

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Surface mounted piezoelectric devices for frequency control and selection –
Standard outlines and terminal lead connections –
Part 3: Metal enclosures**

**Dispositifs piézoélectriques à montage en surface pour la commande et le choix
de la fréquence – Encombrements normalisés et connexions des sorties –
Partie 3: Enveloppes métalliques**



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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SURFACE MOUNTED PIEZOELECTRIC
DEVICES FOR FREQUENCY CONTROL AND SELECTION –
STANDARD OUTLINES AND TERMINAL LEAD CONNECTIONS –****Part 3: Metal enclosures**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61837-3 has been prepared by IEC technical committee 49: Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection.

This second edition cancels and replaces the first edition published in 2000. It constitutes a technical revision.

This International Standard is to be read in conjunction with IEC 61240:2012.

This edition includes the following significant technical changes with respect to the previous edition:

- The outline drawing is defined as one set of drawings consisting of four views, which are the view from above, the front view, the view from the right, and the view from below; the view from the right was drawn optionally in the previous edition.

- The height of package (G_1) is eliminated, instead total height is expressed by the symbol letter G or with a subscript number.
- The dimensions of terminal lead spacing are shown by the centre position of the terminal leads and its basic value e is $2.54 \times n$ mm (n is an integer) and $1.27 \times n$ mm for package dimensions smaller than 6 mm (See IEC 61240:2012, 5.5). If the terminal lead spacing is not a multiple of the basic value, a subscript number such as e_1 , e_2 is attached, e.g. e_1 , e_2 , etc. If there are plural spacing values, the subscript number is followed by a hyphen and numbers such as e_{1-1} , e_{1-2} , etc.
- In terminal land areas, the lengths of each terminal pad are now expressed with maximum values for consumer's convenience. They were expressed as minimum values in the previous edition of IEC 61837-3.
- If there are plural identical enclosures with different height, each enclosure was expressed by a dash (/) and a two-digit number after the basic type name. The identity references are given in the table of the sheet.
- The configurations of the enclosures were revised as shown in Table 1.

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

FDIS	Report on voting
49/1118/FDIS	49/1140/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.

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

A list of all parts in the IEC 61837 series, published under the general title *Surface mounted piezoelectric devices for frequency control and selection – Standard outlines and terminal lead connections*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

SURFACE MOUNTED PIEZOELECTRIC DEVICES FOR FREQUENCY CONTROL AND SELECTION – STANDARD OUTLINES AND TERMINAL LEAD CONNECTIONS –

Part 3: Metal enclosures

1 Scope

This part of IEC 61837 deals with standard outlines and terminal lead connections as they apply to SMDs for frequency control and selection in metal enclosures and is based on IEC 61240 which standardized layout rules of outline drawings of the surface-mounted devices.

2 Normative references

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

IEC 61240:2012, *Piezoelectric devices – Preparation of outline drawings of surface mounted devices (SMD) for frequency control and selection – General rules*

3 Configuration of enclosures

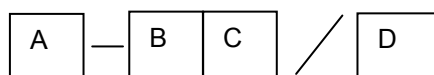
The enclosures of the surface-mounted devices are made of metal with the formed lead terminals based on the descriptive designation system for semiconductors – devices package.

All SMD enclosures described in this part of IEC 61837 are special surface mount types. Therefore, the following designator is used.

- SMS (Surface-Mounted, Special)

4 Designation of types

The type designator consists of four parts as follows:



A: Configuration symbol of enclosures:

- SMS (Surface-Mounted, Special).

B: Structure of terminal leads

- L: folded leads type;
- J: folded leads type.

If there is a leadless type, it will have no mark.

See Clause 3 of IEC 61240:2012, Classification of SMD.

C: Number of terminal leads

D: 2-digit serial number

5 Metal enclosure dimensions

The dimensions given in this part of IEC 61837 apply to all completed SMD for frequency control and selection. Only those dimensions are given which meet the requirements of IEC 61240.

