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MULTILAYER CERAMIC ELECTRONIC COMPONENT

Abstract

A multilayer ceramic electronic component includes a multilayer ceramic electronic component main body, metallic terminals connected to external electrodes by a joining material, and a covering material covering the multilayer ceramic electronic component main body, wherein the metallic terminals include joining surfaces joined to the joining material and contact surfaces in contact with the covering material. The contact surfaces include outermost-surface plating films on at least some surfaces and include surfaces in which a metal different from the outermost-surface plating films is exposed and which are spaced apart from each other along an extension direction of the metallic terminals.

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Background/Summary

CROSS REFERENCE TO RELATED APPLICATIONS [0001] This application claims the benefit of priority to Japanese Patent Application No. 2022-202663 filed on Dec. 19, 2022 and is a Continuation Application of PCT Application No. PCT/JP2023/042187 filed on Nov. 24, 2023. The entire contents of each application are hereby incorporated herein by reference.

BACKGROUND OF THE INVENTION
1. Field of the Invention
[0002] invention relates to multilayer ceramic electronic components.
2. Description of the Related Art
[0003] Conventionally, multilayer ceramic electronic components each covered with a resin functioning as an exterior material are known. In each of such multilayer ceramic electronic components, metal terminals each extending to the outside of the exterior material and external electrodes each provided on the surface of the multilayer ceramic electronic component main body are bonded to each other by a bonding material including a metal such as solder inside the exterior material.
[0004] Japanese Unexamined Patent Application Publication No. 2019-145767 discloses a multilayer ceramic electronic component including a plating film on a surface of a frame functioning as a metal terminal. Since the plating film is provided on the metal terminal, the bonding property by the bonding material can be enhanced. However, when the plating film is provided on the entire surface of the metal terminal, the bonding material may excessively flow out along the metal terminal. In this case, the bonding material is located close to the surface of the exterior material, and when the bonding material is remelted and the volume of the bonding material expands during reflow at the time of mounting the substrate, a phenomenon such as solder splash may occur in which a solder component is spewed out from the interface between the exterior material and the metal terminal.
SUMMARY OF THE INVENTION
[0005] Example embodiments of the present invention provide multilayer ceramic electronic components that are each able to reduce or prevent excessive outflow of a bonding material appropriately to reduce or prevent the occurrence of solder splash.
[0006] An example embodiment of the present invention provides a multilayer ceramic electronic component which includes a multilayer ceramic electronic component main body including a multilayer body including a plurality of ceramic layers and a plurality of internal conductive layers that are each laminated on a corresponding one of the plurality of ceramic layers, a first main surface and a second main surface opposed to each other in a height direction, a first lateral surface and a second lateral surface opposed to each other in a width direction orthogonal or substantially orthogonal to the height direction, and a first end surface and a second end surface opposed to each other in a length direction orthogonal or substantially orthogonal to the height direction and the width direction, a first external electrode on the first end surface, and a second external electrode on the second end surface, a first metal terminal connected to the first external electrode via a bonding material, a second metal terminal connected to the second external electrode via a bonding material, and an exterior material covering the multilayer ceramic electronic component main body, the bonding material, a portion of the first metal terminal, and a portion of the second metal terminal. The first metal terminal includes a first bonding surface bonded to the bonding material, and a first contact surface in contact with the exterior material. The first contact surface in contact with the exterior material includes a first outermost surface metal film on at least a portion of a

