IEC 60286-3-2

Edition 1.0 2009-05

INTERNATIONAL STANDARD

Packaging of components for automatic handling – Part 3-2: Packaging of surface mount components on continuous tapes – Type VI – Blister carrier tapes of 4 mm width

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRICE CODE K

ICS 31.020; 31.240

ISBN 2-8318-1039-6

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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International Standard IEC 60286-3-2 has been prepared by IEC technical committee 40: Capacitors and resistors for electronic equipment.

The text of this standard is based on the following documents:

FDIS	Report on voting
40/1973/FDIS	40/1982/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

IEC 60286-3-2 is to be used in conjunction with IEC 60286-3.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The list of all parts of the IEC 60286 series, under the general title *Packaging of components for automatic handling*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
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A bilingual version of this publication may be issued at a later date.

PACKAGING OF COMPONENTS FOR AUTOMATIC HANDLING –

Part 3-2: Packaging of surface mount components on continuous tapes – Type VI – Blister carrier tapes of 4 mm width

INTRODUCTION

Tape packaging meets the requirements of automatic component placement machines and also covers the use of tape packing for components for test purpose and other operations.

This International Standard has been developed to introduce a new 4 mm width carrier tape with 1 mm pitch cavities suitable for very small components. This can be used to replace paper tape for processing in clean rooms where particulates have to be controlled.

1 General

1.1 Scope

This part of IEC 60286 is applicable to the tape packing of ultra small surface mount components using plastic blister carrier tape of 4 mm in width which has concave cavities for containing components of 1 mm in pitch of the component compartments (W4P1).

1.2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60286-3:2007, *Packaging of components for automatic handling – Part 3: Packaging of surface mount components on continuous tapes*

