Packing and Order Information

GENERAL INFORMATION

Vishay offers LEDs and 7 Segment Displays with several packing options.

In case of moisture absorption the device will recover to the former condition by drying under the following recommended conditions:
192 h at 40 °C + 5 °C and < 5 % RH

Example:

**CAUTION**
This bag contains MOISTURE-SENSITIVE DEVICES

**LEVEL 2**

1. Shelf life in sealed bag: 12 months at < 40 °C and < 90 % relative humidity (RH)
2. After this bag is opened, devices that will be subjected to infrared reflow, vapor-phase reflow, or equivalent processing (peak package body temp. 220 °C) must be:
   2a. Stored at < 20 % RH
   2b. Mounted within 1 year at factory condition of ≤ 30 °C/60 % RH or
   2c. Stored at ≤ 20 % RH
3. Devices require baking before mounting if:
   Humidity Indicator Card is > 20 % when read at 23 °C ± 5 °C or
   2a. or 2b. are not met.
4. If baking is required, devices may be baked for:
   192 hours at 40 °C ± 5 °C/ 0 °C and < 5 % RH (dry air/nitrogen) or
   96 hours at 60 °C ± 5 °C and < 5 % RH for all device containers or
   24 hours at 100 °C ± 5 °C not suitable for reels or tubes

Fan Fold Packing
Fan fold box is the standard containment for reel, tube, and bulk. Label format is identical to packing options as described above. Packing might contain tubes or reels with several parameter selection codes. In this case the label code of fan fold packing is SEL000.

Exception:
TELUX fan fold boxes contain one SEL code only.

Minimum Order Quantity
Packing Options describe the smallest physical packing unit. Vishay Sales representatives can provide information on the Minimum Order Quantity per type.

<table>
<thead>
<tr>
<th>DEVICE</th>
<th>SERIES</th>
<th>BULK</th>
<th>TAPE</th>
<th>BLISTER</th>
<th>TUBE</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-Segment Display</td>
<td>TD..</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>TELUX</td>
<td>TLW..</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>PLCC-2, PLCC-3, PLCC-4</td>
<td>VLM.3..</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>PLCC-2 Plus</td>
<td>VLM.51..</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Reverse Gullwing</td>
<td>VLR..</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Pin Hole LED</td>
<td>TL..</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Mini</td>
<td>VLM.2..</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>0603 LED</td>
<td>TLM.10.., TLM.11, VLM.10., VLM.11., VLM.13..</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>0402 LED</td>
<td>VLM.15..</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Little Star</td>
<td>VLM.7..</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

All packing options are classified in terms of brightness (standard), color (optional), or forward voltage (optional). Reference for parameter selection codes is the chapter "Classification of Components", label code is SEL.

Barcode Label Format
Type: PTC - Assembly Location Code
SEL - Parameter Selection Code
DC - Date Code
BN - Batch Number
PCS - Quantity
MN - Machine number

Drypacks
Blister tapes are packed in anti-humidity aluminium bags to prevent the products from moisture absorption during transportation and storage. Each bag contains a desiccant with moisture indicators. In cases of moisture absorption, the indicators change their color from blue to pink.

Dry box storage is recommended to prevent the parts from moisture absorption. The following conditions should be preserved if dry boxes are not available.

Storage condition (example for JEDEC level 2, see table 2 “Assembly Instructions”):
- max. 1 year:
  Temperature: 10 °C to 30 °C
  Humidity: 60 % RH max.
- unlimited:
  Temperature: 10 °C to 30 °C
  Humidity: 20 % RH max.
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

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

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

SPECIFICATION OF PACKING OPTIONS

Pin Hole LED (TL..., VL...-series)

Reel

![Reel Dimensions](image1)

Identification label:
Vishay/type/group/tape code/production code/quantity

Tape

![LED in Tape](image2)