- If there are plural identical enclosures with different height (G), or different length (F), etc. The symbol letter shall be expressed with a subscript number such as G_1 , G_2 , F_1 , F_2 , etc.
- The dimensions of terminal lead spacing shall be shown by the centre position of the terminal leads and its basic value e is $2,54 \times n$ mm (n is an integer) and $1,27 \times n$ mm for package dimensions smaller than 6 mm (see IEC 61240:2012, 5.5). If the terminal lead spacing is not a multiple of the basic value, a subscript number such as e_1 , e_2 shall be attached. If there are plural spacing values, the subscript number shall be followed by a hyphen and numbers such as e_{1-1} , e_{1-2} , etc.
- If there are plural identical enclosures with different height, each enclosure was expressed by the following dash (/) and two digit number after the basic type name. The identity references are given in the table of the sheet.

6 Lead connections

Since SMS types of enclosures are special SMD type, they won't have any specified lead connections. However, lead connections shall always be given in the detail specification under the agreement with customers.

7 Designation of metal enclosures

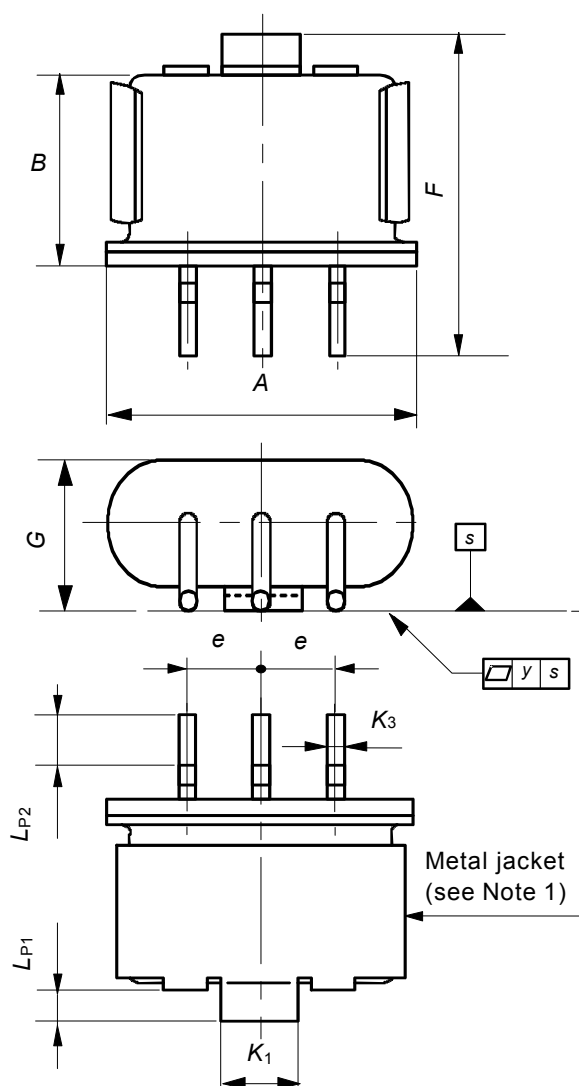
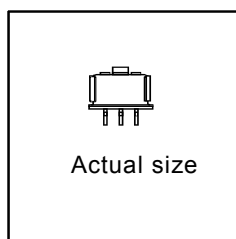
Table 2 sets out the designation of the metal enclosures as outlined in the following specification sheets. All corresponding enclosures are listed in Table 1 below.

Table 1 – Revised configurations

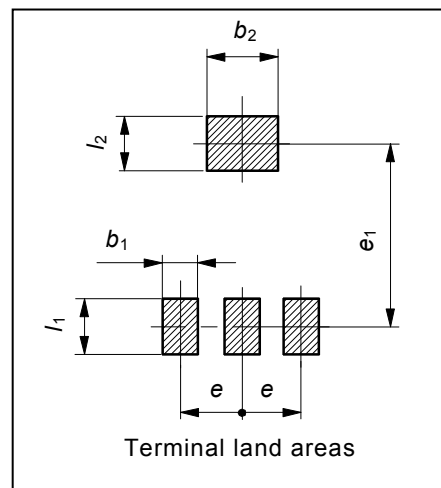
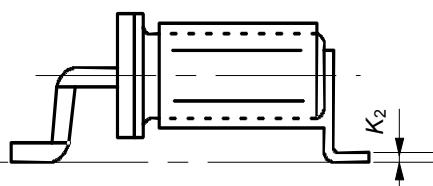
Type	Sheet No.	Description
SMS-L4/01~03	Sheet 1	Maximum LP_1 was changed from 1,2 to 1,4.
SMS-L4/04~07	Sheet 2	Maximum B_1 was changed from 9,5 to 9,6. Maximum LP_1 was changed from 1,2 to 1,4.
SMS-J2/01~02	Sheet 12	Maximum B was changed from 4,7 to 5,0. Minimum K_1 was changed from 0,85 to 0,6.