surface of the first contact surface. The second metal terminal includes a second bonding surface bonded to the bonding material, and a second contact surface in contact with the exterior material. The second contact surface in contact with the exterior material includes a second outermost surface metal film on at least a portion of a surface of the second contact surface. The first contact surface in contact with the exterior material includes a plurality of first exposed surfaces spaced apart from each other in an extending direction of the first metal terminal and each including an exposed surface of a metal different from the first outermost surface metal film. The second contact surface in contact with the exterior material includes a plurality of second exposed surfaces spaced apart from each other in an extending direction of the second metal terminal and each including an exposed surface of a metal different from the second outermost surface metal film.
[0007] Example embodiments of the present invention provide multilayer ceramic electronic components that are each able to reduce or prevent excessive outflow of a bonding material appropriately to reduce or prevent the occurrence of solder splash.
[0008] The above and other elements, features, steps, characteristics and advantages of the present invention will become more apparent from the following detailed description of the example embodiments with reference to the attached drawings.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
[0009] FIG. **1** is an external perspective view of a multilayer ceramic capacitor of an example embodiment of the present invention.
[0010] FIG. **2** is an arrow view when the multilayer ceramic capacitor of FIG. **1** is viewed in the direction of the arrow II.
[0011] FIG. **3** is an arrow view when the multilayer ceramic capacitor of FIG. **2** is viewed in the direction of the arrow III.
[0012] FIG. **4** is an arrow view when the multilayer ceramic capacitor of FIG. **2** is viewed in the direction of the arrow IV.
[0013] FIG. **5** is a diagram corresponding to FIG. **1**, and is an imaginary perspective view for explaining an internal structure of a multilayer ceramic capacitor according to an example embodiment of the present invention.
[0014] FIG. **6** is an imaginary arrow view when the multilayer ceramic capacitor of FIG. **5** is viewed in the direction of arrow VI.
[0015] FIG. **7** is an external perspective view showing the appearance of a multilayer ceramic capacitor main body before being covered with an exterior material and before a metal terminal is attached.
[0016] FIG. **8** is a cross-sectional view taken along the line VIII-VIII of the multilayer ceramic capacitor main body of FIG. **7**.
[0017] FIG. **9** is a cross-sectional view taken along the line IX-IX of the multilayer ceramic capacitor main body of FIG. **8**.
[0018] FIG. **10** is a cross-sectional view taken along the line X-X of the multilayer ceramic capacitor main body of FIG. **8**.
[0019] FIG. **11** is a view corresponding to FIG. **4**, and is a view showing a metal terminal when an exterior material and a multilayer ceramic capacitor main body according to an example embodiment of the present invention are excluded.
[0020] FIG. **12**A is an enlarged view of a portion XIIA of the multilayer ceramic capacitor shown in FIG. **6**.
[0021] FIG. **12**B is an enlarged view of a portion XIIB of the multilayer ceramic capacitor shown in FIG. **6**.

[0022] FIG. **12**C is a partial external perspective view of a first metal terminal.
[0023] FIG. **12**D is an enlarged view of a portion R**1** of the multilayer ceramic capacitor shown in FIG. **12**A.
[0024] FIG. **12**E is an enlarged view of a portion R**2** of the multilayer ceramic capacitor shown in FIG. **12**A.
[0025] FIG. **12**F is an enlarged view of a portion R**3** of the multilayer ceramic capacitor shown in FIG. **12**A.
[0026] FIG. **13**A is a front view of a metal terminal before being folded.
[0027] FIG. **13**B is a view showing an opposite surface of a metal terminal before being folded.
[0028] FIG. **14**A is an external perspective view of a mounting structure in which a multilayer ceramic capacitor according to an example embodiment is mounted on a mounting substrate.
[0029] FIG. **14**B is a view corresponding to FIG. **6**, and is an imaginary arrow view when the mounting structure of the multilayer ceramic capacitor of FIG. **14**A is viewed in the direction of the arrow XIIIB.
[0030] FIG. **15**A is a view showing a modified example of a multilayer ceramic capacitor according to an example embodiment, and corresponds to FIG. **2**.
[0031] FIG. **15**B is an arrow view when the multilayer ceramic capacitor of FIG. **15**A is viewed in the direction of the arrow XVB.
[0032] FIG. **16**A is a diagram showing a multilayer ceramic capacitor having a two-portion structure.
[0033] FIG. **16**B is a diagram showing a multilayer layer ceramic capacitor having a three-portion structure.
[0034] FIG. **16**C is a diagram showing a multilayer layer ceramic capacitor having a four-portion structure.

