BS EN 60679-3:2013

BSI Standards Publication

Quartz crystal controlled oscillators of assessed quality

Part 3: Standard outlines and lead connections

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National foreword

This British Standard is the UK implementation of EN 60679-3:2013. It is identical to IEC 60679-3:2012. It supersedes BS EN 60679-3:2002 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EPL/49, Piezoelectric devices for frequency control and selection.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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NORME EUROPÉENNE

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July 2013

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English version

Quartz crystal controlled oscillators of assessed quality - Part 3: Standard outlines and lead connections

(IEC 60679-3:2012)

Oscillateurs pilotés par quartz sous assurance de la qualité - Partie 3: Encombrements normalisés et connexions des sorties (CEI 60679-3:2012)

Quarzoszillatoren mit bewerteter Qualität - Teil 3: Norm-Gehäusemaße und Anschlussdrähte (IEC 60679-3:2012)

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 60679-3:2013 E

Foreword

The text of document 49/1009/FDIS, future edition 3 of IEC 60679-3, prepared by IEC/TC 49 "Piezoelectric, dielectric and electrostatic devices and associated materials for frequency control, selection and detection" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60679-3:2013.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2014-01-12
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-01-18

This document supersedes EN 60679-3:2001.

EN 60679-3:2013 includes the following significant technical changes with respect to EN 60679-3:2001:

- CO 01, CO 07, CO 10, CO 17 and CO 18 were deleted;
- the current pin layout of CO 06 was deleted;
- new pin layout of CO 06 was added as CO 40;
- new layout of CO 15 was added as CO 41;
- two new enclosures, CO 42 and CO 43 were added.

Therefore revised edition includes 15 types of enclosures as in Table 1 of Clause 5.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60679-3:2012 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60679-1:2007	NOTE	Harmonised as EN 60679-1:2007 (not modified).
IEC 60679-4:1997	NOTE	Harmonised as EN 60679-4:1998 (not modified).
IEC 60679-4-1:1998	NOTE	Harmonised as EN 60679-4-1:1998 (not modified).
IEC 60679-5:1998	NOTE	Harmonised as EN 60679-5:1998 (not modified).
IEC 60679-5-1:1998	NOTE	Harmonised as EN 60679-5-1:1998 (not modified).
ISO 1101	NOTE	Harmonised as EN ISO 1101.

CONTENTS

QUARTZ CRYSTAL CONTROLLED OSCILLATORS OF ASSESSED QUALITY –

Part 3: Standard outlines and lead connections

1 Scope

This part of IEC 60679 specifies the outline dimensions and lead connections for quartz crystal controlled oscillators with lead enclosures.

2 Guidance for the standardization of outline drawings for frequency control and selection devices

In order to achieve a uniform presentation of outline drawings for frequency control and selection devices, the following shall be considered.

a) An outline drawing shall show all dimensional and geometrical characteristics of an enclosure necessary to ensure mechanical interchangeability with all other enclosures of the same outline. Enlarged and detailed view may be used, if necessary.

b) The outline drawing shall consist of three parts:

   1) A drawing with dimensional symbols (capital letter) as shown in Figure 1 with applicable footnotes, if necessary.

   2) A tabular listing relating to the drawing symbol to the actual dimensions. Where possible, this shall be shown on the same page as the drawing.

   3) An "actual-size" sketch (scale 1:1).

c) The outline drawing shall be executed in the third-angle projection.

d) The function and identification of the lead connections (termination) shall be determined by agreement between the supplier and user. They shall not be defined on the outline drawing.

e) Descriptive footnotes may be used at the bottom of/ or adjacent to, the drawing with proper reference to the body of the drawing.

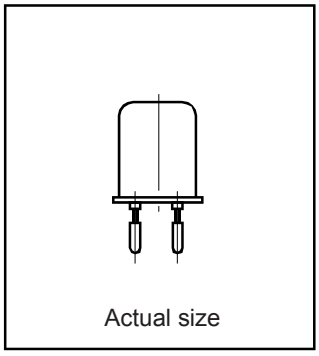
f) All dimensions shall be in millimeters.

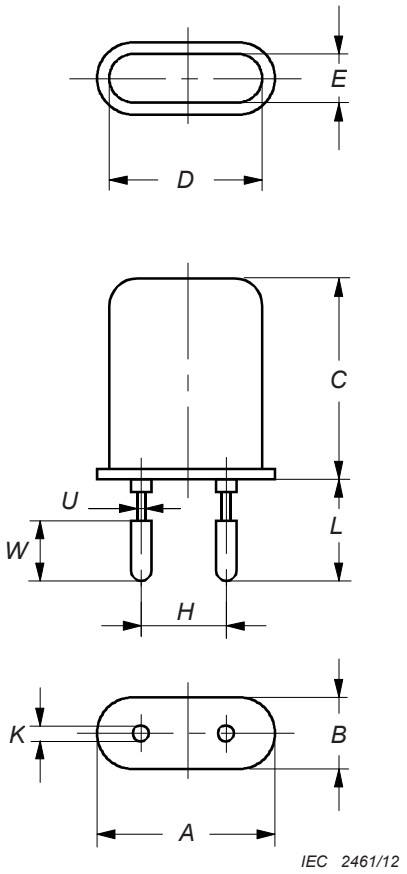
g) 0utline dimensions *A*, *B*, *C*, *D* and *E* shall be listed with maximum values only.

h) If there are plural identical enclosures with different height (*C*), *C* shall be expressed with a suffix number such as C_1, C_2, etc. The following letter and number after the basic type number (four digits) indicate the enclosure height and lead length. The identity references are given in the table in the sheet.

i) Lead (termination) cross-sectional dimensions shall be listed with minimum and maximum values. If applicable, nominal dimensions may be added.

j) The spacing of the leads (termination) – symbol *H* – shall be listed with minimum, nominal and maximum dimensions.





Ref.	Dimensions (mm)			Footnotes
	Min.	Nom.	Max.	
A	—	—	X	
B	—	—	X	
C	—	—	X	
D	—	—	X	
E	—	—	X	
H	X	X	X	
K	X	—	X	1
L	X	—	X	
U	X	—	—	2
W	X	—	—	2

1

2

Figure 1 – Guidance for outline drawings

Scale 2:1

Sheet – number

k) Leads (terminations) for soldering application shall be specified with the minimum length dimensions (symbol *L*) only.

Lead (termination) for plug-in application shall be specified with minimum and maximum length dimensions.

l) If leads (terminations) are provided with an undercut, dimensions *U* and *W* shall be listed with minimum dimensions only.

3 Dimensions of crystal oscillator enclosure

The dimensions in this standard apply to the completed quartz crystal controlled oscillators.

Only those dimensions which meet the requirements of the guidance for standardization of outline drawings are given (see Clause 2).

