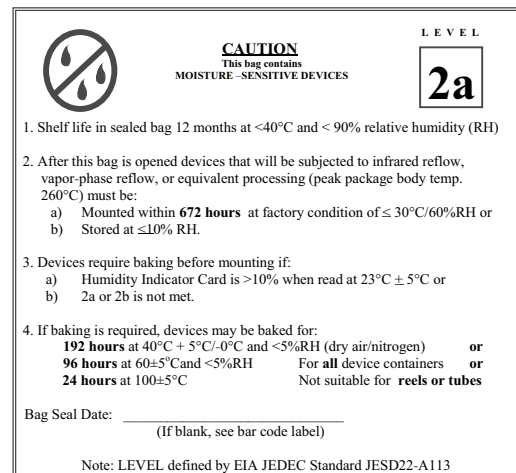


Fig. 2 - Example of MSL Sticker

TABLE 2 - MOISTURE SENSITIVITY LEVEL, FLOOR LIFE AND FLOOR CONDITIONS

MSL	FLOOR LIFE	CONDITIONS
1	No limit	≤ 30 °C/90 % RH
2	1 year	≤ 30 °C/60 % RH
2a	672 h	
3	168 h	
4	72 h	
5	24h/48 h	
6	6 h	



TABLE 3 - MOQ / DELIVERY UNIT SURVEY		
PACKAGE FORM / DEVICE TYPE	MINIMUM ORDER QUANTITY	DELIVERY UNIT
LEADED		
5 mm		
Bulk e.g. TSAL, TSHF, BPV	4000	4000/bulk
Tape e.g. TSHF5210-ES21	5000	1000/reel
3 mm		
Bulk e.g. TSAL, VSLB, TEFT	5000	5000/bulk
Tape e.g. VSLB3940-MSZ	10 000	2000/reel
1.8 mm		
Bulk e.g. CQY37N, BPW17N	5000	5000/bulk
Tape e.g. CQY37N-CS12	4000	2000/reel
Side View Lens		
Bulk e.g. TEKT	2000	2000/bulk
Tape e.g. TEKT5400S	2000	2000/reel
Side View Micro		
Bulk e.g. TEST2600, TSSS2600	5000	5000/bulk
Tape e.g. TEST2600-MS21	5000	1000/reel
Top View Detector		
Bulk e.g. BP104, BPW34	3000	3000/bulk
Tube e.g. BP104S	1800	45/tube
Side View Detector		
Bulk e.g. BPV22F, BPW46	4000	4000/bulk
Tape e.g. BPV22F-AS12	5000	1000/reel
Metal Can TO-5		
Bulk e.g. BPW21R, BPW20RF	500	500/bulk
Metal Can TO-18		
Bulk e.g. BPW76, TSTS7100	1000	1000/bulk
Reflective Sensors		
Bulk e.g. TCRT1000, TCRT1010	1000	1000/bulk
Tube e.g. CNY70	4000	80/tube
Tube e.g. TCRT5000	4500	50/tube
Tube e.g. TCRT5000L	2400	48/tube
Transmissive Sensors		
e.g. TCST1030	5200	65/tube
e.g. TCST1103, TCST1202, TCST1300	1020	85/tube
e.g. TCST2103, TCST2202, TCST2300	1020	85/tube
e.g. TCST1230	4800	60/tube
e.g. TCST5250	4860	30/tube
SMD		
0805		
e.g. TEMT6200FX01, VEMD4xxx, VEMT4xxx	3000	3000/reel
1206		
e.g. TEMT6000X01	3000	3000/reel
SMD Sensors		
e.g. TCxT1300X01, TCxT1350X01	2000	2000/reel
e.g. TCPT1600X01, TCUT1600X01	1300	1300/reel
e.g. TCUT1630X01, TCUT1800X01	1100	1100/reel
SMD Top View		
e.g. TEMD5010X01	1500	1500/reel
SMD QFN		
e.g. VCNT2020, VCNT2025X01	3000	3000/reel
e.g. VEML6031X00 - GS08	3000	3000/reel
e.g. VEML6031X00 - GS15	10 000	10 000/reel
SMD Gullwing, Reverse Gullwing		
e.g. VBP104S, VBPW34FASR	1000	1000/reel
Dome Lens 1.8 mm		
e.g. VSMB2020X01, VEMD2020X01	6000	6000/reel
Dome Lens 1.8 mm, Side Looker		
e.g. VSMB2943SLX01, VEMD2023SLX01	3000	3000/reel
Dome Lens 1.9 mm		
e.g. TSML1020, TEMT1020	1000	1000/reel

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.

BAR CODE LABELS

Vishay Semiconductor standard bar code labels are printed on the final package. Labels containing Vishay Semiconductor specific data are affixed to each package unit.

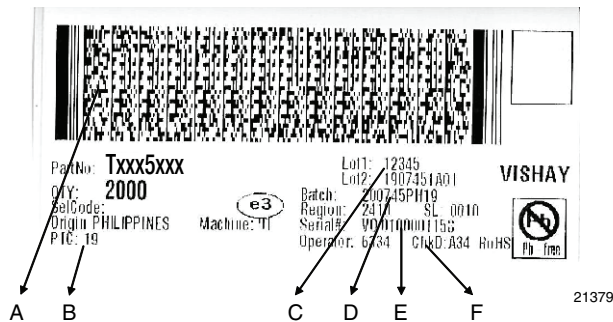


Fig. 3 - Bar code design and information

- A) PDF417 barcode including 325 char
- b. Plant code according TQD9021
http://intra.hn.vishay.com/quality/docs/tqd/tqd_9021.htm
- C) Lot1 and Lot2 reflects the lot numbers. Lot2 is a combination of 19 (PTC), 0745 (YYWW), 1 (production day MO=1, TU=2), A (Shift A,B,C) and 01 as production equipment
- D) Batch contains the datecode 200745 (YYYYWW), origin (PH=Philippines), 19 (PTC)
- E) Unique label serial number: VO production location (ISO), 01=label station ID, 00001158 (serial number)
- F) Check digit: counting number starting at A00 up to Z99 to give e.g. a manufactured reel a serial number (track and trace information)

TAPING OF SMD

Vishay SMD IR emitters and detectors are packed in antistatic blister tapes (in accordance with DIN IEC 40 (CO) 564) for automatic component insertion. The blister tapes are plastic strips with impressed component cavities, which are covered by a glued top tape.

Missing Devices

A maximum of 0.5 % of the total number of components per reel may be missing, excluding missing components at the beginning and at the end of reel. A maximum of three consecutive components may be missing. This gap is followed by ≥ 6 consecutive components (minimum).

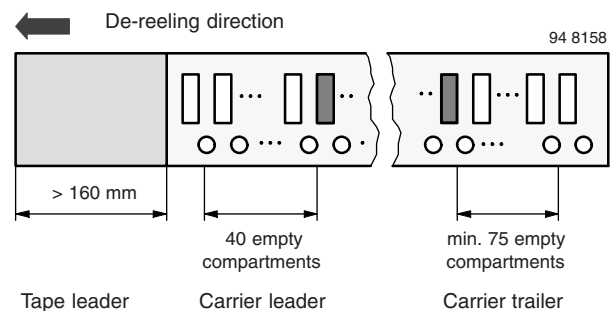


Fig. 4 - Beginning and End of Reel

TAPING SMD PLCC-2 PACKAGE

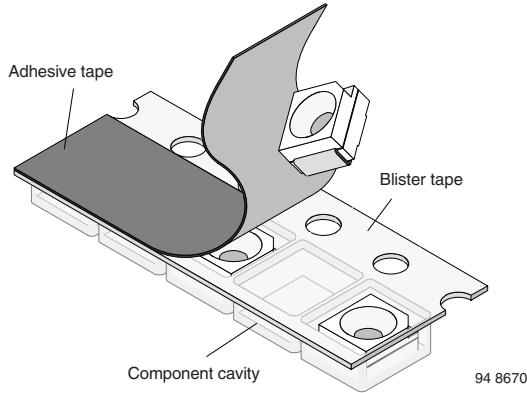


Fig. 5 - Blister Tape

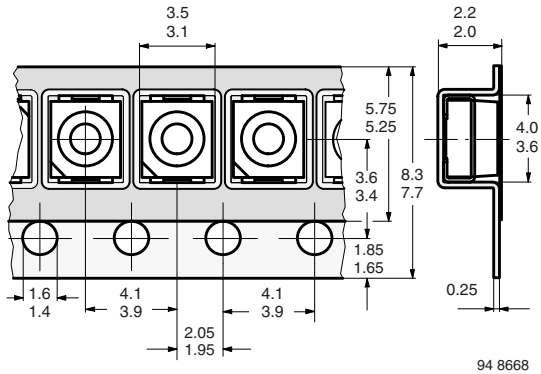


Fig. 6 - Tape Dimensions in mm for PLCC-2

TAPING STANDARDS GS08 AND GS18

GS08: 1500 pcs/reel

GS18: 8000 pcs/reel

The tape leader is at least 160 mm and is followed by a carrier tape leader with at least 40 empty compartments (figure 3). The tape leader may include carrier tape as long as the cover tape is not connected to carrier tape.

The last component is followed by a carrier tape trailer with at least 75 empty compartments, sealed with cover tape.

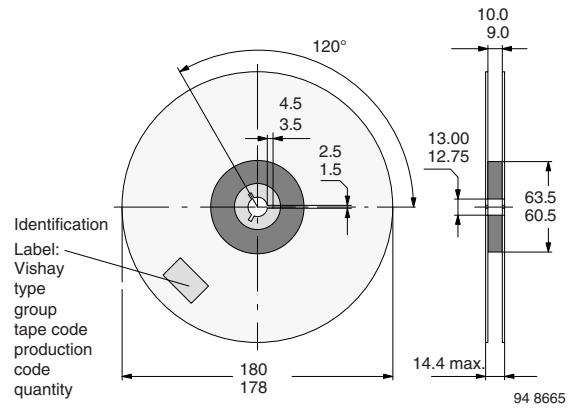


Fig. 7 - Reel Dimensions: GS08

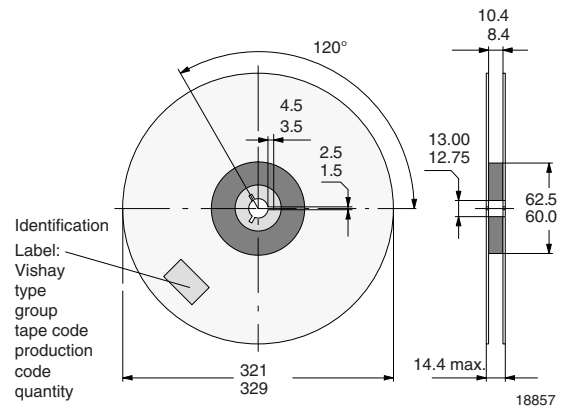


Fig. 8 - Reel Dimensions: GS18

COVER TAPE REMOVAL FORCE

The removal force may vary in strength between 0.1 N and 1.0 N at a removal speed of 5 mm/s.

In order to prevent components from popping out of blisters, the cover tape must be pulled off at an angle of 180° relative to the feed direction.

TAPING SMD WITH PCB OR DOME PACKAGE

Dimensions in millimeters

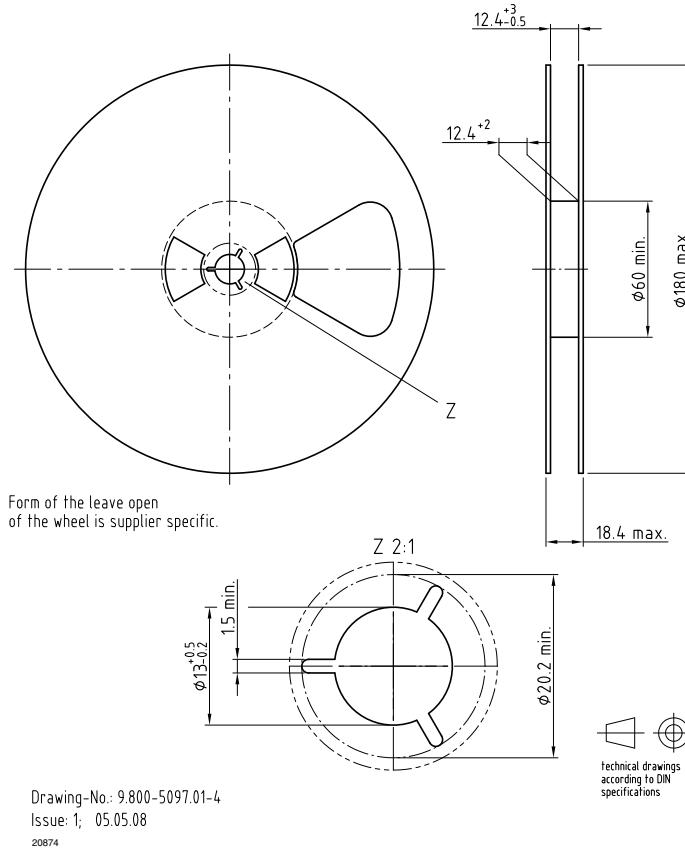


Fig. 9 - Reel of TEMD5010X01, TEMD5020X01, TEMD5110X01, TEMD5120X01, and TEMD5510FX01

