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(54) ELECTRONIC COMPONENT

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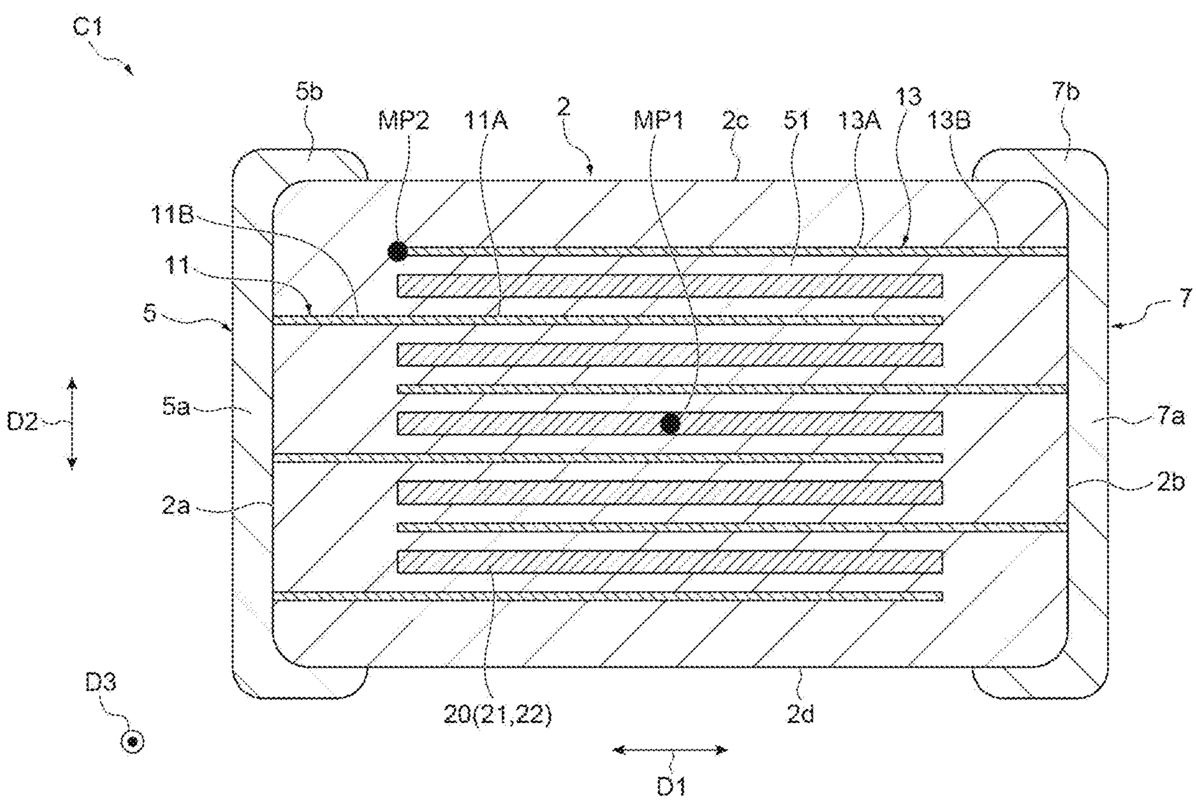
(57) **ABSTRACT**

An electronic component includes, a first internal electrode disposed in the element body and connected to the first terminal electrode, a second internal electrode disposed in the element body and connected to the second terminal electrode, a dissimilar material layer disposed in the element body and containing a material different from the element body, in which the first internal electrode and the second internal electrode are opposite to each other in a second direction perpendicular to the first direction with the dissimilar material layer interposed between the first internal electrode and the second internal electrode, the dissimilar material layer has a linear expansion coefficient greater than a linear expansion coefficient of the element body, the first internal electrode and the second internal electrode include corner portions positioned in the element body, and the dissimilar material layer is not overlapped with the corner portions as viewed from the second direction.



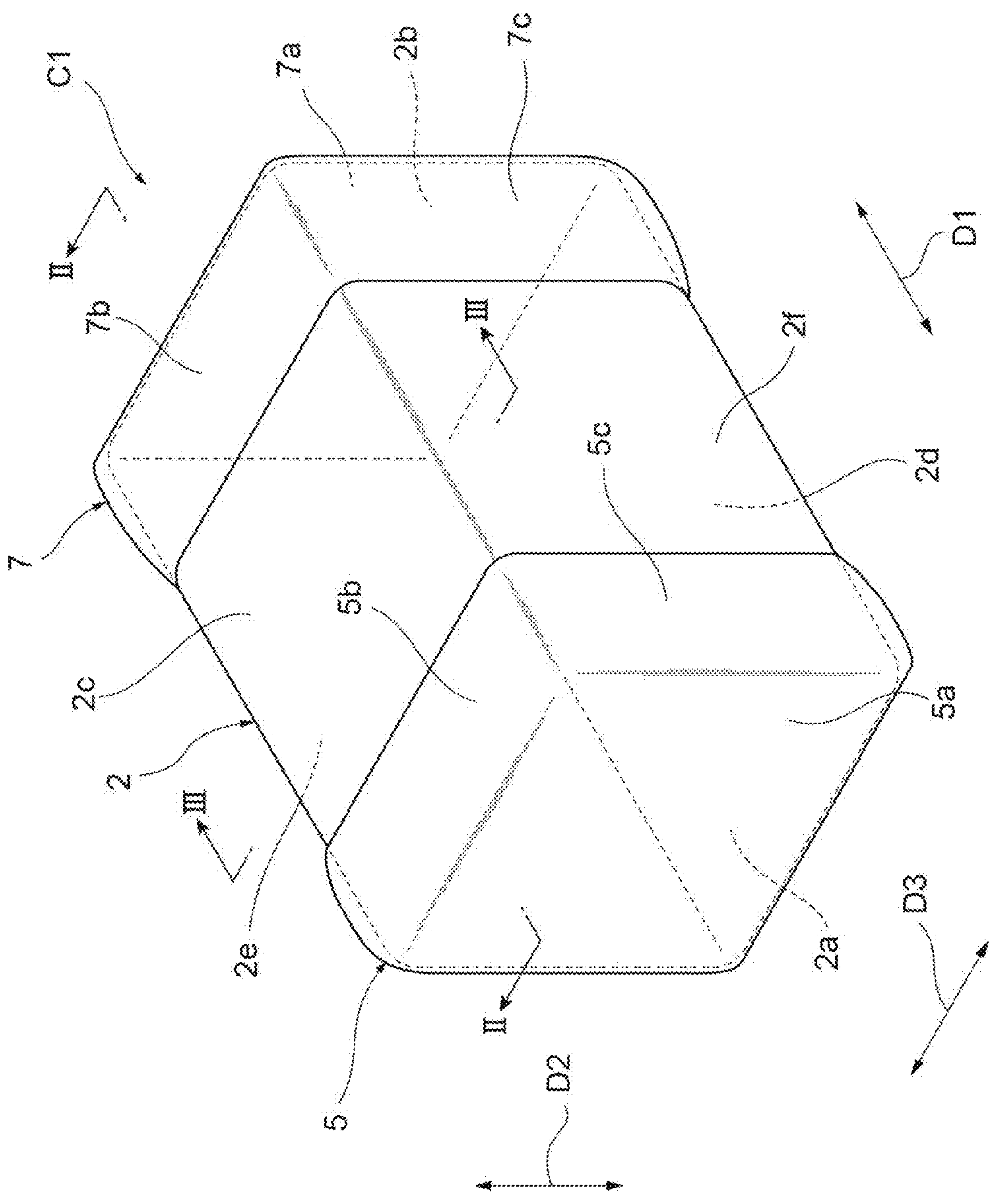


Fig.1

Fig.2

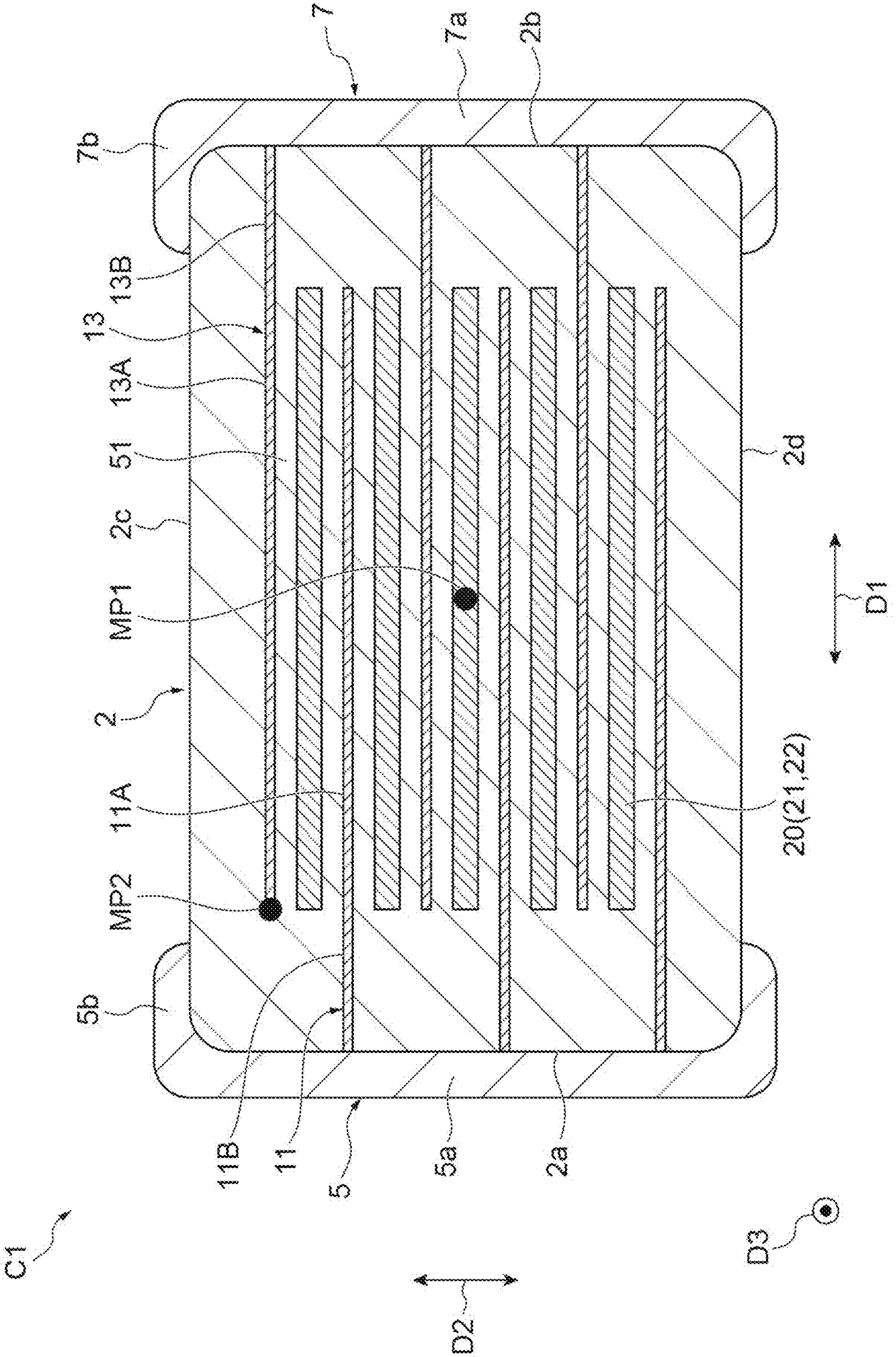

C1
7
7a
2b
7b
13B
13
13A
51
2c
MP1
2
11A
MP2
5b
2d
D1
20(21,22)
11B
11
5
5a
2a
D2
D3