2 Tape dimensions

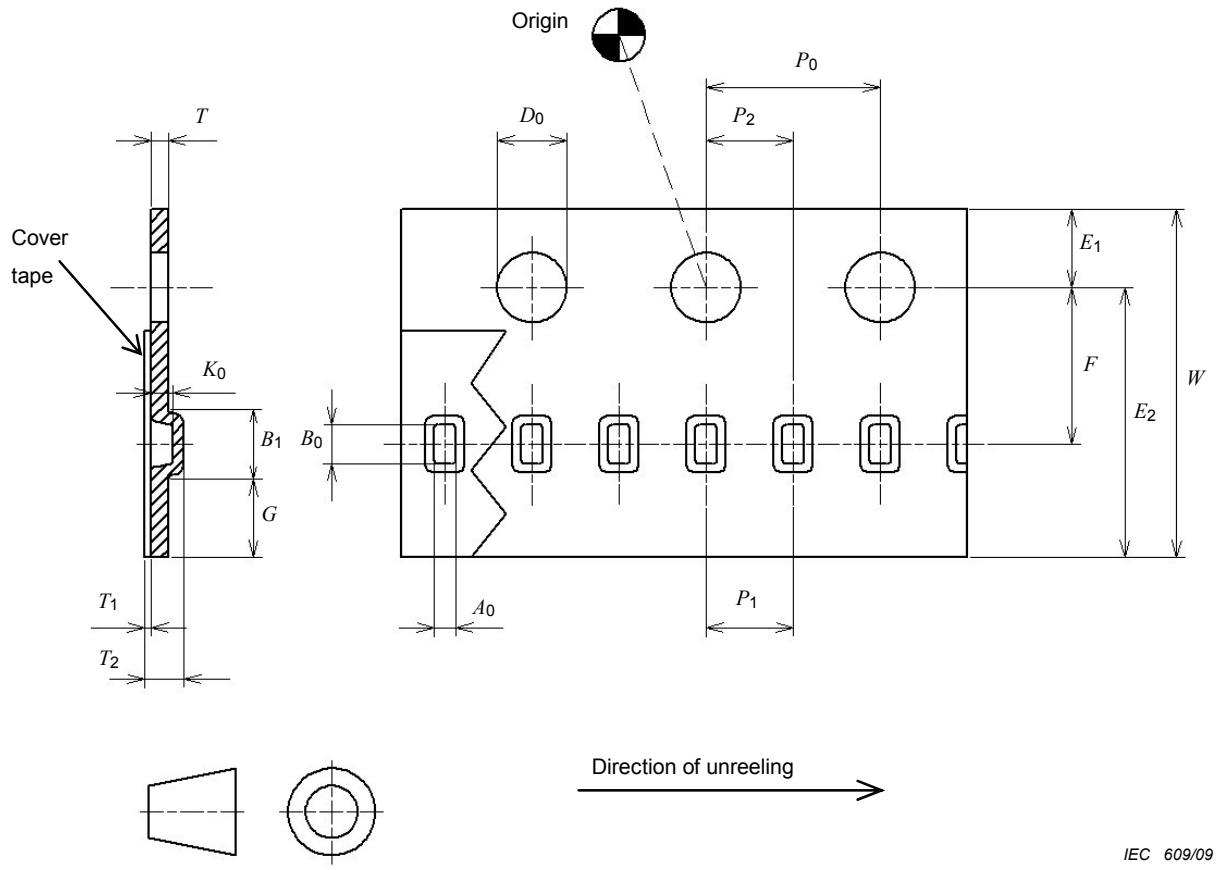

Figure 1 – Type VI carrier tape

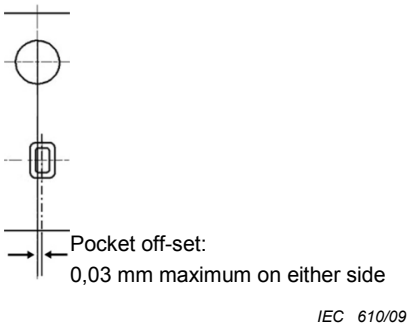

Figure 2 – Maximum pocket off-set

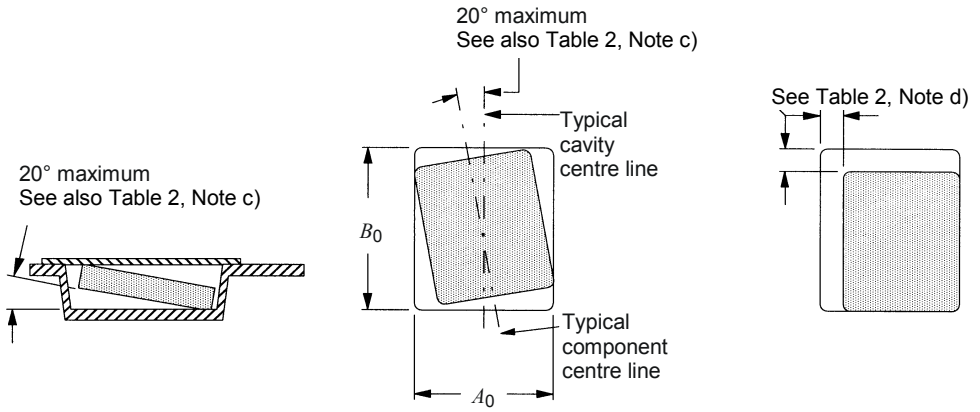

Figure 3 – Maximum component tilt, rotation and lateral movement

Table 1 – Constant dimensions of carrier tape

Tape size mm	D_0 mm	E_1 mm	G_{min} mm	P_0 mm	T_{min} mm	T_{max} mm	$T_{1\ max}$ mm	**Cumulative pitch (over 20 pitches)** mm
4	0,80 ± 0,04	0,90 ± 0,05	0,50	2,00 ± 0,04	0,15	0,40	0,08	±0,1

Table 2 – Variable dimensions of carrier tape

Tape size mm	$B_{1\ max}$ mm	$E_{2\ min}$ mm	F mm	P_1 mm	P_2 mm	$T_{2\ max}$ mm	W mm	A_0, B_0, K_0 mm
4	1,48 [a]	3,07	1,8 ± 0,03	1,0 ± 0,03	1,0 ± 0,03	1,1	4,0 ± 0,08	see Note

NOTE The nominal dimensions of the component compartment should be derived from the relevant component specification. The tolerances on the nominal sizes of the compartment should be selected so that the components cannot change their orientation within the tape and can be easily removed from the tape, with the following characteristics.

There should be sufficient clearance surrounding the component so that

a) the component does not protrude above the top surface of the carrier tape,

b) the component can be removed from the cavity in a vertical direction without mechanical restriction after the top cover tape has been removed,

c) the rotation of the component is limited to a 20° maximum tilt (see Figure 3, sketch A) and a 20° maximum planar rotation (see Figure 3, sketch B),

d) the maximum lateral movement allowed is 0,20 mm except for 0603M sized components where the maximum should be 0,12 mm and for 0402M sized components the maximum should be 0,10 mm.

For defined component positioning the cavity positions should be defined to an origin point. This origin is the centre of the Index hole, defined by the crosshair of the dimensions E_1 and P_0. The centre of the component compartment is defined by P_2 and F, relative to the sprocket holes, as shown in Figure 1, with tolerances given in the table above.

Preferred dimensions for components should be taken from the relevant IEC specifications.

Dimensions $A_0 \leq B_0$, unless otherwise specified in the component detail specification.

Dimension K_0 should comply with the component tilt in Sketch A.

The off-set between the centre of the component compartment and the centre of the sprocket hole should not be more than 0,03 mm (see Figure 2).

[a] Reference dimension.

3 Polarity and orientation of components in the tape

Requirements shall be in accordance with IEC 60286-3, 4.1, 4.2.1 and 4.2.3.