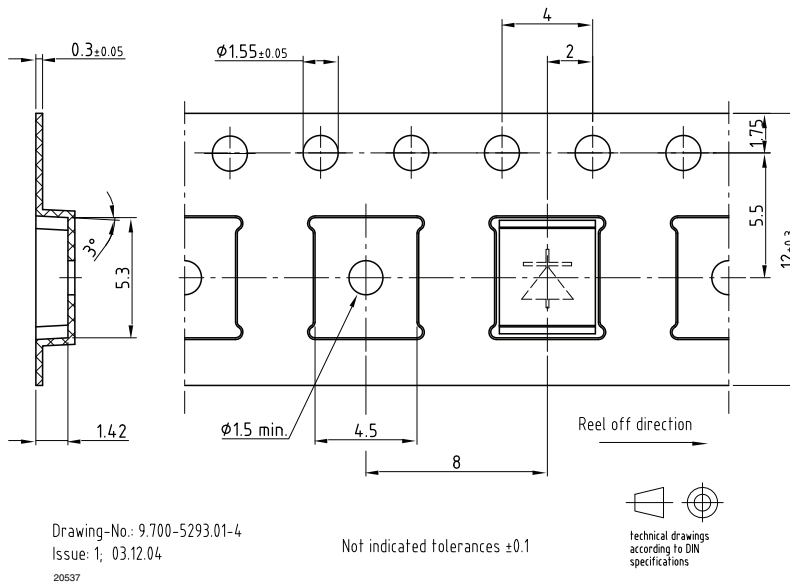
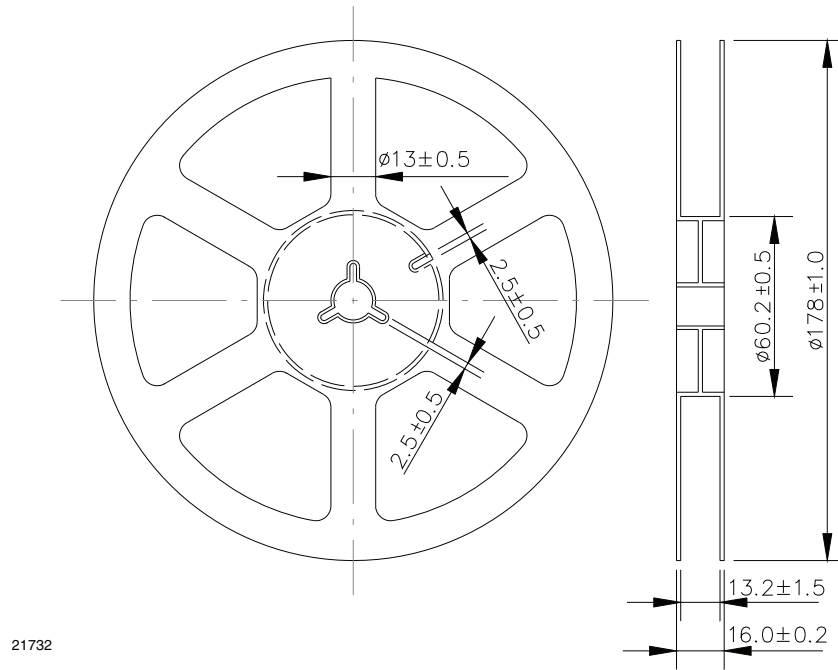
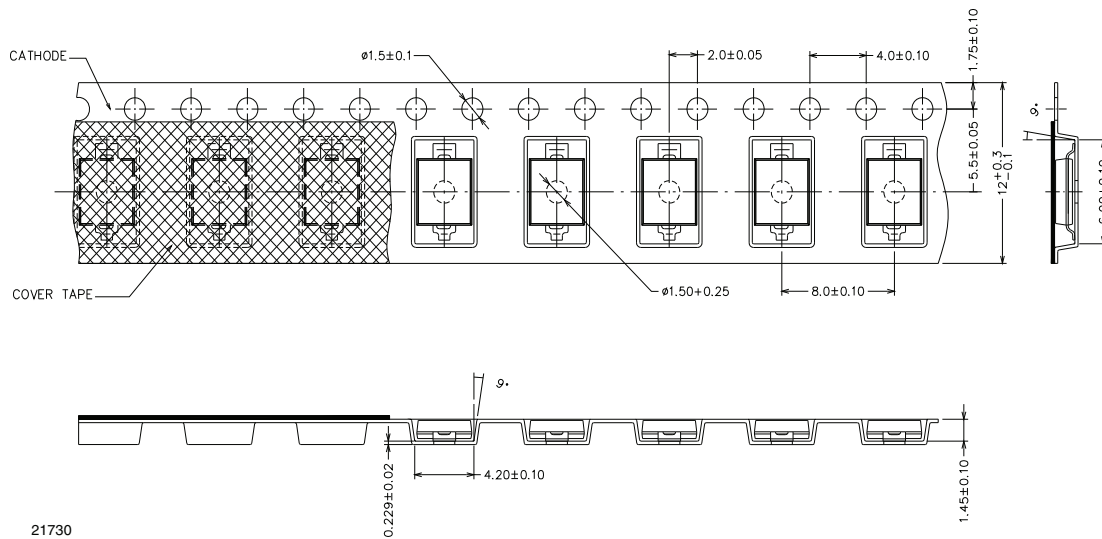


Fig. 10 - Blister Tape of TEMD5010X01, TEMD5020X01, TEMD5110X01, TEMD5120X01, and TEMD5510FX01



21732

Fig. 11 - Reel of VBP104S, VPB104SR Series and VBPW34S, VBPW34SR Series



21730

Fig. 12 - Blister Tape VBP104S Series and VBPW34S Series

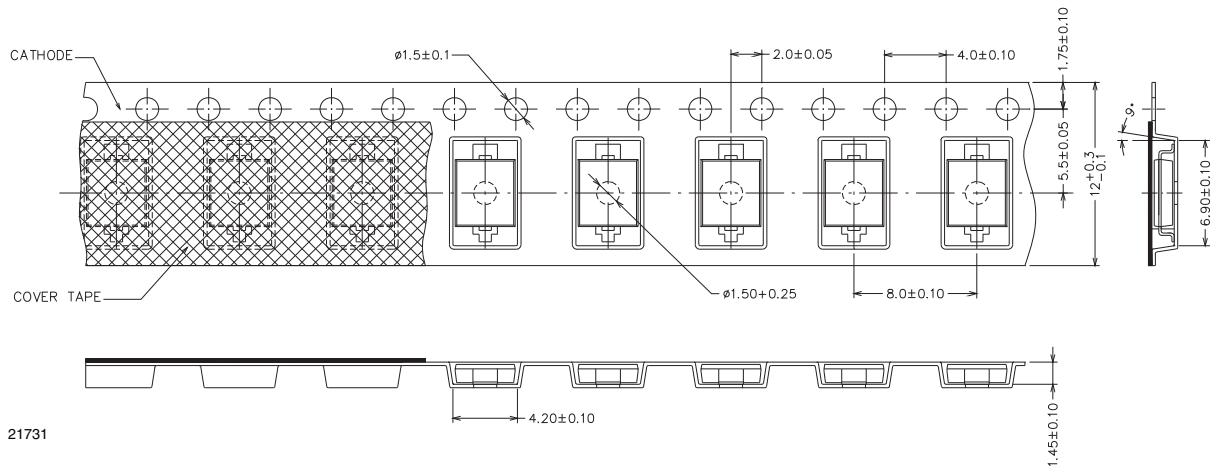
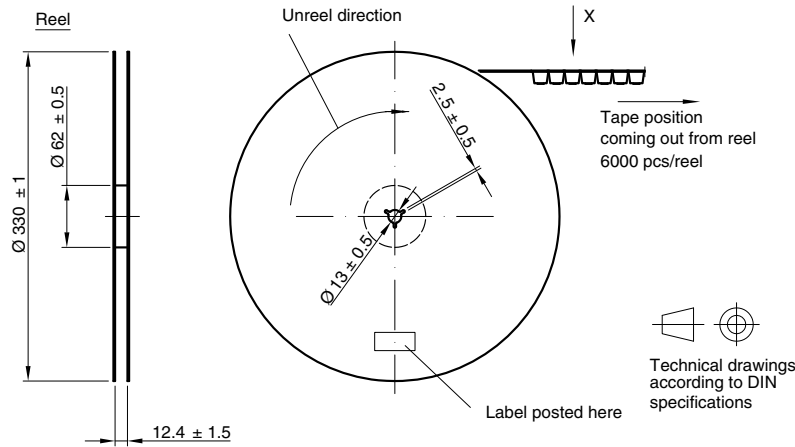
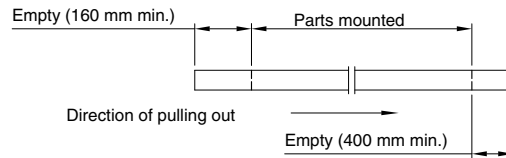


Fig. 13 - Blister Tape VBP104SR Series and VBPW34SR Series

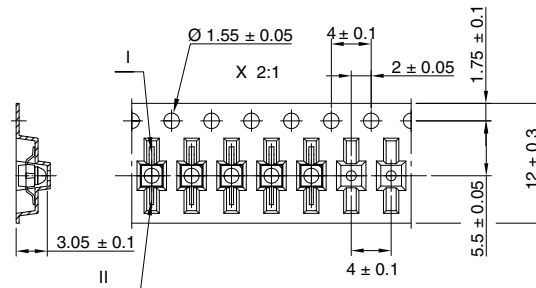


Leader and trailer tape:



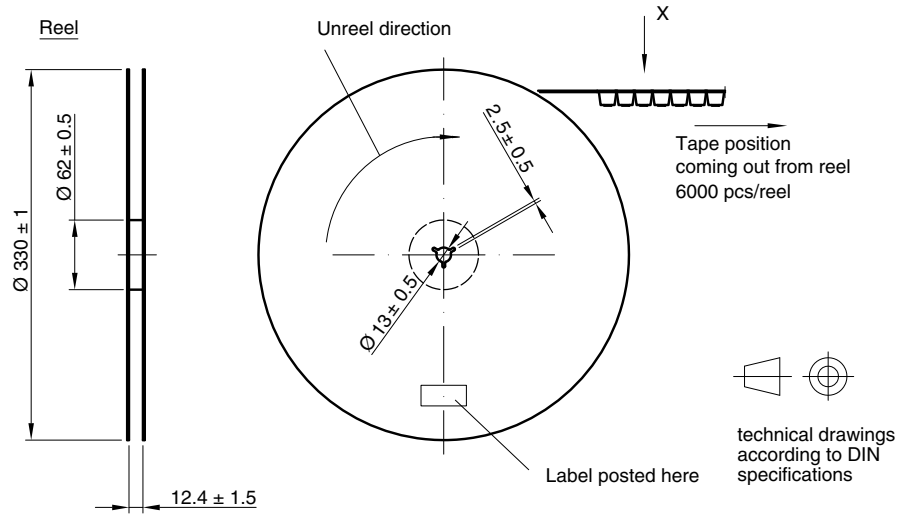
Terminal position in tape

Device	Lead I	Lead II
VEMT2000		
VEMT2500	Collector	Emitter
VEMD2000		
VEMD2500	Cathode	Anode
VSMB2000		
VSMG2000		
VSMY2850RG	Anode	Cathode

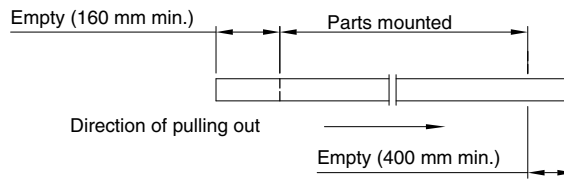


Drawing-No.: 9.800-5100.01-4
Issue: 2; 18.03.10
21572

Fig. 14 - Reel and Blister Tape of SMD Dome Lens, 1.8 mm, Reverse Gullwing

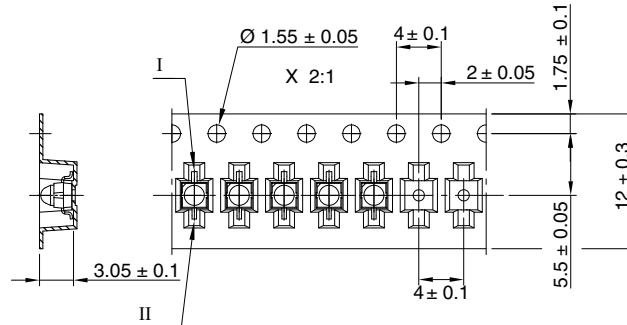


Leader and trailer tape:



Terminal position in tape

Device	Lead I	Lead II
VEMT2020	Collector	Emitter
VSMB2020	Cathode	Anode
VSMG2020		
VEMD2020	Anode	Cathode
VEMD2520		
VSMY2850G	Anode	Cathode

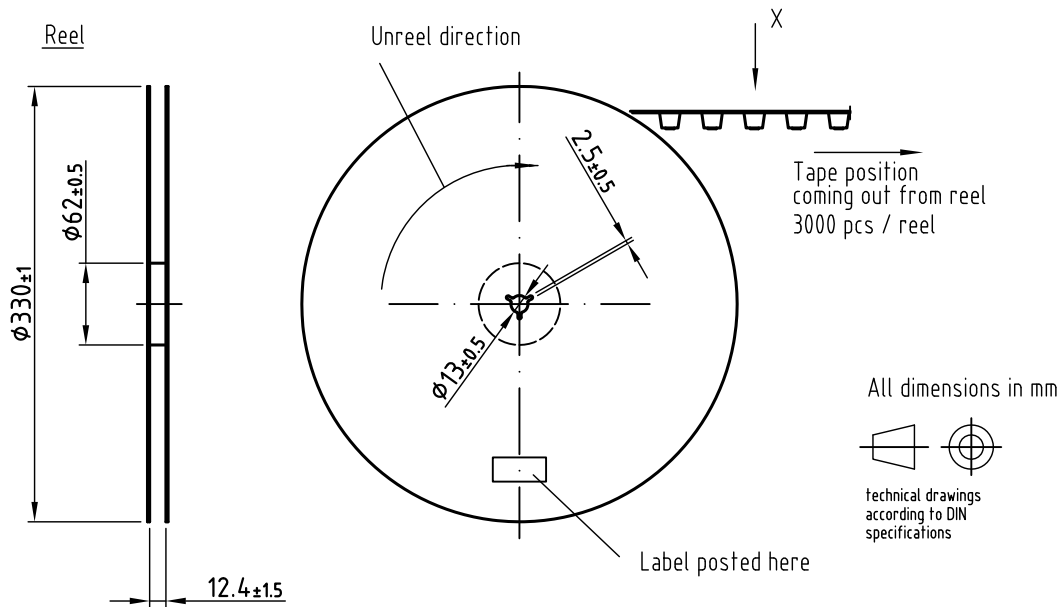


Drawing-No.: 9.800-5091.01-4

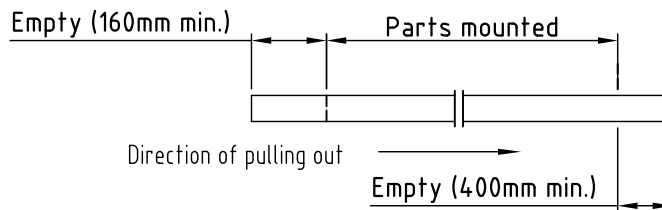
Issue: 3; 18.03.10

21571

Fig. 15 - Reel and Blister Tape of SMD Dome Lens, 1.8 mm, Gullwing

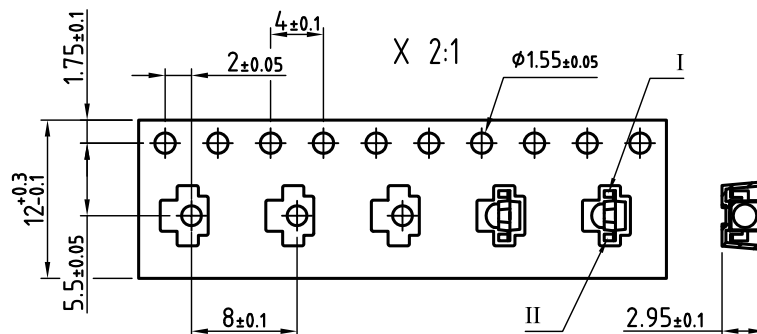


Leader and trailer tape:



Terminal position in tape

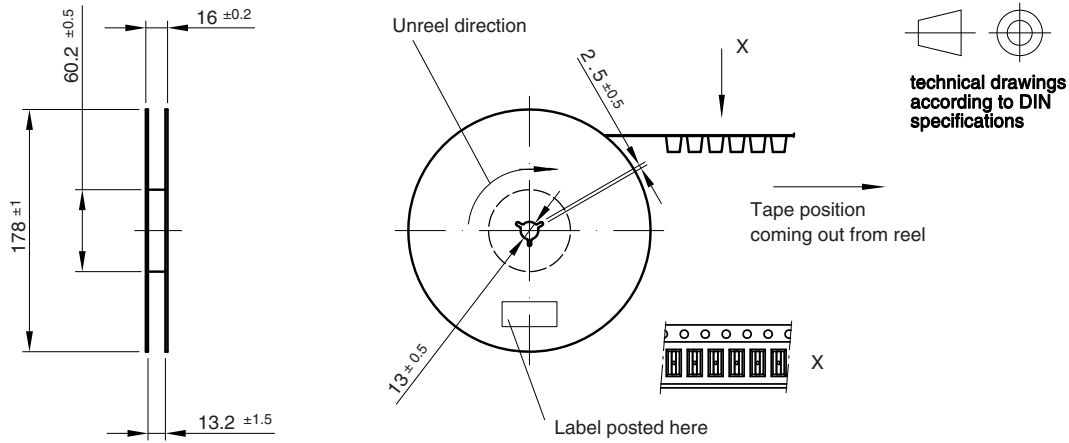
Device	Lead I	Lead II
V SMB2943SLX01	Cathode	Anode
V SMF2893SLX01		
V SMB2948SL		
V EMD2023SLX01		
V EMD2523SLX01	Collector	Emitter
V EMT2023SLX01		
V EMT2523SLX01	Anode	Cathode
V SMY2853SL		



Drawing refers to following types: see table
Reel dimensions and tape

Drawing-No.: 9.800-5123.01-4
Issue: prel; 03.08.12

Fig. 16 - Reel and Blister Tape of SMD Dome Lens, 1.8 mm, Side Looker



Leader and trailer tape:

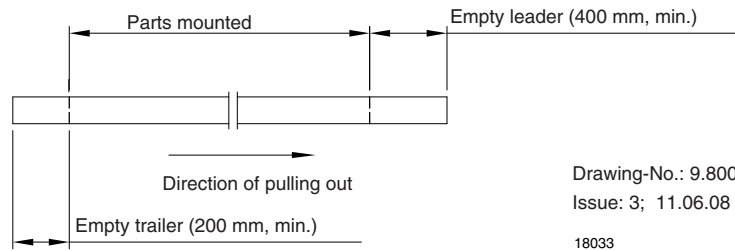


Fig. 17 - Reel of TEMx1000 Series and TSMx1000 Series
Quantity per Reel: 1000 pcs

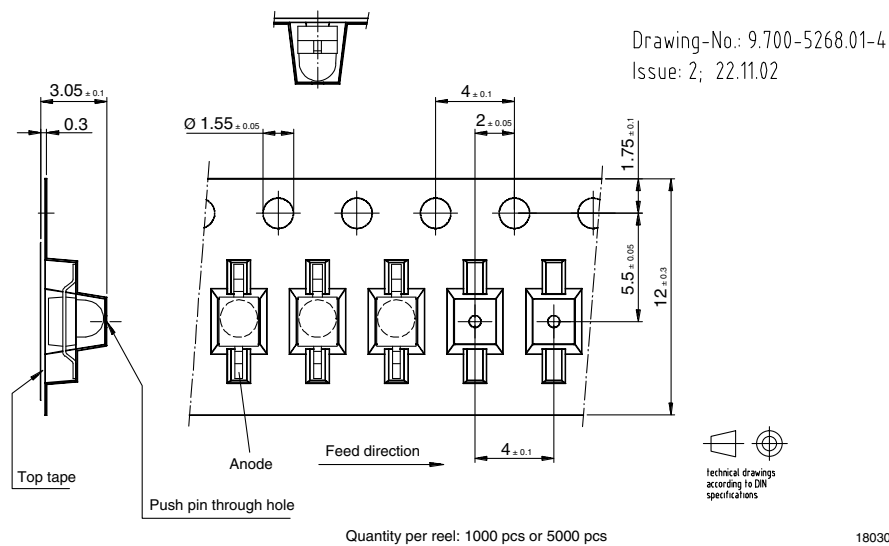
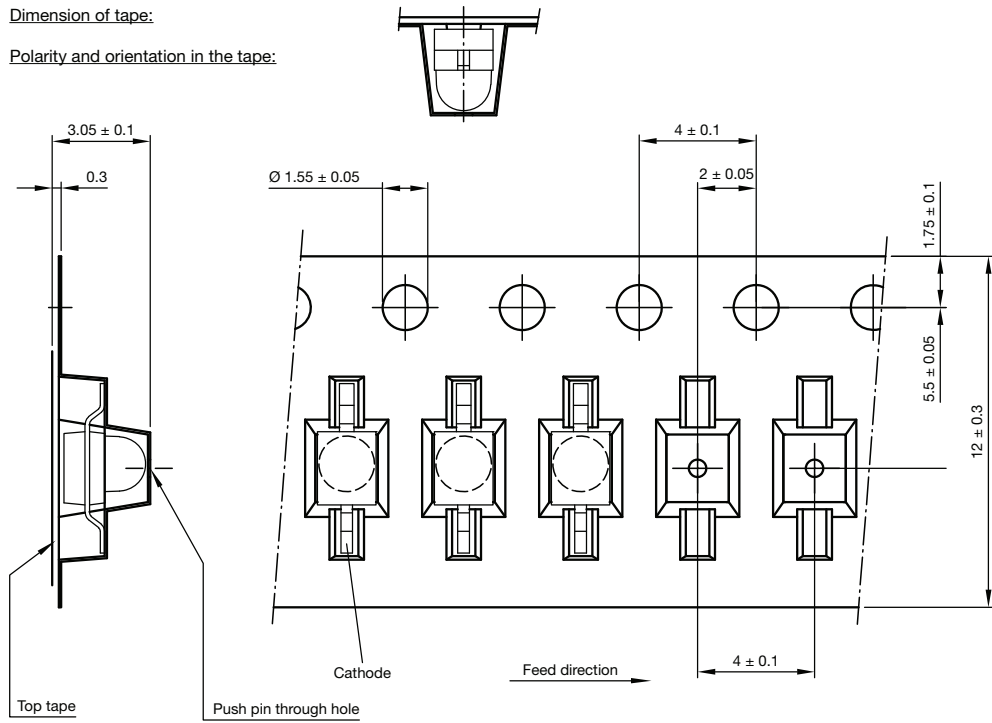


Fig. 18 - Blister Tape of TSML1000, and TEMD1000

Dimension of tape:

Polarity and orientation in the tape:



Quantity per reel: 1000 pieces

Drawing-No.: 9.700-5268.02-4
Issue: 1; 28.09.2021

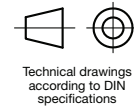
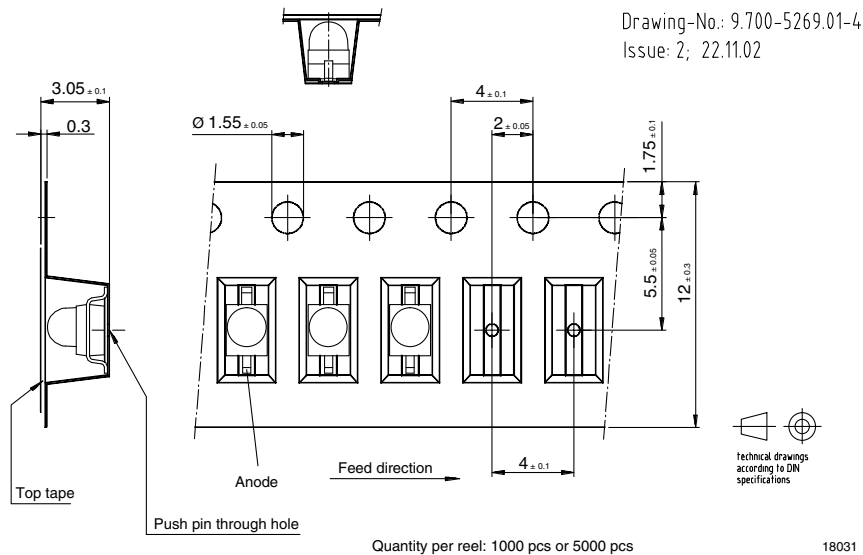


Fig. 19 - Blister Tape of TSMF1000



Drawing-No.: 9.700-5269.01-4
Issue: 2; 22.11.02



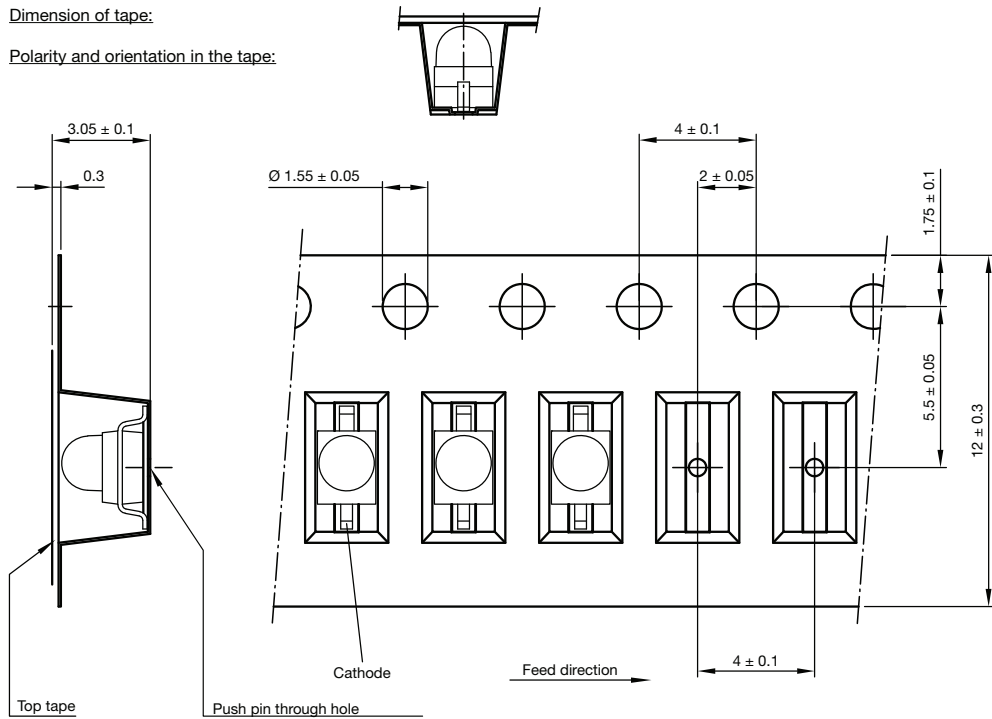
Quantity per reel: 1000 pcs or 5000 pcs

18031

Fig. 20 - Blister Tape of TSML1020, and TEMD1020

Dimension of tape:

Polarity and orientation in the tape:

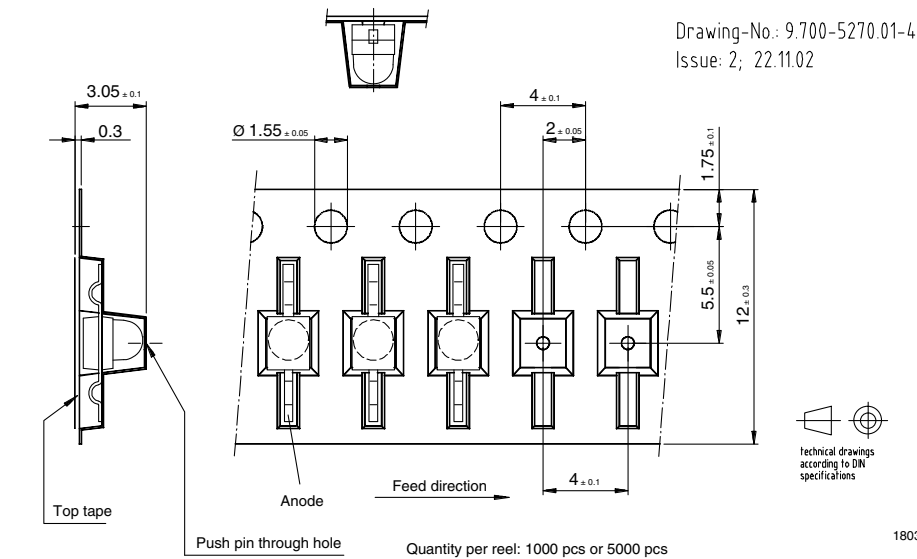


Quantity per reel: 1000 pieces

Drawing-No.: 9.700-5269.02-4
Issue: 1; 28.09.2021

Technical drawings according to DIN specifications

Fig. 21 - Blister Tape of TSMF1020



Drawing-No.: 9.700-5270.01-4
Issue: 2; 22.11.02

Technical drawings according to DIN specifications

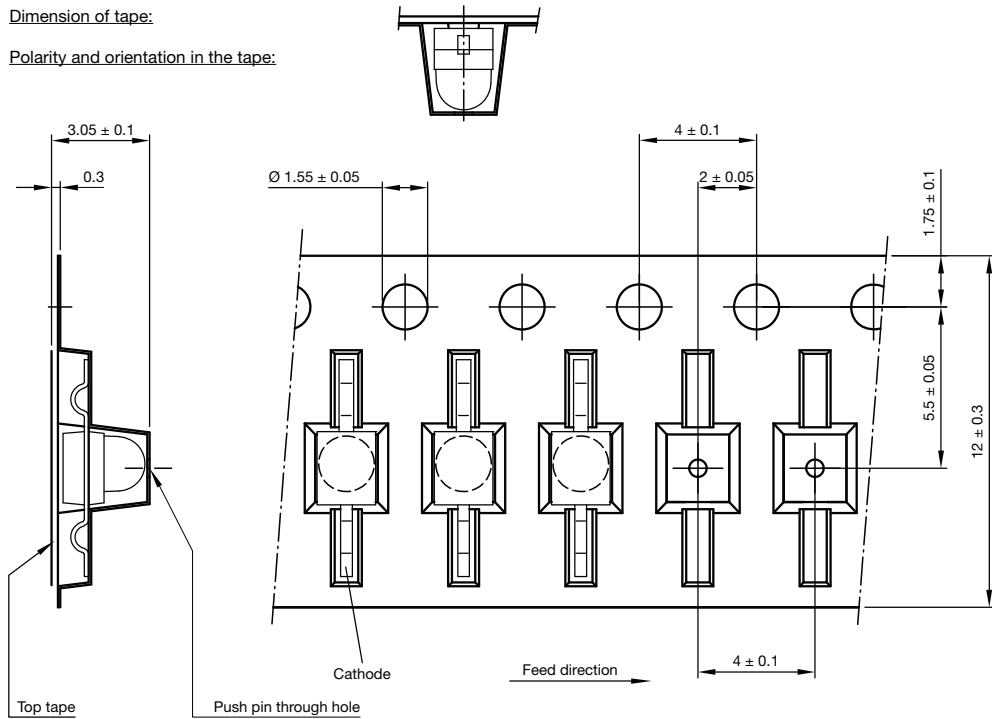
18032

Quantity per reel: 1000 pcs or 5000 pcs

Fig. 22 - Blister Tape of TSML1030, and TEMD1030

Dimension of tape:

Polarity and orientation in the tape:



Quantity per reel: 1000 pieces

Drawing-No.: 9.700-5270.02-4
Issue: 1; 28.09.2021

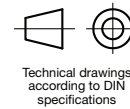
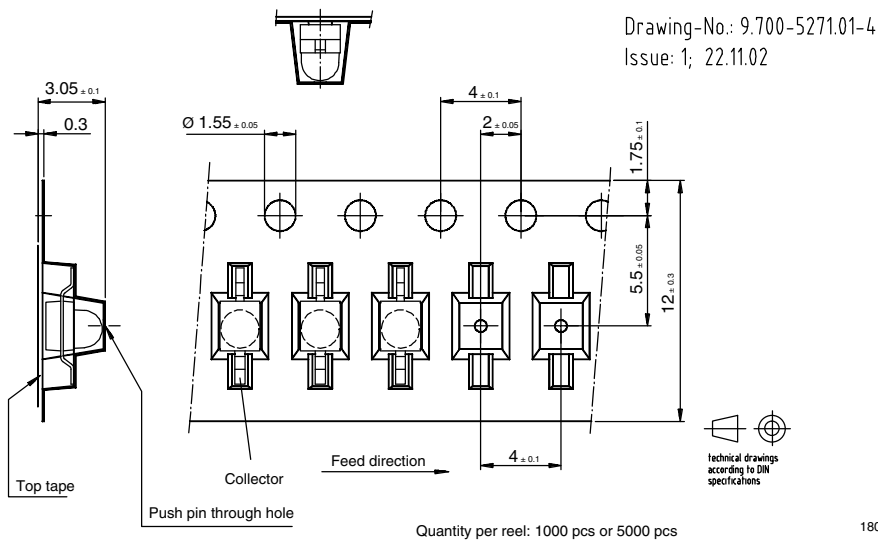


Fig. 23 - Blister Tape of TSMF1030



Drawing-No.: 9.700-5271.01-4
Issue: 1; 22.11.02



Quantity per reel: 1000 pcs or 5000 pcs

18089

Fig. 24 - Blister Tape of TEMT1000

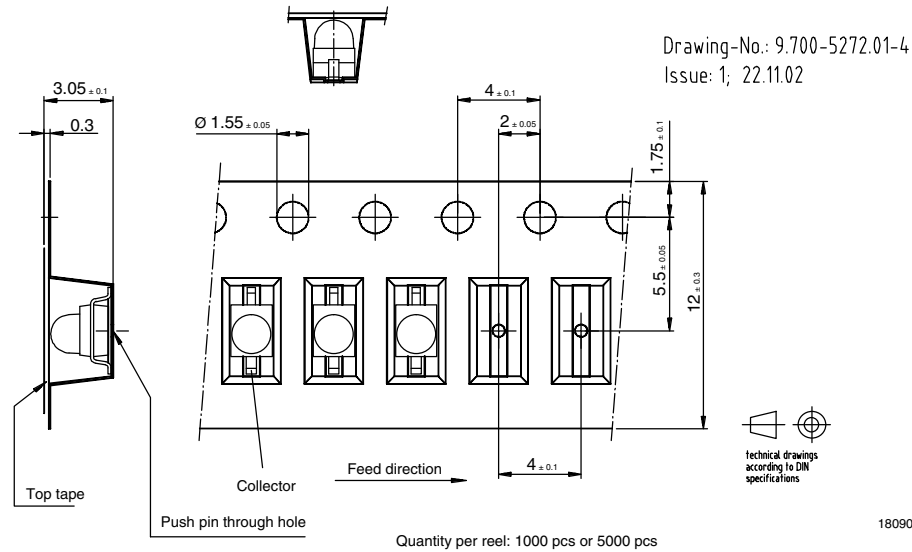


Fig. 25 - Blister Tape of TEMT1020 and TEMT1520

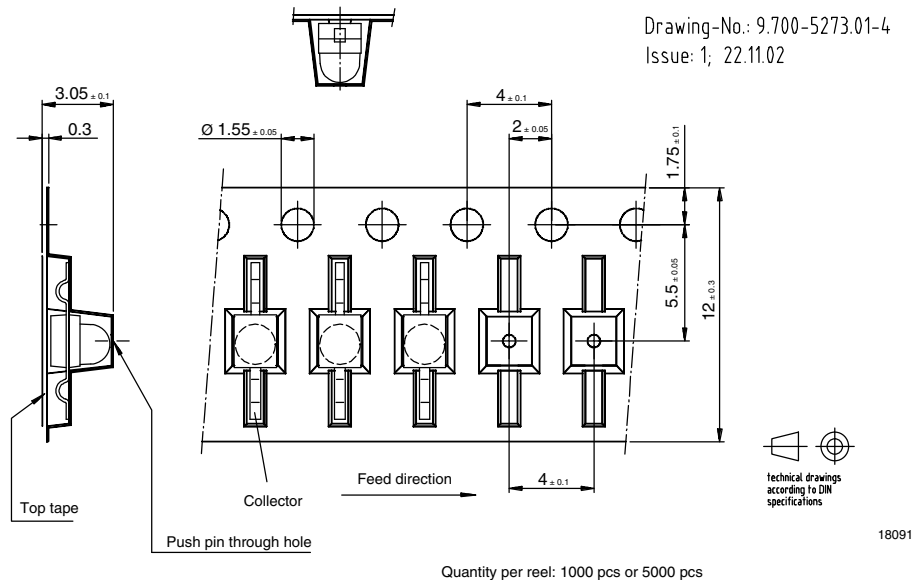
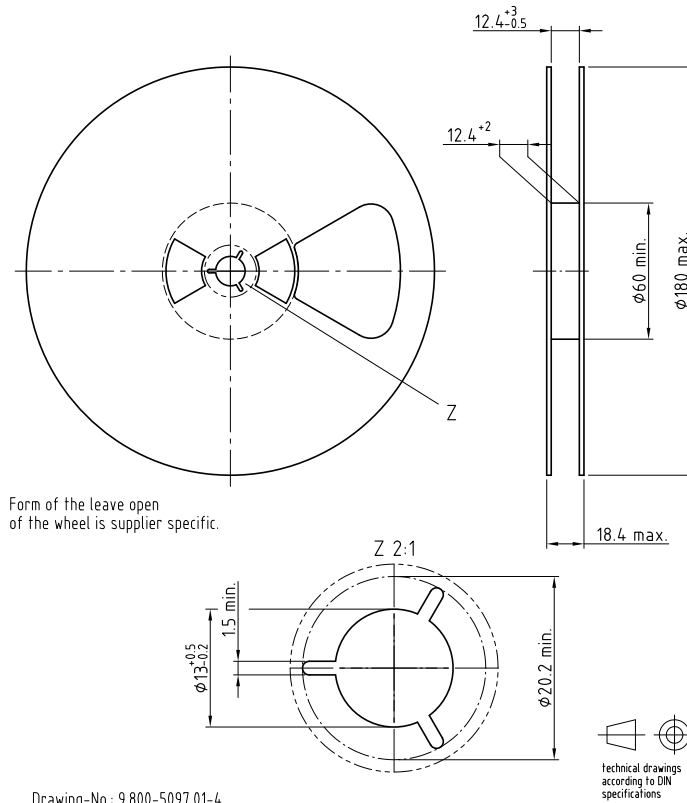
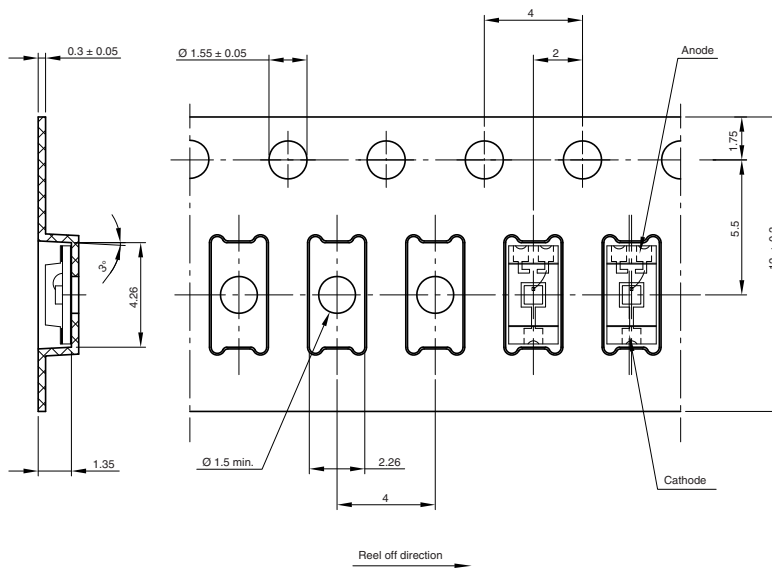


Fig. 26 - Blister Tape of TEMT1030



Drawing-No.: 9.800-5097.01-4
 Issue: 1; 05.05.08
 20874

Fig. 27 - Reel of TEMx6000, VEML60x0FX01 Series
 Quantity per Reel: 3000 pcs



Drawing-No.: 9.700-5329.02-4
 Issue: 2; 31.08.09
 20877

Not indicated tolerances ± 0.1

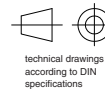
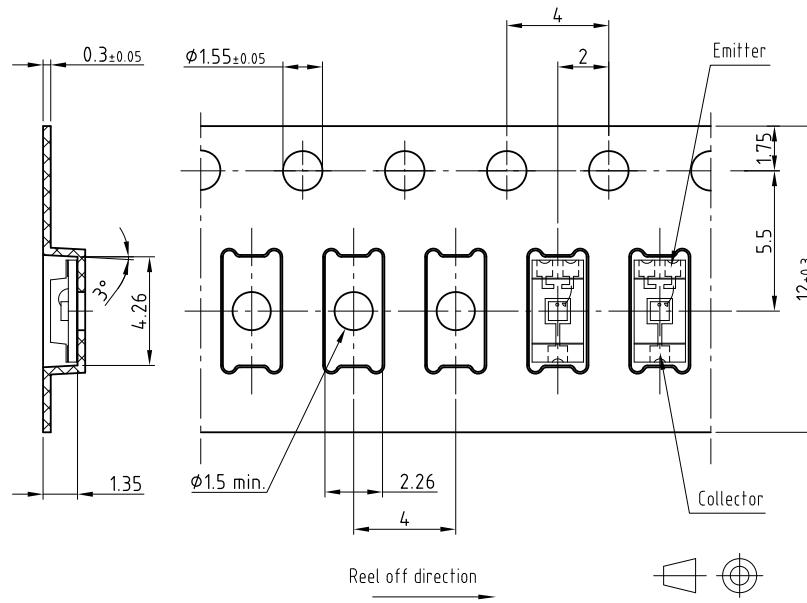


Fig. 28 - Blister Tape of TEMD6010FX01



Drawing-No.: 9.700-5329.01-4
 Issue: 1; 05.05.08
 20876

Not indicated tolerances ±0.1

Fig. 29 - Blister Tape of TEMT6000X01

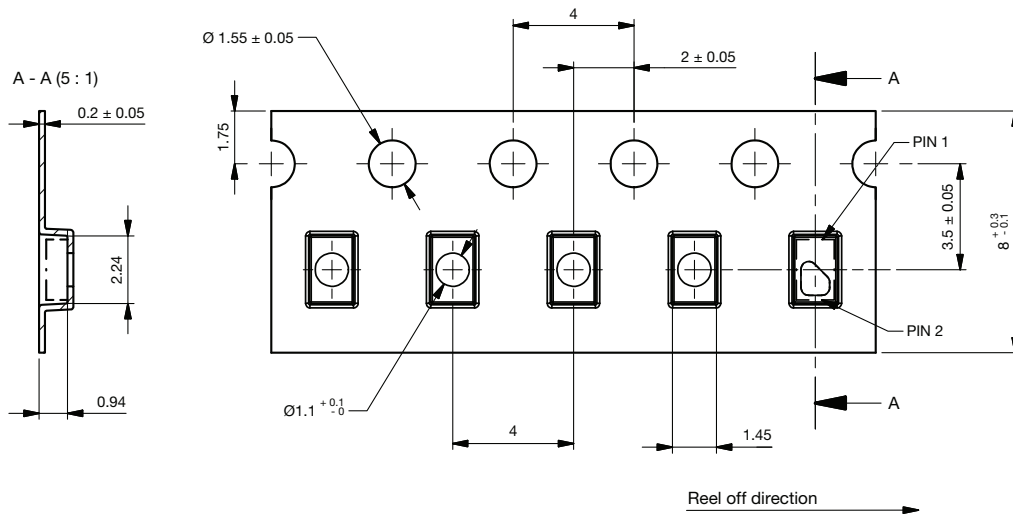
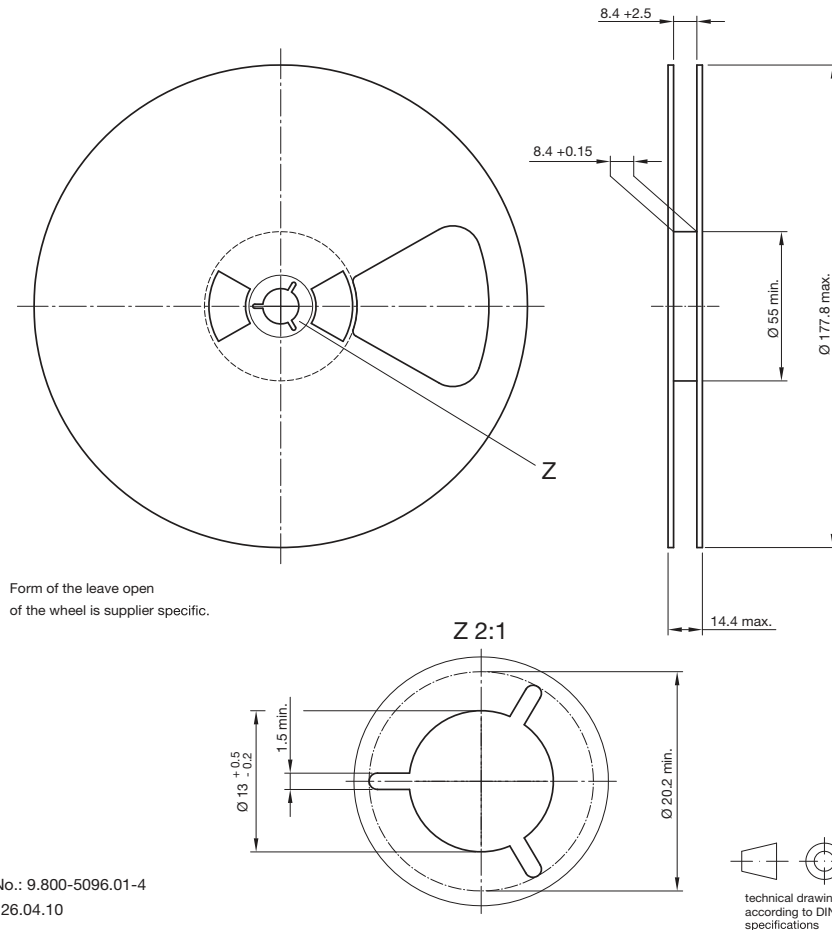