Fig.3

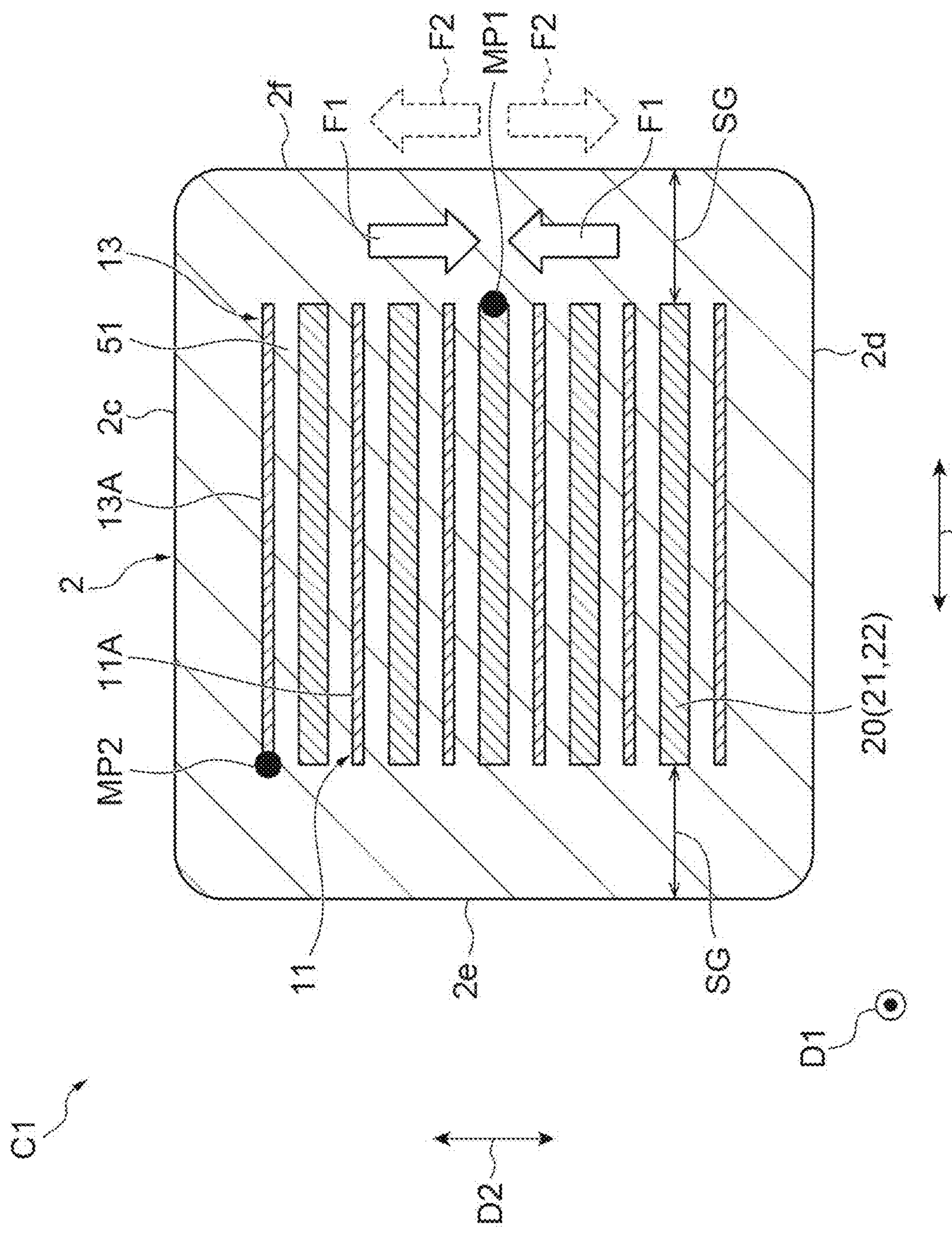

C1
2
13
51
2c
13A
11A
MP2
11
2e
2f
F1
F2
MP1
F2
F1
SG
2d
D3
20(21,22)
SG
D1
D2

Fig.4

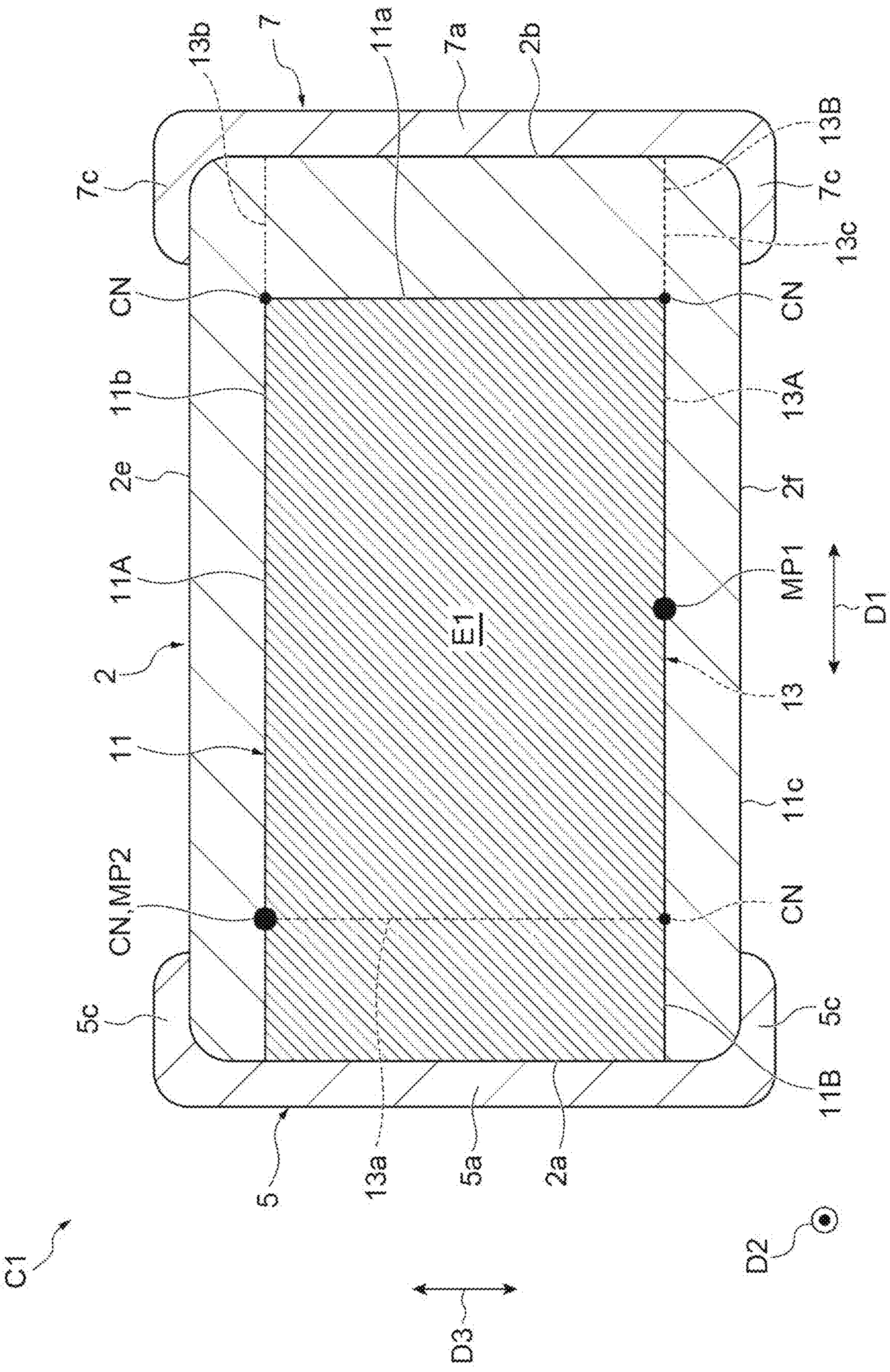
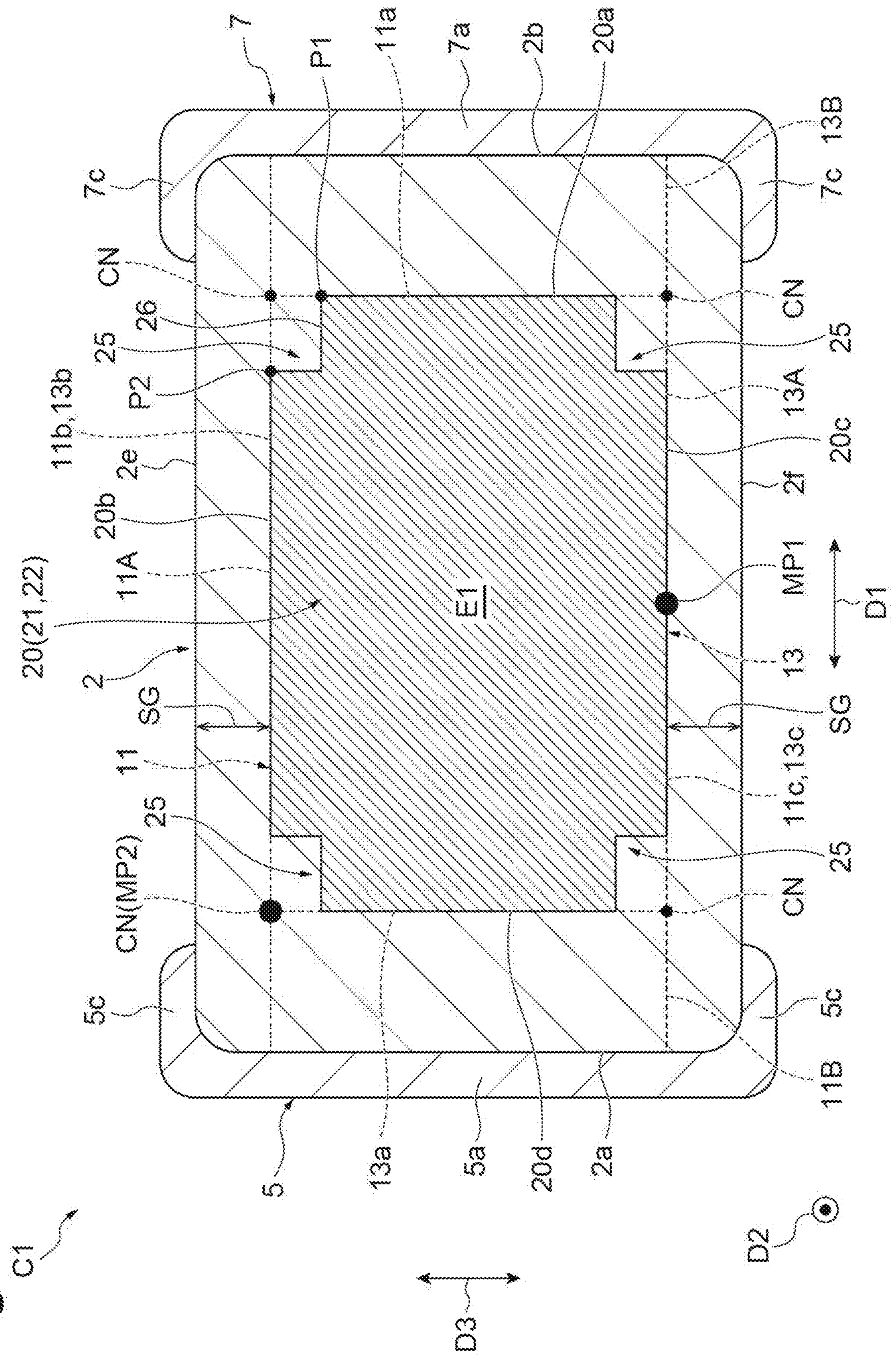

C1
5
13a
5a
2a
D2
D3
5c
CN,MP2
11
2
11A
2e
11b
CN
7c
13b
7
11a
7a
2b
13B
7c
13c
CN
13A
2f
MP1
D1
13
11c
CN
5c
11B
E1

Fig.5


C1
D3
D2
D1
7
7a
7c
P1
11a
2b
20a
13B
CN
26
25
P2
11b,13b
2e
20b
11A
20(21,22)
E1
2
SG
11
CN(MP2)
5c
5
13a
5a
20d
2a
11B
13A
20c
2f
MP1
13
11c,13c