PACKAGE/PACKAGING

<table>
<thead>
<tr>
<th>PACKAGE/PACKAGING</th>
<th>QTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-Segment Display</td>
<td></td>
</tr>
<tr>
<td>7 mm</td>
<td>500 pcs</td>
</tr>
<tr>
<td>10 mm</td>
<td>400 pcs</td>
</tr>
<tr>
<td>13 mm</td>
<td>400 pcs</td>
</tr>
<tr>
<td>Clock Module</td>
<td>384 pcs</td>
</tr>
<tr>
<td>TELUX</td>
<td>2100 pcs</td>
</tr>
<tr>
<td>PLCC-2, PLCC-3,</td>
<td></td>
</tr>
<tr>
<td>PLCC-4</td>
<td></td>
</tr>
<tr>
<td>GS08</td>
<td>7500 (5 x 1500) pcs</td>
</tr>
<tr>
<td>GS18</td>
<td>8000 pcs</td>
</tr>
<tr>
<td>PLCC-2 Plus</td>
<td></td>
</tr>
<tr>
<td>GS08</td>
<td>1000 pcs</td>
</tr>
<tr>
<td>PLCC-2 Ultraviolet</td>
<td></td>
</tr>
<tr>
<td>GS08</td>
<td>2000 pcs</td>
</tr>
<tr>
<td>RGB</td>
<td>2050 pcs</td>
</tr>
<tr>
<td>Reverse Gullwing</td>
<td></td>
</tr>
<tr>
<td>GS08</td>
<td>2000 pcs</td>
</tr>
<tr>
<td>GS18</td>
<td>8000 pcs</td>
</tr>
<tr>
<td>Mini</td>
<td></td>
</tr>
<tr>
<td>GS08</td>
<td>3000 pcs</td>
</tr>
<tr>
<td>0603 LED</td>
<td></td>
</tr>
<tr>
<td>GS08</td>
<td>3000 pcs</td>
</tr>
<tr>
<td>0402 LED</td>
<td></td>
</tr>
<tr>
<td>GS08</td>
<td>9000 (3 x 3000) pcs</td>
</tr>
<tr>
<td>Little Star</td>
<td></td>
</tr>
<tr>
<td>GS08</td>
<td>2000 pcs</td>
</tr>
<tr>
<td>1.8 mm, 3 mm</td>
<td></td>
</tr>
<tr>
<td>Bulk</td>
<td>5000 pcs</td>
</tr>
<tr>
<td>Reel</td>
<td>10 000 (5 x 2000) pcs</td>
</tr>
<tr>
<td>Ammopack</td>
<td>10 000 (5 x 2000) pcs</td>
</tr>
<tr>
<td>5 mm</td>
<td></td>
</tr>
<tr>
<td>Bulk</td>
<td>4000 pcs</td>
</tr>
<tr>
<td>Reel</td>
<td>5000 (5 x 1000) pcs</td>
</tr>
<tr>
<td>Ammopack</td>
<td>5000 (5 x 1000) pcs</td>
</tr>
<tr>
<td>Side View</td>
<td></td>
</tr>
<tr>
<td>Bulk</td>
<td>2000 pcs</td>
</tr>
<tr>
<td>Ammopack</td>
<td>5000 (5 x 1000) pcs</td>
</tr>
</tbody>
</table>

Ammopack

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

If the components are required with the cathode before the anode (figure 4), the start of the tape should be taken from the side of the box marked “-”. If the components are required with the anode before cathode (figure 7), the tape should be taken from the side of the box marked “+”.