Table 2 – Designation of metal enclosures

No.	Type	Sheet No.	Description
1	SMS – L4/01	Sheet 1	Metal, resistance-welded, four L-lead SMD outline
2	SMS – L4/02		
3	SMS – L4/03		
4	SMS – L4/04	Sheet 2	Metal, resistance-welded, four L-lead SMD outline
5	SMS – L4/05		
6	SMS – L4/06		
7	SMS – L4/07		
8	SMS – L3/01	Sheet 3	Metal, resistance-welded, three L-lead SMD outline
9	SMS – L3/02		
10	SMS – L3/03		
11	SMS – L3/04	Sheet 4	Metal, resistance-welded, three L-lead, SMD outline
12	SMS – L3/05		
13	SMS – L3/06	Sheet 5	Metal, resistance-welded, three L-lead, SMD outline
14	SMS – L3/07		
15	SMS – L3/08		
16	SMS – L3/09	Sheet 6	Metal, resistance-welded, three L-lead, SMD outline
17	SMS – L3/10		
18	SMS – L3/11		
19	SMS – L3/12	Sheet 7	Metal, resistance-welded, three L-lead SMD outline
20	SMS – L3/13		
21	SMS – L3/14		
22	SMS – L3/15	Sheet 8	Metal, resistance-welded, three L-lead, SMD outline
23	SMS – L3/16		
24	SMS – L3/17		
25	SMS – L3/18		
26	SMS – L3/19		
27	SMS – L3/20		
28	SMS – L3/21	Sheet 9	Metal, resistance-welded, three L-lead SMD outline
29	SMS – L3/22		
30	SMS – L3/23		
31	SMS – L3/24		
32	SMS – L3/25	Sheet 10	Metal, resistance-welded, three L-lead SMD outline
33	SMS – L3/26		
34	SMS – L3/27		
35	SMS – J4/01	Sheet 11	Metal, resistance-welded, plastic frame, four J-lead SMD outline
36	SMS – J2/01	Sheet 12	Metal, resistance-welded, plastic frame, two J-lead SMD outline
37	SMS – J2/02		



Ref.	Dimensions (mm)			Notes
	Min.	Nom.	Max.	
A	—	—	8,26	
B ₁	—	—	5,10	/01
B ₂	—	—	6,40	/02
B ₃	—	—	8,80	/03
F ₁	—	—	9,50	/01
F ₂	—	—	10,80	/02
F ₃	—	—	12,75	/03
G	—	—	4,00	
K ₁	1,75	—	2,25	
K ₂	0,15	—	0,30	
K ₃	0,30	—	0,90	Note 2
L _{p1}	0,70	—	1,40	
L _{p2}	1,20	—	1,80	
e	—	1,88	—	
e ₁₋₁	—	7,50	—	/01
e ₁₋₂	—	8,80	—	/02
e ₁₋₃	—	10,80	—	/03
b ₁	—	—	0,80	
b ₂	—	—	2,40	
l ₁	—	—	2,30	
l ₂	—	—	2,10	
y	—	—	0,20	



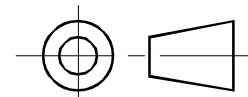
IEC

NOTE 1 The configuration of the metal jacket is given as an example.