DETAILED DESCRIPTION OF THE EXAMPLE EMBODIMENTS

[0035] Example embodiments of the present invention will be described in detail with reference to the drawings.
[0036] Hereinafter, a multilayer ceramic capacitor **1** as a multilayer ceramic electronic component according to an example embodiment of the present invention will be described. FIG. **1** is an external perspective view of the multilayer ceramic capacitor **1**. FIG. **2** is an arrow view when the multilayer ceramic capacitor **1** of FIG. **1** is viewed in the direction of the arrow II. FIG. **3** is an arrow view when the multilayer ceramic capacitor **1** of FIG. **2** is viewed in the direction of the arrow III. FIG. **4** is an arrow view when the multilayer ceramic capacitor **1** of FIG. **2** is viewed in the direction of the arrow IV. FIG. **5** is a diagram corresponding to FIG. **1**, and is an imaginary perspective view for explaining an internal structure of the multilayer ceramic capacitor **1**. FIG. **6** is an imaginary view for explaining the internal structure of the multilayer ceramic capacitor **1**, and is an imaginary view when the multilayer ceramic capacitor **1** of FIG. **5** is viewed in the direction of the arrow VI.
[0037] The multilayer ceramic capacitor **1** includes a multilayer ceramic capacitor main body **2** defining and functioning as a multilayer ceramic electronic component main body, a metal terminal **100**, and an exterior material **3**. Since the multilayer ceramic capacitor main body **2** is covered with the exterior material **3**, it is not shown in FIGS. **1** to **4**. FIGS. **5** and **6** show the multilayer ceramic capacitor main body **2**.
[0038] The multilayer ceramic capacitor main body **2** will also be described with reference to FIGS. **7** to **10**, in addition to FIGS. **5** and **6**. FIG. **7** is an external perspective view showing the appearance of the multilayer ceramic capacitor main body **2** before being covered with the exterior material **3** and before the metal terminal **100** is attached. FIG. **8** is a cross-sectional view taken along the line VIII-VIII of the multilayer ceramic capacitor main body **2** of FIG. **7**. FIG. **9** is a cross-sectional view taken along the line IX-IX of the multilayer ceramic capacitor main body **2** of FIG. **8**. FIG. **10** is a cross-sectional view taken along the line X-X of the multilayer ceramic

capacitor main body **2** of FIG. **8**.
[0039] The multilayer ceramic capacitor main body **2** includes a multilayer body **10** and external electrodes **40**.
[0040] FIGS. **5** to **10** each show an XYZ Cartesian coordinate system. As shown in FIGS. **5** and **7**, the length directions L of the multilayer ceramic capacitor main body **2** and the multilayer body **10** correspond to the X direction. The width directions W of the multilayer ceramic capacitor main body **2** and the multilayer body **10** correspond to the Y direction. The height directions T of the multilayer ceramic capacitor main body **2** and the multilayer body **10** correspond to the Z direction. Here, the cross section shown in FIG. **8** is also referred to as a cross section LT. The cross section shown in FIG. **9** is also referred to as a cross section WT. The cross section shown in FIG. **10** is also referred to as a cross section LW. A similar XYZ Cartesian coordinate system is also shown in FIGS. **1** to **4**, **11**, and **14**A to **15**B.
[0041] As shown in FIGS. **5** to **10**, the multilayer body **10** includes a first main surface TS**1** and a second main surface TS**2** which oppose each other in the height direction T, a first lateral surface WS**1** and a second lateral surface WS**2** which oppose each other in the width direction W orthogonal or substantially orthogonal to the height direction T, and a first end surface LS**1** and a second end surface LS**2** which oppose each other in the length direction L orthogonal or substantially orthogonal to the height direction T and the width direction W.
[0042] As shown in FIG. **7**, the multilayer body **10** includes a rectangular or substantially rectangular shape. The dimension of the multilayer body **10** in the length direction L is not necessarily longer than the dimension of the width direction W. The multilayer body **10** preferably includes rounded corner portions and rounded ridge portions. The corner portions are portions where the three surfaces of the multilayer body intersect, and the ridge portions are portions where the two surfaces of the multilayer body intersect. In addition, unevenness or the like may be provided on a portion or the entirety of the surface of the multilayer body **10**.
[0043] The dimension of the multilayer body **10** is not particularly limited. However, when the dimension in the length direction L of the multilayer body **10** is defined as L, L is, for example, preferably about 0.2 mm or more and about 10 mm or less. When the dimension in the height direction T of the multilayer body **10** is defined as T, T is, for example, preferably about 0.1 mm or more and about 10 mm or less. Furthermore, when the dimension in the width direction W of the multilayer body **10** is defined as W, W is, for example, preferably about 0.1 mm or more and about 10 mm or less.
[0044] As shown in FIGS. **8** and **9**, the multilayer body **10** includes an inner layer portion **11**, and a first main surface-side outer layer portion **12** and a second main surface-side outer layer portion **13** sandwiching the inner layer portion **11** in the height direction T. The inner layer portion **11** may also be referred to as an active layer portion.
[0045] The inner layer portion **11** includes a plurality of dielectric layers **20** defining and functioning as a plurality of ceramic layers, and a plurality of internal electrode layers **30** defining and functioning as a plurality of inner conductive layers. The inner layer portion **11** includes internal electrode layers, in the height direction T, from the internal electrode layer **30** located closest to the first main surface TS**1** to the internal electrode layer **30** located closest to the second main surface TS**2**. In the inner layer portion **11**, the plurality of internal electrode layers **30** are opposed to each other with the dielectric layer **20** interposed therebetween. The inner layer portion **11** is a portion that generates a capacitance, and thus substantially defines and functions as a capacitor.
[0046] The plurality of dielectric layers **20** are made of a dielectric material. For example, the dielectric material may be a dielectric ceramic including a component such as BaTiO.sub.3, CaTio.sub.3, SrTiO.sub.3, or CaZro.sub.3. Furthermore, the dielectric material may be obtained by adding a second component such as a Mn compound, an Fe compound, a Cr compound, a Co compound, or a Ni compound to the main component.