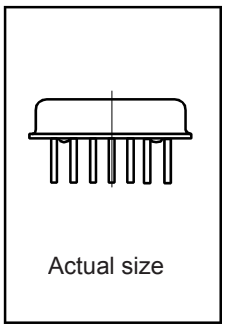
4 Lead connections

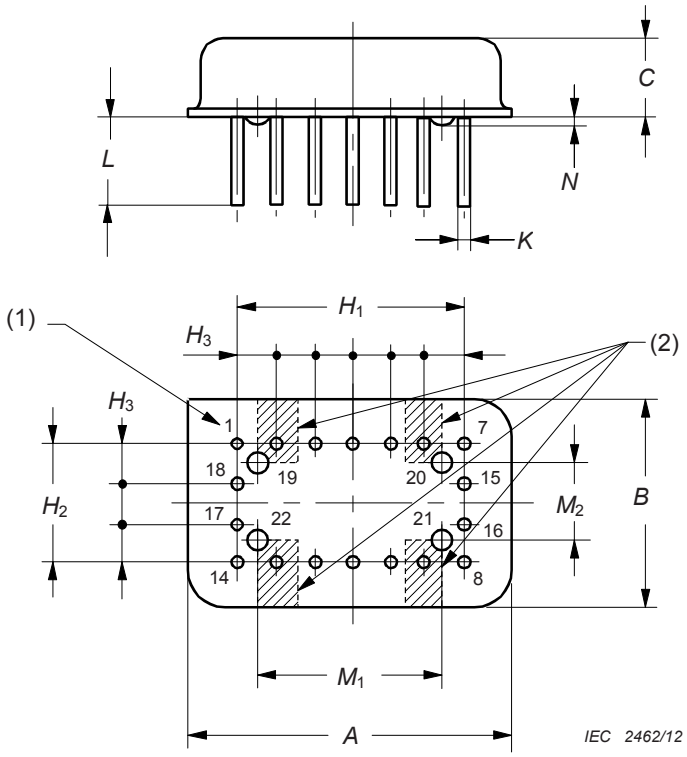
Recommendations for the lead connections of quartz crystal controlled oscillators are given in Annex A to this standard. Lead connections shall always be given in the detail specification.

5 Designation of crystal oscillator enclosure

Table 1 – Designation of crystal oscillator enclosures

No.	Type	Sheet No.	Description
1	CO 02 A1 CO 02 B1	Sheet 1	Metal enclosure, welded, 4 to 18 lead crystal oscillator outline
2	CO 05 B1	Sheet 2	Metal enclosure, welded, eight lead crystal oscillator outline
3	CO 08 A1 CO 08 B1 CO 08 C1	Sheet 3	Metal enclosure, five lead crystal oscillator outline
4	CO 09 A1 CO 09 B1	Sheet 4	Metal enclosure, five lead crystal oscillator outline
5	CO 15 B1 CO 15 C1	Sheet 5	Metal enclosure, five lead crystal oscillator outline
6	CO 16 A1 CO 16 B1 CO 16 C1	Sheet 6	Metal enclosure, four lead crystal oscillator outline
7	CO 19 A1 CO 19 B1	Sheet 7	Metal enclosure, five lead crystal oscillator outline
8	CO 21 A1	Sheet 8	Metal enclosure, welded, four lead crystal oscillator outline
9	CO 22 A1	Sheet 9	Plastic, moulded or ceramic, solder-glass sealed eight lead crystal oscillator outline
10	CO 23 B1	Sheet 10	Metal enclosure, welded, eight lead crystal oscillator outline
11	CO 24 A1	Sheet 11	Metal enclosure, four lead crystal oscillator outline
12	CO 40	Sheet 12	Metal enclosure, five lead crystal oscillator outline
13	CO 41 A1 CO 41 B1	Sheet 13	Metal enclosure, four lead crystal oscillator outline
14	CO 42	Sheet 14	Metal enclosure, four lead crystal oscillator outline
15	CO 43 A1 CO 43 B1 CO 43 C1	Sheet 15	Metal enclosure, five lead crystal oscillator outline





Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	—	—	20,70		
B	—	—	13,10		
C_1	—	—	5,10	CO 02 A.	5
C_2	—	—	6,60	CO 02 B.	5
H_1	14,94	15,24	15,54		
H_2	7,32	7,62	7,92		
H_3	2,30	2,54	2,70		
K	0,40	—	0,53		3
L	5,85	—	—	CO 02 .1	5
M_1	—	12,20	—		2
M_2	—	4,58	—		2
N	—	—	0,75		

Key

(1) An indication shall be provided to locate the position of lead No.1 (a 90° corner is shown on the drawing as an example).

(2) If required, insulating standoffs shall be located within corner areas defined in the table by M_1 and M_2.

If insulating tape standoffs are used, shaded areas as indicated are preferred and the tape may encircle the leads.

3 Leads with solderable finish shall not exceed K_{max} .

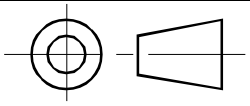
4 Ground leads may be created by a brazed or welded joint(s) to the base.

5 The complete identity for any oscillator outline is a six digit type number consisting of the basic type number (four digits) followed by a letter indicating the enclosure height and a number indicating the lead length. The identity references are given in the table, where a dot indicates the missing information, which is given on another line.

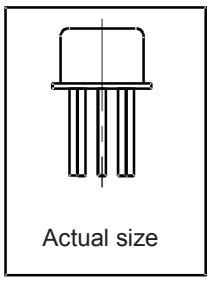
EXAMPLE CO 02 B1 is the complete identity for the enclosure CO 02 with enclosure height C_2 and lead length *L*.

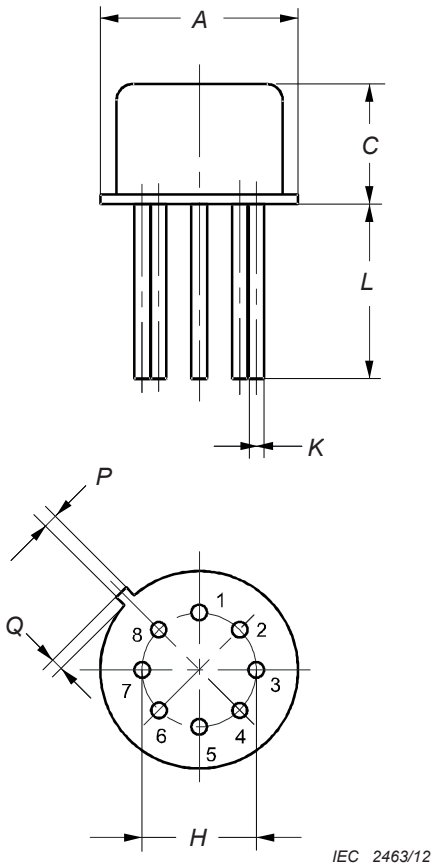
Metal enclosure, welded, 4 to 18 lead crystal oscillator outline – Type CO 02

Scale 2:1



Sheet 1





Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	—	—	13,20		
C	—	—	8,90	CO 05 B.	2
H	6,70	7,10	7,50		
K	0,40	—	0,53		1
L	11,70	—	—	CO 05 .1	2
P	0,70	—	0,90		
Q	0,60	—	0,80		

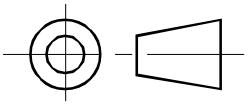
1 Leads with solderable finish shall not exceed K_{max} .