- Diodes: anode before cathode
- Phototransistors: emitter before collector
- Code 21

- Diodes: cathode before anode
- Phototransistors: collector before emitter
- Code 12

- Diodes: anode before cathode
- Transistors: collector before emitter

- Diodes: cathode before anode
- Transistors: emitter before collector

Fig. 1 - Reel Dimensions

Fig. 2 - LED in Tape

Fig. 3 - Tape Direction
OPTIONS

TAPE DIMENSIONS FOR Ø 3 mm STANDARD PACKAGES

Available Package Variations: 12, Z, 21

<table>
<thead>
<tr>
<th>OPTION</th>
<th>DIMENSION “H”</th>
<th>DIMENSION “X”</th>
<th>PREFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS</td>
<td>17.3 ± 0.5</td>
<td></td>
<td>Standard</td>
</tr>
<tr>
<td>VS</td>
<td>18.5 ± 0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KS</td>
<td>19.7 ± 0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BS</td>
<td>20.0 ± 0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LS</td>
<td>21.0 ± 0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>22.0 ± 0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS</td>
<td>25.5 ± 0.5</td>
<td></td>
<td>Standard</td>
</tr>
<tr>
<td>BT</td>
<td>20.0 ± 0.5</td>
<td>16.0 ± 0.5</td>
<td></td>
</tr>
<tr>
<td>DT</td>
<td>21.0 ± 0.5</td>
<td>16.0 ± 0.5</td>
<td></td>
</tr>
<tr>
<td>NT</td>
<td>21.5 ± 0.5</td>
<td>16.0 ± 0.5</td>
<td></td>
</tr>
<tr>
<td>GT</td>
<td>24.0 ± 0.5</td>
<td>16.0 ± 0.5</td>
<td></td>
</tr>
<tr>
<td>HT</td>
<td>24.0 ± 0.5</td>
<td>14.5 ± 0.5</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>25.5 ± 0.5</td>
<td>16.0 ± 0.5</td>
<td></td>
</tr>
</tbody>
</table>

Explanation:
12 - cathode leaves first
21 - anode leaves first
Z - ammopack

ORDER CODES

The type designation of the device is extended by tape option codes.

Example:
VLME3100-GS08
TLHE4200-AS21
TLHE4200-ASZ
optional since 1999:
VLMS3100-GS18

Note:
The new nomenclature for ammopack is ASZ only, without suffix for the LED orientation. The carton box has to be turned to the desired position: “+” for anode first, or “-” for cathode first. AS12Z and AS21Z are still valid for already existing types, BUT NOT FOR NEW DESIGN.
TAPE DIMENSIONS FOR Ø 5 mm STANDARD PACKAGES

Available Package Variations: 12, Z, 21

<table>
<thead>
<tr>
<th>OPTION</th>
<th>DIMENSION “H”</th>
<th>DIMENSION “X”</th>
<th>PREFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS</td>
<td>17.3 ± 0.5</td>
<td></td>
<td>Standard</td>
</tr>
<tr>
<td>KS</td>
<td>19.7 ± 0.5</td>
<td></td>
<td>Standard</td>
</tr>
<tr>
<td>LS</td>
<td>21.0 ± 0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td>22.0 ± 0.5</td>
<td></td>
<td>Standard</td>
</tr>
<tr>
<td>MS</td>
<td>25.5 ± 0.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BT</td>
<td>20.0 ± 0.5</td>
<td>16.0 ± 0.5</td>
<td></td>
</tr>
<tr>
<td>DT</td>
<td>21.0 ± 0.5</td>
<td>16.0 ± 0.5</td>
<td></td>
</tr>
<tr>
<td>NT</td>
<td>21.5 ± 0.5</td>
<td>16.0 ± 0.5</td>
<td></td>
</tr>
<tr>
<td>GT</td>
<td>24.0 ± 0.5</td>
<td>16.0 ± 0.5</td>
<td></td>
</tr>
<tr>
<td>HT</td>
<td>24.0 ± 0.5</td>
<td>14.5 ± 0.5</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>25.5 ± 0.5</td>
<td>16.0 ± 0.5</td>
<td></td>
</tr>
</tbody>
</table>

Explanation:
- 12 - cathode leaves first
- 21 - anode leaves first
- Z - ammopack

ORDER CODES

The type designation of the device is extended by tape option codes.