[0047] The dielectric layers **20** each preferably have, for example, a thickness of about 0.5 μm or more and about 72 μm or less. The number of the dielectric layers **20** to be stacked (laminated) is, for example, preferably ten or more and 700 or less. The number of the dielectric layers **20** refers to the total number of dielectric layers in the inner layer portion **11**, and dielectric layers in the first main surface-side outer layer portion **12** and the second main surface-side outer layer portion **13**.
[0048] The plurality of internal electrode layers **30** (internal conductive layer **30**) include a plurality of first internal electrode layers **31** (first internal conductive layer **31**) and a plurality of second internal electrode layers **32** (second internal conductive layer **32**). The plurality of first internal electrode layers **31** are provided on the plurality of dielectric layers **20**. The plurality of second internal electrode layers **32** are provided on the plurality of dielectric layers **20**. The plurality of first internal electrode layers **31** and the plurality of second internal electrode layers **32** are alternately provided in the height direction T of the multilayer body **10** with the dielectric layers **20** interposed therebetween. The first internal electrode layers **31** and the second internal electrode layers **32** sandwich the dielectric layers **20**.
[0049] The first internal electrode layer **31** includes a first counter portion **31**A that is opposed to the second internal electrode layer **32**, and a first extension portion **31**B extending from the first counter portion **31**A toward the first end surface LS**1**. The first extension portion **31**B is exposed at the first end surface LS**1**.
[0050] The second internal electrode layer **32** includes a second counter portion **32**A that is opposed to the first internal electrode layer **31**, and a second extension portion **32**B extending from the second counter portion **32**A toward the second end surface LS**2**. The second extension portion **32**B is exposed at the second end surface LS**2**.
[0051] In the present example embodiment, the first counter portion **31**A and the second counter portion **32**A are opposed to each other with the dielectric layer **20** interposed therebetween, such that a capacitance is generated, giving the characteristics of a capacitor.
[0052] The shapes of the first counter portion **31**A and the second counter portion **32**A are not particularly limited. However, they are preferably rectangular or substantially rectangular. However, the corner portions of the rectangular or substantially rectangular shape may be rounded or slanted. The shapes of the first extension portion **31**B and the second extension portion **32**B are not particularly limited. However, they are preferably rectangular or substantially rectangular. However, the corner portions of the rectangular or substantially rectangular shape may be rounded or slanted.
[0053] The dimension in the width direction W of the first counter portion **31**A and the dimension in the width direction W of the first extension portion **31**B may be provided in the same dimensions, or one of them may have a smaller dimension. The dimension in the width direction W of the second counter portion **32**A and the dimension in the width direction W of the second extension portion **32**B may have the same dimension, or one of them may have a narrower dimension.
[0054] The first internal electrode layer **31** and the second internal electrode layer **32** are each made of a metal such as, for example, Ni, Cu, Ag, Pd, or Au, or a suitable electrically conductive material such as an alloy including at least one of these metals. In a case in which an alloy is used, the first internal electrode layer **31** and the second internal electrode layer **32** may be made of, for example, a Ag—Pd alloy.
[0055] The thickness of each of the first internal electrode layer **31** and the second internal electrode layer **32** is preferably, for example, about 0.2 μm or more and about 3.0 μm or less. The total number of the first internal electrode layers **31** and the second internal electrode layers **32** is, for example, preferably five or more and 350 or less.
[0056] The first main surface-side outer layer portion **12** is located adjacent to the first main surface TS**1** of the multilayer body **10**. The first main surface-side outer layer portion **12** is an assembly including a plurality of dielectric layers **20** defining and functioning as ceramic layers