2 The complete identity for any oscillator outline is a six digit type number consisting of the basic type number (four digits) followed by a letter indicating the enclosure height and a number indicating the lead length. The identity references are given in the table, where a dot indicates the missing information, which is given on another line.

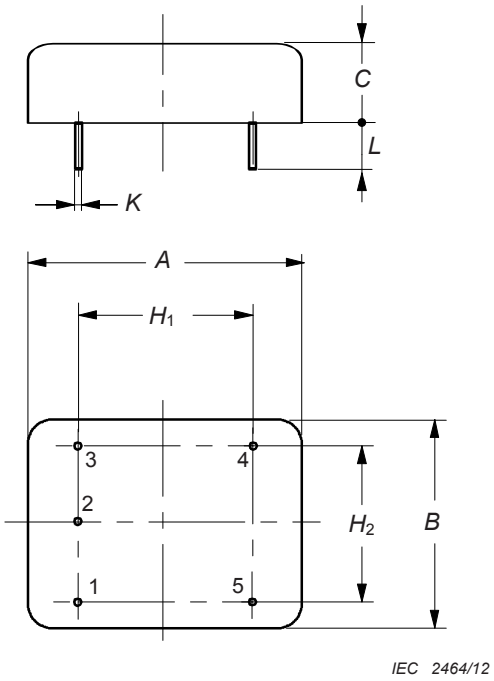
EXAMPLE CO 05 B1 is the complete identity for the enclosure CO 05 with enclosure height *C* and lead length *L*.

Metal enclosure, welded, eight lead crystal oscillator outline – Type CO 05

Scale 2:1



Sheet 2



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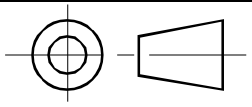
Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	—	—	36,10		
B	—	—	27,20		
C_1	—	—	10,20	CO 08 A.	1
C_2	—	—	12,80	CO 08 B.	1
C_3	—	—	19,40	CO 08 C.	1
H_1	25,25	25,40	25,65		
H_2	17,55	17,80	18,05		
K	0,70	—	0,90		
L	4,50	—	—	CO 08 .1	1

1 The complete identity for any oscillator outline is a six digit type number consisting of the basic type number (four digits) followed by a letter indicating the enclosure height and a number indicating the lead length. The identity references are given in the table, where a dot indicates the missing information, which is given on another line.

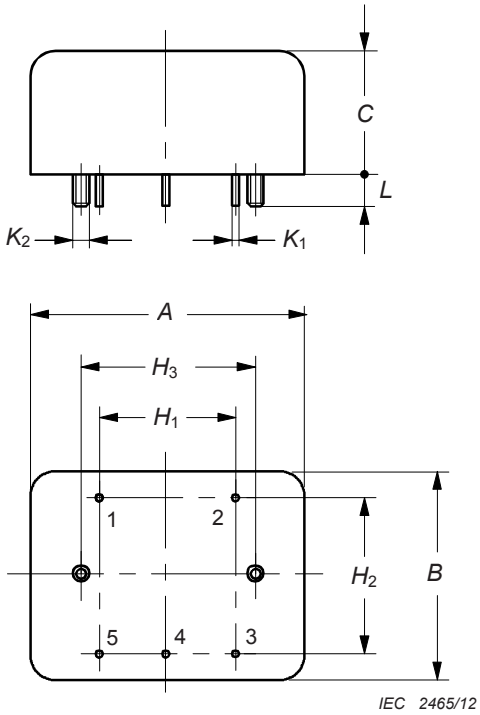
EXAMPLE CO 08 A1 is the complete identity for enclosure CO 08 with enclosure height C1 and lead length L.

Metal enclosure, five lead crystal oscillator outline – Type CO 08

Scale 1:1



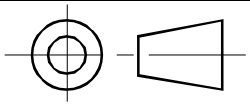
Sheet 3



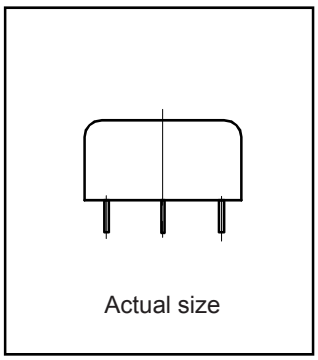
Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	—	—	36,10		
B	—	—	27,20		
C_1	—	—	16,10	CO 09 A.	1
C_2	—	—	19,40	CO 09 B.	1
H_1	17,75	17,80	18,05		
H_2	20,15	20,35	20,55		
H_3	22,65	22,90	23,15		
K_1	0,70	—	0,90		
K_2	—	M2	—		
L	4,50	—	—	CO 09 .1	1

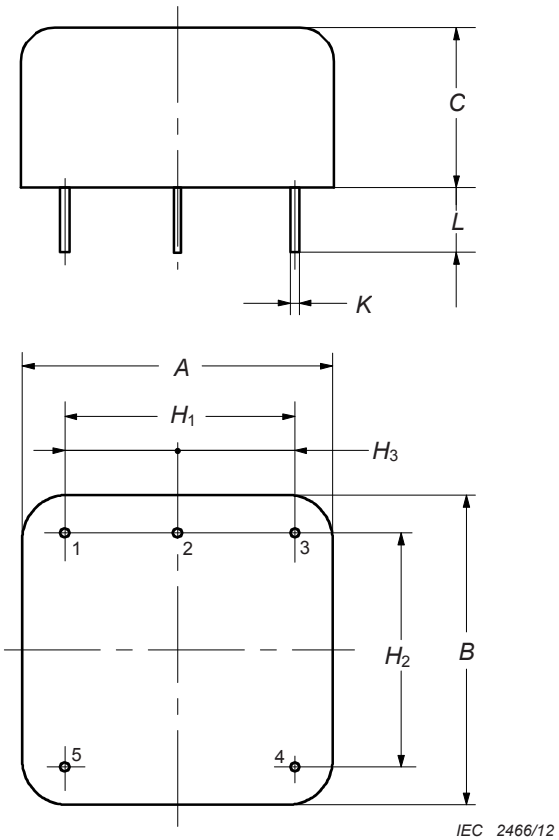
1 The complete identity for any oscillator outline is a six digit type number consisting of the basic type number (four digits) followed by a letter indicating the enclosure height and a number indicating the lead length. The identity references are given in the table, where a dot indicates the missing information, which is given on another line.

EXAMPLE CO 09 A1 is the complete identity for enclosure CO 09 with enclosure height C1 and lead length L.