Tabelle		
TYPE	PIN 1	PIN 2
VEMD4xxx	Anode	Cathode
VEMT4xxx	Emitter	Collector

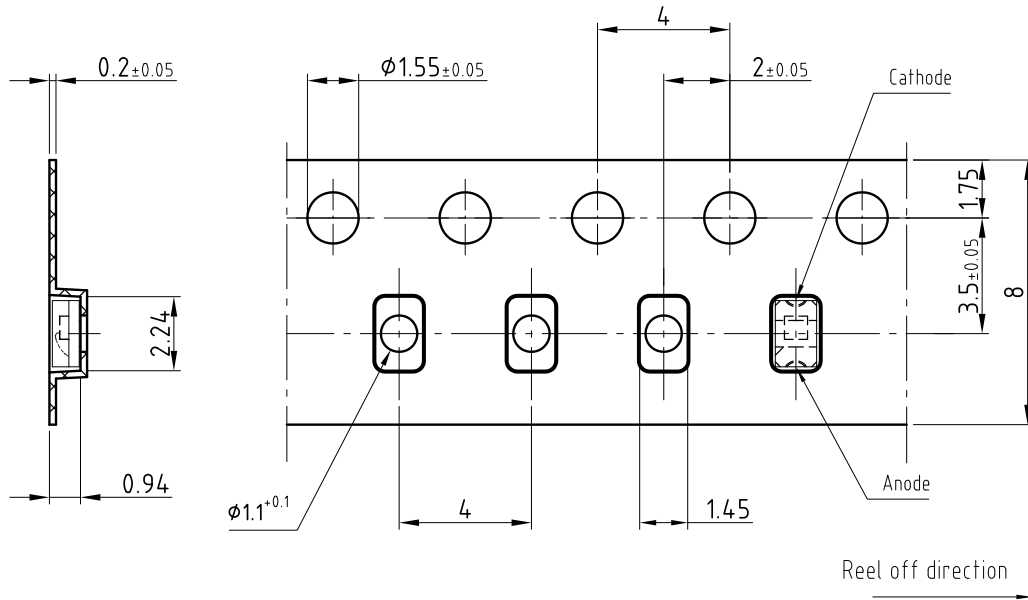
Drawing-No.: 9.700-5411.0-4
 Issue: 1; 31.01.2019

Fig. 30 - Reel of VEMD4xxx, VEMT4xxx Series
 Quantity per reel: 3000 pcs



Drawing-No.: 9.800-5096.01-4
 Issue: 2; 26.04.10
 20875

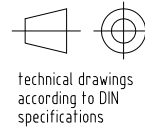
Fig. 31 - Reel of TEMx6200X01, TEMx7x00X01, VSMB1940X01, VSMY1850X01 Series
 Quantity per reel: 3000 pcs



Drawing-No.: 9.700-5311.01-4

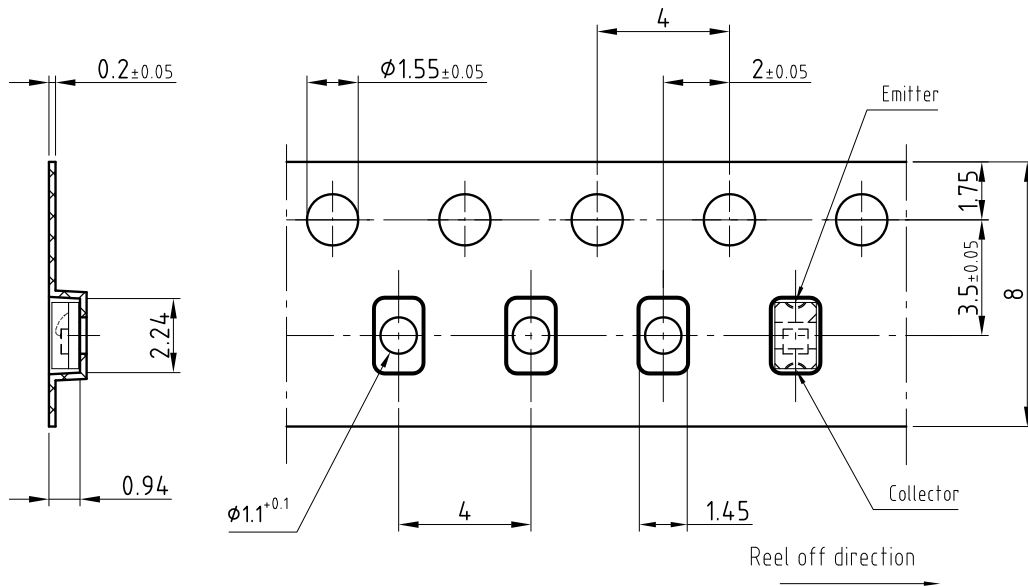
Issue: 1; 23.02.07

21501



Not indicated tolerances ±0.1

Fig. 32 - Blister Tape of TEMD7x00X01, VSMB1940X01



Drawing-No.: 9.700-5310.01-4

Issue: 2; 14.08.07

20690

Not indicated tolerances ±0.1

Quantity per reel: 3000 pcs

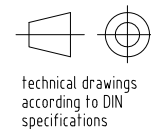
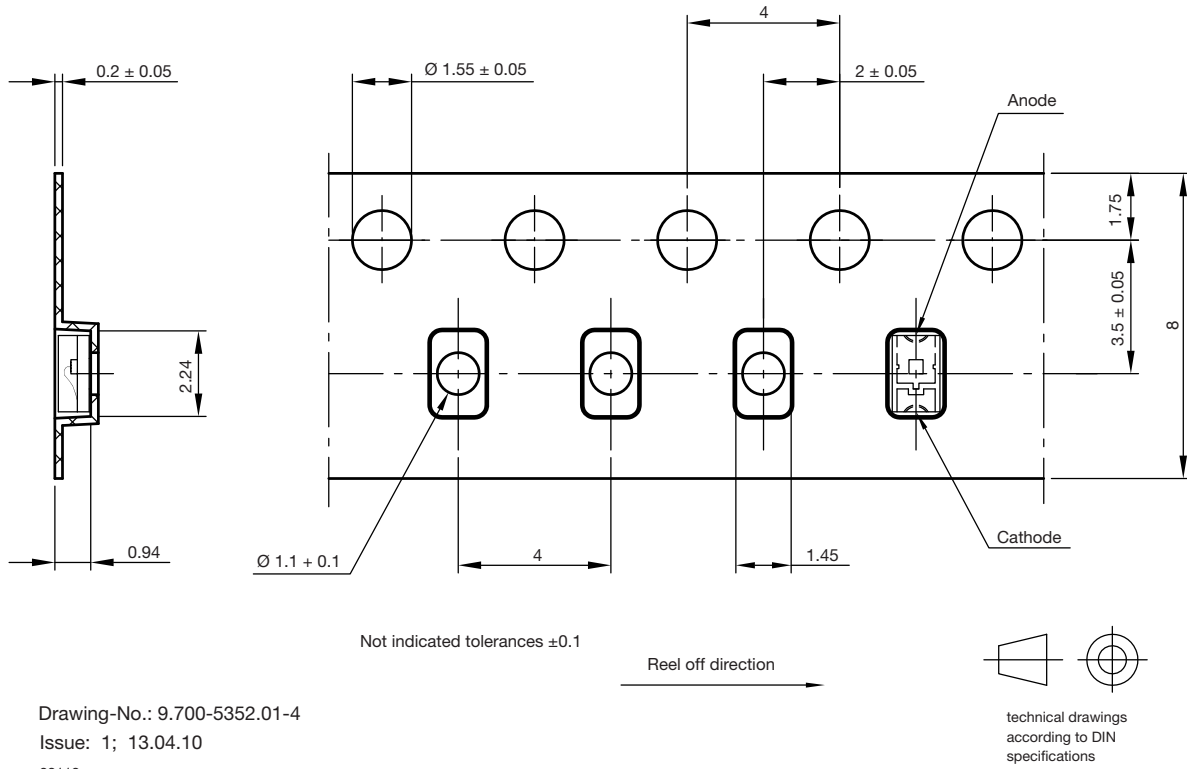


Fig. 33 - Blister Tape of TEMA7x00X01, TEMT6200FX01



Drawing-No.: 9.700-5352.01-4
 Issue: 1; 13.04.10
 22112

Fig. 34 - Blister Tape of VSMY1850, VSMY1850X01, VSMY4xxx, VSMY5xxx

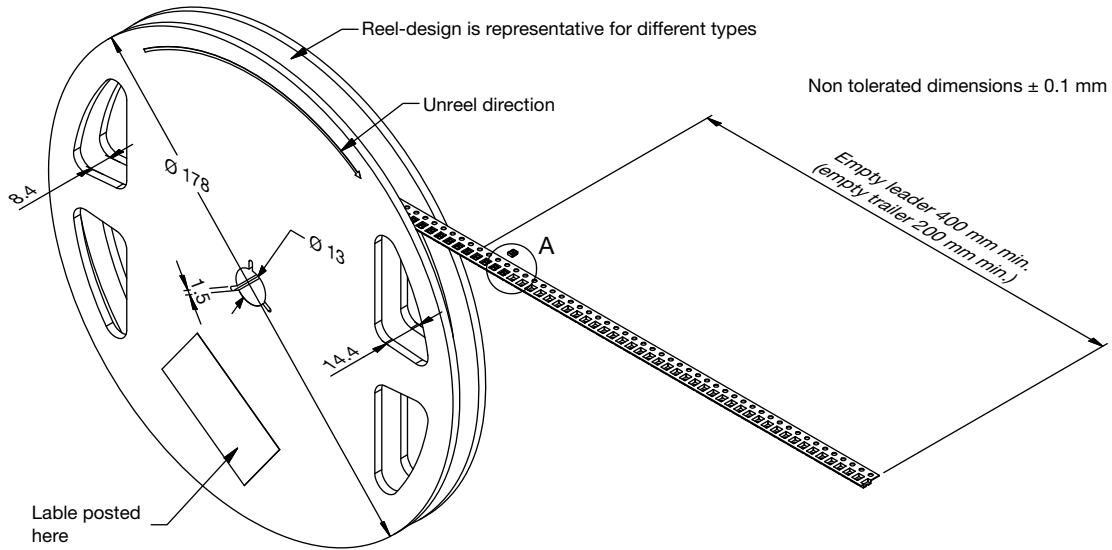


Fig. 35 - Reel of VCNT2020, VCNT2025X01, or VEML6030

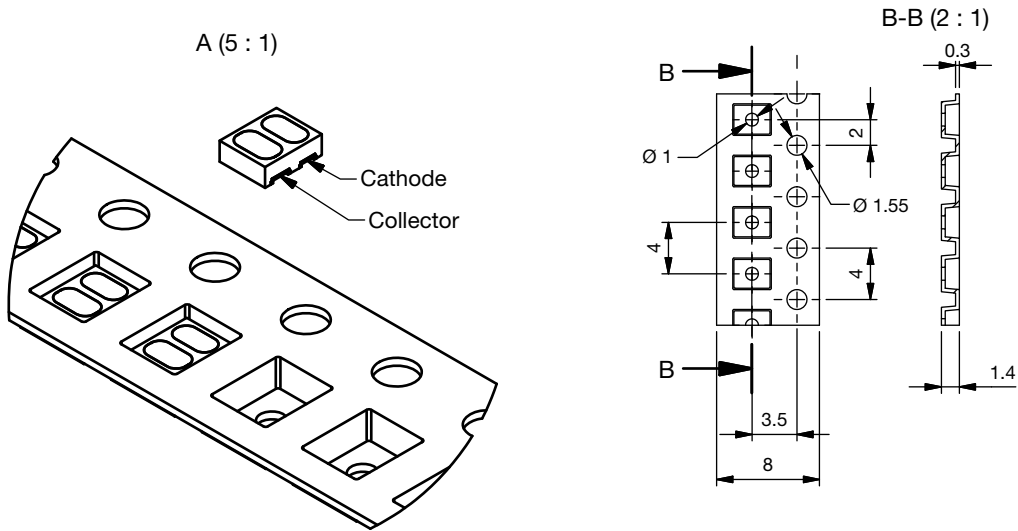


Fig. 36 - Blister Tape of VCNT2020

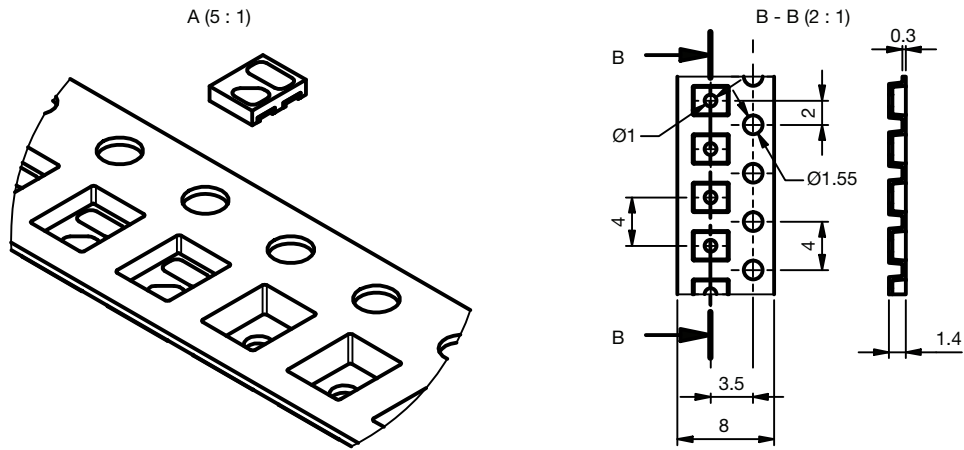
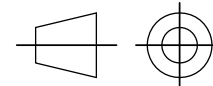
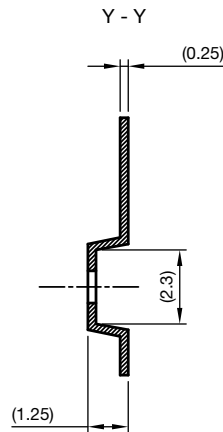
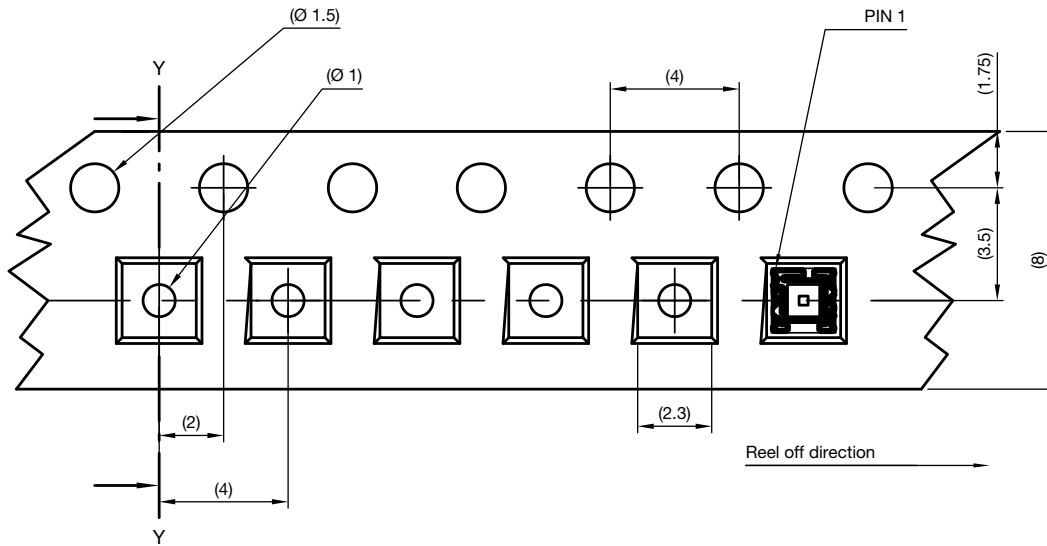


