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# External Delivery Instructions for Through Hole Technology - Components

This instruction contains rules and instructions for the external delivery of THT (Through Hole Technology) components as well as the necessary packing materials and is based on the current valid norms and guidelines as well as the P+F-specific requirements for a process-safe processing in the SMT production process.

## 1 References, Norms

| | |
|---|---|
| **IEC 60286-3**: | Taping and magazining of components for automatic processing - Part 3: Taping of surface-mountable components (IEC 60286-3:1997) |
| **IEC 60286-4** | Taping and magazining of components for automatic processing - Part 4: Bar magazine for electronic components with housings of Form E and G (IEC 60286-4:1997) |
| **IEC 60286-5** | Taping and magazining of components for automatic processing - Part 5: Flat magazine (IEC 60286-5:2003) |
| **IEC 60191** | Mechanical standardization for semiconductor devices 2001-01-25 |
| **ISO 11469** | Moulding-marking of thermoplastics |
| **IPC/JEDEC J-STD-020D** | Moisture/Reflow Sensitivity Classification for Nonhermetic Solid State Surface Mount Devices (Classification of non-hermetic SMT-semiconductor components re their sensitivity towards moisture during reflow soldering) |
| **IPC/JEDEC J-STD-033A** | Handling, Packing, Shipping and Use of Moisture/Reflow Sensitive Surface Mount Devices |
| **IPC/EIA J-STD-001C** | Requirements for Soldered Electrical & Electronic Assemblies* |
| **IPC-A-610D** | Acceptability of Electronic Assemblies (Abnahmekriterien für elektronische Baugruppen) |

The respective latest versions of the references and norms apply.

## 2 Expiry date upon delivery

- The expiry date is calculated from date of manufacture (Date Code)
  The defined storage conditions are listed in Chapter 5.

- The following expiry dates (based on the date of manufacture) may generally not be exceeded upon delivery

  - **Electrolytic capacitor proposal 24 Months**
  - **THT-components with AgPd-leg alloy 12 Months**
  - **Other THT-components 36 Months**

- THT components with expired date code are only accepted in urgent cases after consultation with the responsible specialist buyer (onl in Mannheim) and the QA staff (only in Mannheim). In Singapore, the THT specialist staff must be consulted, who will decide on approval of the longer storage life.

The metallisation used for the connection pads must ensure a faultless solderability / wettability in the sense of J-STD-001C and IPC-A 610D.

## 3 Components with unlimited shelf life

If a manufacturer specifies unlimited shelf life for its THT components, it must be ensured by the supplier that components that cannot be processed or are claimed are replaced at any time without charge by the supplier.
The free replacement at all times of claimed THT components is to be confirmed in writing by the supplier!

## 4 Marking

The smallest packing unit rolls / magazines / bulk goods must be marked with a label. The label must contain the following details:

- P+F-part number
- Manufacturer part number
- Manufacturer
- Component designation
- Metallisation of the component legs/component connections
- Quantity
- Date of manufacture (Date Code)
- Batch number
- ESD-Warning advice
- MS-Level

| | | |
|---|---|---|
| P+F-part number | : | 123456 |
| Part number of the manufacturer | : | xyz |
| Manufacturer | : | ZMD |
| Component designation | : | R7K5 5% T200 CH0805 MF |
| Component legs/comp. connections | : | Sn |
| Quantity | : | 1250 |
| Date of manufacture (Date Code) | : | 01.01.2007 |
| Batch number | : | abc |
| MS-Level | : | 1 |

Example/Sample Label

## 5 Storage conditions

| | |
|---|---|
| Storage environment: | Cool, dry storage place, free of corrosive gas, dust and smoke |
| Temperature: | minimum 20°C, maximum 26°C (fluctuation max. ±2°C) |
| Humidity: | minimum 30% RF, maximum 60% RF (fluctuation max. ±5% RF) |

It is to be ensured that the defined storage conditions are adhered to by the manufacturer/ distributor.

## 6 Packing

MSL- (Moisture Sensitivity level) critical components with an MS-Level ≥2 as well as components with a silver-palladium alloy are to be packed MSL-appropriate in MSL bags with desiccator and humidity indicator under vacuum.
The packing must be marked with a label, which contains a marking acc. to Chapter 4. Furthermore, the packing must contain a marking acc. to IPC/JEDEC J-STD-033A.

## 7 Delivery forms

The following delivery forms of THT components are defined:

- Components on tape + roll
- Components on tape
- Components in matrix tray
- Components in bar magazine
- Components as bulk goods

## 8 Substrates

Sharp edges at substrates can cause damage to Dry-Packs or other packing materials. It is ensured that the substrates do not have any destructive influence on packing materials.

The material is not to negatively affect the mechanical and electrical characteristics, solderability of the components or component marking during transport.

In case of taped goods, it must be ensured the the components are held and fixed at least 3 years by the carrier tape.

### *8.1* Plastic carrier rolls

- Antistatic or conducting plastic (less than $10^{12}$ Ω).

### *8.2* Paper- and blister tape

- Carrier tape - conducting (less than $10^{6}$ Ω)
- With non-ESD-risk components, a paper or blister tape can be used.

### *8.3* Matrix tray

- The material must conform to the ESD requirements of ≥ 1.0x105 Ω/square, but fulfill less than 1,0 x $10^{12}$ Ω/square.
  The material should be re-usable or recycleable and must in characteristics be designed such that no damage to the components can occur during handling.

### *8.4* Bar magazine

- Antistatic or conducting plastic (less than $10^{12}$ Ω)

## 9 Packing types

### *9.1 Paper- and blister tapes*

#### 9.1.1 Roll requirements

- The roll must have a free space for an adhesive lable (roll marking) (see Illustration 2).
- The manufacturer label for the roll marking should contain detailed information of the components in plain text acc. to Chapter 4.
- Additional information can be indicated in plain text or in coded form.

#### 9.1.2 Tape requirement

- The packing, materials and processing techniques must not influence the mechanical and electrical properties as well as the labelling of the components.
- It has to be ensured that materials and processing techniques do not cause any damage to electrostatic sensitive components.
- The material must not age or lose its strength so that it leads to breaking or detachment of the carrier tape during the unwinding process. This applies for manual as well as machine unwinding.

#### 9.1.3 Polarity and alignment

- All poled components must be aligned in one direction.
- The polarity or alignment of components with other forms or connection legs is defined in a detailed specification.

## *9.2* Matrix tray

### 9.2.1 Magazine requirement

- The magazine must have a free space for an adhesive label (magazine marking) (see Illustration 2).
- The manufacturer label for the magazine marking should contain detailed information of the components in plain text according to Chapter 4.
- Further information can be indicated in plain text or in coded form.

### 9.2.2 Polarity and alignment

- Filling of the magazine must begin at the top left corner, at the chamfer of the magazine. From here, the gaps are to be filled from left to right / from top to bottom.
- Pin1 of the component must point in the direction of the chamfer of the magazine.

## *9.3 Bar magazine*

- Bar magazine / stick feeder must conform to IEC 60286-4: 1997.

## *9.4 Bulk goods*

The packing material must not negatively affect the mechanical and electrical properties as well as the solderability of the components during transport.