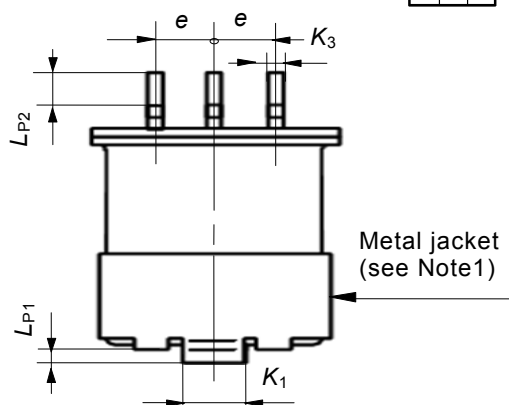
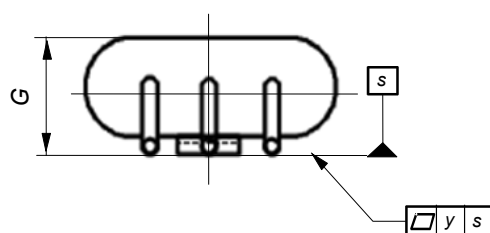
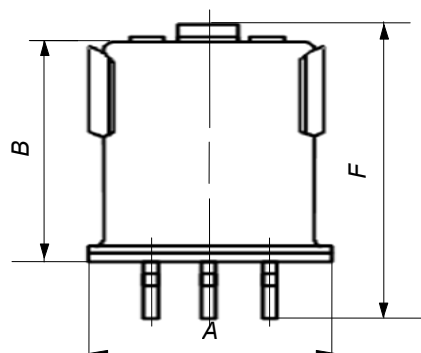
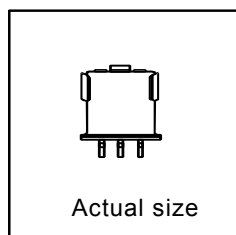
NOTE 2 This portion of the lead may be re-shaped under pressure.

Metal, resistance-welded, four L-lead SMD
outline – Type SMS-L4/01 ~ 03

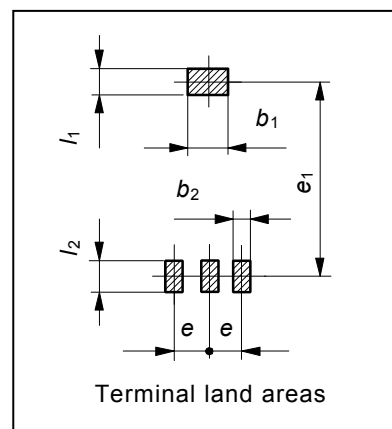
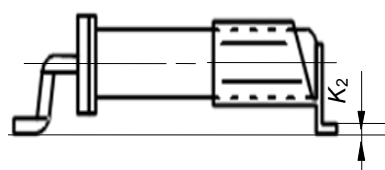
Scale
5:1



Sheet 1



Ref.	Dimensions (mm)			Notes
	Min.	Nom.	Max.	
A	—	—	11,05	
B ₁	—	—	9,60	/04
B ₂	—	—	10,70	/05
B ₃	—	—	11,40	/06
B ₄	—	—	13,50	/07
F ₁	—	—	14,30	/04
F ₂	—	—	15,50	/05
F ₃	—	—	16,20	/06
F ₄	—	—	18,30	/07
G	—	—	5,30	
K ₁	2,90	—	3,10	
K ₂	0,15	—	0,30	
K ₃	0,38	—	1,10	Note 2
LP1	0,70	—	1,40	
LP2	1,00	—	1,70	
e	—	2,44	—	
e1-1	—	11,80	—	/04
e1-2	—	13,00	—	/05
e1-3	—	13,70	—	/06
e1-4	—	16,00	—	/07
b ₁	—	—	5,00	
b ₂	—	—	1,40	
l ₁	—	—	1,80	
l ₂	—	—	3,00	
y	—	—	0,20	



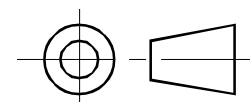
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NOTE 1 The configuration of the metal jacket is given as an example.