Metal enclosure, five lead crystal oscillator outline – Type CO 09	Scale 1:1	

Sheet 4





Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	—	—	20,50		
B	—	—	20,50		
C_1	—	—	15,50	CO 15 B.	1,2
C_2	—	—	20,50	CO 15 C.	1,2
H_1	14,70	—	15,54		
H_2	14,70	—	15,54		
H_3	7,20	7,50	7,80		
K	0,40	—	0,60		
L	4,00	—	—	CO 15 .1	1

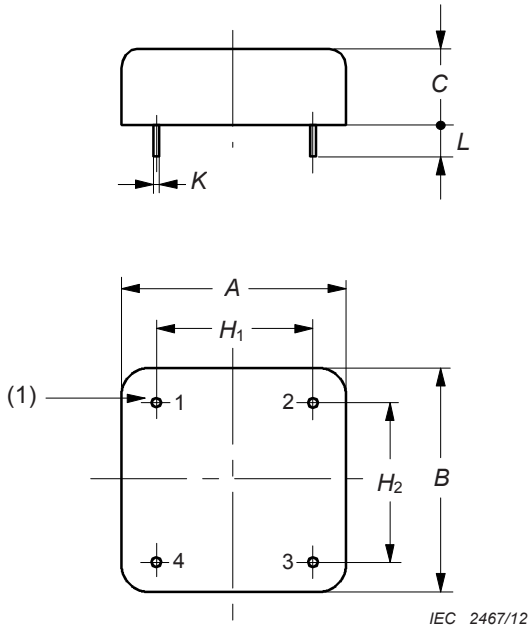
1 The complete identity for any oscillator outline is a six digit type number consisting of the basic type number (four digits) followed by a letter indicating the enclosure height and a number indicating the lead length. The identity references are given in the table, where a dot indicates the missing information, which is given on another line.

EXAMPLE CO 15 B1 is the complete identity for enclosure CO 15 with enclosure height C_1 and lead length *L*.

2 The same pin layout of CO 15 but optionally with four of insulating standoffs is in CO 41 in Sheet 13.

Metal enclosure, five lead crystal oscillator outline – Type CO 15	Scale 2:1	

Sheet 5



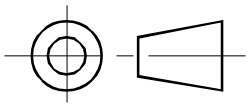
Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	—	—	31,00		
B	—	—	31,00		
C_1	—	—	11,00	CO 16 A.	2
C_2	—	—	16,00	CO 16 B.	2
C_3	—	—	21,00	CO 16 C.	2
H_1	21,70	22,00	22,30		
H_2	21,70	22,00	22,30		
K	0,70	—	0,90		
L	4,00	—	—	CO 16 .1	2

Key

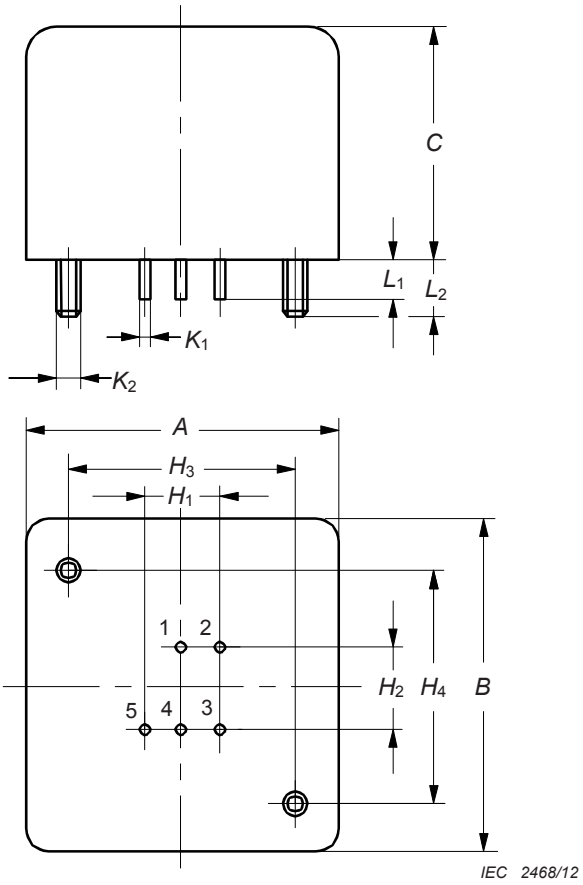
(1) An indication shall be provided to locate the position of lead No. 1.

2 The complete identity for any oscillator outline is a six digit type number consisting of the basic type number (four digits) followed by a letter indicating the enclosure height and a number indicating the lead length. The identity references are given in the table, where a dot indicates the missing information, which is given on another line.

EXAMPLE CO 16 A1 is the complete identity for enclosure CO 16 with enclosure height C_1 and lead length *L*.

Metal enclosure, four lead crystal oscillator outline – Type CO 16	Scale 1:1	

Sheet 6



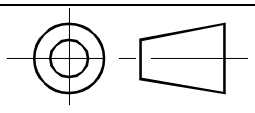
Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	—	—	41,00		
B	—	—	41,00		
C_1	—	—	31,00	CO 19 A.	1
C_2	—	—	60,00	CO 19 B.	1
H_1	9,70	10,00	10,30		
H_2	9,70	10,00	10,30		
H_3	29,50	30,00	30,50		
H_4	29,50	30,00	30,50		
K_1	0,90	1,00	1,10		
K_2	—	M3	—		
L_1	5,00	—	—	CO 19 .1	1
L_2	7,00	—	—		

1 The complete identity for any oscillator outline is a six digit type number consisting of the basic type number (four digits) followed by a letter indicating the enclosure height and a number indicating the lead length. The identity references are given in the table, where a dot indicates the missing information, which is given on another line.