located between the first main surface TS**1** and the internal electrode layer **30** closest to the first main surface TS**1**. In other words, the first main surface-side outer layer portion **12** includes a plurality of dielectric layers **20** located between the first main surface TS**1** and the internal electrode layer **30** located closest to the first main surface TS**1** among the plurality of internal electrode layers **30**. The dielectric layers **20** in the first main surface-side outer layer portion **12** may be the same as the dielectric layers **20** in the inner layer portion **11**.

[0057] The second main surface-side outer layer portion **13** is located adjacent to the second main surface TS**2** of the multilayer body **10**. The second main surface-side outer layer portion **13** is an assembly including a plurality of dielectric layers **20** located between the second main surface TS**2** and the internal electrode layer **30** closest to the second main surface TS**2**. In other words, the second main surface-side outer layer portion **13** includes a plurality of dielectric layers **20** located between the second main surface TS**2** and the internal electrode layer **30** located closest to the second main surface TS**2** among the plurality of internal electrode layers **30**. The dielectric layers **20** in the second main surface-side outer layer portion **13** may be the same as the dielectric layers **20** in the inner layer portion **11**.

[0058] As described above, the multilayer body **10** includes the laminated plurality of dielectric layers **20** and the plurality of internal electrode layers **30** laminated on the dielectric layer **20**. That is, the multilayer ceramic capacitor **1** includes the multilayer body **10** including the dielectric layers **20** and the internal electrode layers **30** alternately laminated therein.

[0059] The multilayer body **10** includes a counter electrode portion **11**E. The counter electrode portion **11**E refers to a portion where a first counter portion **31**A of each of the first internal electrode layers **31** and a second counter portion **32**A of each of the second internal electrode layers **32** are opposed to each other. The counter electrode portion **11**E defines and functions as a portion of the inner layer portion **11**. FIG. **8** shows the range of the counter electrode portion **11**E in the length direction L. FIG. **9** shows the range of the counter electrode portion **11**E in the width direction W. FIG. **10** shows the ranges of the width direction W and the length direction L of the counter electrode portion **11**E. The counter electrode portion **11**E is also referred to as a capacitor active portion.

[0060] The multilayer body **10** includes a lateral surface-side outer layer portion. The lateral surface-side outer layer portion includes a first lateral surface-side outer layer portion WG**1** and a second lateral surface-side outer layer portion WG**2**. The first lateral surface-side outer layer portion WG**1** includes the dielectric layers **20** located between the counter electrode portion **11**E and the first lateral surface WS**1**. The second lateral surface-side outer layer portion WG**2** includes the dielectric layers **20** located between the counter electrode portion **11**E and the second lateral surface WS**2**. FIG. **9** and FIG. **10** each show the ranges in the width direction W of the first lateral surface-side outer layer portion WG**1** and the second lateral surface-side outer layer portion WG**2**. The first lateral surface-side outer layer portion WG**1** and the second lateral surface-side outer layer portion WG**2** are also referred to as W gaps or side gaps.

[0061] The multilayer body **10** includes an end surface-side outer layer portion. The end surface-side outer layer portion includes a first end surface-side outer layer portion LG**1** and a second end surface-side outer layer portion LG**2**. The first end surface-side outer layer portion LG**1**: includes the dielectric layers **20** located between the counter electrode portion **11**E and the first end surface LS**1**, and the first extension portions **31**B. The second end surface-side outer layer portion LG**2** includes the dielectric layers **20** located between the counter electrode portion **11**E and the second end surface LS**2**, and the second extension portion **32**B. FIG. **8** and FIG. **10** each show the ranges in the length direction L of the first end surface-side outer layer portion LG**1** and the second end surface-side outer layer portion LG**2**. The first end surface-side outer layer portion LG**1** and the second end surface-side outer layer portion LG**2** are also referred to as L gaps or end gaps.