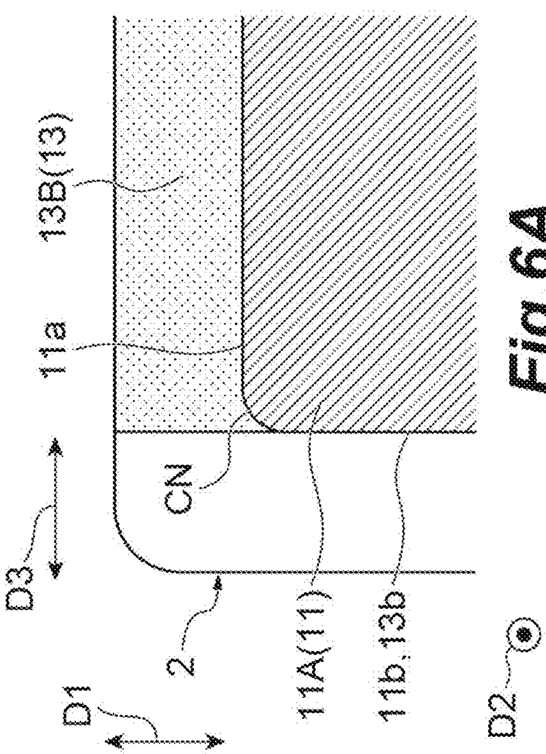


Fig.6A

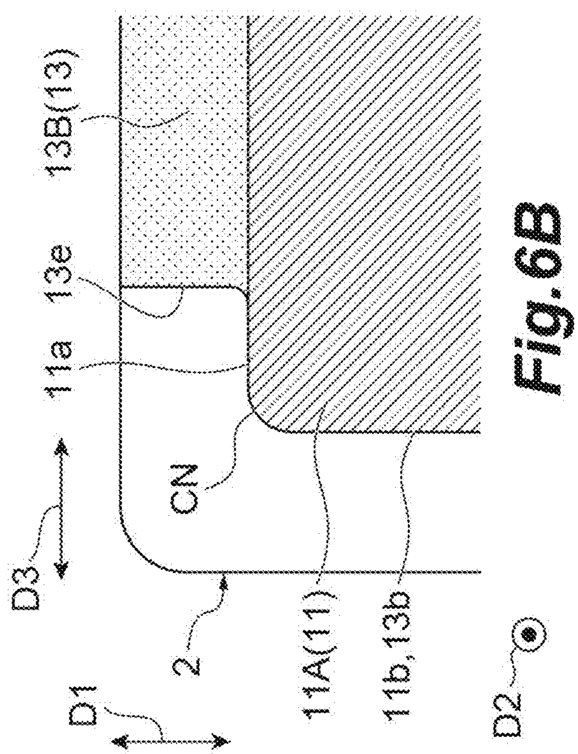


Fig.6B

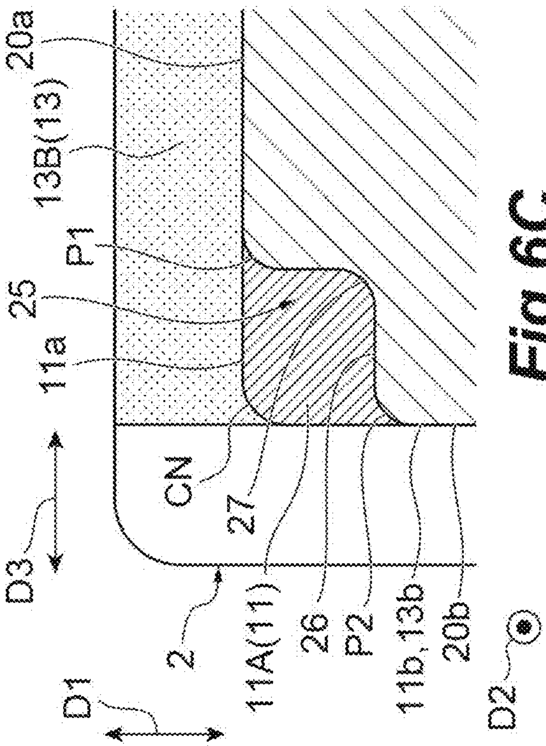


Fig.6C

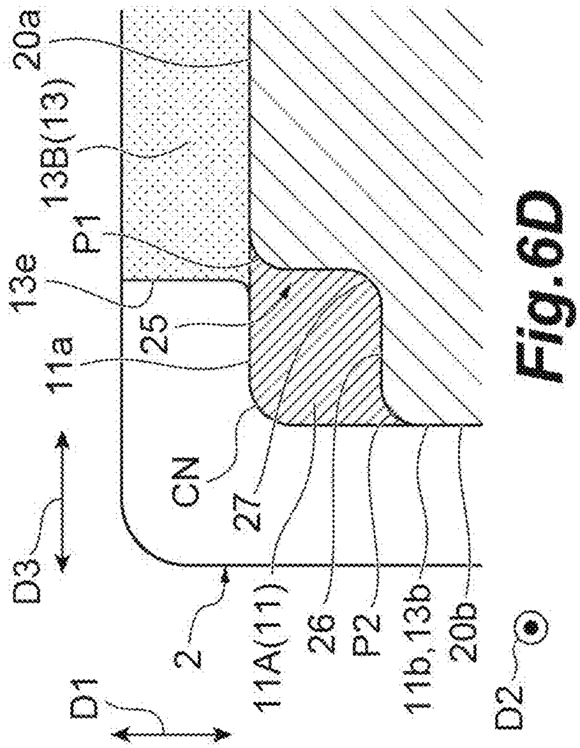


Fig.6D

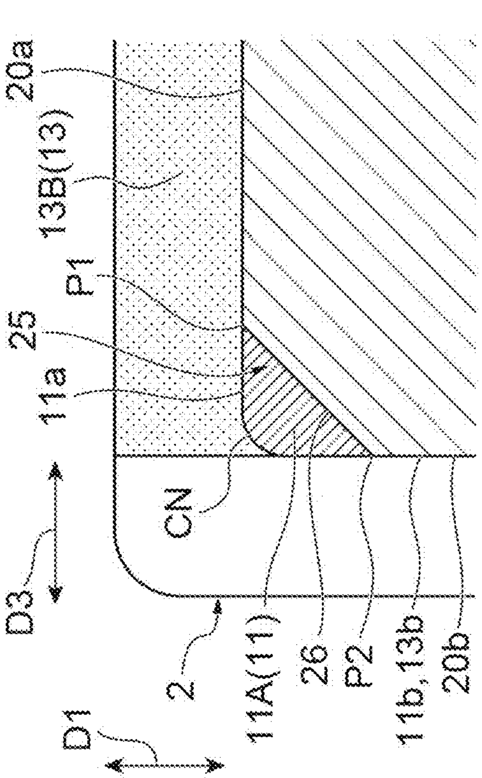


Fig.7A

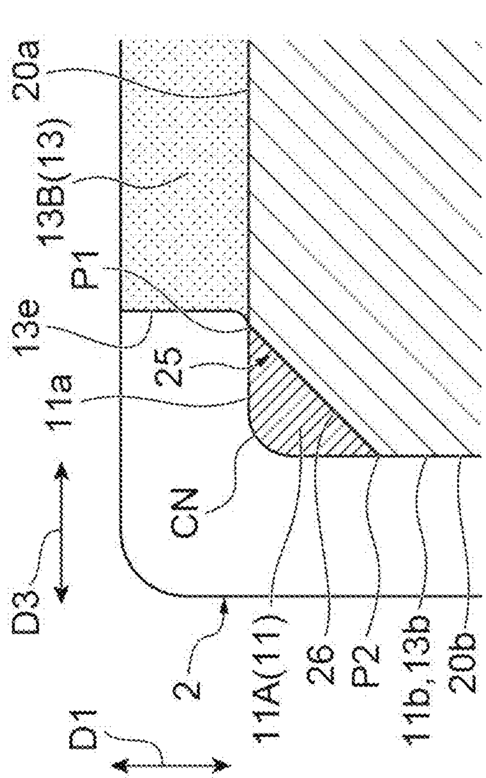


Fig.7B

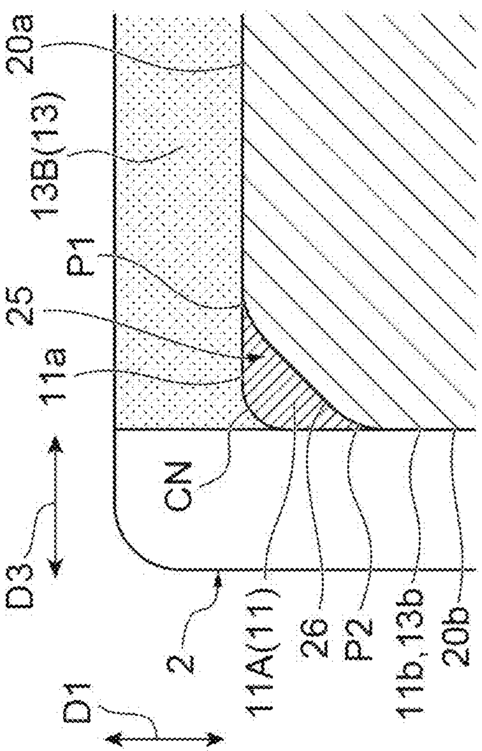


Fig.7C

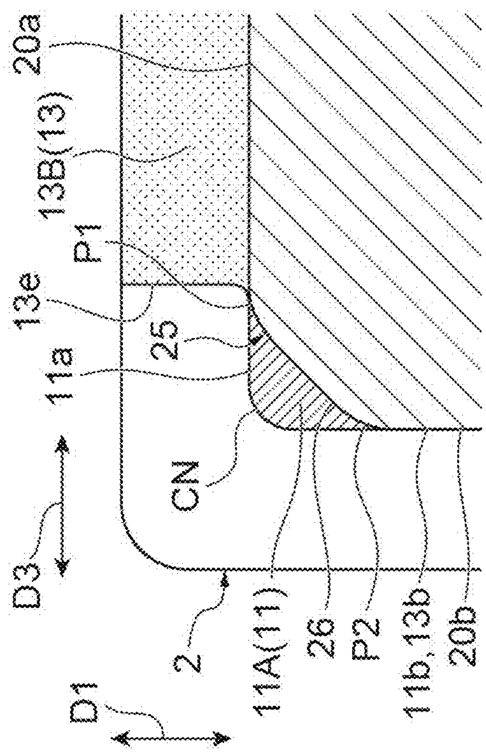


Fig.7D

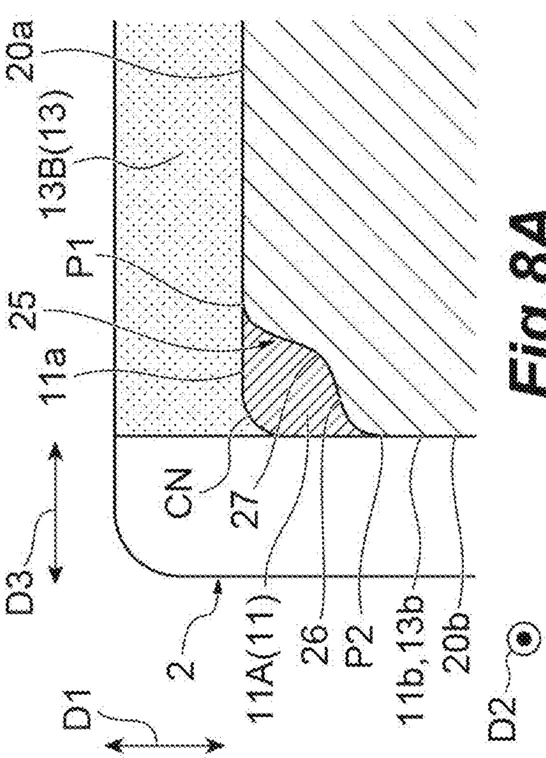


Fig.8A

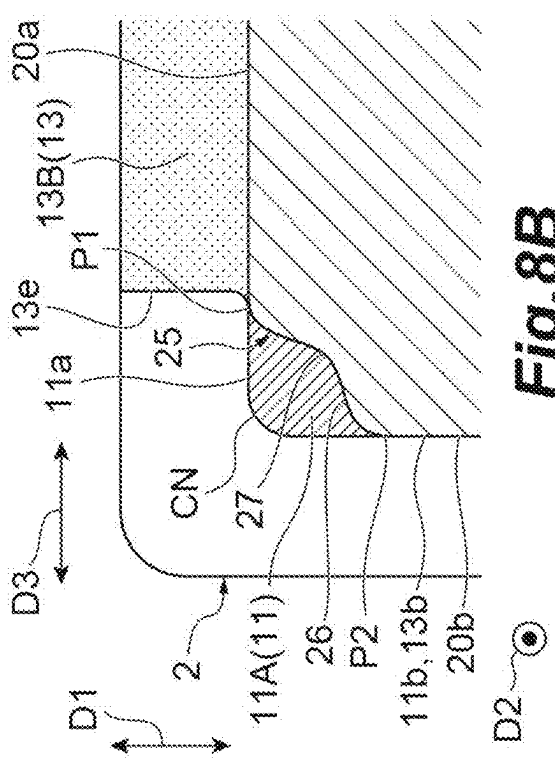


Fig.8B

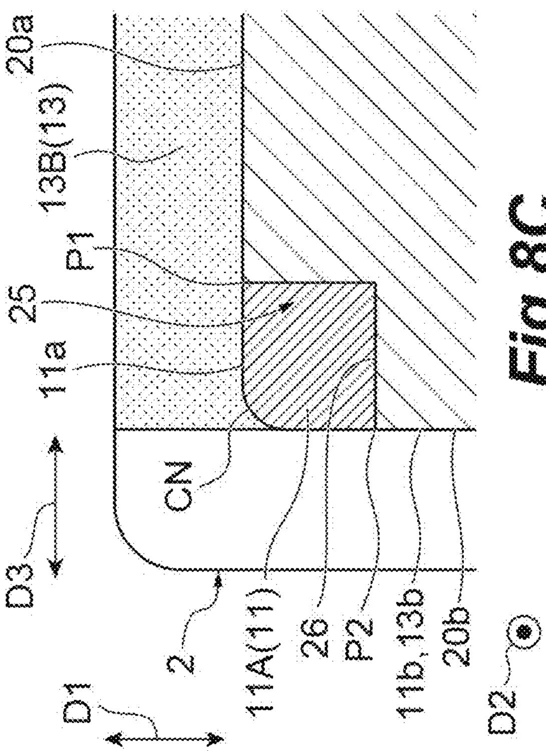


Fig.8C

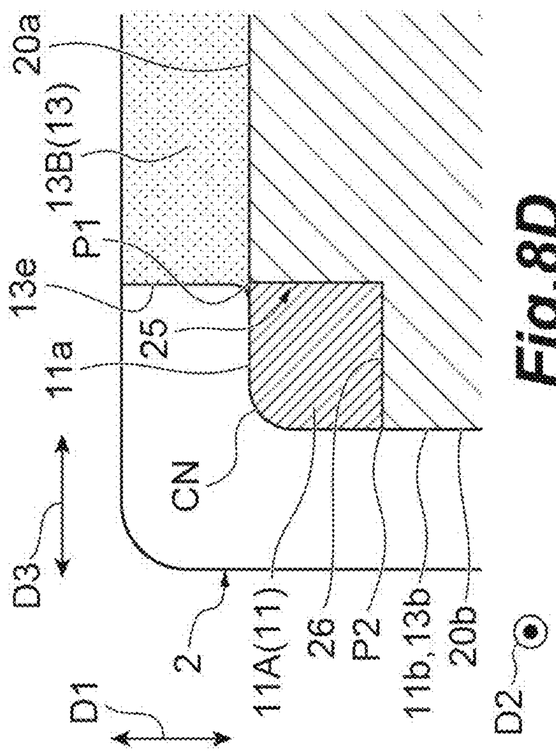
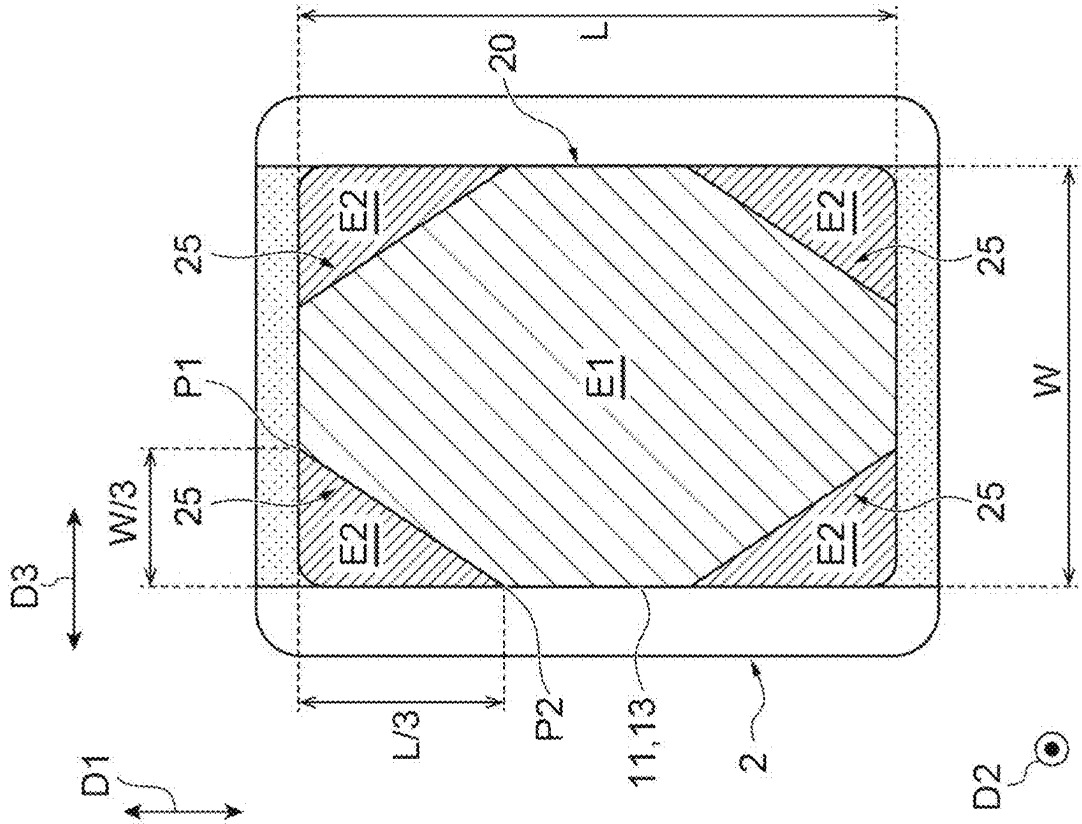
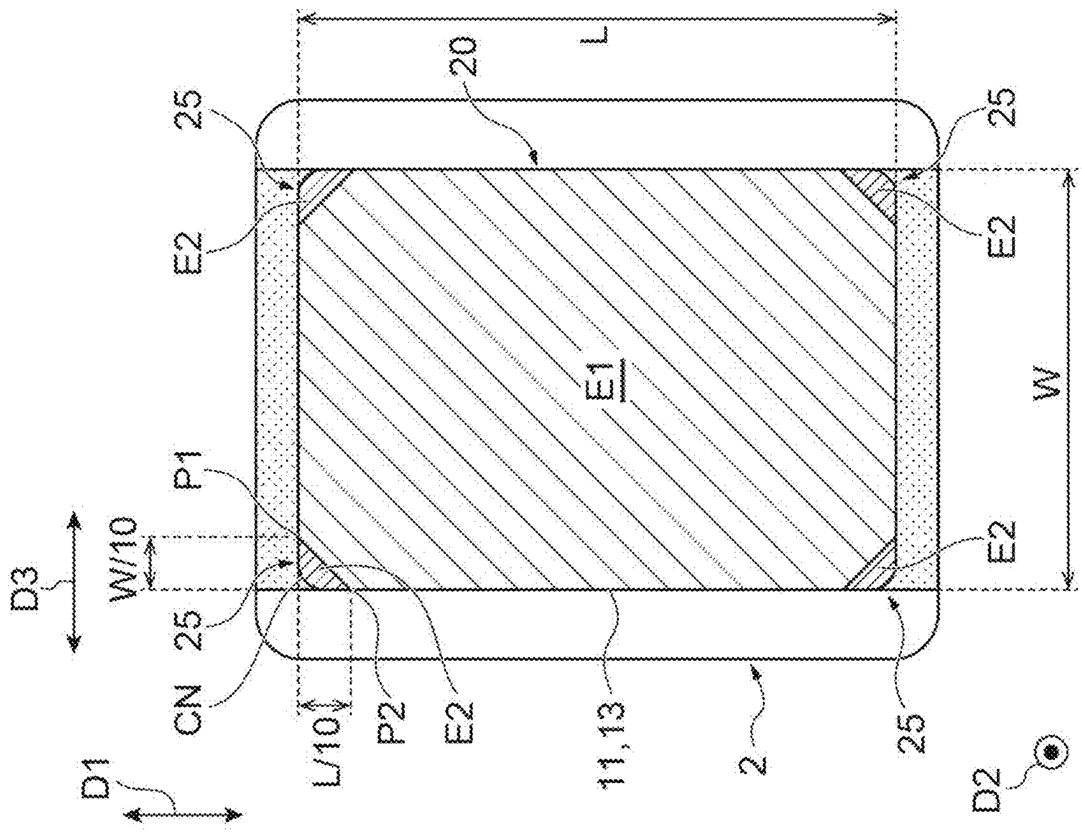