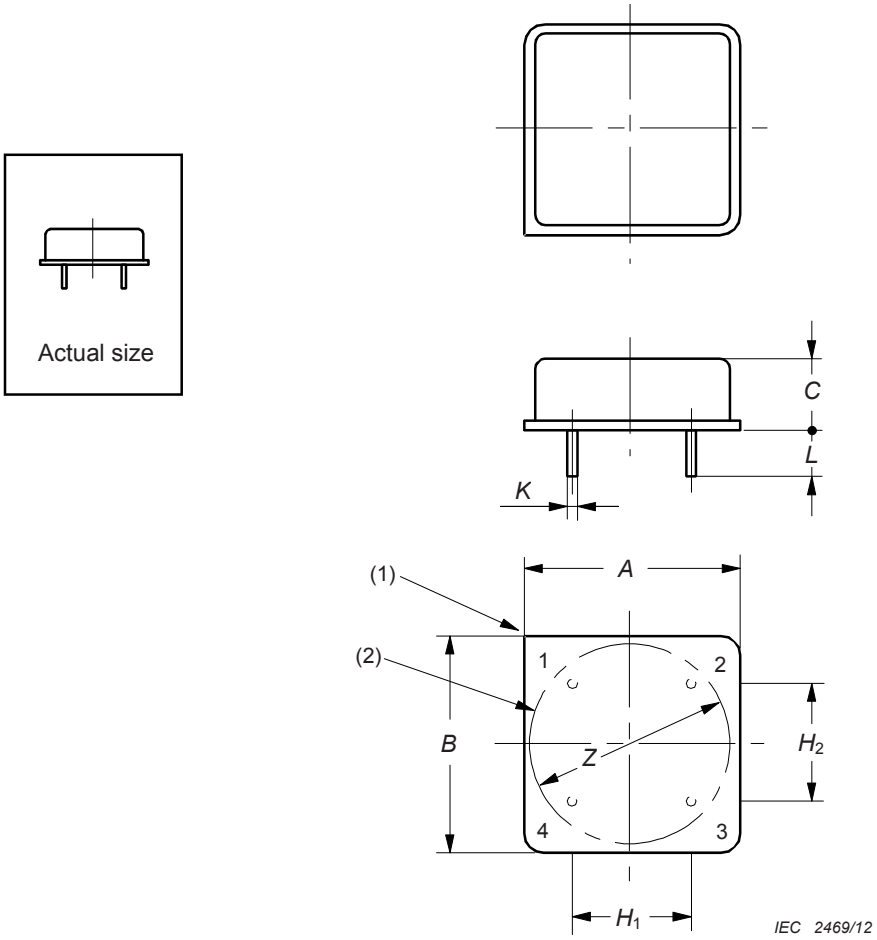
EXAMPLE CO 19 B1 is the complete identity for enclosure CO 19 with enclosure height C_2 and lead length L_1.

Metal enclosure, five lead crystal oscillator outline – Type CO 19

Scale 1:1



Sheet 7



Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	—	—	13,20		
B	—	—	13,20		
C	—	—	5,00	CO 21 A.	3
H_1	7,32	7,62	7,92		
H_2	7,32	7,62	7,92		
K	0,40	—	0,60		
L	4,00	—	—	CO 21 .1	3
Z	—	—	13,00		

Key

(1) An indication shall be provided to locate the position of lead No. 1 (a 90° corner is shown on the drawing as an example).

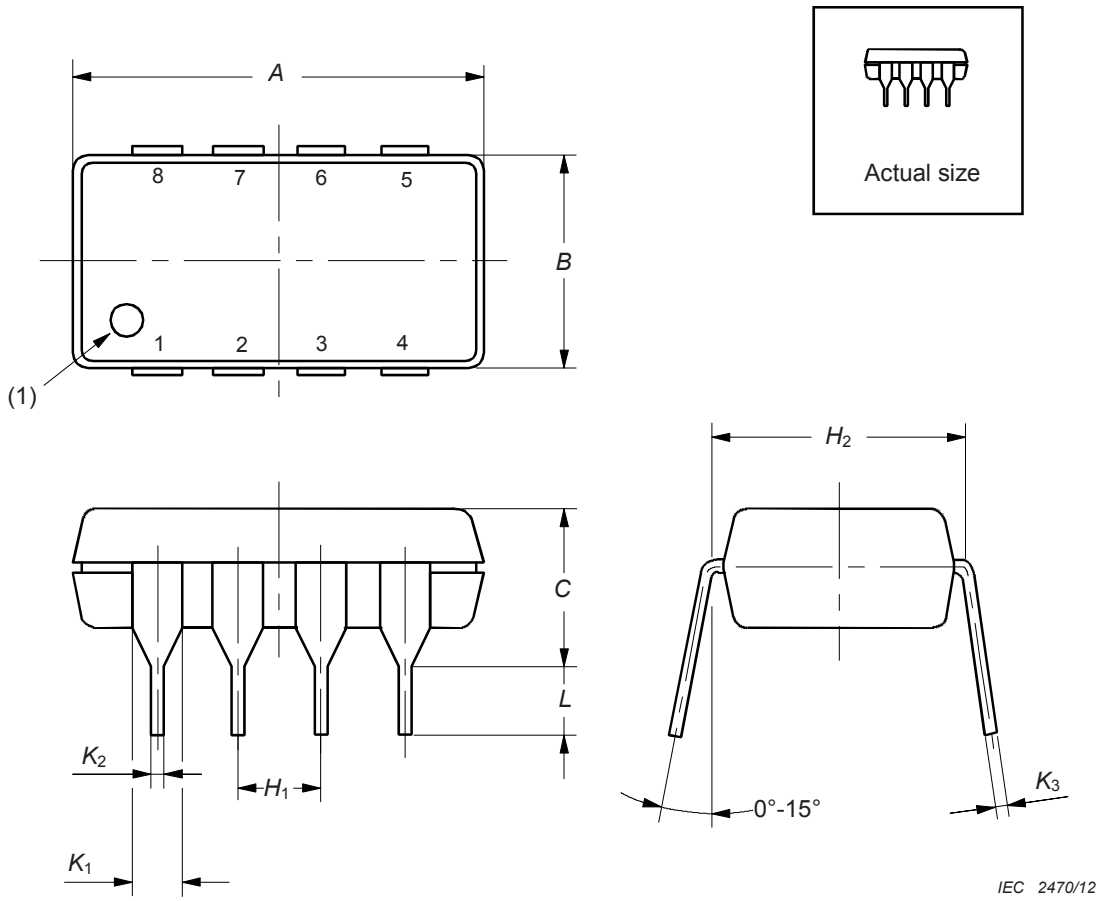
(2) Three or more standoffs may be present within the circle defined by *Z*.

3 The complete identity for any oscillator outline is a six digit type number consisting of the basic type number (four digits) followed by a letter indicating the enclosure height and a number indicating the lead length. The identity references are given in the table, where a dot indicates the missing information, which is given on another line.

EXAMPLE CO 21 A1 is therefore the complete identity of this enclosure.

Metal enclosure, welded, four lead crystal oscillator outline – Type CO 21	Scale 2:1	

Sheet 8



Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	—	—	12,80		
B	—	—	7,00		
C	—	—	5,08	CO 22 A.	2
H_1	2,29	2,54	2,79		
H_2	7,37	7,62	7,87		
K_1	—	1,52	—		
K_2	0,35	—	0,65		
K_3	0,20	—	0,36		
L	2,50	—	—	CO 22 .1	2

Key

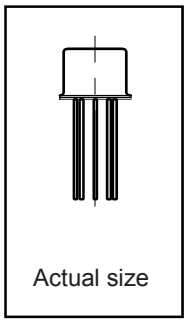
(1) An indication shall be provided to locate the position of lead No. 1.