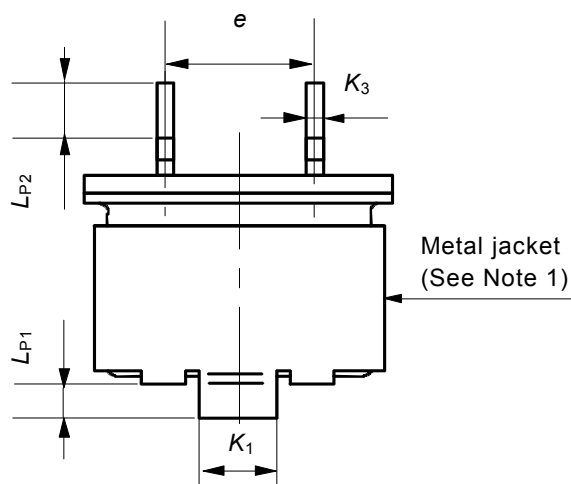
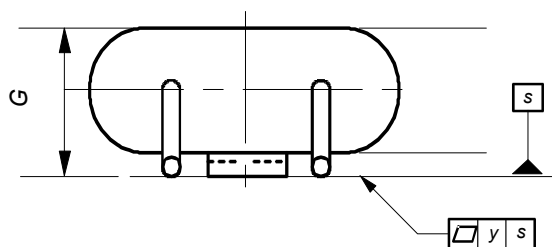
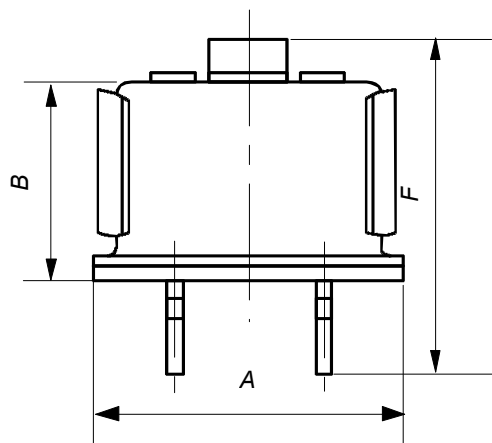
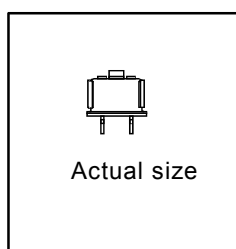
NOTE 2 This portion of the lead may be re-shaped under pressure.

Metal, resistance-welded, four L-lead SMD

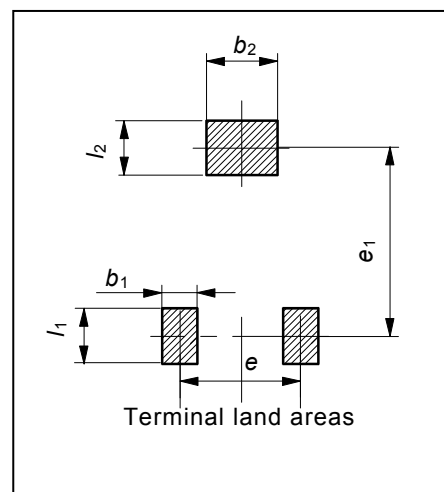
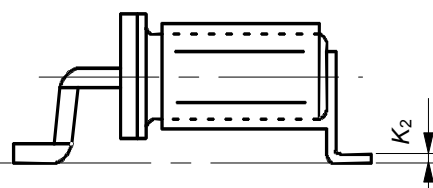
outline – Type SMS-L4/04 ~ 07

Scale
3:1

Sheet 2



Ref.	Dimensions (mm)			Notes
	Min.	Nom.	Max.	
A	—	—	8,26	
B ₁	—	—	5,10	/01
B ₂	—	—	6,40	/02
B ₃	—	—	8,80	/03
F ₁	—	—	9,50	/01
F ₂	—	—	10,80	/02
F ₃	—	—	12,75	/03
G	—	—	4,00	
K ₁	1,75	—	2,25	
K ₂	0,15	—	0,30	
K ₃	0,30	—	0,90	Note 2
LP ₁	0,70	—	1,20	
LP ₂	1,20	—	1,80	
e	—	3,75	—	
e ₁₋₁	—	7,50	—	/01
e ₁₋₂	—	8,80	—	/02
e ₁₋₃	—	10,80	—	/03
b ₁	—	—	0,80	
b ₂	—	—	2,40	
l ₁	—	—	2,30	
l ₂	—	—	2,10	
y	—	—	0,20	



IEC

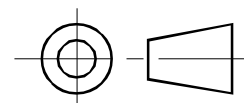
NOTE 1 The configuration of the metal jacket is given as an example.

NOTE 2 This portion of the lead may be re-shaped under pressure.