[0062] The external electrode **40** includes a first external electrode **40**A provided on the first end surface LS**1** and a second external electrode **40**B provided on the second end surface LS**2**.

[0063] The first external electrode **40**A is provided at least on a portion of the first main surface TS**1** adjacent to the first end surface LS**1**. The first external electrode **40**A is preferably provided at least on the first end surface LS**1** and a portion on the first main surface TS**1**. In the present example embodiment of the present invention, the first external electrode **40**A is provided on the first end surface LS**1**, a portion of the first main surface TS**1**, a portion of the second main surface TS**2**, a portion of the first lateral surface WS**1**, and a portion of the second lateral surface WS**2**. Furthermore, in the present example embodiment of the present invention, the first external electrode **40**A is connected to the first internal electrode layers **31** on the first end surface LS**1**. Furthermore, for example, the first external electrode **40**A may extend from the first end surface LS**1** to a portion of the first main surface TS**1**. In other words, the cross-section of the first external electrode **40**A may have an L shape (not shown). The portion provided on the first main surface TS**1** of the first external electrode **40**A is connected to a first metal terminal **100**A described later.
[0064] The length L**1** in the length direction L of the first external electrode **40**A provided on the first main surface TS**1** is, for example, preferably about 10% or more and about 40% or less (for example, about 20 μm or more and about 4000 μm or less) of the dimension L of the multilayer body. In a case in which the first external electrode **40**A is provided on the second main surface TS**2**, the first lateral surface WS**1**, and the second lateral surface WS**2**, the length L**1** in the length direction L of the first external electrode **40**A provided on these surfaces is, for example, also preferably about 10% or more and about 40% or less (for example, 20 μm or more and 4000 μm or less) of the dimension L of the multilayer body.
[0065] The length W**1** in the width direction W of the first external electrode **40**A provided on the first main surface TS**1** is preferably a dimension (for example, about 0.1 mm or more and about 10 mm or less) equal or substantially equal to the dimension W of the multilayer body **10**. In a case in which the first external electrode **40**A is also provided on the second main surface TS**2**, the length W**1** in the width direction W of the first external electrode **40**A provided on the second main surface TS**2** is preferably a dimension equal or substantially equal to the dimension W of the multilayer body **10** (for example, about 0.1 mm or more and about 10 mm or less). Furthermore, in a case in which the first external electrode **40**A is provided on at least one surface of the first lateral surface WS**1** or the second lateral surface WS**2**, the length T**1** in the height direction T of the first external electrode **40**A provided on this portion is preferably a dimension equal or substantially equal to the dimension T of the multilayer body **10** (for example, about 0.1 mm or more and about 10 mm or less).
[0066] The second external electrode **40**B is provided at least on a portion of the first main surface TS**1** adjacent to the second end surface LS**2**. The second external electrode **40**B is preferably provided at least on the second end surface LS**2** and a portion on the first main surface TS**1**. In the present example embodiment of the present invention, the second external electrode **40**B is provided on the second end surface LS**2**, a portion of the first main surface TS**1**, a portion of the second main surface TS**2**, a portion of the first lateral surface WS**1**, and a portion of the second lateral surface WS**2**. Further, in the present example embodiment, the second external electrode **40**B is connected to the second internal electrode layers **32** on the second end surface LS**2**. Furthermore, for example, the second external electrode **40**B may extend from the second end surface LS**2** to a portion of the first main surface TS**1**. In other words, the cross-section of the second external electrode **40**B may have an L shape (not shown). The portion provided on the first main surface TS**1** of the second external electrode **40**B is connected to a second metal terminal **100**B described later via a bonding material.
[0067] The length L**2** in the length direction L of the second external electrode **40**B provided on the first main surface TS**1** is, for example, preferably about 10% or more and about 40% or less (for example, about 20 μm or more and about 4000 μm or less) of the dimension L of the multilayer body. In a case in which the second external electrode **40**B is provided on the second main surface TS**2**, the first lateral surface WS**1**, and the second lateral surface WS**2**, the length L**2** in the length