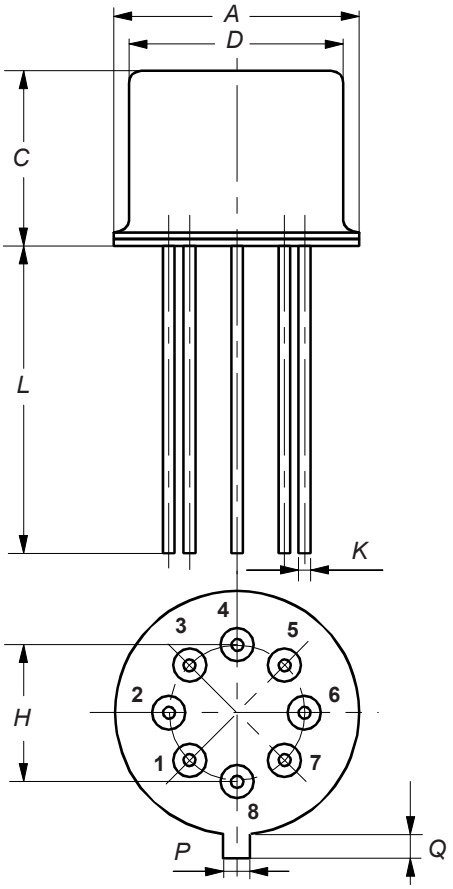
2 The complete identity for any oscillator outline is a six digit type number consisting of the basic type number (four digits) followed by a letter indicating the enclosure height and a number indicating the lead length. The identity references are given in the table, where a dot indicates the missing information which is given on another line.

EXAMPLE CO 22 A1 is therefore the complete identity of this enclosure.

Plastic, moulded or ceramic, solder-glass sealed eight lead crystal oscillator outline – Type CO 22	Scale 4:1	

Sheet 9





IEC 2471/12

Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	—	—	9,40		
C	—	—	6,60	CO 23 B.	2
D	—	—	8,40		
H	4,83	5,08	5,33		
K	0,40	—	0,51		
L	12,70	—	—	CO 23 .1	2
P	—	—	0,90		1
Q	—	—	1,00		1

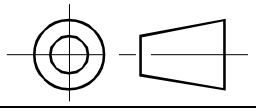
1 An indication shall be provided to locate the position of lead No. 8 (a tag is shown on the drawing as an example.).

2 The complete identity for any oscillator outline is a six digit type number consisting of the basic type number (four digits) followed by a letter indicating the enclosure height and a number indicating the lead length. The identity references are given in the table, where a dot indicates the missing information which is given on another line.

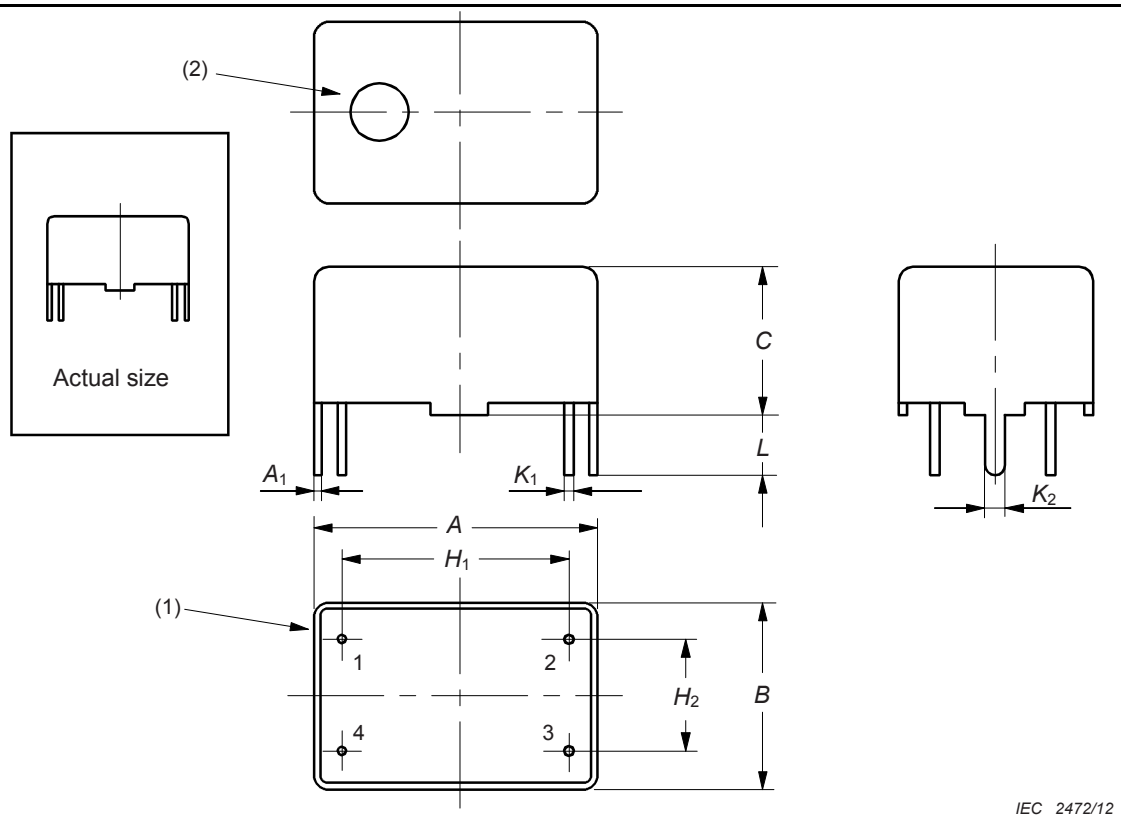
EXAMPLE CO 23 B1 is therefore the complete identity of this enclosure.

Metal enclosure, welded, eight lead crystal oscillator outline – Type CO 23

Scale 3,5:1



Sheet 10



Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	—	—	19,00		
A_1	—	0,30	—		
B	—	—	12,50		
C	—	—	10,00	CO 24 A.	3
H_1	14,84	15,24	15,54		
H_2	7,22	7,62	7,92		
K_1	0,40	—	0,60		
K_2	0,80	—	1,20		4
L	3,00	—	—	CO 24 .1	3

Key

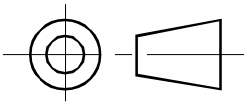
(1) The presence of lead No.1 is optional.

(2) The position of the hole should be on the side of leads No.1 and No.4.