Fig.8D



D1
D2
D3
L
20
25
E2
E1
P1
W
W/3
L/3
P2
11,13
2

Fig.9B



D1
D2
D3
L
20
25
E2
E1
P1
W
W/10
CN
L/10
P2
11,13
2

Fig.9A

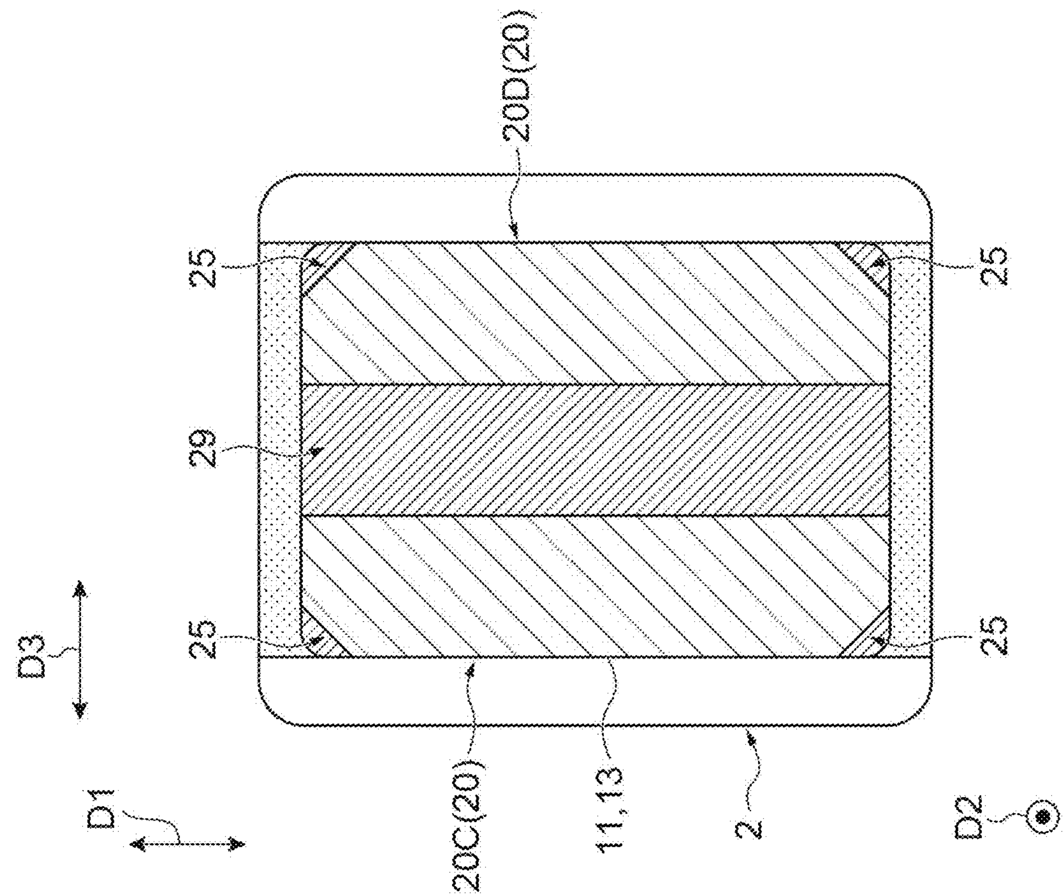


Fig.10B

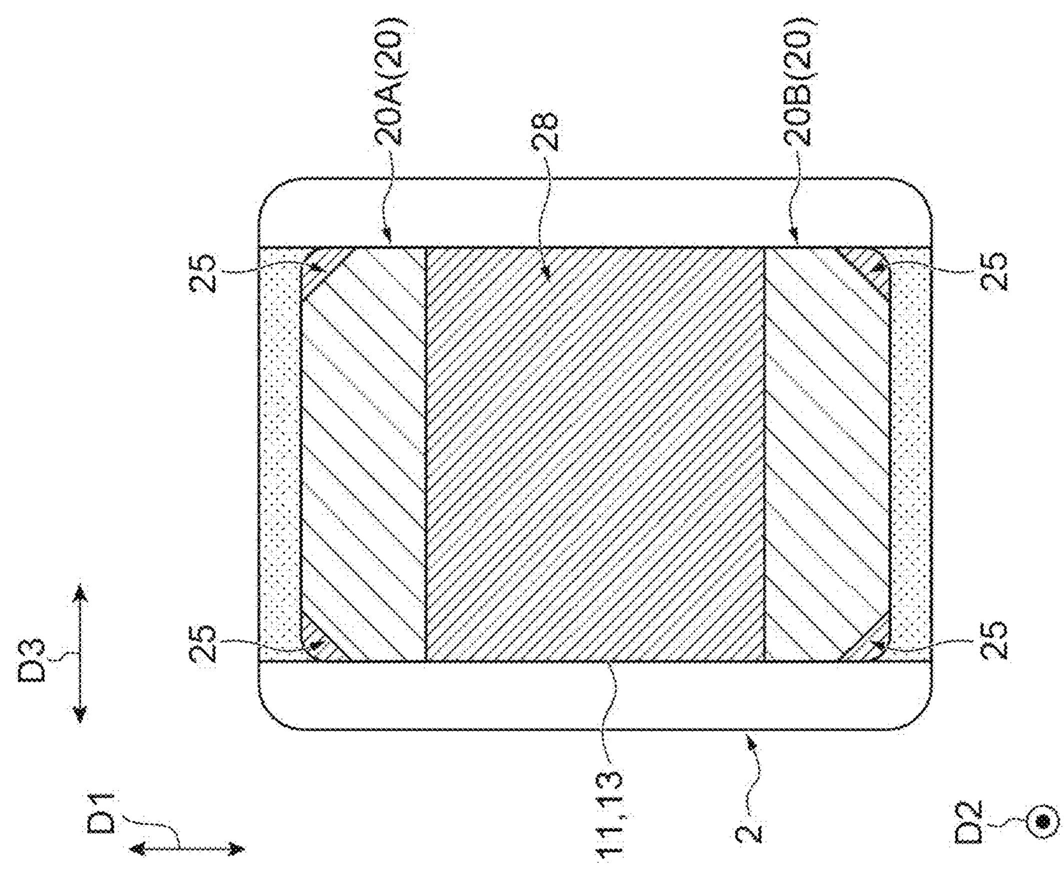


Fig.10A

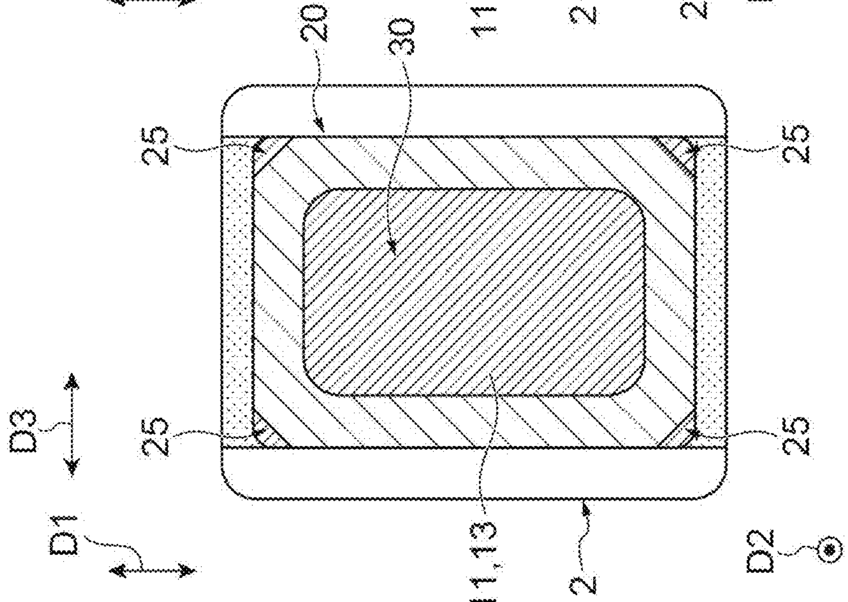


Fig.11A

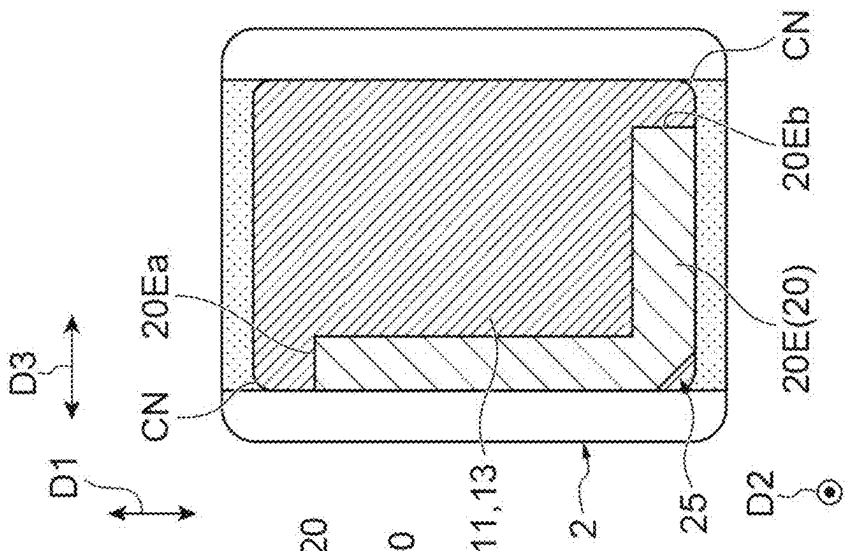


Fig.11B

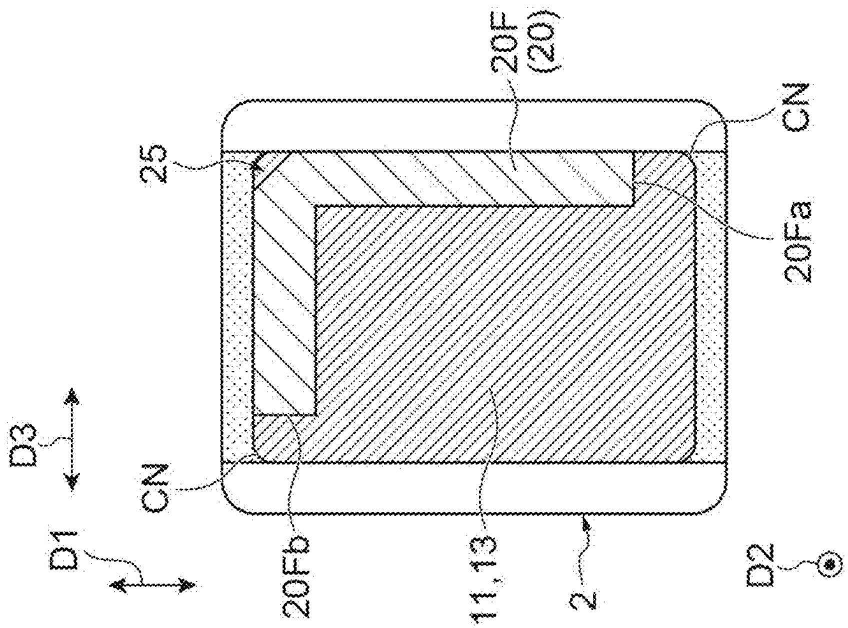
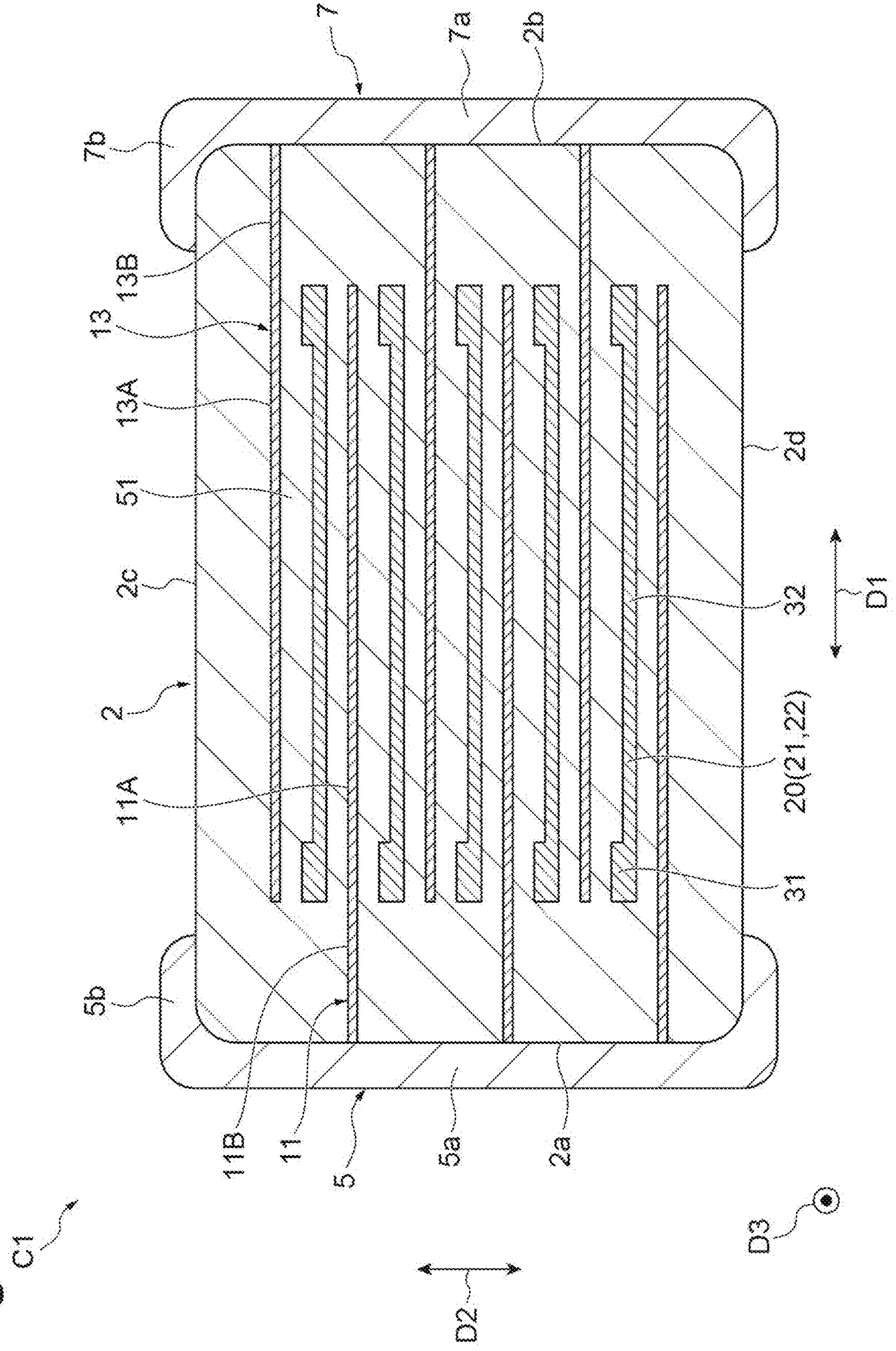


Fig.11C

Fig.12


C1
7
7a
2b
7b
13B
13
13A
51
2c
2
11A
5b
2d
D1
32
20(21,22)
31
11B
11
5
5a
2a
D2
D3

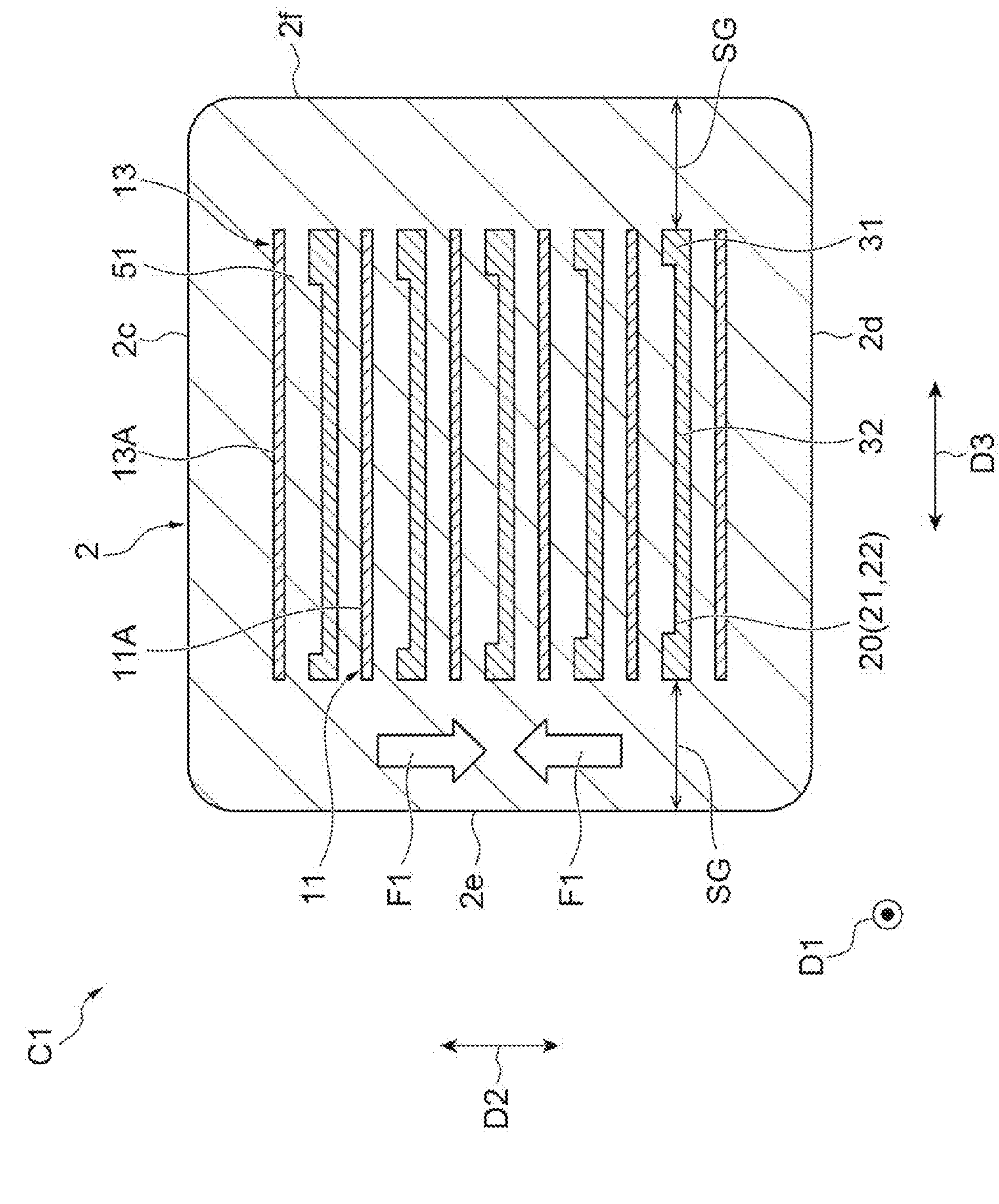
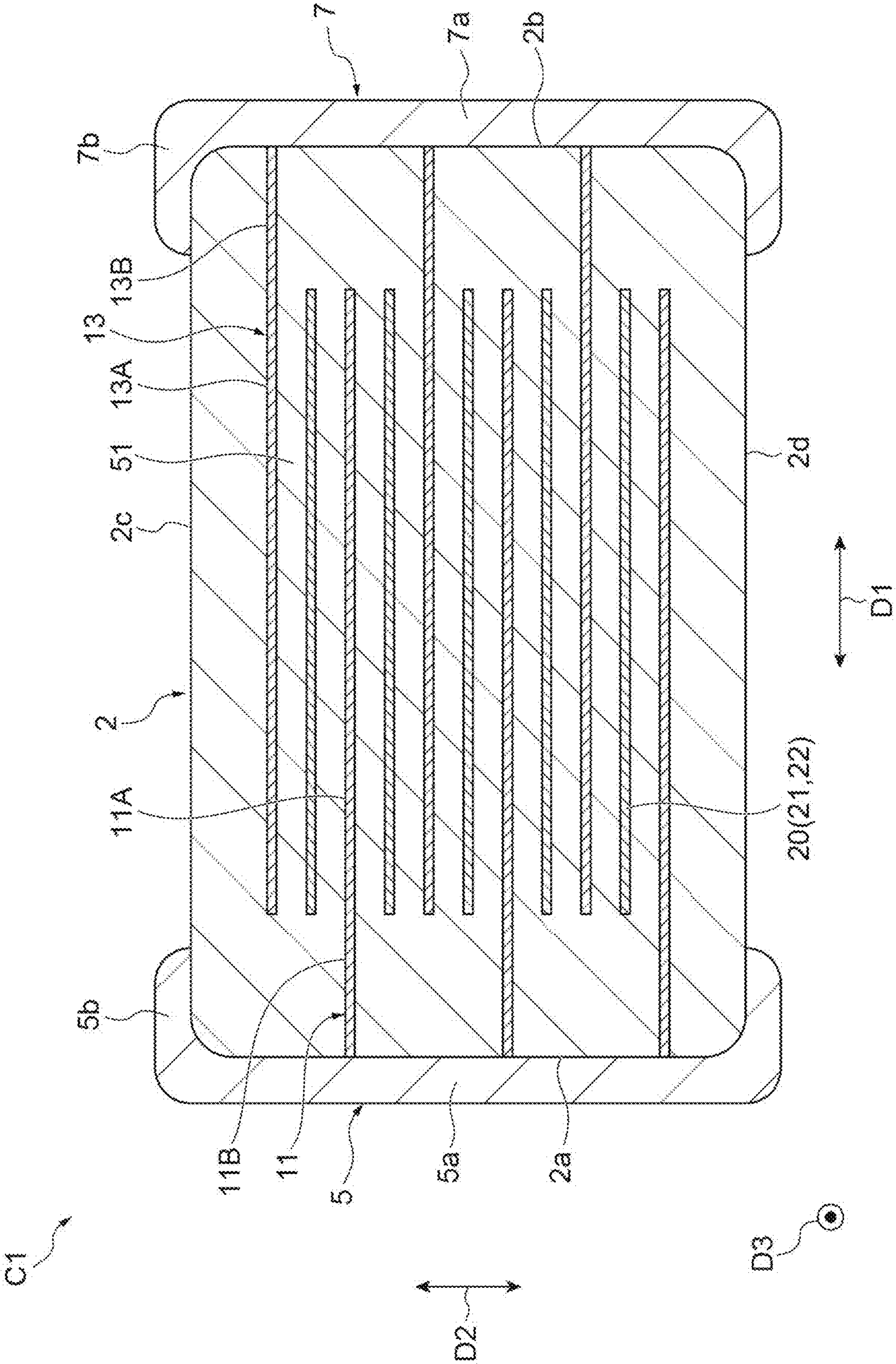


Fig.13

Fig.14



7
7a
2b
7b
13B
13
13A
51
2c
2d
D1
2
11A
20(21,22)
5b
11B
11
5
5a
2a
C1
D2
D3

Fig.15

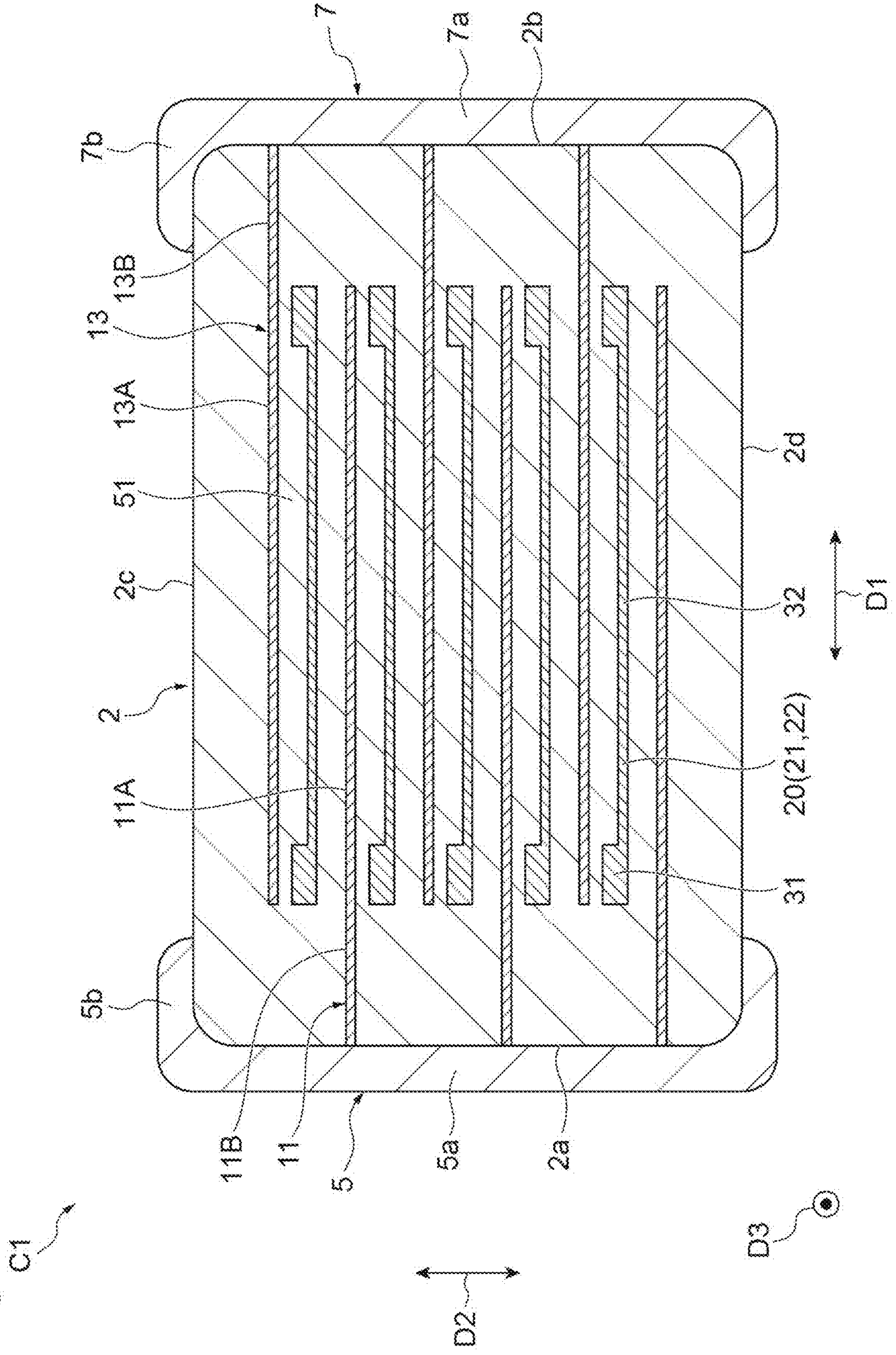

C1
7
7a
2b
7b
13B
13
13A
51
2c
2
11A
5b
2d
32
D1
20(21,22)
31
11B
11
5
5a
2a
D3
D2