Fig. 37 - Blister Tape of VCNT2025X01

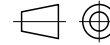


technical drawings
according to DIN
specifications

Drawing-No.: 9.700-5397.01-4
Issue: 1; 19.02.16

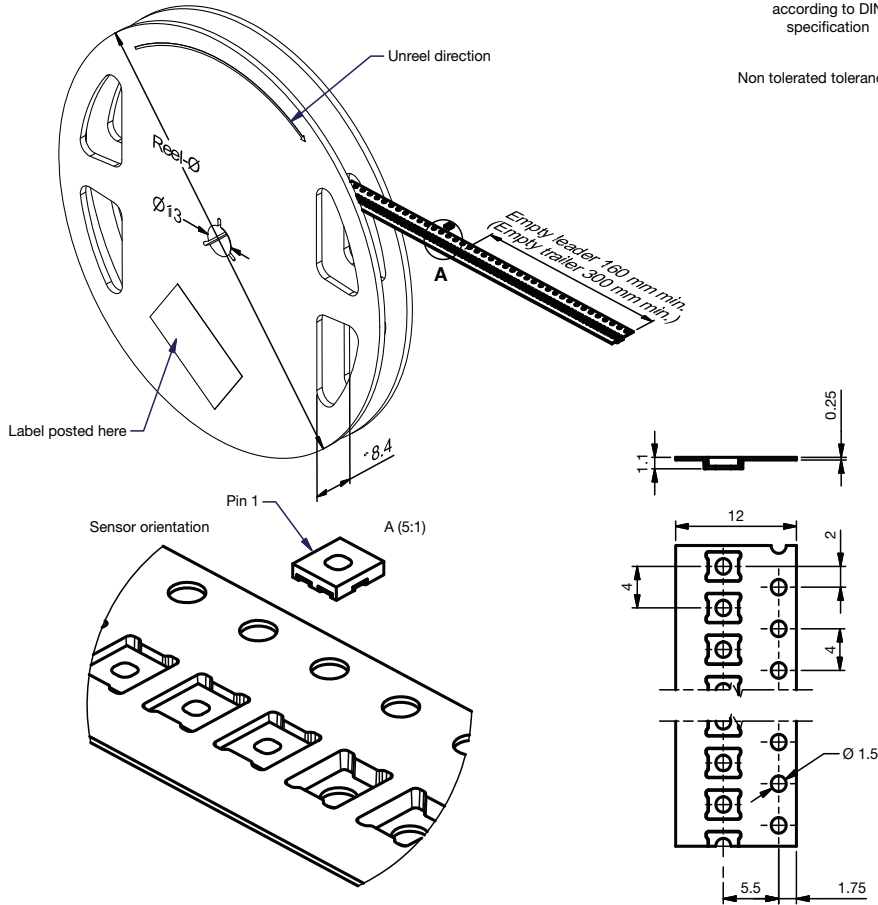
Fig. 38 - Blister Tape of VEML6030

Reel size:
 VEML6031: \varnothing 180 mm \pm 2 mm = 3000 pcs.
 VEML6031-GS 15: \varnothing 330 mm \pm 2 mm = 10 000 pcs.
 Reel design is representative for different types.



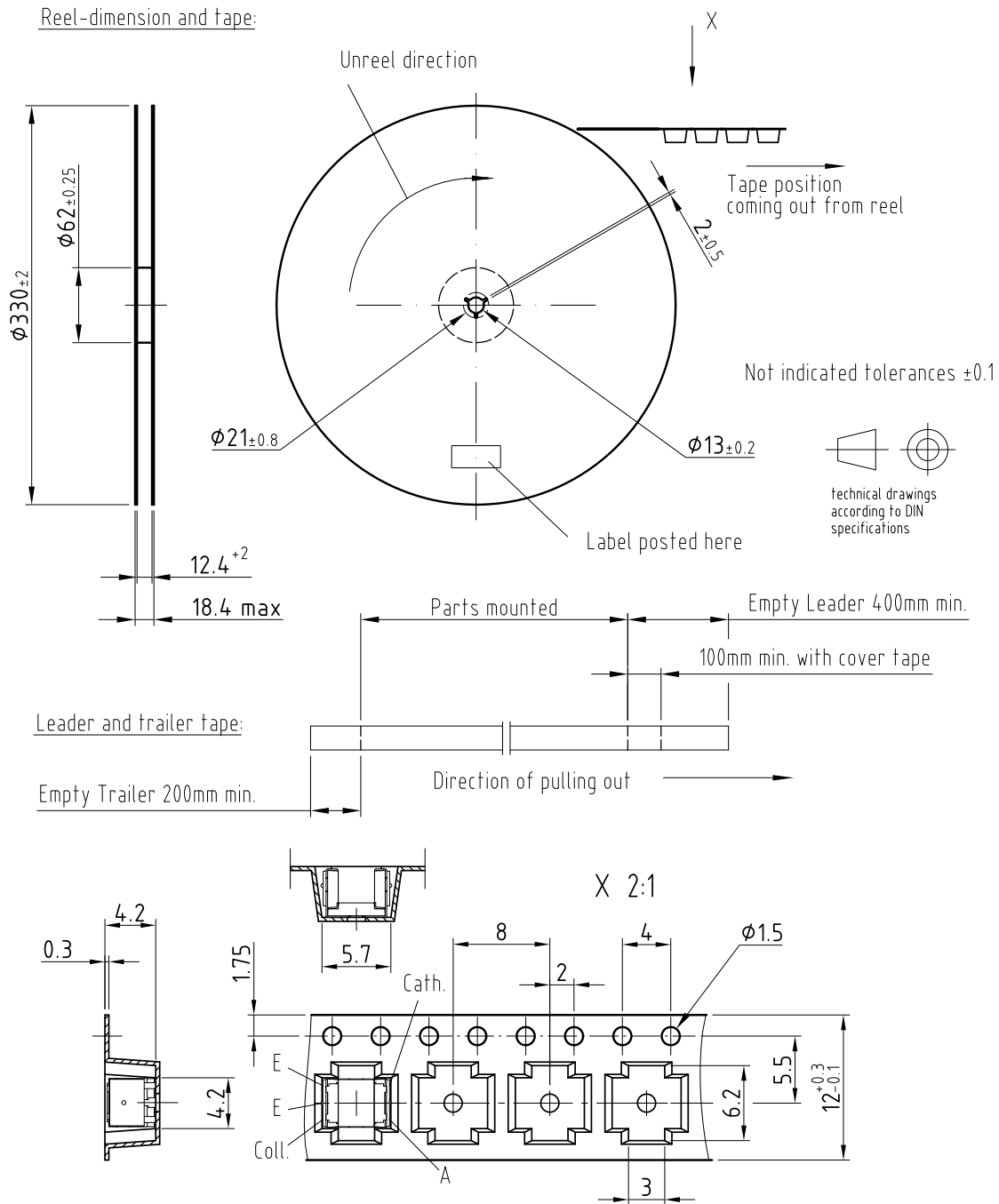
Technical drawings according to DIN specification

Non tolerated tolerances \pm 0.1 mm



Drawing No.: 9.800-5148.01-4
 Issue: 2; 28.05.21

Fig. 39 - Reel and Taping Diagram of VEML6031X00



Drawing-No.: 9.800-5092.01-4

Issue: 1; 14.05.07

20611

Fig. 40 - Reel and Tape Diagram of SMD Transmissive Sensors
 TCPT1300X01, TCUT1300X01, TCPT1350X01, TCUT1350X01, TCPT1400X01, TCUT1400X01

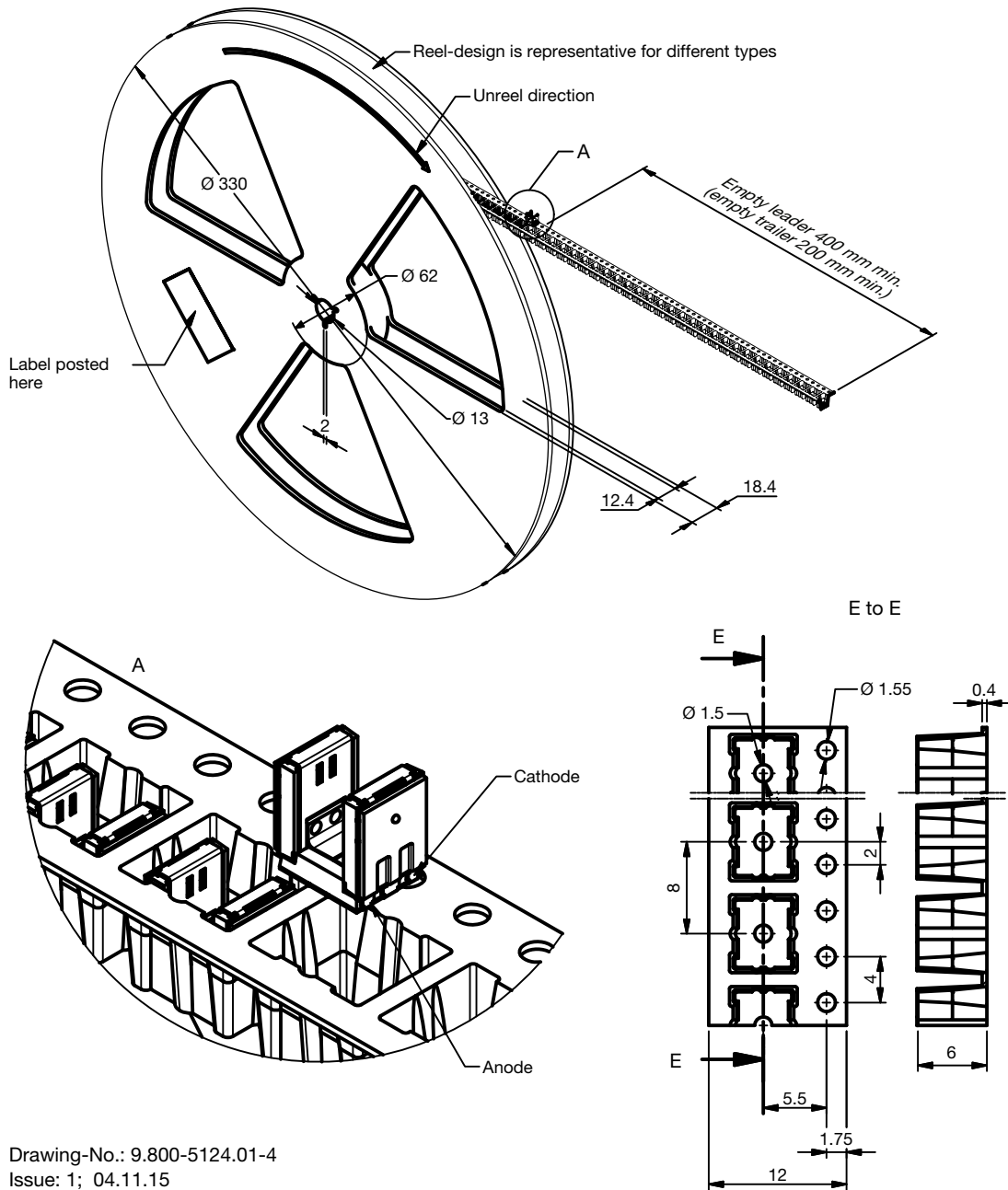
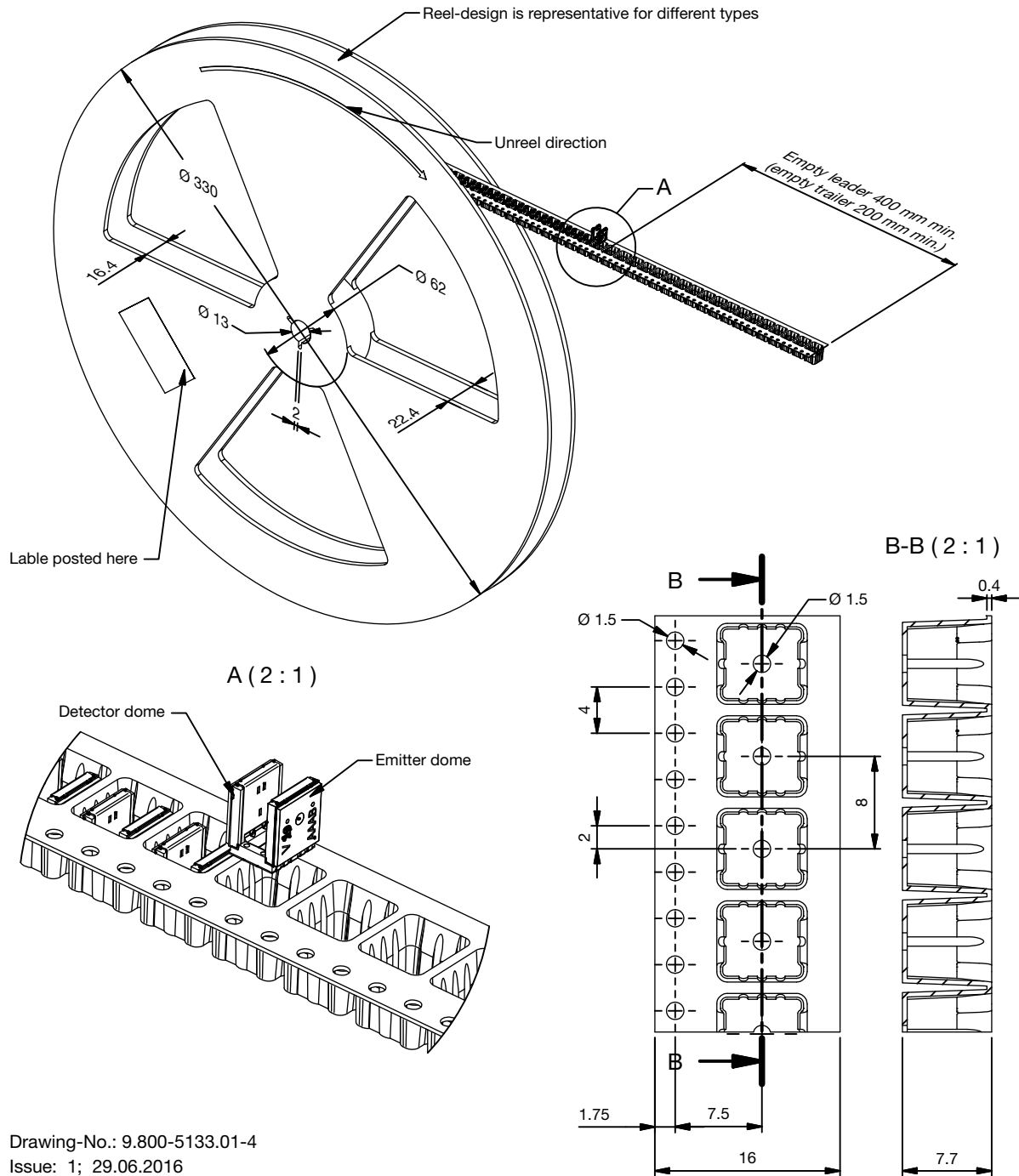


Fig. 41 - Reel and Tape Diagram of SMD Transmissive Sensors
TCPT1600X01, TCUT1600X01



Drawing-No.: 9.800-5133.01-4
Issue: 1; 29.06.2016

Fig. 42 - Reel and Tape Diagram of SMD Transmissive Sensors
TCUT1630X01, TCUT1800X01



TAPING OF T-1 (3 mm) AND T-1¾ (5 mm) DEVICES

The taping specification is based on IEC publication 286, taking into account industrial requirements for automatic insertion.