4 Fixing components and additional tape requirements

Requirements shall be in accordance with IEC 60286-3, 5.1, 5.5, 5.7 and 5.8 and the following.

4.1 Tape requirements

4.1.1 The cover tapes shall not cover the sprocket holes.

4.1.2 The adhesive of the cover tape shall not adversely affect the mechanical and electrical characteristics and the marking of the components.

4.1.3 Components shall not stick to the carrier tape or to the cover tape.

4.1.4 The cover tape shall not become detached.

4.1.5 The cover tape shall not protrude beyond the edge of the tape.

4.1.6 The cover tape shall not be attached to the carrier tape on the surface between two adjacent component pockets.

4.2 Peel force of the cover tape

The angle between the cover tape during peel-off and the direction of unreeling shall be 165° to 180°. The cover tape shall adhere uniformly to the carrier tape along both sides in the direction of unreeling.

The peel force with a peel speed of 300 mm/min ± 10 mm/min shall be 0,1 N to 1,0 N.

4.3 Minimum bending radius

Minimum bending radius (R_{min}) shall be 25 mm.

4.4 Break force of the cover tapes

The break force of the cover tape shall be 10 N min.

4.5 Taping material

The carrier tape and cover tape shall be made of a plastic material which should not shed particulates and has antistatic characteristics.

The carrier tape material should be suitable for use in the cleanroom classification for which it is intended.

5 Packing

5.1 General

Requirements shall be in accordance with IEC 60286-3, 7.1, 7.2.2, 7.2.3 and 7.3 and the following apply.

5.2 Reel dimensions

Suggested configuration and dimensions of a suitable reel is given in Annex A.

6 Marking

Requirements shall be in accordance with IEC 60286-3, Clause 8.

Annex A
(informative)

Dimensions of reel

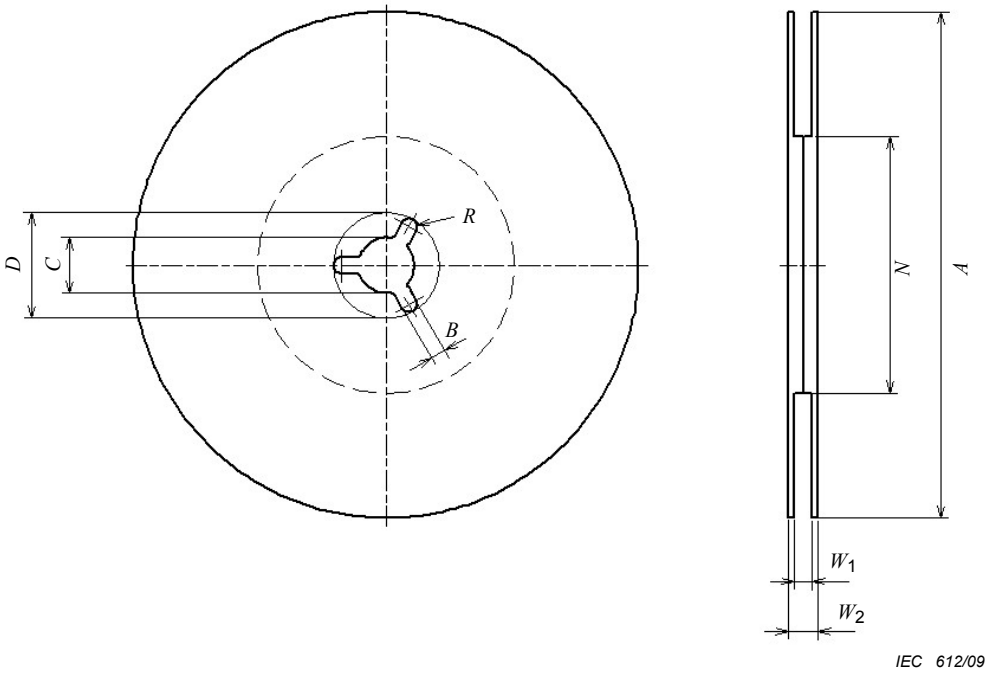

Figure A.1 – Reel

Table A.1 – Dimensions of reel

Name	Code	Dimensions mm	
Reel diameter	A	120 +0/–3	180 +0/–3
Hub diameter [a]	N	60 +1/–0	
Reel inner width	W_1	4,3 [b]	
Reel overall width	W_2	7 [b]	
Maximum reel overall width	$W_{2\ max}$	7,5	7,95
Reel hole	C	13 ± 0,2	
Reel hole width	B	2,0 ± 0,5	
Reel hole diameter	D	21,0 ± 0,8	
Radius of reel hole point	R	0,5 B	

[a] Tape with components must wrap around the hub without damage.

[b] Nominal values.

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