Fig.16

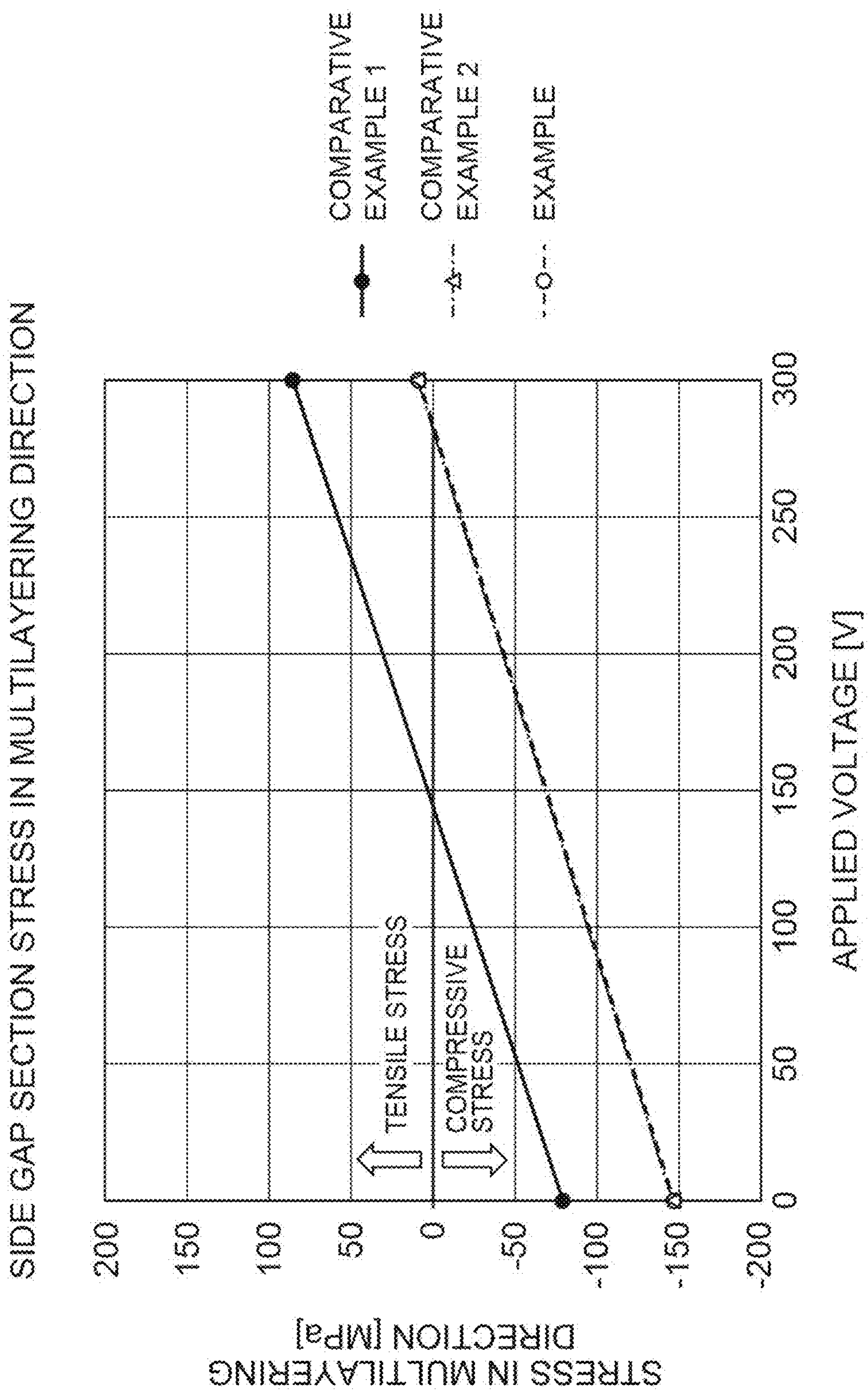

SIDE GAP SECTION STRESS IN MULTILAYERING DIRECTION
STRESS IN MULTILAYERING DIRECTION [MPa]
200
150
100
50
0
-50
-100
-150
-200
TENSILE STRESS
COMPRESSIVE STRESS
0
50
100
150
200
250
300
APPLIED VOLTAGE [V]
COMPARATIVE EXAMPLE 1
COMPARATIVE EXAMPLE 2
EXAMPLE

Fig.17

■ VOLTAGE CAUSING GENERATION OF ELECTROSTRICTIVE CRACKS

	COMPARATIVE EXAMPLE 1	COMPARATIVE EXAMPLE 2	EXAMPLE
AVERAGE VALUE	395.4	454.0	457.5
STANDARD DEVIATION	24.5	28.1	25.1

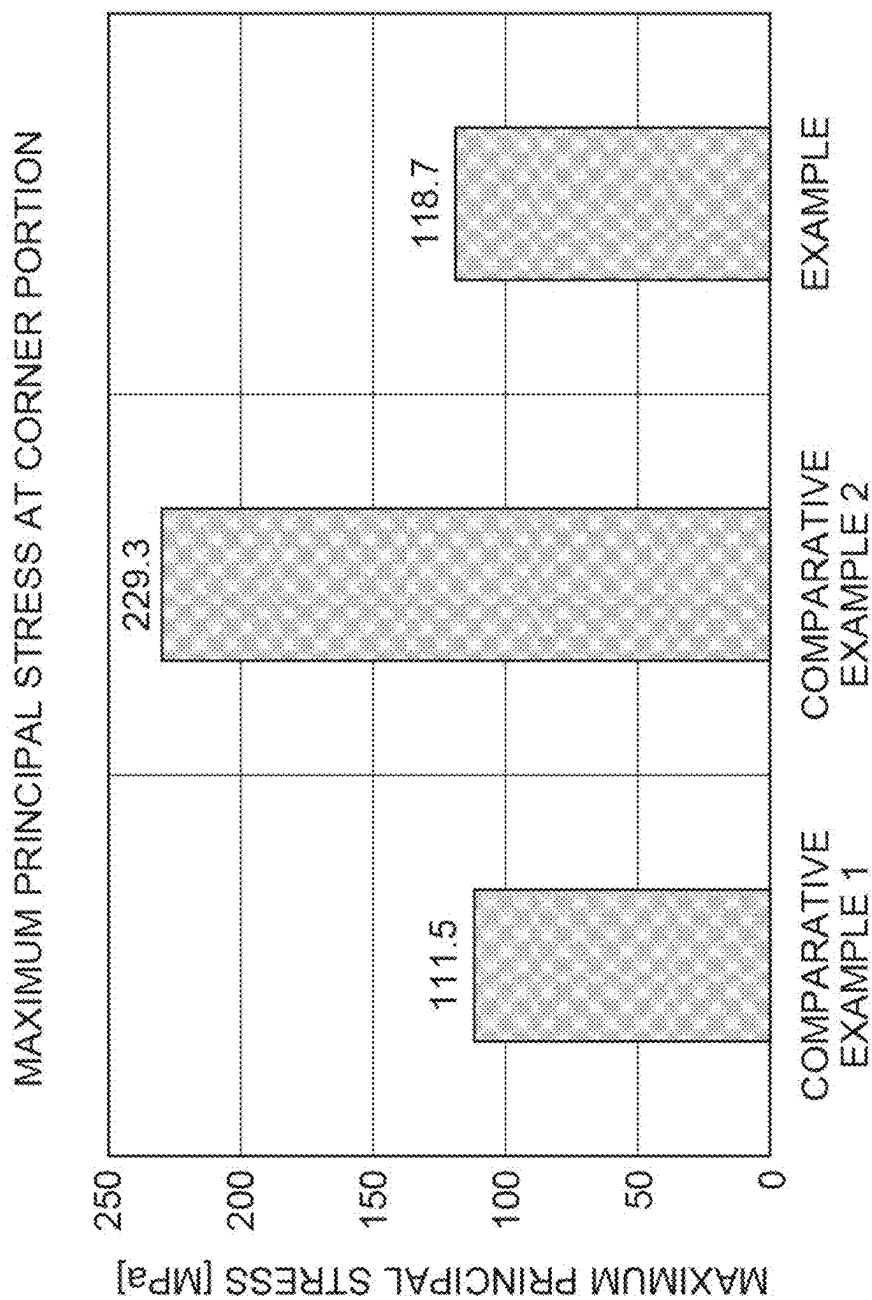

MAXIMUM PRINCIPAL STRESS AT CORNER PORTION
MAXIMUM PRINCIPAL STRESS [MPa]
250
200
150
100
50
0
111.5
229.3
118.7
COMPARATIVE EXAMPLE 1
COMPARATIVE EXAMPLE 2
EXAMPLE

Fig.18

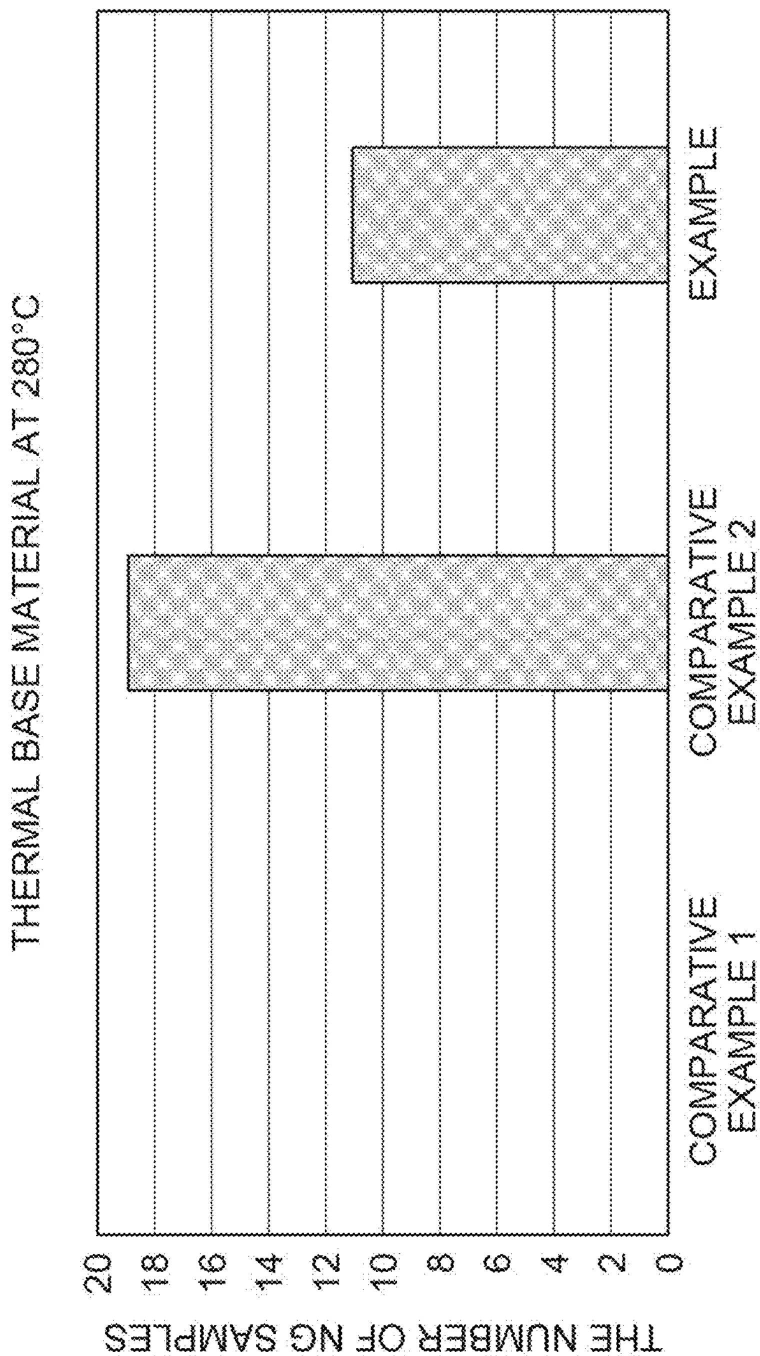

THERMAL BASE MATERIAL AT 280°C
THE NUMBER OF NG SAMPLES
20
18
16
14
12
10
8
6
4
2
0
COMPARATIVE EXAMPLE 1
COMPARATIVE EXAMPLE 2
EXAMPLE

Fig.19

ELECTRONIC COMPONENT

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is based upon and claims the benefit of priority from Japanese Patent Application No. 2024-017920, filed on Feb. 8, 2024, the entire contents of which are incorporated herein by reference.

TECHNICAL FIELD

[0002] The present disclosure relates to an electronic component.

BACKGROUND

[0003] An electronic component including an element body having a pair of end surfaces opposite to each other, a pair of terminal electrodes disposed on the pair of end surfaces, and an internal electrode connected to each of the terminal electrodes is known (see, for example, Japanese Unexamined Patent Publication No. 2000-124064).

SUMMARY

[0004] Here, in the electronic component as described above, when a voltage is applied, a volume change due to electrostriction occurs at a position where the internal electrodes are overlapped with each other, and cracks may occur in a side gap section. In order to reduce such electrostrictive cracks, a method of increasing the volume of the internal electrode is employed, but there is a problem that deterioration occurs due to a high-temperature load when a dielectric layer is subjected to thinning and multilayering in order to increase the volume. In addition, by taking a countermeasure for the cracks due to electrostriction, a stress at a corner portion of the internal electrode may increase.

[0005] Therefore, an object of the present disclosure is to provide an electronic component capable of reducing electrostrictive cracks and relaxing a stress at a corner portion of an internal electrode.

[0006] An electronic component includes an element body including a pair of end surfaces opposite to each other in a first direction, a first terminal electrode disposed on one side of the pair of end surfaces in the first direction, a second terminal electrode disposed another side of the pair of end surfaces in the first direction, a first internal electrode disposed in the element body and connected to the first terminal electrode, a second internal electrode disposed in the element body and connected to the second terminal electrode, a dissimilar material layer disposed in the element body and containing a material different from the element body, in which the first internal electrode and the second internal electrode are opposite to each other in a second direction perpendicular to the first direction with the dissimilar material layer interposed between the first internal electrode and the second internal electrode, the dissimilar material layer has a linear expansion coefficient greater than a linear expansion coefficient of the element body, the first internal electrode and the second internal electrode include corner portions positioned in the element body, and the dissimilar material layer is not overlapped with the corner portions as viewed from the second direction.

[0007] In the electronic component, the first internal electrode and the second internal electrode are opposite to each other in the second direction, with the dissimilar material layer containing a material different from that of the element body interposed therebetween. In this manner, since the dissimilar material layer is additionally provided to be overlapped with the internal electrodes, the volume of the member having the linear expansion coefficient greater than that of the element body is increased, so that the compressive stress can be introduced into a side gap section between the internal electrodes and a side surface of the element body. As a result, even though electrostrictive vibration occurs when a voltage is applied, the generation of electrostrictive cracks can be minimized by reducing a tensile stress at the central portion of the side gap section in the second direction. In addition, unlike the thinning and multilayering of the dielectric layers, it is possible to reduce electrostrictive cracks while reducing deterioration due to a high-temperature load. Here, as viewed from the second direction, the dissimilar material layer is not overlapped with the corner portion of the internal electrodes. Therefore, it is possible to relax the stress at the corner portion of the outermost internal electrodes. As described above, it is possible to reduce the electrostrictive cracks and relax the stress at the corner portion of the internal electrodes.

[0008] The element body may contain a ceramic material, and the dissimilar material layer may include a metal layer. In this case, a linear expansion coefficient of the dissimilar material layer can be higher than that of the element body.

[0009] In the region where the first internal electrode and the second internal electrode are overlapped with each other in the second direction, when the dimension in the third direction perpendicular to the first direction and the second direction is denoted by W, the dimension in the third direction of the region overlapped with no dissimilar material layer in the corner portion may be W/10 or more and W/3 or less. In this case, the region of the corner portion overlapped with no dissimilar material layer can be sufficiently secured, and the compressive stress can be sufficiently introduced into the side gap section by restricting the excessive widening of the region.

[0010] In the region where the first internal electrode and the second internal electrode are overlapped with each other in the second direction, when the dimension in the first direction is denoted by L, the dimension in the first direction of the region overlapped with no dissimilar material layer in the corner portion may be L/10 or more and L/3 or less. In this case, the region of the corner portion overlapped with no dissimilar material layer can be sufficiently secured, and the compressive stress can be sufficiently introduced into the side gap section by restricting the excessive widening of the region.

[0011] The dissimilar material layer may have the notched portions at the positions corresponding to the corner portions, and each notched portion may be shaped to be away from each corner portion toward the inner peripheral side as viewed from the second direction. Since the distance between the corner portion of the internal electrodes and an edge portion of the notched portion of the dissimilar material layer can be increased, the stress at the corner portion of the internal electrodes can be relaxed.

[0012] The dissimilar material layer may have the notched portions at the positions corresponding to the corner portions, and each notched portion may have a curved portion that is curved as viewed from the second direction. In this case, the electric field concentration on the notched portion can be alleviated.

[0013] As viewed from the second direction, the curved portion may be curved in such a manner as to be away from the corner portion toward the inner peripheral side. In this case, since the distance between the corner portion of the internal electrodes and the edge portion of the notched portion of the dissimilar material layer can be increased, the stress at the corner portion of the internal electrodes can be relaxed.

[0014] The corner portion may have a shape protruding toward the outer peripheral side. In this case, the electric field concentration on the corner portion can be alleviated.

[0015] The thickness of the dissimilar material layer may be greater than the thicknesses of the first internal electrode and the second internal electrode. In this case, the thickness of the dissimilar material layer can be increased to increase the breakdown voltage.

[0016] The thickness of the dissimilar material layer may be 1.3 times or more the thicknesses of the first internal electrode and the second internal electrode. In this case, the thickness of the dissimilar material layer can be sufficiently increased to increase the breakdown voltage.

[0017] The edge portion by the outer peripheral side of the dissimilar material may be thicker than the region on the inner peripheral side. In this case, the expansion of the element body can be reduced by thinning the region on the inner peripheral side.

[0018] The thickness of the edge portion may be 1.3 times or more the thickness of the region on the inner peripheral side. In this case, the expansion of the element body can be reduced by sufficiently thinning the region on the inner peripheral side.

[0019] When a direction perpendicular to the first direction and the second direction is a third direction, the dissimilar material layer may have a smaller width in at least one direction of the first direction or the third direction than those of the first internal electrode and the second internal electrode, and may be disposed on an end portion side of the first internal electrode and the second internal electrode in the one direction as viewed from the second direction. In this case, since the internal electrodes are not overlapped with the dissimilar material layer in the vicinity of the center, it is possible to reduce the expansion of the element body.

[0020] An electronic component includes an element body including a pair of end surfaces opposite to each other in a first direction, a first terminal electrode disposed on one side of the pair of end surfaces in the first direction, a second terminal electrode disposed another side of the pair of end surfaces in the first direction, a first internal electrode disposed in the element body and connected to the first terminal electrode, a second internal electrode disposed in the element body and connected to the second terminal electrode, a compressive stress introduction layer disposed in the element body and configured to introduce a compressive stress into the element body, in which the first internal electrode and the second internal electrode are opposite to each other in a second direction perpendicular to the first direction with the compressive stress introduction layer interposed between the first internal electrode and the second internal electrode, the compressive stress introduction layer is configured to introduce the compressive stress into a side gap section between the first internal electrode and the second internal electrode, and a side surface of the element body in a third direction perpendicular to the first direction and the second direction, the first internal electrode and the second internal electrode include corner portions positioned in the element body, and the compressive stress introduction layer is not overlapped with the corner portions as viewed from the second direction.