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

Note that the lead wires of taped components may be shorted or bent in accordance to the IEC standard.

PACKAGING

The tapes of components are available on reels or in Ammopack. Each reel and each box is marked with label containing the following information:

- Vishay
- Type
- Group
- Tape code (see figure 24)
- Productions code
- Quantity

CODE FOR TAPED DEVICES

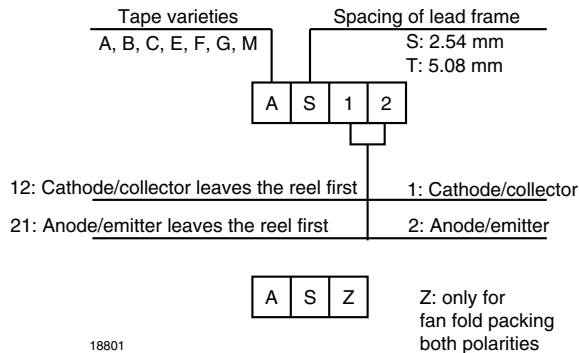


Fig. 43 - Taping Code

Number of Packed Components

- T-1 (3 mm): 2000 pcs
- T-1¾ (5 mm): 1000 pcs

MISSING COMPONENTS

Up to 3 consecutive components may be missing but the gap is followed by at least 6 components. A maximum of 0.5 % of 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

Pulling force in plane of the tape, at right angles to reel: ≥ 5 N

Note

- Shipment in fan-fold packages is standard for radial taped devices. Shipment in reel packing is only possible if the customer guarantees removal of empty reels. According to what is stated in a German packaging decree (Verpackungsverordnung) we are not able to accept return of reels.

ORDERING CODE

Type designations are extended by a code for the taping standard.

Example:

- TSAL6200-AS12 (reel packing)
- TSAL6200-ASZ (fan-fold packing)
- BPW85-AS12 (reel packing)

TABLE 4 - TAPING SURVEY OF LEADED COMPONENTS

CODE FOR TAPING STANDARD	"H" - HEIGHT OF TAPING IN mm (TOLERANCES ± 0.5 mm)			PREFERENCES	REMARKS
	3 mm	5 mm	SIDEVIEW'S		
AS12	17.3	17.3	16.0	Standard	Reel, cathode / collector leaves first
AS21					Reel, anode / emitter leaves first
ASZ					Ammopack
KS12	19.3	19.3	-	-	Reel, cathode / collector leaves first
KS21					Reel, anode / emitter leaves first
KSZ					Ammopack
CS12	22.0	22.0	-		Reel, cathode / collector leaves first
CS21					Reel, anode / emitter leaves first
CSZ					Ammopack
ES12	-	24.0	24.0	Standard	Reel, cathode / collector leaves first
ES21					Reel, anode / emitter leaves first
ESZ					Ammopack
EGZ	-	-	24.0		Ammopack 2 mm pin distance lead to lead
MS12	25.5	25.5	-		Reel, cathode / collector leaves first
MS21					Reel, anode / emitter leaves first
MSZ					Ammopack
GSZ	-	-	29.0		Ammopack 2 mm pin distance lead to lead
FSZ	-	-	27.0	Standard	Ammopack
FGZ	-	-	27.0		Ammopack 2 mm pin distance lead to lead

REEL DIMENSIONS in millimeters

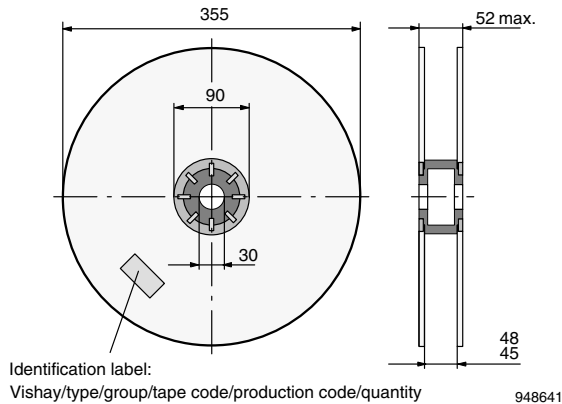


Fig. 44 - Dimensions of the Reel

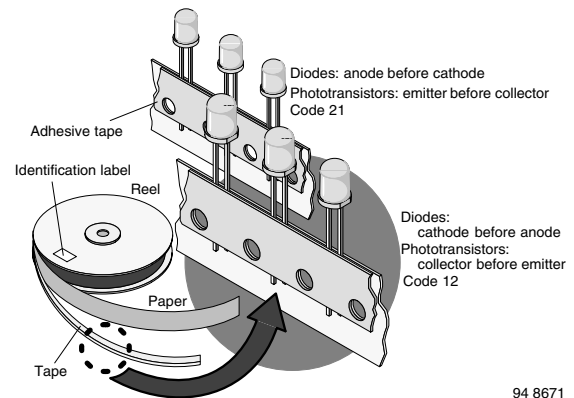


Fig. 45 - Components on Tape and Reel

AMMOPACK

The tape is folded in a concertina arrangement and laid in a cardboard box.

If components are required to have the cathode or collector leave the box first (figure 27), then open the box at the side marked with the “-” symbol. If anode or emitter should leave the box first, then open at the side marked with the “+” symbol.

TAPING OF T-1 (3 mm) PACKAGES

Polarity options: Z, 12, 21

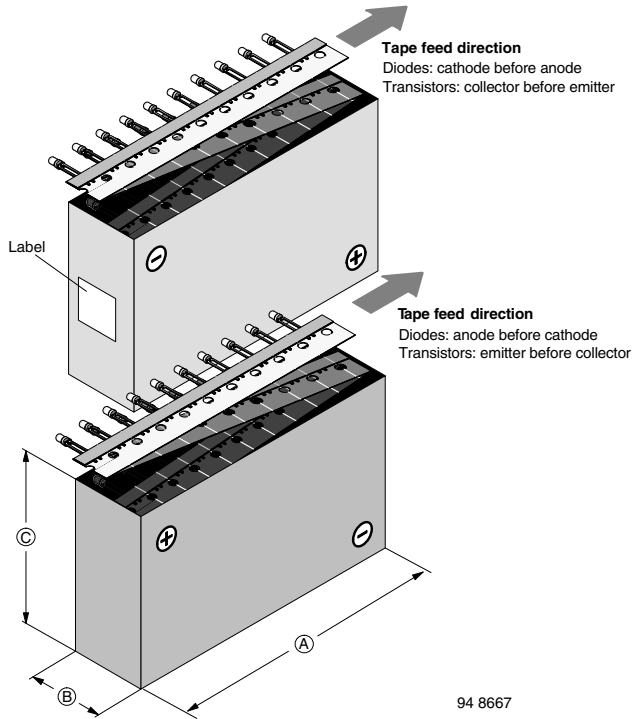
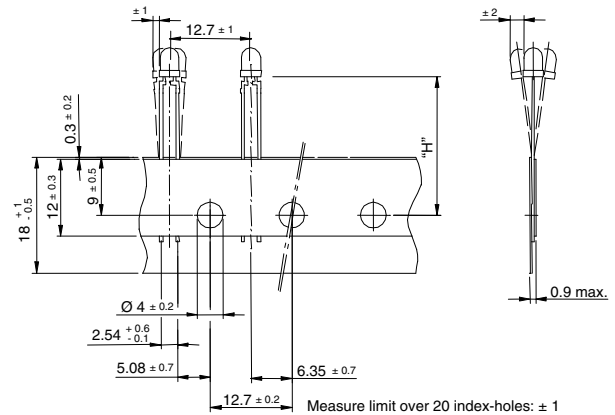


Fig. 46 - Tape Feed Direction

TABLE 6 - POSITION OF T-1 (3 mm) COMPONENTS IN TAPE

OPTION	H	PREFERENCE
AS	17.3 ± 0.5 mm	recommended
MS	25.5 ± 0.5 mm	recommended
CS	22.0 ± 0.5 mm	



Quantity per:	Reel
	(Mat. - No. 1764)
	2000

94 8171

Fig. 47 - Taping of T-1 (3 mm) Devices

TABLE 5 - INNER DIMENSIONS OF AMMOPACK

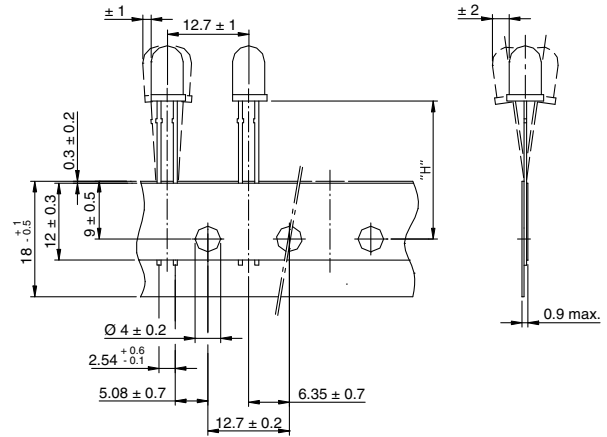
A mm	B mm	C mm	COMPONENTS
340	46	125	T-1 ¼ (5 mm)
340	34	140	T-1 (3 mm) AS-taping
340	41	140	T-1 (3 mm) other than AS-taping
348	43	125	FSZ side view lens
348	46	125	GSZ side view lens



TAPING OF T-1 $\frac{3}{4}$ (5 mm) PACKAGES

Polarity options: Z, 12, 21

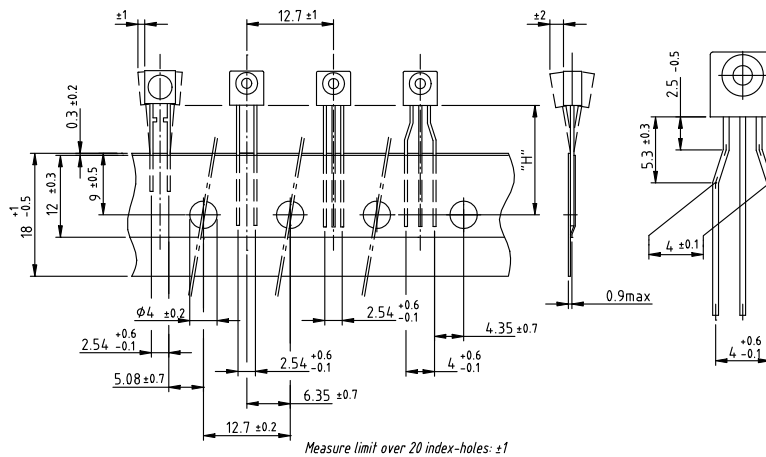
TABLE 7 - POSITION OF T-1 $\frac{3}{4}$ (5 mm) COMPONENTS IN TAPE		
OPTION	H	PREFERENCE
AS	17.3 ± 0.5 mm	recommended
KS	19.3 ± 0.5 mm	
MS	25.5 ± 0.5 mm	recommended
CS	22.0 ± 0.5 mm	
ES	24.0 ± 0.5 mm	



Quantity per:	Reel (Mat.-no. 1764)
	1000

94 8172

Fig. 48 - Taping of T-1 $\frac{3}{4}$ (5 mm) Devices



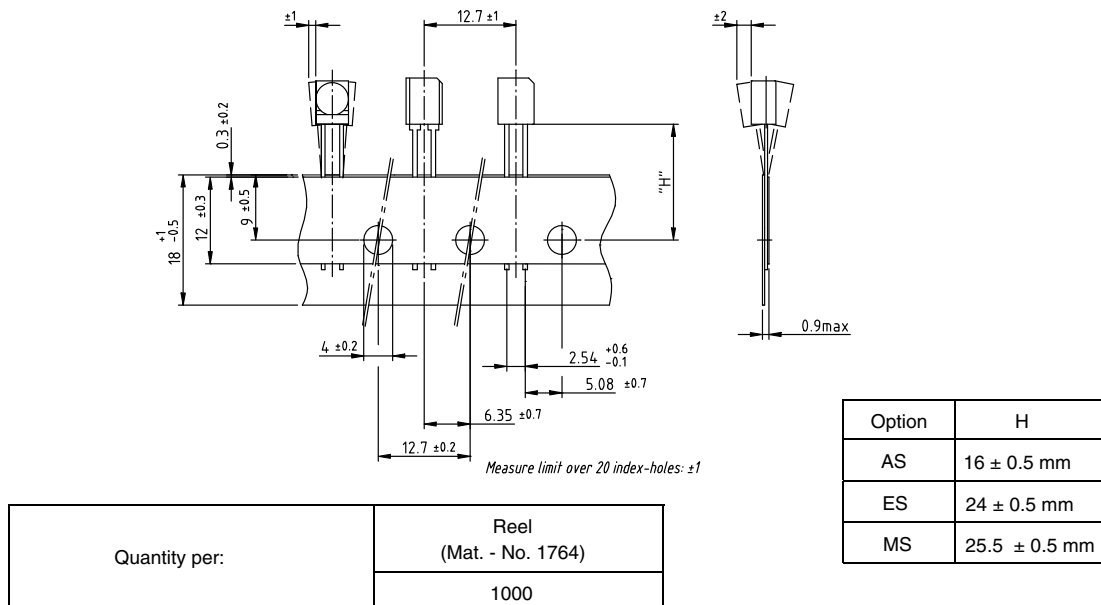
Bend leads:
Lead standard xG
Straight leads:
Lead standard xS