Example:
- VLME3100-GS08
- TLHE4200-AS21
- TLHE4200-ASZ

Optional since 1999:
- VLMS3100-GS18

Note:
- The new nomenclature for ammopack is ASZ only, without suffix for the LED orientation. The carton box has to be turned to the desired position: “+” for anode first, or “-” for cathode first. AS12Z and AS21Z are still valid for already existing types, BUT NOT FOR NEW DESIGN.
Vishay’s LEDs in SMD packages are available in an antistatic 8 mm blister tape (in accordance with DIN IEC 40 (CO) 564) for automatic component insertion. The blister tape is a plastic strip with impressed component cavities, covered by a top tape.

**Fig. 8 - Tape Dimensions in mm for PLCC-2**

**Fig. 9 - Tape Dimensions in mm for PLCC-2**

**Fig. 10 - Reel Dimensions - GS08**

**Fig. 11 - Reel Dimensions - GS18**
Packing and Order Information

Vishay Semiconductors

TAPE DIMENSIONS FOR PLCC-2 PLUS

Technical drawings according to DIN specifications

Not indicated tolerances ± 0.5
Material: black static dissipative

Label area with depression

Drawing-No.: 9.800-5104.01-4
Issue: 2; 19.03.10

GS=1000 pcs

Material: black static dissipative

GS=1000 pcs

Reels come in quantity of 1000 units.

Drawing-No.: 9.700-5348.01-4
Issue: 1; 01.03.10

For technical questions, contact: LED@vishay.com

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TAPE DIMENSIONS FOR REVERSE GULLWING

Rev. 1.4, 17-May-13

www.vishay.com Vishay Semiconductors

Document Number: 80101

For technical questions, contact: LED@vishay.com

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Drawing-No: 9.800-5009.04-1
Issue: 2; 22.07.08

Taping and orientation
Reels come in quantity of 8000 units or 2000 units.
Reel diameters are 330 mm and 180 mm respectively.

2.29±0.1

2.05±0.05

0.229±0.02

200 mm min. for Ø 180 reel
480 mm min. for Ø 180 reel
9600 mm min. for Ø 330 reel

For technical questions, contact: LED@vishay.com

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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 the reel. A maximum of three consecutive components may be missing, provided this gap is followed by six consecutive components.

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

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

TOP TAPE REMOVAL FORCE
The removal force lies 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 the blisters, the cover tape must be pulled off at an angle of 180 °C with regard to the feed direction.

ORDER CODES
Example: VLMG2100-GS08

TAPE AND REEL DIMENSIONS FOR TLM.10., TLM.11., VLM.11.. 0603 LED LEADFRAME BASED

Critical dimension for IA.

Label area with ( 111x57 )

Depression ( 0.25 )

Example:

VLMG2100-GS08

Technical drawings according to DIN specifications

Not indicated tolerances ±0.05
Material: black static dissipative

Drawing-No.: 9800-5086.01-4
Issue: 1; 29.04.04

19043
PACKAGING DIMENSIONS FOR TELUX

TUBE WITH BAR CODE LABEL

Fig. 13 - Drawing Proportions not scaled

EXAMPLE FOR TELUX TUBE LABEL

A. Bar code
B. Type of component
C. Manufacturing plant
D. SEL - Selection Code (Bin)
   Digit 1 - code for Luminous Flux group
   Digit 2 - code for Dominant Wavelength group
   Digit 3 - code for Forward Voltage group
E. Date code
F. Batch No.
G. Total quantity
H. Company code
LABEL OF FAN FOLD BOX

I. Type of component
J. Manufacturing plant
K. SEL - Selection Code (Bin)
   Digit 1 - code for Luminous Flux group
   Digit 2 - code for Dominant Wavelength group
   Digit 3 - code for Forward Voltage group
L. Date Code year/week
M. Day Code (e.g. 5: Friday)
N. Batch No.
O. Total quantity
P. Company code

Note
- Any distance between bar code and character is more than 1 mm.