[0021] In the electronic component, the first internal electrode and the second internal electrode are opposite to each other in the second direction, with the compressive stress introduction layer that introduces compressive stress into the element body interposed therebetween. The compressive stress introduction layer can introduce a compressive stress into a side gap section between the first internal electrode and the second internal electrode, and the side surface of the element body in the third direction. As a result, even though electrostrictive vibration occurs when a voltage is applied, the generation of electrostrictive cracks can be minimized by reducing a tensile stress at the central portion of the side gap section in the second direction. In addition, unlike the thinning and multilayering of the dielectric layers, it is possible to reduce electrostrictive cracks while reducing deterioration due to a high-temperature load. Here, as viewed from the second direction, the compressive stress introduction layer is not overlapped with the corner portion of the internal electrodes. Therefore, it is possible to relax the stress at the corner portion of the outermost internal electrodes. As described above, it is possible to reduce the electrostrictive cracks and relax the stress at the corner portion of the internal electrodes.

[0022] According to the present disclosure, it is possible to provide the electronic component capable of reducing electrostrictive cracks and relaxing the stress at the corner portion of the internal electrodes.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] FIG. **1** is a perspective view illustrating an electronic component according to an embodiment of the present disclosure;

[0024] FIG. **2** is a cross-sectional view taken along line II-II illustrated in FIG. **1**;

[0025] FIG. **3** is a cross-sectional view taken along line III-III illustrated in FIG. **1**;

[0026] FIG. **4** is a cross-sectional view of a first internal electrode as viewed from a second direction;

[0027] FIG. **5** is a cross-sectional view of an interlayer as viewed from the second direction;

[0028] FIGS. **6**A to **6**D are conceptual diagrams illustrating specific configurations of notched portions;

[0029] FIGS. **7**A to **7**D are conceptual diagrams illustrating specific configurations of notched portions;

[0030] FIGS. **8**A to **8**D are conceptual diagrams illustrating specific configurations of notched portions;

[0031] FIGS. **9**A and **9**B are conceptual diagrams illustrating specific configurations of notched portions;

[0032] FIGS. **10**A and **10**B are conceptual diagrams illustrating specific configurations of notched portions;

[0033] FIGS. **11**A to **11**C are conceptual diagrams illustrating specific configurations of notched portions;

[0034] FIG. **12** is a cross-sectional view illustrating an electronic component according to a modification;

[0035] FIG. **13** is a cross-sectional view illustrating an electronic component according to a modification;

[0036] FIG. **14** is a cross-sectional view illustrating an electronic component according to a modification;

[0037] FIG. **15** is a cross-sectional view illustrating an electronic component according to a modification;

[0038] FIG. **16** is a graph illustrating an experimental result;

[0039] FIG. **17** is a table illustrating the experimental result;

[0040] FIG. **18** is a graph illustrating an experimental result; and

[0041] FIG. **19** is a graph illustrating the experimental result.

DETAILED DESCRIPTION

[0042] Hereinafter, embodiments of the present disclosure will be described in detail with reference to the accompanying drawings. Note that in the description, the same reference numerals will be used for the same elements or elements having the same function, and redundant description will be omitted.

[0043] The configuration of an electronic component according to the present embodiment will be described with reference to FIGS. **1** to **5**. FIG. **1** is a perspective view illustrating the electronic component according to the present embodiment. FIGS. **2** and **3** are diagrams illustrating cross-sectional configurations of a multilayer capacitor according to the present embodiment. FIG. **4** is a cross-sectional view of a first internal electrode **11** as viewed from a second direction D**2**. FIG. **5** is a cross-sectional view of an interlayer **20** as viewed from the second direction D**2**. In the present embodiment, as the electronic component, a multilayer capacitor C**1** is exemplified.

[0044] As illustrated in FIG. **1**, the multilayer capacitor C**1** includes an element body **2** having a rectangular parallelepiped shape, and a first terminal electrode **5** and a second terminal electrode **7**, which are disposed on outer surfaces of the element body **2**. The first terminal electrode **5** and the second terminal electrode **7** are spaced apart from each other. The rectangular parallelepiped shape includes a rectangular parallelepiped shape in which corner portions and ridge line portions are chamfered, or a rectangular parallelepiped shape in which corner portions and ridge line portions are filleted.

[0045] The element body **2** has, as the outer surfaces thereof, a pair of end surfaces **2***a* and **2***b* opposite to each other, a pair of main surfaces **2***c* and **2***d* opposite to each other, and a pair of side surfaces **2***e* and **2***f* facing each other. In the present embodiment, a direction in which the pair of end surfaces **2***a* and **2***b* are opposite to each other (first direction D**1**) is a length direction of the element body **2**, a direction in which the pair of main surfaces **2***c* and **2***d* are opposite to each other (second direction D**2**) is a height direction of the element body **2**, and a direction in which the pair of side surfaces **2***e* and **2***f* are opposite to each other (third direction D**3**) is a width direction of the element body **2**.

[0046] A length of the element body **2** in the first direction D**1** is greater than a length of the element body **2** in the second direction D**2** and a length of the element body **2** in the third direction D**3**. The length of the element body **2** in the second direction D**2** is equal to the length of the element body **2** in the third direction D**3**. In other words, in the present embodiment, the pair of end surfaces **2***a* and **2***b* are square-shaped, and the pair of main surfaces **2***c* and **2***d*, and the pair of side surfaces **2***e* and **2***f* are rectangular-shaped. The length of the element body **2** in the first direction D**1** may be equal to the length of the element body **2** in the second direction D**2** and the length of the element body **2** in the third direction D**3**. The length of the element body **2** in the second direction D**2** and the length of the element body **2** in the third direction D**3** may be different from each other.

[0047] It should be noted that "equal" may not only mean being equivalent but also mean being equal to a value including a slight difference, a manufacturing error, or other defects within a preset range. For example, when a plurality of values is included within a range of ±5% of an average value of the plurality of values, the plurality of values is defined to be equal.

[0048] The pair of main surfaces **2***c* and **2***d* extends in the first direction D**1** to connect the pair of end surfaces **2***a* and **2***b*. The pair of main surfaces **2***c* and **2***d* also extends in the third direction D**3**. The pair of side surfaces **2***e* and **2***f* extends in the first direction D**1** to connect the pair of end surfaces **2***a* and **2***b*. The pair of side surfaces **2***e* and **2***f* also extends in the second direction D**2**.

[0049] The element body **2** is configured by multilayering a plurality of dielectric layers **51** in the direction in which the pair of main surfaces **2***c* and **2***d* are opposite to each other (second direction D**2**). In the element body **2**, the direction in which the plurality of dielectric layers **51** is multilayered (hereinafter, simply referred to as a "multilayering direction") coincides with the second direction D**2**. Each dielectric layer **51** is composed of, for example, a sintered body of ceramic green sheets containing a dielectric material (dielectric ceramic such as $BaTiO_3$-based, $Ba(Ti,Zr)O_3$-based, or $(Ba,Ca)TiO_3$-based ceramic). In the actual element body **2**, the individual dielectric layers **51** are integrated to such an extent that boundaries between the individual dielectric layers **51** cannot be visually recognized. The third direction D**3** may be the above-described multilayering direction.

[0050] As illustrated in FIGS. **2**, **3**, and **4**, the multilayer capacitor C**1** includes a plurality of first internal electrodes **11** and a plurality of second internal electrodes **13**. The internal electrodes **11** and **13** are made of a conductive material (for example, Ni, Cu, Ag, Pt, and other conductive materials), which is usually used as an internal conductor of a multilayer electronic component. The internal electrodes **11** and **13** are configured as, for example, sintered bodies of conductive paste containing the above-described conductive material. The internal electrodes **11** and **13** function as internal conductors disposed in the element body **2**.

[0051] The first internal electrodes **11** and the second internal electrodes **13** are disposed at distinct positions (layers) in the second direction D**2**. In other words, the first internal electrodes **11** and the second internal electrodes **13** are alternately disposed to be opposite to each other (with an interlayer **20** interposed between a first internal electrode **11** and a second internal electrode **13**; the interlayer **20** will be described later) at intervals in the second direction D**2** in the element body **2**. The first internal electrodes **11** have different polarities from the second internal electrodes **13**.

[0052] As also illustrated in FIG. **4**, each of the first internal electrodes **11** includes a main electrode part **11**A and a connection part **11**B. The main electrode part **11**A is a part that forms electrostatic capacitance when positioned opposite to a main electrode part **13**A of a second internal electrode **13** described later. The connection part **11**B is a part that connects the main electrode part **11**A and the first terminal electrode **5**. The connection part **11**B extends from one side (one short side) of the main electrode part **11**A and is exposed on the end surface **2***a*. The first internal electrodes **11** are exposed on the end surface **2***a* and are not exposed on the end surface **2***b*, the pair of main surfaces **2***c* and **2***d*, and the pair of side surfaces **2***e* and **2***f*. The main electrode part **11**A and the connection part **11**B are integrally formed.

[0053] As illustrated in FIG. **4**, the main electrode part **11**A has a rectangular shape in which the first direction D**1** is a long side direction, and the third direction D**3** is a short side direction. In other words, the main electrode part **11**A of each of the first internal electrodes **11** has a length in the first direction D**1** greater than a length in the third direction D**3**. The connection part **11**B extends from an end portion of the main electrode part **11**A on the end surface **2***a* side to the end surface **2***a*. A length of the connection part **11**B in the first direction D**1** is smaller than a length of the main electrode part **11**A in the first direction D**1**. A length of the connection part **11**B in the third direction D**3** is equal to a length of the main electrode part **11**A in the third direction D**3**. The connection part **11**B is connected to the first terminal electrode **5** at an end portion exposed on the end surface **2***a*. The length of the connection part **11**B in the third direction D**3** is smaller than the length of the main electrode part **11**A in the third direction D**3**.

[0054] As also illustrated in FIG. **4**, each of the second internal electrodes **13** includes a main electrode part **13**A and a connection part **13**B. The main electrode part **13**A is a part that forms electrostatic capacitance when positioned opposite to a main electrode part **11**A of a first internal electrode **11** described later. The connection part **13**B is a part that connects the main electrode part **13**A and the second terminal electrode **7**. The main electrode part **13**A is opposite to the main electrode part **11**A with a part (dielectric layer) of the element body **2** interposed therebetween in the second direction D**2**. The connection part **13**B extends from one side (one short side) of the main electrode part **13**A and is exposed on the end surface **2***b*. The second internal electrodes **13** are exposed on the end surface **2***b* and are not exposed on the end surface **2***a*, the pair of main surfaces **2***c* and **2***d*, and the pair of side surfaces **2***e* and **2***f*. The main electrode part **13**A and the connection part **13**B are integrally formed.

[0055] As illustrated in FIG. **4**, the main electrode part **13**A has a rectangular shape in which the first direction D**1** is a long side direction, and the third direction D**3** is a short side direction. In other words, the main electrode part **13**A of each of the second internal electrodes **13** has a length in the first direction D**1** greater than a length in the third direction D**3**. The connection part **13**B extends from an end portion of the main electrode part **13**A on the end surface **2***b* side to the end surface **2***b*. A length of the connection part **13**B in the first direction D**1** is smaller than a length of the main electrode part **13**A in the first direction D**1**. A length of the connection part **13**B in the third direction D**3** is equal to a length of the main electrode part **13**A in the third direction D**3**. The connection part **13**B is connected to the second terminal electrode **7** at an end portion exposed on the end surface **2***b*. The length of the connection part **13**B in the third direction D**3** is smaller than the length of the main electrode part **13**A in the third direction D**3**.

[0056] Each of the first internal electrodes **11** has an end portion **11***a* extending in the third direction D**3** on the second terminal electrode **7** side, an end portion **11***b* extending in the first direction D**1** on the side surface **2***e* side, and an end portion **11***c* extending in the first direction D**1** on the side surface **2***f* side. Each of the second internal electrodes **13** has an end portion **13***a* extending in the third direction D**3** on the first terminal electrode **5** side, an end portion **13***b* extending in the first direction D**1** on the side surface **2***e* side, and an end portion **13***c* extending in the first direction D**1** on the side surface **2***f* side. As viewed from the second direction D**2**, the end portion **11***b* and the end portion **13***b* are overlapped with each other, and the end portion **11***c* and the end portion **13***c* are overlapped with each other. As viewed from the second direction D**2**, the end portion **11***a* is overlapped with a boundary between the main electrode part **13**A and the connection part **13**B of the second internal electrode **13**. As viewed from the second direction D**2**, the end portion **13***a* is overlapped with a boundary between the main electrode part **11**A and the connection part **11**B of the first internal electrode **11**. A region E**1** where the first internal electrodes **11** and the second internal electrodes **13** are overlapped with each other in the second direction D**2** is defined by the end portion **11***a*, the end portion **13***a*, the end portions **11***b* and **13***b*, and the end portions **11***c* and **13***c*.

[0057] Each of the first internal electrodes **11** and second internal electrodes **13** includes corner portions CN positioned in the element body **2**. The first internal electrode **11** includes a corner portion CN at a position where the end portion **11***a* and the end portion **11***b* intersect with each other, and a corner portion CN at a position where the end portion **11***a* and the end portion **11***c* intersect with each other. Note that, in a case where each corner portion CN has an edge radius or a chamfered portion, the edge radius portion or the chamfered portion corresponds to the corner portion CN. The corner portions CN are buried at positions spaced apart from surfaces of the element body **2** toward the inner peripheral side, respectively.

[0058] The first terminal electrode **5** is positioned at an end portion on the end surface **2***a* side of the element body **2** as viewed from the first direction D**1**. The first terminal electrode **5** includes an electrode portion **5***a* positioned on the end surface **2***a*, electrode portions **5***b* positioned on the pair of main surfaces **2***c* and **2***d*, and electrode portions **5***c* positioned on the pair of side surfaces **2***e* and **2***f*. In other words, the first terminal electrode **5** is formed of the five surfaces **2***a*, **2***c*, **2***d*, **2***e*, and **2***f*.

[0059] The electrode portions **5***a*, **5***b*, and **5***c* adjacent to one another are connected at ridge line portions of the element body **2** and electrically connected to one another. The electrode portion **5***a* and the electrode portions **5***b* are connected at ridge line portions between the end surface **2***a* and the main surface **2***c* and between the end surface **2***a* and the main surface **2***d*. The electrode portion **5***a* and the electrode portions **5***c* are connected at ridge line portions between the end surface **2***a* and the side surface **2***e* and between the end surface **2***a* and the side surface **2***f*.

[0060] The electrode portion **5***a* is disposed to cover all the portions of the connection parts **11**B exposed on the end surface **2***a*, and the connection parts **11**B are directly connected to the first terminal electrode **5**. In other words, the connection part **11**B connects the main electrode part **11**A and the electrode portions **5***c*. Therefore, each of the first internal electrodes **11** is electrically connected to the first terminal electrode **5**.

[0061] The second terminal electrode **7** is positioned at an end portion on the end surface **2***b* side of the element body **2** as viewed from the first direction D**1**. The second terminal electrode **7** includes an electrode portion **7***a* positioned on the end surface **2***b*, electrode portions **7***b* positioned on the pair of main surfaces **2***c* and **2***d*, and electrode portions **7***c* positioned on the pair of side surfaces **2***e* and **2***f*. In other words, the second terminal electrode **7** is formed of the five surfaces **2***b*, **2***c*, **2***d*, **2***e*, and **2***f*.

[0062] The electrode portions **7***a*, **7***b*, and **7***c* adjacent to each other are connected at ridge line portions of the element body **2** and electrically connected to each other. The electrode portion **7***a* and the electrode portions **7***b* are connected at ridge line portions between the end surface **2***b* and the main surface **2***c* and between the end surface **2***b* and the main surface **2***d*. The electrode portion **7***a* and the electrode portions **7***c* are connected at ridge line portions between the end surface **2***b* and the side surface **2***e* and between the end surface **2***b* and the side surface **2***f*.

[0063] The electrode portion **7***a* is disposed to cover all the portions of the connection parts **13**B exposed on the end surface **2***b*, and the connection parts **13**B are directly connected to the second terminal electrode **7**. In other words, the connection part **13**B connects the main electrode part **13**A and the electrode portions **7***c*. Therefore, each of the second internal electrodes **13** is electrically connected to the second terminal electrode **7**.

[0064] As illustrated in FIGS. **2** and **3**, the multilayer capacitor C**1** includes a plurality of interlayers **20** disposed in the element body **2**. Each of the interlayers **20** is disposed between the first internal electrode **11** and the second internal electrode **13**, and the interlayers **20** are disposed at distinct positions (layers) in the second direction D**2**. In other words, the interlayers **20** are disposed at intervals in the second direction D**2** in the element body **2** such that each interlayer **20** is opposite to each of the first internal electrode **11** and the second internal electrode **13**. The interlayers **20** are disposed to be spaced apart from the first terminal electrode **5** and the second terminal electrode **7** toward the inner peripheral side in the first direction D**1**, and the interlayers **20** and the first terminal electrode **5** and second terminal electrode **7** are not electrically connected. Note that, in the present embodiment, the interlayers **20** are disposed in all regions, each being positioned between the first internal electrode **11** and the second internal electrode **13**. Note that the interlayers **20** may not be provided in some regions.

[0065] The interlayer **20** functions as a dissimilar material layer **21** made of a material different from that of the element body **2**. The interlayer **20** as the dissimilar material layer **21** may be a metal layer. Ni, Cu, Ag, Pt, Au, alloy species thereof, and other metals may be employed as materials for the metal layer. As the material of the interlayer **20**, the same material as those of the internal electrodes **11** and **13** may be employed, or a different material may be employed. The interlayer **20** is configured as, for example, a sintered body of conductive paste containing the above-described metal material.

[0066] The interlayer **20** as the dissimilar material layer **21** has a linear expansion coefficient greater than a linear expansion coefficient of the element body **2**. Specifically, the linear expansion coefficient of the interlayer **20** as the dissimilar material layer **21** may be greater than the linear expansion coefficient of the element body **2** by 0.5×10^{-6} K^{-1} or more, and more preferably 2.0×10^{-6} K^{-1} or more. Note that the upper limit value of the linear expansion coefficient of the interlayer **20** as the dissimilar material layer **21** is not particularly limited, but may be 30.0×10^{-6} K^{-1} or less. The thickness of the interlayer **20** as the dissimilar material layer **21** is greater than the thicknesses of the internal electrodes **11** and **13**. For example, the thickness of the interlayer **20** as the dissimilar material layer **21** may be 1.1 times or more, more preferably 1.3 times or more the thicknesses of the internal electrodes **11** and **13**. The upper limit value of the thickness of the interlayer **20** as the dissimilar material layer **21** is not particularly limited, but may be 5.0 times or less the thicknesses of the internal electrodes **11** and **13**. Note that the thicknesses of the internal electrodes **11** and **13** may be set to 0.5 to 1.5 μm.