Quantity per:	Ampopack (Mat. - No. 1763)
	2000

18886

Fig. 49 - Taping of Side View Lens Packages

Option	H
AS	16 ± 0.5 mm
ES	24 ± 0.5 mm
FS	27 ± 0.5 mm
GS	29 $\begin{smallmatrix} +0.2 \\ -0.5 \end{smallmatrix}$ mm
EG	24 ± 0.5 mm
FG	27 ± 0.5 mm

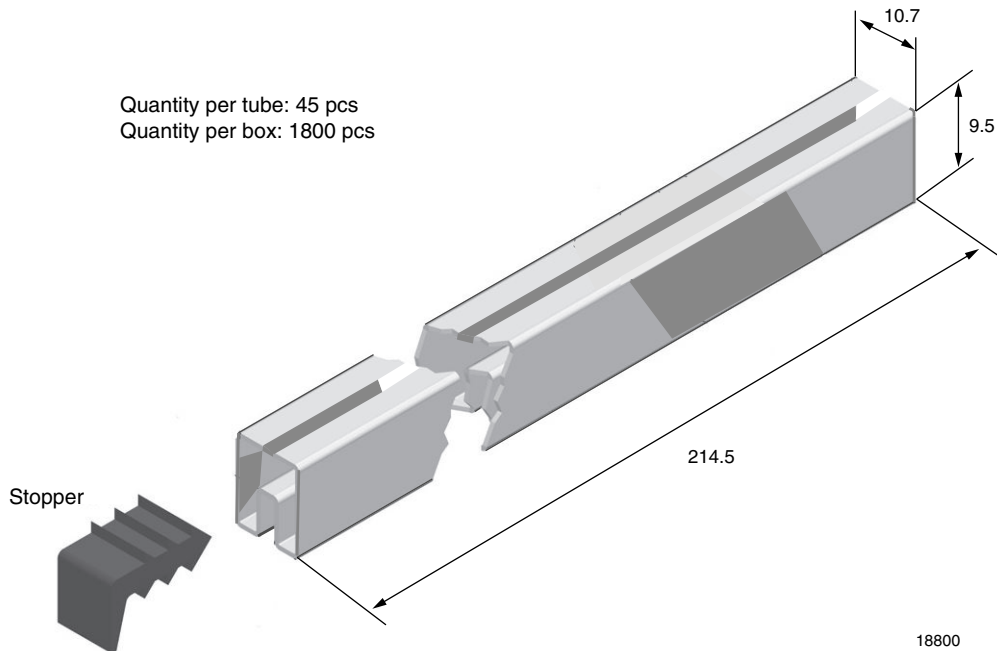


18887

Fig. 50 - Taping of Side View PIN Photodiodes

TUBE PACKAGING OF TOP VIEW PIN PHOTODIODES BP104S AND BPW34S

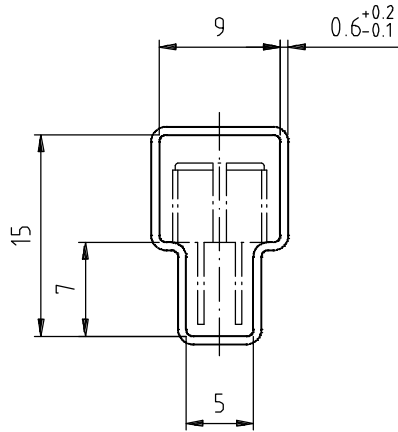
Dimensions in millimeters



18800

Fig. 51 - Drawing Proportions Not Scaled

TUBE SPECIFICATION FIGURES

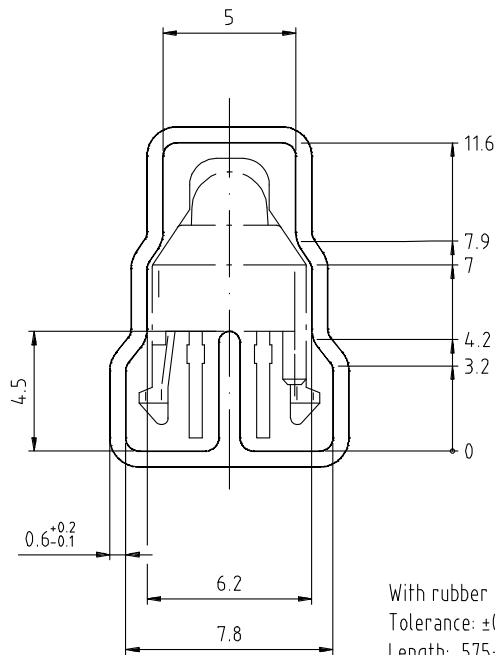


With rubber stopper
Tolerance: $\pm 0.5\text{mm}$
Length: $575 \pm 1\text{mm}$

Drawing-No.: 9.700-5097.01-4
Issue: 1; 25.02.00

15198

Fig. 52



With rubber stopper
Tolerance: $\pm 0.5\text{mm}$
Length: $575 \pm 1\text{mm}$

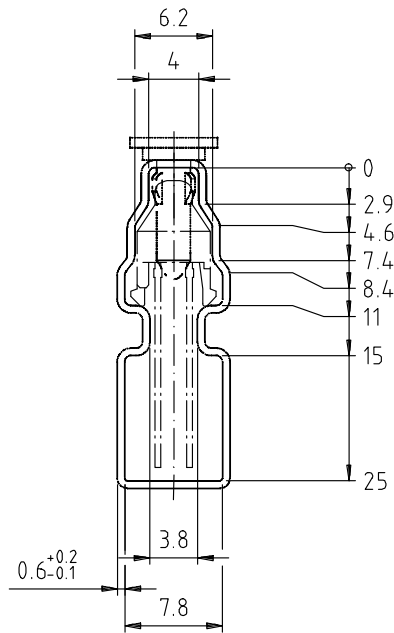
Drawing-No.: 9.700-5139.01-4
Issue: 1; 10.05.00

Drawing refers to following types: TCRT 5000

15210

Fig. 53

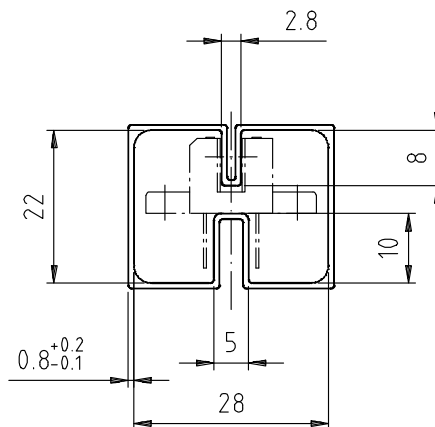
With stopper pins
Tolerance: $\pm 0.5\text{mm}$
Length: $575 \pm 1\text{mm}$



Drawing-No.: 9.700-5178.01-4
Issue: 1; 25.02.00

15201

Fig. 54

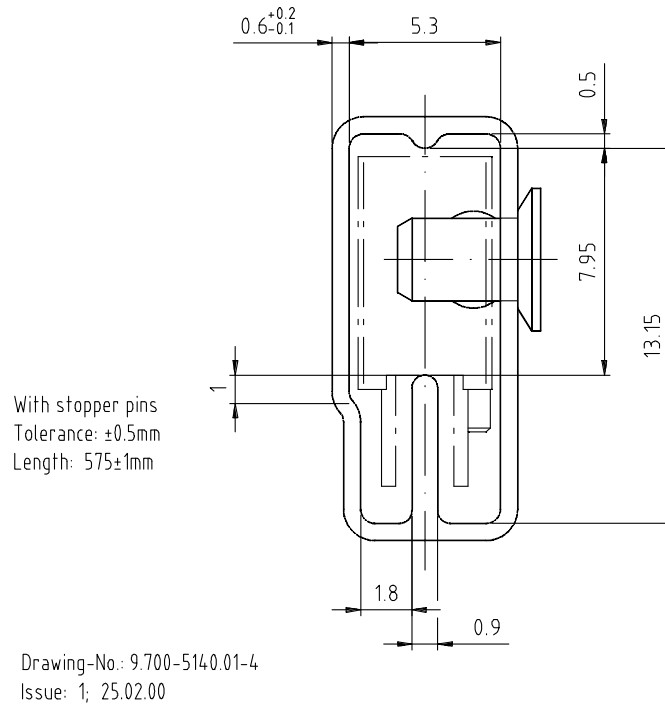


With rubber stopper
Tolerance: $\pm 0.5\text{mm}$
Length: $575 \pm 1\text{mm}$

Drawing-No.: 9.700-5100.01-4
Issue: 1; 25.02.00

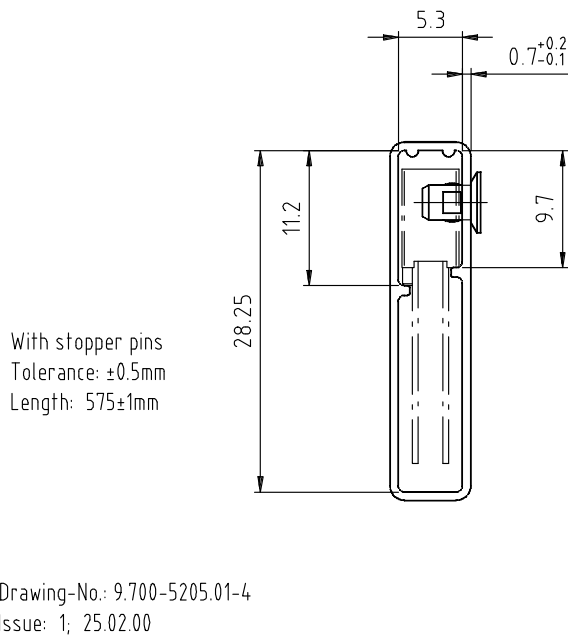
15199

Fig. 55



15202

Fig. 56



15196

Fig. 57

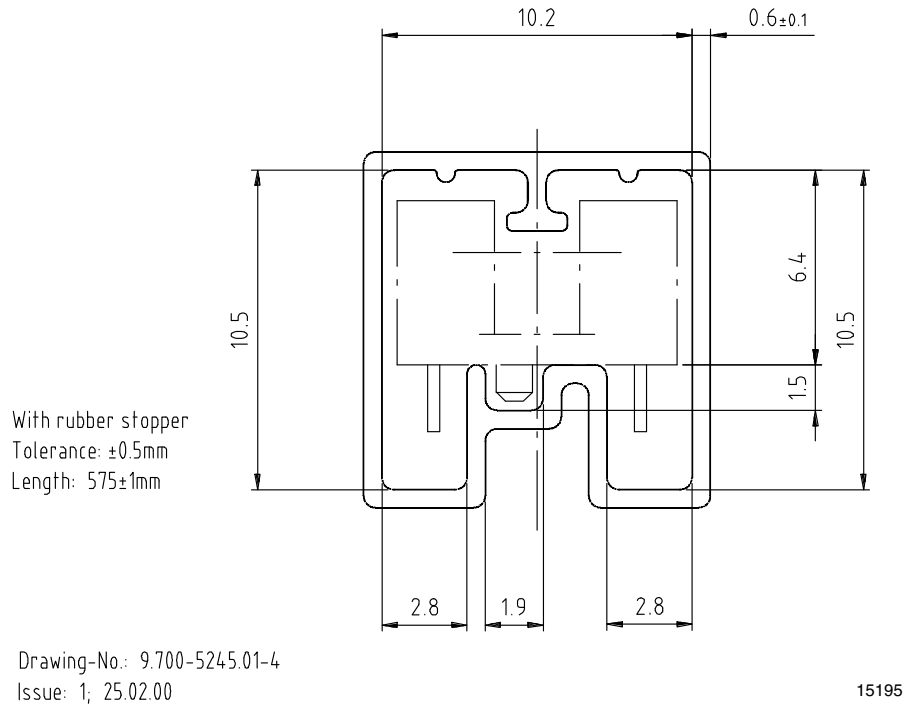
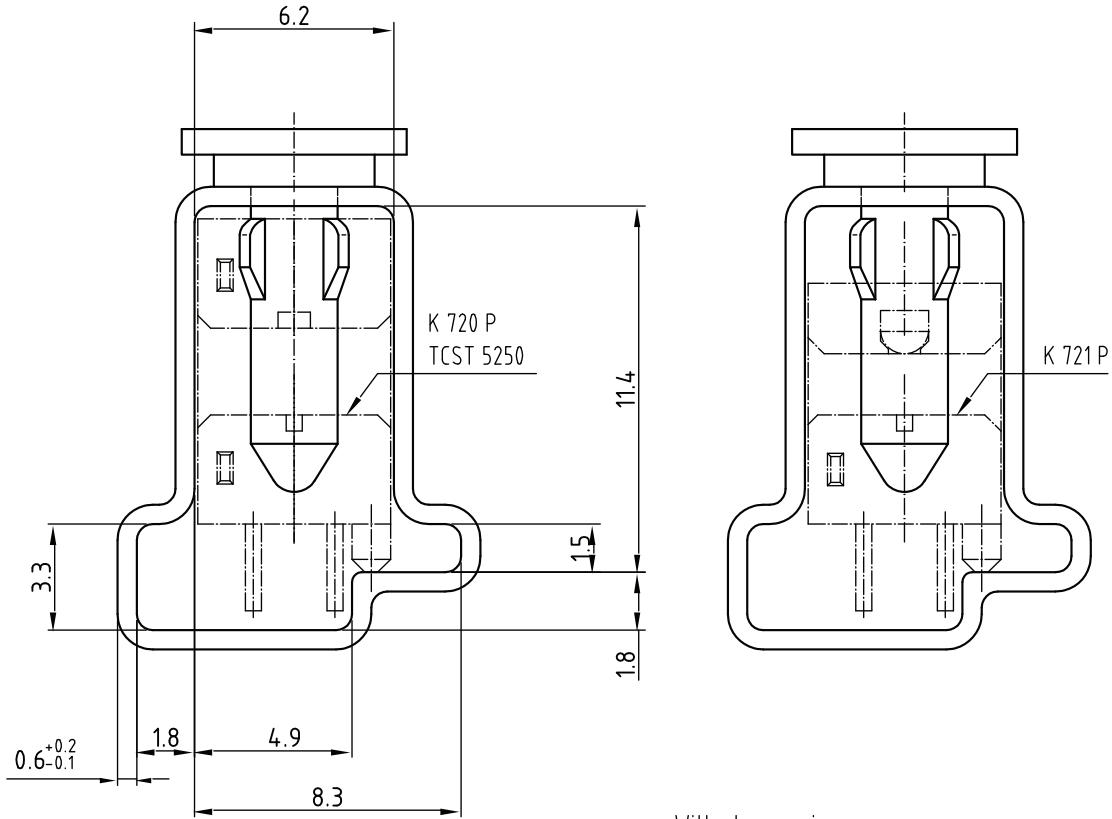


Fig. 58



Drawing-No.: 9.700-5222.01-4
 Issue: 2; 19.11.04
 20257

With stopper pins
 Tolerance: $\pm 0.5\text{mm}$
 Length: $450 \pm 1\text{mm}$
 All dimensions in mm

Fig. 59