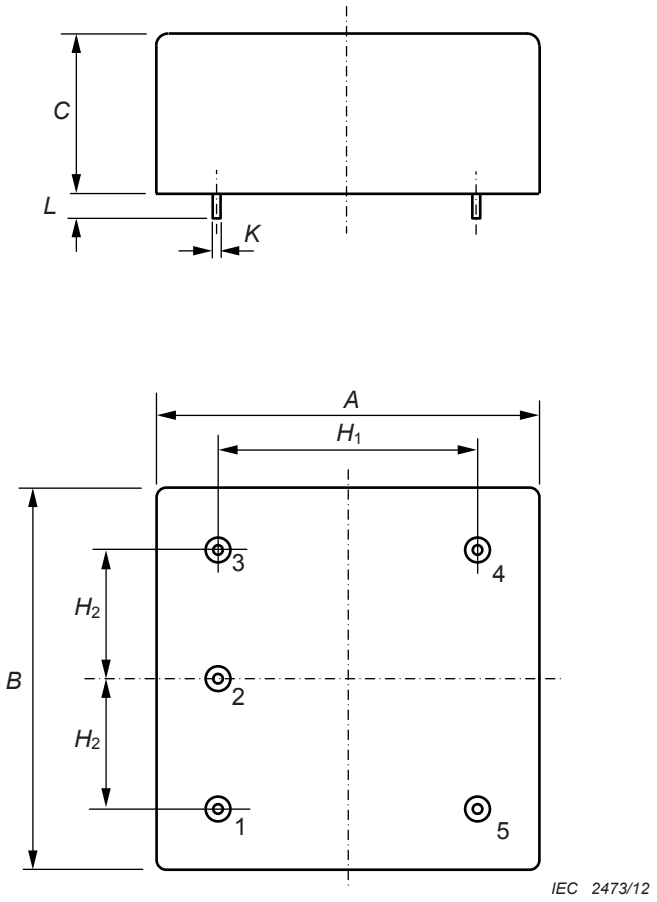
3 The complete identity for any oscillator outline is a six digit type number consisting of the basic type number (four digits) followed by a letter indicating the enclosure height and a number indicating the lead length. The identity references are given in the table, where a dot indicates the missing information which is given on another line.

EXAMPLE CO 24 A1 is therefore the complete identity for the enclosure.

4 The grounding tags are optional.

Metal enclosure, four lead crystal oscillator outline – Type CO 24	Scale 2:1	

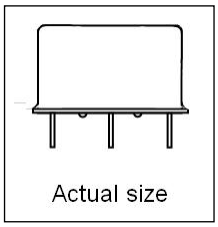
Sheet 11

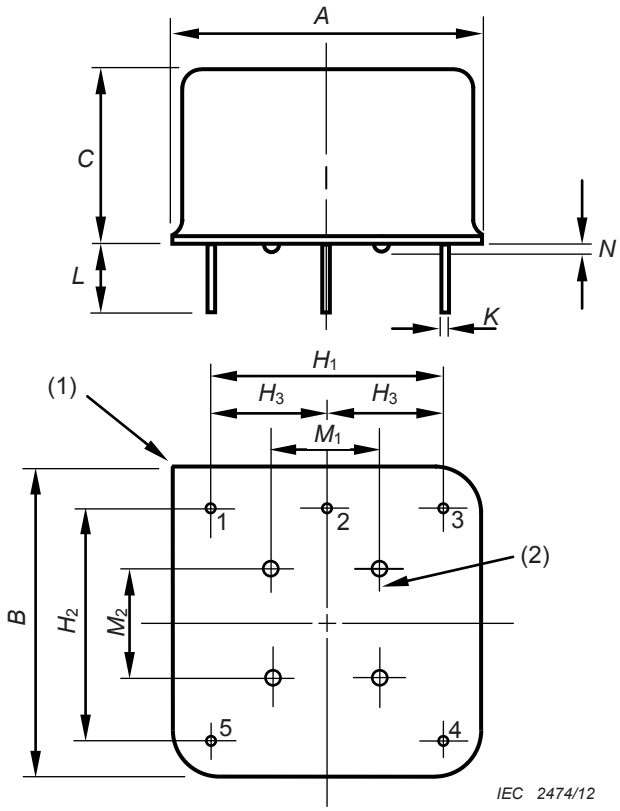


Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	—	—	51,00		1
B	—	—	51,00		1
C	—	—	20,50		
H_1			34,54		1
H_2			17,27		1
K		—	1,0		
L	3,00	—	—		

1 This enclosure is the same size as CO 06 with different pin numbers.

Metal enclosure, five lead crystal oscillator outline – Type CO 40	Scale 1:1	
Sheet 12		





Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A			20,50		3
B	—	—	20,50		3
C_1	—	—	15,50	CO 41A.	4
C_2	—	—	20,50	CO 41B.	4
H_1	15,19	15,24	15,29		
H_2	15,19	15,24	15,29		
H_3	7,20	7,50	7,80		
K	—	0,45	—		
L	4,50	—	—	CO 41.1	4
M_1	7,57	7,62	7,67		2
M_2	7,57	7,62	7,67		2
N	—	—	0,50		

Key

(1) Square corner indicates Pin 1.

(2) If required, insulating standoffs shall be located within corner areas defined in the table by M_1 and M_2.

If insulating tape standoffs are used, shaded areas as indicated are preferred and the tape may encircle the leads.

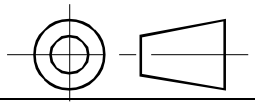
3 This enclosure has same pin layout of CO 15. This enclosure has optionally four insulating standoffs.

4 The complete identity for any oscillator outline is a six digit type number consisting of the basic type number (four digits) followed by a letter indicating the enclosure height and a number indicating the lead length. The identity references are given in the table, where a dot indicates the missing information, which is given on another line.

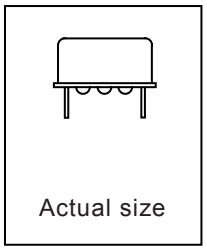
EXAMPLE CO 41 A1 is the complete identity for enclosure CO 41 with enclosure height *C1* and lead length *L*.

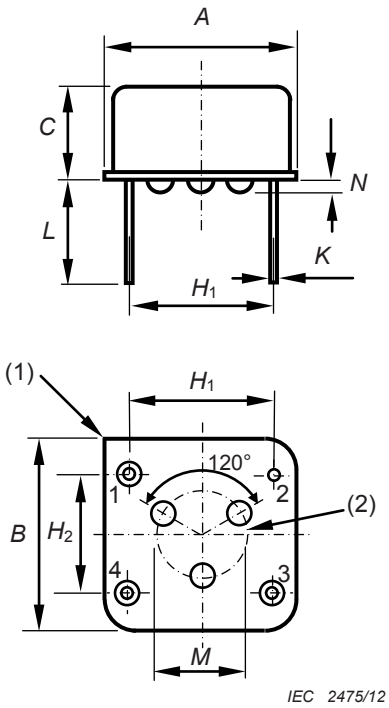
Metal enclosure, five lead crystal oscillator outline – Type CO 41

Scale 2:1



Sheet 13



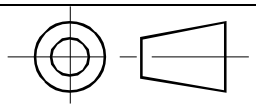


Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	—	—	12,70		
B	—	—	12,70		
C	—	—	6,08		
H_1	—	—	7,72		
H_2	—	—	7,72		
K	—	—	0,45		
L	—	—	6,85		
M	—	6,00	—		2
N	0,70	0,80	0,90		