[0067] As illustrated in FIG. **5**, as viewed from the second direction, the interlayer **20** is overlapped with at least a part of the main electrode part **11**A of the first internal electrode **11**. As viewed from the second direction, the interlayer **20** is overlapped with at least a part of the main electrode part **13**A of the second internal electrode **13**.

[0068] Each interlayer **20** has an end portion **20***a* extending in the third direction D**3** on the second terminal electrode **7** side, an end portion **20***d* extending in the third direction D**3** on the first terminal electrode **5** side, an end portion **20***b* extending in the first direction D**1** on the side surface **2***e* side, and an end portion **20***c* extending in the first direction D**1** on the side surface **2***f* side. As viewed from the second direction D**2**, the end portion **20***b* and the end portions **11***b* and **13***b* are overlapped with one another, and the end portion **20***c* and the end portions **11***c* and **13***c* are overlapped with one another. As viewed from the second direction D**2**, the end portion **20***a* is overlapped with the end portion **11***a* and the boundary between the main electrode part **13**A and the connection part **13**B of the second internal electrode **13**. As viewed from the second direction D**2**, the end portion **20***d* is overlapped with the end portion **13***a* and the boundary between the main electrode part **11**A and the connection part **11**B of the first internal electrode **11**. Therefore, as viewed from the second direction, the interlayer **20** is overlapped with at least a part of a region E**1** (region where electrostatic capacitance is generated) where the first internal electrode **11** and the second internal electrode **13** are overlapped with each other in the second direction D**2**.

[0069] As viewed from the second direction D**2**, the interlayer **20** is not overlapped with the corner portions CN of the internal electrodes **11** and **13**. That is, as viewed from the second direction D**2**, a conductor pattern constituting the interlayer **20** is not present at the positions corresponding to corner portions CN of the interlayer **20**. As a result, the corner portions CN and regions in the vicinity of the corner portions CN in the internal electrodes **11** and **13** are not opposite to the interlayer **20** in the second direction D**2**. As viewed from the second direction D**2**, the end portions of the interlayer **20** at the positions corresponding to the corner portions CN are disposed to be spaced apart from the corner portions CN toward the inner peripheral side in the first direction and the inner peripheral side in the third direction.

[0070] In the present embodiment, the interlayer **20** includes notched portions **25** at the positions corresponding to the four corner portions CN. The notched portions **25** are portions having a shape in which the four corner portions (and the vicinity of each of the corner portions) of the interlayer **20** are cut out so that the interlayer **20** is not overlapped with the corner portions CN of the internal electrodes **11** and **13**. A starting point P**1** is set at a position spaced apart from a corner portion CN toward the inner peripheral side in the third direction D**3** with respect to the end portion (end portion **20***a* in FIG. **5**) of the interlayer **20**. A starting point P**2** is set at a position spaced apart from the corner portion CN toward the inner peripheral side in the first direction D**1** with respect to the end portion (the end portion **20***b* in FIG. **5**) of the interlayer **20**. Each notched portion **25** has an edge portion **26** that extends linearly or recessed toward the inner peripheral side between the starting point P**1** and the starting point P**2**.

[0071] The interlayer **20** includes notched portions **25** separately provided at the positions corresponding to a corner portion between the end portions **20***a* and **20***b*, a corner portion between the end portions **20***a* and **20***c*, a corner portion between the end portions **20***d* and **20***b*, and a corner portion between the end portions **20***d* and **20***c*. Note that, the notched portion **25** is the term indicating a shape, and is not intended to limit a forming method, and a conductor pattern patterned into a desirable shape also corresponds to the notched portion **25**. A specific example of the notched portion **25** will be described later.

[0072] With the above-described configuration, the interlayer **20** functions as a compressive stress introduction layer **22** that introduces compressive stress into the element body **2**. The compressive stress introduction layer **22** introduces compressive stress into side gap sections SG between the internal electrodes **11** and **13** and the side surfaces **2***e* and **2***f* of the element body **2** in the third direction D**3**. As illustrated in FIG. **3**, the compressive stress introduction layer **22** introduces a compressive stress F**1** to generate compression in the second direction D**2** into the side gap sections SG.

[0073] Next, specific examples of the notched portions **25** will be described with reference to FIGS. **6**A to **6**D, **7**A to **7**D, and **8**A to **8**D. FIGS. **6**A to **6**D, **7**A to **7**D, and **8**A to **8**D are schematic diagrams illustrating structures in the vicinity of the corner portions CN as viewed from the second direction D**2**. Note that, unless otherwise specified, the illustrations of FIGS. **6**A to **6**D, **7**A to **7**D, and **8**A to **8**D are assumed to describe the configurations as viewed from the second direction D**2**. In addition, in FIGS. **6**A to **6**D, **7**A to **7**D, and **8**A to **8**D, it is indicated that a pattern is applied to a section where the internal electrodes **11** and **13** are present, a dark pattern is applied to a section with the internal electrodes **11** and **13** being overlapped, and hatching is applied to a section with the interlayer **20** being overlapped. The same applies to FIGS. **9**A and **9**B, **10**A and **10**B, and **11**A to **11**C. FIGS. **6**A and **6**B illustrate configurations in a state where the interlayers **20** are not overlapped. As illustrated in FIGS. **6**A and **6**B here, the configurations in the vicinity of the corner portions CN between the end portion **11***a* and the end portions **11***b* and **13***b* are illustrated. The corner portion CN is formed with an edge radius between the end portion **11***a* and the end portions **11***b* and **13***b*. The corner portion CN has a shape protruding toward the outer peripheral side. FIG. **6**B illustrates the configuration in which a narrow portion **13***e* is provided on the connection part **13**B of the second internal electrode **13**. The narrow portion **13***e* is a portion where the width of the connection part **13**B in the third direction D**3** is narrower than that of the main electrode part **13**A. The narrow portion **13***e* is disposed toward the inner peripheral side in the third direction with respect to the end portion **13***b*.

[0074] A notched portion **25** illustrated in FIG. **6**C has, between the starting point P**1** and the starting point P**2**, an edge portion **26** bent at a right angle to be recessed toward the inner peripheral side. The edge portion **26** extends in the first direction D**1** from the starting point P**1**, is bent, and extends in the third direction D**3** to the starting point P**2**. The notched portion **25** is shaped to be away from the corner portion CN toward the inner peripheral side. In addition, the bent portion of the edge portion **26** is provided with an edge radius. Therefore, the notched portion **25** has a curved portion **27** that is curved as viewed from the second direction D**2**. In addition, edge radii are also provided at the starting points P**1** and P**2** to form curved portions. As viewed from the second direction D**2**, the curved portion **27** is curved in such a manner as to be away from the corner portion CN toward the inner peripheral side. FIG. **6**D illustrates a structure in which a notched portion **25** having the same intention as that in FIG. **6**C with respect to the structure including the narrow portion **13***e* in FIG. **6**B is employed.

[0075] A notched portion **25** illustrated in FIG. **7**A has an edge portion **26** that extends obliquely in a straight line between the starting point P**1** and the starting point P**2**. No edge radii are provided at the starting points P**1** and P**2**. FIG. **7**B illustrates a structure in which a notched portion **25** having the same intention as that in FIG. **7**A with respect to the structure including the narrow portion **13***e* in FIG. **6**B is employed. A notched portion **25** illustrated in FIG. **7**C is formed as a curved portion by providing an edge radius between the starting points P**1** and P**2** with respect to the notched portion **25** illustrated in FIG. **7**A. FIG. **7**D illustrates a structure in which a notched portion **25** having the same intention as that in FIG. **7**C with respect to the structure including the narrow portion **13***e* in FIG. **6**B is employed.

[0076] A notched portion **25** illustrated in FIG. **8**A has, between the starting point P**1** and the starting point P**2**, an edge portion **26** that extends to be recessed toward the inner peripheral side. The edge portion **26** extends obliquely in the first direction D**1** from the starting point P**1**, is bent, and extends obliquely in the third direction D**3** to the starting point P**2**. The notched portion **25** is shaped to be away from the corner portion CN toward the inner peripheral side. In addition, the bent portion of the edge portion **26** is provided with an edge radius. Therefore, the notched portion **25** has a curved portion **27** that is curved as viewed from the second direction D**2**. In addition, edge radii are also provided at the starting points P**1** and P**2** to form curved portions. As viewed from the second direction D**2**, the curved portion **27** is curved in such a manner as to be away from the corner portion CN toward the inner peripheral side. FIG. **8**B illustrates a structure in which a notched portion **25** having the same intention as that in FIG. **8**A with respect to the structure including the narrow portion **13***e* in FIG. **6**B is employed.

[0077] A notched portion **25** illustrated in FIG. **8**C has, between the starting point P**1** and the starting point P**2**, an edge portion **26** bent at a right angle to be recessed toward the inner peripheral side. The edge portion **26** extends in the first direction D**1** from the starting point P**1**, is bent, and extends in the third direction D**3** to the starting point P**2**. The notched portion **25** is shaped to be away from the corner portion CN toward the inner peripheral side. In addition, the bent portion of the edge portion **26** is provided with no edge radius. In addition, no edge radii are also provided at the starting points P**1** and P**2**. FIG. **8**D illustrates a structure in which a notched portion **25** having the same intention as that in FIG. **8**C with respect to the structure including the narrow portion **13***e* in FIG. **6**B is employed.

[0078] The size of the notched portions **25** will be described with reference to FIGS. **9**A and **9**B. FIG. **9**A is a schematic diagram illustrating a structure in a case where notched portions **25** have a minimum size. FIG. **9**B is a schematic diagram illustrating a structure in a case where notched portions **25** have a maximum size. Note that, although the shape of the notched portions **25** corresponding to FIG. **7**A is employed herein, the same size relationship applies to other shapes. In a region E**1** where the first internal electrode **11** and the second internal electrode **13** overlap in the second direction D**2**, a dimension in the third direction D**3** is denoted by W. In the overlapping region E**1**, a dimension in the first direction D**1** is denoted by L. As illustrated in FIG. **9**A, the minimum size of each notched portion **25** in the third direction D**3** is W/10, and the minimum size in the first direction D**1** is L/10. As illustrated in FIG. **9**B, the maximum size of each notched portion **25** in the third direction D**3** is W/3, and the maximum size in the first direction D**1** is L/3.

[0079] As described above, a region E**2** of the corner portion CN, which is not overlapped with the interlayer **20**, has a dimension of W/10 or more and W/3 or less in the third direction D**3**. In other words, the notched portion **25** has a dimension of W/10 or more and W/3 or less in the third direction D**3**. In addition, the region E**2** of the corner portion CN, which is not overlapped with the interlayer **20**, has a dimension of L/10 or more and L/3 or less in the first direction D**1**. In other words, the notched portion **25** has a dimension of L/10 or more and L/3 or less in the first direction D**1**.

[0080] Next, operations and effects of the multilayer capacitor C**1** (electronic component) according to the present embodiment will be described.

[0081] In the multilayer capacitor C**1**, the first internal electrode **11** and the second internal electrode **13** are opposite to each other in the second direction D**2**, with the dissimilar material layer **21** containing a material different from that of the element body **2** interposed therebetween. In this manner, since the dissimilar material layer **21** is additionally provided to be overlapped with the internal electrodes **11** and **13**, the volume of the member having the linear expansion coefficient greater than that of the element body **2** is increased, so that a compressive stress F**1** (see FIG. **3**) can be introduced into side gap sections SG between the internal electrodes **11** and **13** and the side surfaces **2*e*** and **2*f*** of the element body **2**. As a result, even though electrostrictive vibration occurs when a voltage is applied, the generation of electrostrictive cracks can be minimized by reducing a tensile stress F**2** (see FIG. **3**) at the central portion in the side gap section SG in the second direction D**2**. In addition, unlike the thinning and multilayering of the dielectric layers **51** (see FIGS. **2** and **3**), it is possible to reduce electrostrictive cracks while reducing deterioration due to a high-temperature load. Here, as viewed from the second direction D**2**, the dissimilar material layer is not overlapped with the corner portions CN of the internal electrodes **11** and **13**. Therefore, it is possible to relax the stress at the corner portion CN of the outermost internal electrodes **11** and **13**. In addition, as the electric field strength increases, the amount of electrostriction increases, and the effect of increasing the compressive stress is thus less likely to be obtained. However, in the present embodiment, the dissimilar material layer **21** can be used to establish a countermeasure to minimize the increase in the electric field strength. As described above, it is possible to reduce the electrostrictive cracks and relax the stress at the corner portions CN of the internal electrodes **11** and **13**.

[0082] The element body **2** may contain a ceramic material, and the dissimilar material layer **21** may include a metal layer. In this case, a linear expansion coefficient of the dissimilar material layer **21** can be higher than that of the element body **2**.

[0083] In the region E**1** where the first internal electrode **11** and the second internal electrode **13** are overlapped with each other in the second direction D**2**, when the dimension in the third direction D**3** perpendicular to the first direction D**1** and the second direction D**2** is denoted by W, the dimension in the third direction of the region overlapped with no dissimilar material layer **21** in the corner portion CN may be W/10 or more and W/3 or less. In this case, the region of the corner portion CN overlapped with no dissimilar material layer **21** can be sufficiently secured, and the compressive stress can be sufficiently introduced into the side gap section by restricting the excessive widening of the region.

[0084] In the region E**1** where the first internal electrode **11** and the second internal electrode **13** are overlapped with each other in the second direction D**2**, when the dimension in the first direction D**1** is denoted by L, the dimension in the first direction D**1** of the region E**2** overlapped with no dissimilar material layer **21** in the corner portion CN may be L/10 or more and L/3 or less. In this case, the region E**2** of the corner portion CN overlapped with no dissimilar material layer **21** can be sufficiently secured, and the compressive stress can be sufficiently introduced into the side gap section SG by restricting the excessive widening of the region E**2**.

[0085] The dissimilar material layer **21** may have the notched portions **25** at the positions corresponding to the corner portions CN, and each notched portion **25** may be shaped to be away from each corner portion CN toward the inner peripheral side as viewed from the second direction D**2**. Since the distance between each corner portion CN of the internal electrodes **11** and **13** and the edge portion **26** of the notched portion **25** of the dissimilar material layer **21** can be increased, the stress at each corner portion CN of the internal electrodes **11** and **13** can be relaxed.

[0086] The dissimilar material layer **21** may have the notched portions **25** at the positions corresponding to the corner portions CN, and each notched portion **25** may have a curved portion **27** that is curved as viewed from the second direction D**2**. In this case, the electric field concentration on the notched portion **25** can be alleviated.

[0087] As viewed from the second direction D**2**, the curved portion **27** may be curved in such a manner as to be away from each corner portion CN toward the inner peripheral side. In this case, since the distance between each corner portion CN of the internal electrodes **11** and **13** and the edge portion **26** of the notched portion **25** of the dissimilar material layer **21** can be increased, the stress at each corner portion CN of the internal electrodes **11** and **13** can be relaxed.

[0088] The corner portion CN may have a shape protruding toward the outer peripheral side. In this case, the electric field concentration on the corner portion CN can be alleviated.

[0089] The thickness of the dissimilar material layer **21** may be "thickness of dissimilar material layer≥thickness of internal electrode" with respect to the thicknesses of the first internal electrode **11** and the second internal electrode **13** (see, for example, FIGS. **14** and **15** described later), and is preferably "thickness of dissimilar material>thickness of internal electrode". In this case, the thickness of the dissimilar material layer **21** can be increased to increase the breakdown voltage.

[0090] The thickness of the dissimilar material layer **21** may be 1.3 times or more the thicknesses of the first internal electrode **11** and the second internal electrode **13**. In this case, the thickness of the dissimilar material layer **21** can be sufficiently increased to increase the breakdown voltage.

[0091] In the multilayer capacitor C**1**, the first internal electrode **11** and the second internal electrode **13** are opposite to each other in the second direction D**2**, with the compressive stress introduction layer **22** that introduces compressive stress into the element body **2** interposed therebetween. The compressive stress introduction layer **22** can introduce a compressive stress F**1** (see FIG. **3**) into the side gap sections SG between the first internal electrode **11** and second internal electrode **13** and the side surfaces **2***e* and **2***f* of the element body **2** in the third direction D**3**. As a result, even though electrostrictive vibration occurs when a voltage is applied, the generation of electrostrictive cracks can be minimized by reducing a tensile stress F**2** (see FIG. **3**) at the central portion in the side gap section SG in the second direction D**2**. In addition, unlike the thinning and multilayering of the dielectric layers **51** (see FIGS. **2** and **3**), it is possible to reduce electrostrictive cracks while reducing deterioration due to a high-temperature load. Here, as viewed from the second direction D**2**, the compressive stress introduction layer **22** is not overlapped with the corner portions CN of the internal electrodes **11** and **13**. Therefore, it is possible to relax the stress at the corner portion CN of the outermost internal electrodes **11** and **13**. As described above, it is possible to reduce the electrostrictive cracks and relax the stress at the corner portions CN of the internal electrodes **11** and **13**.

[0092] The present disclosure is not limited to the embodiments described above.

[0093] Modifications of the shape of the interlayer **20** will be described with reference to FIGS. **10**A and **10**B, and **11**A to **11**C. FIGS. **10**A and **10**B, and **11**A to **11**C are schematic diagrams of modifications of the interlayer **20** as viewed from the second direction D**2**. As illustrated in FIG. **10**A, the interlayer **20** may be divided in the first direction D**1** by a slit **28**. The slit **28** includes the central position of the internal electrodes **11** and **13** in the first direction D**1** and extends in the third direction. The interlayer **20** is divided into an interlayer **20**A and an interlayer **20**B, with the slit **28** interposed therebetween.

[0094] The interlayers **20**A and **20**B have widths smaller than those of the internal electrodes **11** and **13** in the first direction D**1**. In addition, the interlayer **20**A is disposed on one end portion side of the internal electrodes **11** and **13** in the first direction D**1** as viewed from the second direction D**2**. The interlayer **20**B is disposed on the other end portion side of the internal electrodes **11** and **13** in the first direction D**1** as viewed from the second direction D**2**.

[0095] As illustrated in FIG. **10**B, the interlayer **20** may be divided in the third direction D**3** by a slit **29**. The slit **29** includes the central position of the internal electrodes **11** and **13** in the third direction D**3** and extends in the first direction D**1**. The interlayer **20** is divided into an interlayer **20**C and an interlayer **20**D, with the slit **29** interposed therebetween.