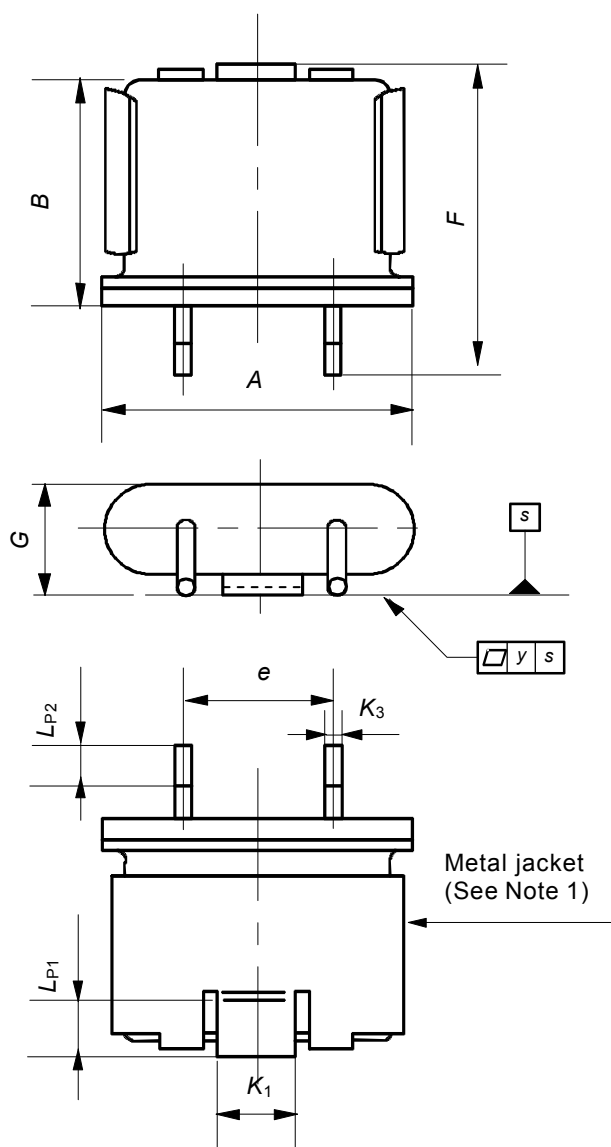
Metal, resistance-welded, three L-lead SMD

outline – Type SMS-L3/01 ~ 03

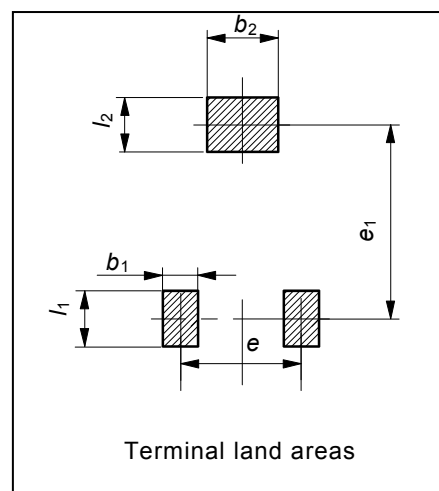
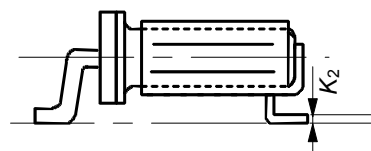
Scale
5:1



Sheet 3



Ref.	Dimensions (mm)			Notes
	Min.	Nom.	Max.	
A	—	—	8,26	
B1	—	—	6,00	/04
B2	—	—	8,00	/05
F1	—	—	8,20	/04
F2	—	—	10,20	/05
G	—	—	3,00	
K1	1,75	—	2,25	
K2	0,15	—	0,30	
K3	0,30	—	0,50	Note 2
Lp1	0,70	—	1,20	
Lp2	1,00	—	1,30	
e	3,50	3,75	4,00	
e1-1	—	6,80	—	/04
e1-2	—	8,80	—	/05
b1	—	—	0,80	
b2	—	—	2,60	
l1	—	—	2,10	
l2	—	—	1,70	
y	—	—	0,20	



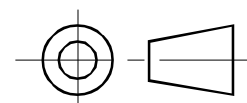
IEC

NOTE 1 The configuration of the metal jacket is given as an example.