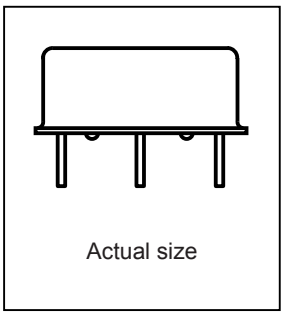
Key

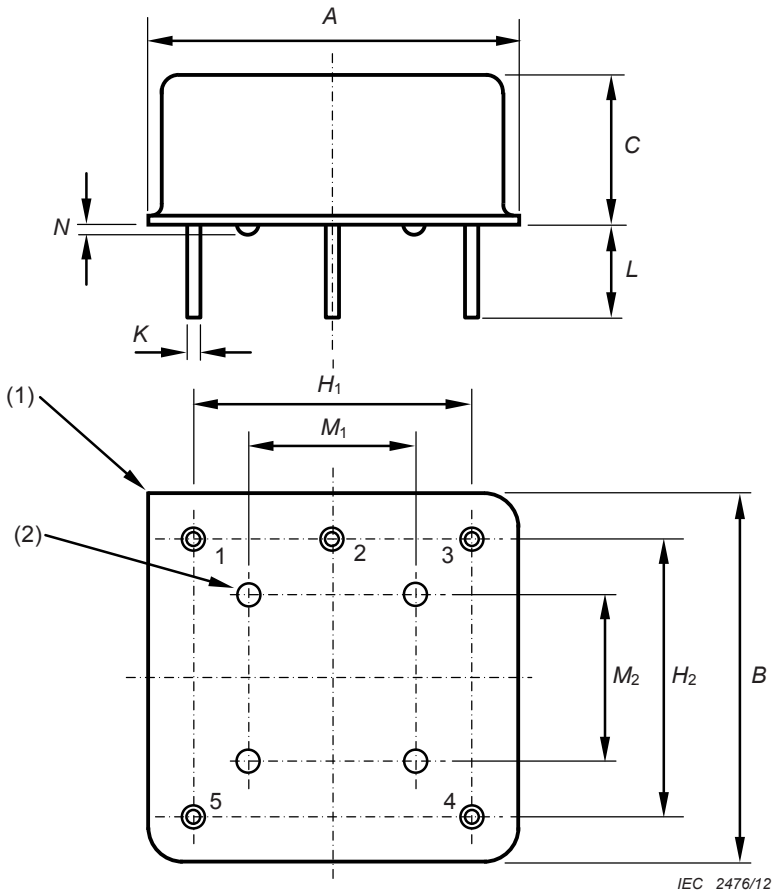
(1) Square corner indicates Pin1.

(2) Three standoffs are located along the circle with diameter of M = 6 mm nom. Each standoff is located at a 120° angle to the others.

Metal enclosure, four lead crystal oscillator outline – Type CO 42	Scale 2:1	

Sheet 14





Ref.	Dimensions (mm)			Identity reference	Footnotes
	Min.	Nom.	Max.		
A	25,02	25,40	25,78		
B	25,02	25,40	25,78		
C_1	—	—	10,00	CO 43 A.	3
C_2	—	—	11,25	CO 43 B.	3
C_3	—	—	13,40	CO 43 C.	3
H_1	—	—	19,05		
H_2	—	—	19,05		
K	0,40	—	0,60		
L	4,00	—	—	CO 43.1	3
M_1	—	—	11,43		2
M_2	—	—	11,43		2
N	0, 51	0, 64	0,77		

Key

(1) Square corner indicates Pin 1.

(2) If required, insulating standoffs shall be located within corner areas defined in the table by M_1 and M_2.

If insulating tape standoffs are used, shaded areas as indicated are preferred and the tape may encircle the leads.

3 The complete identity for any oscillator outline is a six digit type number consisting of the basic type number (four digits) followed by a letter indicating the enclosure height and a number indicating the lead length. The identity references are given in the table, where a dot indicates the missing information, which is given on another line.

EXAMPLE CO 43 A1 is the complete identity for enclosure CO 43 with enclosure height C_1 and lead length *L*.

Metal enclosure, five lead crystal oscillator outline – Type CO 43	Scale 2:1	

Sheet 15

Annex A
(normative)

Lead connections of crystal oscillators – Type CO 02 to CO 43

A.1 Terminal lead connections

Table A.1 below specifies the lead connections for the crystal oscillators given in this standard.

Where the function in column 3 is shown as “NC”, the leads may be connected internally. They shall not be used as external tie points or connections unless otherwise stated in the detail specification.

If the presence of any leads is optional, or of an enclosure is supplied with less than the maximum number of leads, that shall be indicated in the detail specification.

Table A.1 – Lead connections of crystal oscillators – Type CO 02 to CO 43 (1 of 2)

Crystal oscillators outline	Position (lead number)	Function
CO 02	1 to 6 7 8 9 to 13 14 15 to 18	NC Ground Output NC Vcc NC: Inclusion of these leads is not preferred.
CO 05	1 to 2 3 4 5 6 and 7 8	NC Output Ground Output NC Vcc
CO 08	1 and 2 3 4 5	Vcc Ground Output Ground
CO 09	1 2 3 and 4 5	Ground Vcc NC Output
CO 15	1 2 3 4 5	Vcc Output NC Ground NC
CO 16	1 2 3 4	NC Ground Output Vcc

Table A.1 – Lead connections of crystal oscillators – Type CO 02 to CO 43 (2 of 2)

Crystal oscillators outline	Position (lead number)	Function
CO 19	1 2 3 and 4 5	Output Vcc NC Ground
CO 21	1 2 3 4	To be specified Ground Output Vcc
CO 22	1 2 3 4 5 6 7 8	Oscillator output Divided output Output control Ground Function leads may be used for the divided frequency Vcc
CO 23	1 and 2 3 4 5 6 and 7 8	NC Output Ground Output NC Vcc
CO 24	1 2 3 4	To be specified Ground Output Vcc
CO 40	1 2 3 4 5	To be specified NC Output Ground Vcc
CO 41	1 2 3 4 5	Vcc Output Ground To be specified NC
CO 42	1 2 3 4	To be specified Ground Output Vcc
CO 43	1 2 3 4 5	Output Ground To be specified NC Vcc

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IEC 60679-4:1997, *Quartz crystal controlled oscillators of assessed quality – Part 4: Sectional Specification – Capability approval*

IEC 60679-4-1:1998, *Quartz crystal controlled oscillators of assessed quality – Part 4-1: Blank detail specification – Capability approval*

IEC 60679-5:1998, *Quartz crystal controlled oscillators of assessed quality – Part 5: Sectional specification – Qualification approval*

IEC 60679-5-1:1998, *Quartz crystal controlled oscillators of assessed quality – Part 5-1: Blank detail specification – Qualification approval*

ISO 1101, *Geometrical Product Specifications (GPS) – Geometrical tolerancing – Tolerances of form, orientation, location and run-out*

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