[0096] The interlayers **20**C and **20**D have widths smaller than those of the internal electrodes **11** and **13** in the third direction D**3**. In addition, the interlayer **20**C is disposed on one end portion side of the internal electrodes **11** and **13** in the third direction D**3** as viewed from the second direction D**2**. The interlayer **20**D is disposed on the other end portion side of the internal electrodes **11** and **13** in the third direction D**3** as viewed from the second direction D**2**.

[0097] As illustrated in FIG. **11**A, the interlayer **20** may have an annular shape with a penetration portion **30**. The interlayer **20** is disposed to overlap along the four end portions of the internal electrodes **11** and **13**. The interlayer **20** has a width smaller than those of the internal electrodes **11** and **13** in the first direction D**1**, and has portions disposed on both end portion sides of the internal electrodes **11** and **13** in the first direction D**1** as viewed from the second direction D**2**. The interlayer **20** has a width smaller than those of the internal electrodes **11** and **13** in the third direction D**3**, and has portions disposed on both end portion sides of the internal electrodes **11** and **13** in the third direction D**3** as viewed from the second direction D**2**.

[0098] As illustrated in FIGS. **11**B and **11**C, a structure in which an annular interlayer **20** is formed by combining a pair of L-shaped interlayers **20**E and **20** F may be employed. The interlayer **20**E illustrated in FIG. **11**B has a width smaller than those of the internal electrodes **11** and **13** in the first direction D**1**, and has a portion disposed on one end portion side of the internal electrodes **11** and **13** in the first direction D**1** as viewed from the second direction D**2**. The interlayer **20**E has a width smaller than those of the internal electrodes **11** and **13** in the third direction D**3**, and has a portion disposed on one end portion side of the internal electrodes **11** and **13** in the third direction D**3** as viewed from the second direction D**2**. Note that a notched portion **25** is provided at a L-shaped corner portion. End portions **20**Ea and **20**Eb of the interlayer **20**E in an L-shaped longitudinal direction are disposed at positions overlapped with no corner portion CN of the internal electrodes **11** and **13**.

[0099] The interlayer **20**F illustrated in FIG. **11**C has a width smaller than those of the internal electrodes **11** and **13** in the first direction D**1**, and has a portion disposed on the other end portion side of the internal electrodes **11** and **13** in the first direction D**1** as viewed from the second direction D**2**. The interlayer **20**F has a width smaller than those of the internal electrodes **11** and **13** in the third direction D**3**, and has a portion disposed on the other end portion side of the internal electrodes **11** and **13** in the third direction D**3** as viewed from the second direction D**2**. Note that a notched portion **25** is provided at a L-shaped corner portion. End portions **20**Fa and **20**Fb of the interlayer **20**F in an L-shaped longitudinal direction are disposed at positions overlapped with no corner portion CN of the internal electrodes **11** and **13**.

[0100] The combination of the end portion **20**Ea and the end portion **20**Fb described above can form a shape in which the interlayer **20** is not overlapped with the corner portion CN as viewed from the second direction D**2**. The combination of the end portion **20**Eb and the end portion **20**Fa described above can form a shape in which the interlayer **20** is not overlapped with the corner portion CN as viewed from the second direction D**2**. As described above, means for preventing the interlayer **20** from being overlapped with the corner portion CN as viewed from the second direction D**2** is not limited to the notched portion **25**, and means for adjusting a position of an end portion of an interlayer **20** having a narrow width may be employed. Instead of the L-shape extending along two sides of the internal electrodes

11 and **13**, illustrated as the interlayers **20**E and **20**F, a shape corresponding to one side may be employed. In this case, four sets of interlayers may be prepared.

[0101] When a direction perpendicular to the first direction and the second direction is a third direction, the dissimilar material layer may have a smaller width in at least one direction of the first direction or the third direction than those of the first internal electrode and the second internal electrode, and may be disposed on an end portion side of the first internal electrode and the second internal electrode in the one direction as viewed from the second direction. In this case, since the internal electrodes are not overlapped with the dissimilar material layer in the vicinity of the center, it is possible to reduce the expansion of the element body.

[0102] As illustrated in FIGS. **12** and **13**, an edge portion **31** of the interlayer **20** on the outer peripheral side may be thicker than a region **32** on the inner peripheral side. In this case, the expansion of the element body **2** can be reduced by thinning the region **32** on the inner peripheral side. Note that the shape and size of the thinned region **32** on the inner peripheral side may be similar to those of the penetration portion **30** in FIG. **11**A. The thickness of the edge portion **31** may be 1.1 times or more, more preferably 1.3 times or more the thickness of the region **32** on the inner peripheral side. In this case, the expansion of the element body can be reduced by sufficiently thinning the region on the inner peripheral side. The upper limit value of the thickness of the edge portion **31** is not particularly limited, but may be 5.0 times or less the thickness of the region **32** on the inner peripheral side.

[0103] The thickness relationship between the interlayer **20** (dissimilar material layer **21**) and the internal electrodes **11** and **13** is not particularly limited. For example, as illustrated in FIGS. **2** and **3**, the interlayer **20** may be thicker than the internal electrodes **11** and **13**, and as illustrated in FIG. **14**, the interlayer **20** and the internal electrodes **11** and **13** may be equal in thickness. In addition, for example, as illustrated in FIGS. **12** and **13**, the thin region **32** of the interlayer **20** may be thicker than the internal electrodes **11** and **13**, and as illustrated in FIG. **15**, the thin region **32** of the interlayer **20** and the internal electrodes **11** and **13** may be equal in thickness.

[0104] An experiment for confirming the effect of the electronic component of the present embodiment will be described with reference to FIGS. **16** to **19**. As Example, a multilayer capacitor according to the layer configuration illustrated in FIGS. **2** to **5** was prepared. As Comparative Example 1, a multilayer capacitor with interlayers **20** removed from Example was prepared. As Comparative Example 2, a multilayer capacitor in which notched portions **25** were removed from Example, and interlayers **20** overlapped with corner portions CN of internal electrodes **11** and **13** was prepared.

[0105] First, the effect of reducing cracks due to electrostriction was confirmed. A voltage was applied to Example and Comparative Examples 1 and 2, and the stress in a side gap section SG in a multilayering direction was measured. The stress at a measurement point MP**1** illustrated in FIGS. **2**, **3**, and **4** was measured. Measurement results are illustrated in FIG. **16**. As illustrated in FIG. **16**, in Comparative Example 2 and Example having the interlayers **20**, the compressive stress greater than that in Comparative Example 1 can be introduced even in the stage the voltage is yet applied. In Comparative Example 1, the stress acting on the side gap section SG around 150 V is a tensile stress. On the other hand, in Comparative Example 2 and Example, the stress acting on the side gap section SG up to about 300 V can be set as the compressive stress. From this fact, it was confirmed that the compressive stress could be introduced into the side gap section SG by using the interlayers **20**.

[0106] Next, a voltage causing the generation of electrostrictive cracks was measured. A voltage was applied to Example and Comparative Examples 1 and 2, and a voltage when the electrostrictive cracks was generated was measured. The measurement results are illustrated in Table described in FIG. **17**. As shown in Table illustrated in FIG. **17**, in Comparative Example 2 and Example having the interlayers **20**, the voltage causing the generation of electrostrictive cracks was higher than that in Comparative Example 1 having no interlayer **20**. A T-test was performed to confirm that the difference between Comparative Example 2 and Example, and Comparative Example 1 was a statistically significant difference. From this fact, it was confirmed that the electrostrictive cracks can be reduced by using the interlayers **20**.

[0107] Next, the effect of reducing the stress in the corner portions CN by providing the notched portions **25** was confirmed. In Example and Comparative Examples 1 and 2, the stress in a corner portion CN was measured. The stress at a measurement point MP**2** illustrated in FIGS. **2**, **3**, and **4** was measured. Measurement results are illustrated in FIG. **18**. As illustrated in FIG. **18**, in Comparative Example 2 having no notched portion **25**, the maximum principal stress at the corner portions CN was large. On the other hand, in Example in which the notched portions **25** were provided, the maximum principal stress of the corner portions CN could be reduced to the same extent as in Comparative Example 1 without the interlayers **20**. From this fact, it was confirmed that the stress at the corner portions CN could be reduced by providing the notched portions **25** so that the interlayers **20** are not overlapped with the corner portions CN.

[0108] Next, a thermal shock at 280° C. was applied to Example and Comparative Examples 1 and 2, and cracks generated were counted. Here, 20 samples were prepared, and the number of NG samples was counted.

[0109] Measurement results are illustrated in FIG. **19**. In Comparative Example 2, the NG proportion was high. On the other hand, in Example, the NG proportion could be reduced. From this fact, it was confirmed that the generation of cracks at the corner portions CN could be minimized by providing the notched portions **25** so that the interlayers **20** are not overlapped with the corner portions CN.

[0110] [Aspect 1]

[0111] An electronic component comprising:

[0112] an element body including a pair of end surfaces opposite to each other in a first direction;

[0113] a first terminal electrode disposed on one side of the pair of end surfaces in the first direction;

[0114] a second terminal electrode disposed another side of the pair of end surfaces in the first direction;

[0115] a first internal electrode disposed in the element body and connected to the first terminal electrode;

[0116] a second internal electrode disposed in the element body and connected to the second terminal electrode;

[0117] a dissimilar material layer disposed in the element body and containing a material different from the element body, wherein

[0118] the first internal electrode and the second internal electrode are opposite to each other in a second direction perpendicular to the first direction with the dissimilar material layer interposed between the first internal electrode and the second internal electrode,

[0119] the dissimilar material layer has a linear expansion coefficient greater than a linear expansion coefficient of the element body,

[0120] the first internal electrode and the second internal electrode include corner portions positioned in the element body, and

[0121] the dissimilar material layer is not overlapped with the corner portions as viewed from the second direction.

[0122] [Aspect 2]

[0123] The electronic component according to Aspect 1, wherein

[0124] the element body contains a ceramic material, and

[0125] the dissimilar material layer includes a metal layer.

[0126] [Aspect 3]

[0127] The electronic component according to Aspect 1 or 2, wherein,

[0128] when in a region where the first internal electrode and the second internal electrode are overlapped with each other in the second direction, a dimension in a third direction perpendicular to the first direction and the second direction is denoted by W,

[0129] the dimension in the third direction of a region overlapped with no dissimilar material layer in the corner portion is W/10 or more and W/3 or less.

[0130] [Aspect 4]

[0131] The electronic component according to any one of Aspects 1 to 3, wherein

[0132] when in a region where the first internal electrode and the second internal electrode are overlapped with each other in the second direction, a dimension in the first direction is denoted by L,

[0133] the dimension in the first direction of a region overlapped with no dissimilar material layer in the corner portion is L/10 or more and L/3 or less.

[0134] [Aspect 5]

[0135] The electronic component according to any one of Aspects 1 to 4, wherein

[0136] the dissimilar material layer has a notched portion at a position corresponding to the corner portion, and

[0137] the notched portion is shaped to be away from the corner portion toward an inner peripheral side as viewed from the second direction.

[0138] [Aspect 6]

[0139] The electronic component according to any one of Aspects 1 to 5, wherein

[0140] the dissimilar material layer has a notched portion at a position corresponding to the corner portion, and

[0141] the notched portion has a curved portion curved as viewed from the second direction.

[0142] [Aspect 7]

[0143] The electronic component according to Aspect 6, wherein the curved portion is curved in such a manner as to be away from the corner portion toward an inner peripheral side as viewed from the second direction.

[0144] [Aspect 8]

[0145] The electronic component according to any one of Aspects 1 to 7, wherein the corner portion has a shape protruding toward an outer peripheral side.

[0146] [Aspect 9]

[0147] The electronic component according to any one of Aspects 1 to 8, wherein a thickness of the dissimilar material layer is greater than thicknesses of the first internal electrode and the second internal electrode.

[0148] [Aspect 10]

[0149] The electronic component according to Aspect 9, wherein the thickness of the dissimilar material layer is 1.3 times or more the thicknesses of the first internal electrode and the second internal electrode.

[0150] [Aspect 11]

[0151] The electronic component according to any one of Aspects 1 to 10, wherein an edge portion on an outer peripheral side of the dissimilar material is thicker than a region on an inner peripheral side.

[0152] [Aspect 12]

[0153] The electronic component according to Aspect 11, wherein a thickness of the edge portion is 1.3 times or more a thickness of the region on the inner peripheral side.

[0154] [Aspect 13]

[0155] The electronic component according to any one of Aspect 1 to 12, wherein,

[0156] when a direction perpendicular to the first direction and the second direction is a third direction,

[0157] the dissimilar material layer

[0158] has a smaller width in at least one direction of the first direction or the third direction than those of the first internal electrode and the second internal electrode, and

[0159] the dissimilar material layer is disposed on an end portion side of the first internal electrode and the second internal electrode in the at least one direction as viewed from the second direction.

[0160] [Aspect 14]

[0161] An electronic component comprising:

[0162] an element body including a pair of end surfaces opposite to each other in a first direction;

[0163] a first terminal electrode disposed on one side of the pair of end surfaces in the first direction;

[0164] a second terminal electrode disposed another side of the pair of end surfaces in the first direction;

[0165] a first internal electrode disposed in the element body and connected to the first terminal electrode;

[0166] a second internal electrode disposed in the element body and connected to the second terminal electrode;

[0167] a compressive stress introduction layer disposed in the element body and configured to introduce a compressive stress into the element body, wherein

[0168] the first internal electrode and the second internal electrode are opposite to each other in a second direction perpendicular to the first direction with the compressive stress introduction layer interposed between the first internal electrode and the second internal electrode,

[0169] the compressive stress introduction layer is configured to introduce the compressive stress into a side gap section between the first internal electrode and the second internal electrode, and a side surface of the element body in a third direction perpendicular to the first direction and the second direction,

[0170] the first internal electrode and the second internal electrode include corner portions positioned in the element body, and

[0171] the compressive stress introduction layer is not overlapped with the corner portions as viewed from the second direction.

REFERENCE SIGNS LIST

[0172] **2** Element body
[0173] **5** First terminal electrode
[0174] **7** Second terminal electrode
[0175] **11** First internal electrode
[0176] **13** Second internal electrode
[0177] **21** Dissimilar material layer
[0178] **22** Compressive stress introduction layer
[0179] **25** Notched portion
[0180] **26** Edge portion
[0181] **27** Curved portion
[0182] C**1** Multilayer capacitor (electronic component)

What is claimed is:

1. An electronic component comprising:
an element body including a pair of end surfaces opposite to each other in a first direction;
a first terminal electrode disposed on one side of the pair of end surfaces in the first direction;
a second terminal electrode disposed another side of the pair of end surfaces in the first direction;
a first internal electrode disposed in the element body and connected to the first terminal electrode;
a second internal electrode disposed in the element body and connected to the second terminal electrode;
a dissimilar material layer disposed in the element body and containing a material different from the element body, wherein
the first internal electrode and the second internal electrode are opposite to each other in a second direction perpendicular to the first direction with the dissimilar material layer interposed between the first internal electrode and the second internal electrode,
the dissimilar material layer has a linear expansion coefficient greater than a linear expansion coefficient of the element body,
the first internal electrode and the second internal electrode include corner portions positioned in the element body, and
the dissimilar material layer is not overlapped with the corner portions as viewed from the second direction.

2. The electronic component according to claim **1**, wherein
the element body contains a ceramic material, and
the dissimilar material layer includes a metal layer.

3. The electronic component according to claim **1**, wherein,
when in a region where the first internal electrode and the second internal electrode are overlapped with each other in the second direction, a dimension in a third direction perpendicular to the first direction and the second direction is denoted by W,
the dimension in the third direction of a region overlapped with no dissimilar material layer in the corner portion is W/10 or more and W/3 or less.

4. The electronic component according to claim **1**, wherein,
when in a region where the first internal electrode and the second internal electrode are overlapped with each other in the second direction, a dimension in the first direction is denoted by L,
the dimension in the first direction of a region overlapped with no dissimilar material layer in the corner portion is L/10 or more and L/3 or less.

5. The electronic component according to claim **1**, wherein
the dissimilar material layer has a notched portion at a position corresponding to the corner portion, and
the notched portion is shaped to be away from the corner portion toward an inner peripheral side as viewed from the second direction.

6. The electronic component according to claim **1**, wherein
the dissimilar material layer has a notched portion at a position corresponding to the corner portion, and
the notched portion has a curved portion curved as viewed from the second direction.

7. The electronic component according to claim **6**, wherein the curved portion is curved in such a manner as to be away from the corner portion toward an inner peripheral side as viewed from the second direction.

8. The electronic component according to claim **1**, wherein the corner portion has a shape protruding toward an outer peripheral side.

9. The electronic component according to claim **1**, wherein a thickness of the dissimilar material layer is greater than thicknesses of the first internal electrode and the second internal electrode.

10. The electronic component according to claim **9**, wherein the thickness of the dissimilar material layer is 1.3 times or more the thicknesses of the first internal electrode and the second internal electrode.

11. The electronic component according to claim **1**, wherein an edge portion on an outer peripheral side of the dissimilar material is thicker than a region on an inner peripheral side.

12. The electronic component according to claim **11**, wherein a thickness of the edge portion is 1.3 times or more a thickness of the region on the inner peripheral side.

13. The electronic component according to claim **1**, wherein,
when a direction perpendicular to the first direction and the second direction is a third direction,
the dissimilar material layer
has a smaller width in at least one direction of the first direction or the third direction than those of the first internal electrode and the second internal electrode, and
the dissimilar material layer is disposed on an end portion side of the first internal electrode and the second internal electrode in the at least one direction as viewed from the second direction.

14. An electronic component comprising:
an element body including a pair of end surfaces opposite to each other in a first direction;
a first terminal electrode disposed on one side of the pair of end surfaces in the first direction;

a second terminal electrode disposed another side of the pair of end surfaces in the first direction;

a first internal electrode disposed in the element body and connected to the first terminal electrode;

a second internal electrode disposed in the element body and connected to the second terminal electrode;

a compressive stress introduction layer disposed in the element body and configured to introduce a compressive stress into the element body, wherein

the first internal electrode and the second internal electrode are opposite to each other in a second direction perpendicular to the first direction with the compressive stress introduction layer interposed between the first internal electrode and the second internal electrode,

the compressive stress introduction layer is configured to introduce the compressive stress into a side gap section between the first internal electrode and the second internal electrode, and a side surface of the element body in a third direction perpendicular to the first direction and the second direction,

the first internal electrode and the second internal electrode include corner portions positioned in the element body, and

the compressive stress introduction layer is not overlapped with the corner portions as viewed from the second direction.

* * * * *