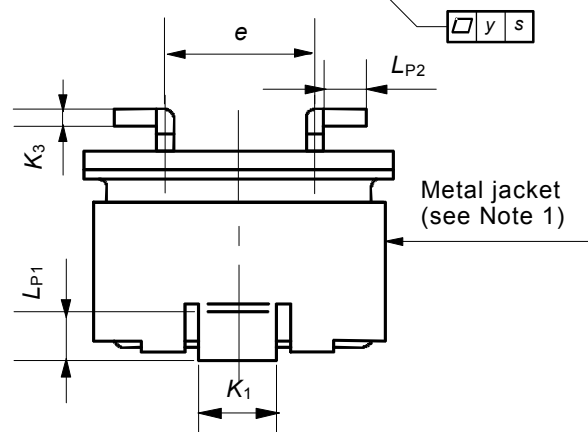
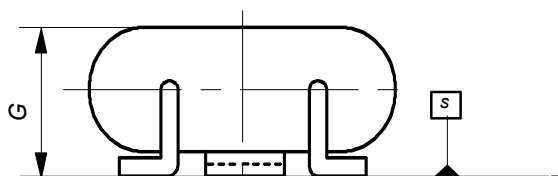
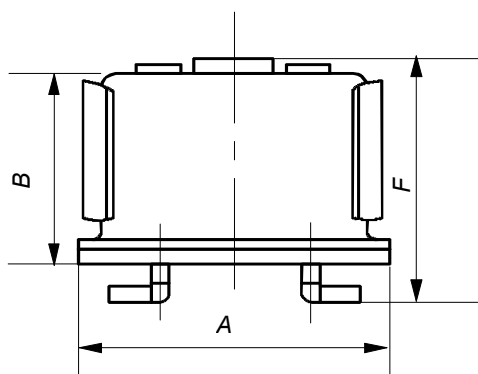
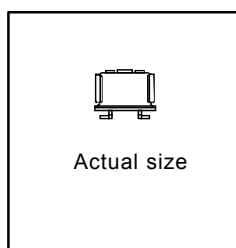
NOTE 2 This portion of the lead may be re-shaped under pressure.

Metal, resistance-welded, three L-lead SMD
outline – Type SMS-L3/04 ~ 05

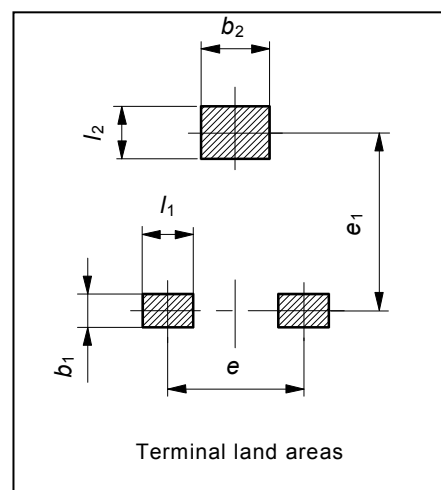
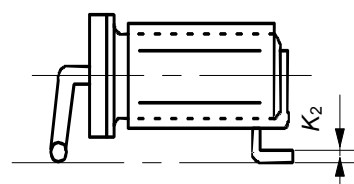
Scale
5:1



Sheet 4



Ref.	Dimensions (mm)			Notes
	Min.	Nom.	Max.	
A	—	—	8,26	
B1	—	—	5,10	/06
B2	—	—	6,00	/07
B3	—	—	8,00	/08
F1	—	—	6,20	/06
F2	—	—	8,00	/07
F3	—	—	10,00	/08
G	—	—	4,00	
K1	1,75	—	2,25	
K2	0,15	—	0,30	
K3	0,30	—	0,50	Note 2
Lp1	0,70	—	1,20	
Lp2	0,80	—	1,60	
e	5,30	5,60	5,90	
e1-1	—	5,00	—	/06
e1-2	—	5,90	—	/07
e1-3	—	7,90	—	/08
b1	—	—	2,60	
b2	—	—	0,80	
l1	—	—	1,70	
l2	—	—	2,10	
y	—	—	0,20	



IEC

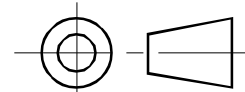
NOTE 1 The configuration of the metal jacket is given as an example.

NOTE 2 This portion of the lead may be re-shaped under pressure.

Metal, resistance-welded, three L-lead SMD

outline – Type SMS-L3/06 ~ 08

Scale
5:1



Sheet 5