direction L of the second external electrode **40**B provided on these surfaces is, for example, also preferably about 10% or more and about 40% or less (for example, about 20 μm or more and about 4000 μm or less) of the dimension L of the multilayer body.
[0068] The length W**1** in the width direction W of the second external electrode **40**B provided on the first main surface TS**1** is preferably a dimension (for example, about 0.1 mm or more and about 10 mm or less) equal or substantially equal to the dimension W of the multilayer body **10**. In a case in which the second external electrode **40**B is also provided on the second main surface TS**2**, the length W**1** in the width direction W of the second external electrode **40**B provided on the second main surface TS**2** is preferably a dimension equal or substantially equal to the dimension W of the multilayer body **10** (for example, about 0.1 mm or more and about 10 mm or less). Furthermore, in a case in which the second external electrode **40**B is provided on at least one surface of the first lateral surface WS**1** or the second lateral surface WS**2**, the length T**1** in the height direction T of the second external electrode **40**B provided on this portion is preferably a dimension equal or substantially equal to the dimension T of the multilayer body **10** (for example, about 0.1 mm or more and about 10 mm or less).
[0069] As shown in FIG. **7**, in the present example embodiment of the present invention, the length L**3** in the length direction L of the portion of the surface of the multilayer body **10** exposed from the external electrode **40** is, for example, preferably about 20% or more and about 80% or less (for example, about 40 μm or more and about 8000 μm or less) of the dimension L of the multilayer body. In other words, the separation distance L**3** between the first external electrode **40**A and the second external electrode **40**B is, for example, preferably about 20% or more and about 80% or less (for example, about 40 μm or more and about 8000 μm or less) of the dimension L of the multilayer body.
[0070] As described above, in the multilayer body **10**, the capacitance is generated by the first counter portions **31**A of the first internal electrode layers **31** and the second counter portions **32**A of the second internal electrode layers **32** being opposed to each other with the dielectric layers **20** interposed therebetween. Therefore, the characteristics of the capacitor are developed between the first external electrode **40**A to which the first internal electrode layers **31** are connected and the second external electrode **40**B to which the second internal electrode layers **32** are connected.
[0071] The first external electrode **40**A includes a first base electrode layer **50**A and a first plated layer **60**A provided on the first base electrode layer **50**A.
[0072] The second external electrode **40**B includes a second base electrode layer **50**B and a second plated layer **60**B provided on the second base electrode layer **50**B.
[0073] The first base electrode layer **50**A is provided on the first end surface LS**1**. The first base electrode layer **50**A is connected to the first internal electrode layer **31**. In the present example embodiment of the present invention, the first base electrode layer **50**A extends from the first end surface LS**1** to a portion of the first main surface TS**1** and to a portion of the second main surface TS**2**, and to a portion of the first lateral surface WS**1** and to a portion of the second lateral surface WS**2**.
[0074] The second base electrode layer **50**B is provided on the second end surface LS**2**. The second base electrode layer **50**B is connected to the second internal electrode layer **32**. In the present example embodiment of the present invention, the second base electrode layer **50**B extends from the second end surface LS**2** to a portion of the first main surface TS**1** and to a portion of the second main surface TS**2**, and to a portion of the first lateral surface WS**1** and to a portion of the second lateral surface WS**2**.
[0075] In the present example embodiment of the present invention, each of the first base electrode layer **50**A and the second base electrode layer **50**B is a fired layer. The fired layer preferably includes a metal component and either a glass component or a ceramic component, or alternatively, a metal component and both a glass component and a ceramic component. The metal component includes, for example, at least one of Cu, Ni, Ag, Pd, Ag—Pd alloys, or Au. The glass component

includes, for example, at least one of B, Si, Ba, Mg, Al, or Li. As the ceramic component, a ceramic material of the same kind as that of the dielectric layer **20** may be used, or a ceramic material of a different kind may be used. The ceramic component includes, for example, at least one of $BaTiO_3$, $CaTiO_3$, (Ba, Ca) TiO_3, $SrTiO_3$, or $CaZro_3$.

[0076] The fired layer is obtained, for example, by applying a conductive paste including glass and metal to the multilayer body, and then firing. The fired layer may be obtained by simultaneously firing a multilayer (laminated) chip including the internal electrode layers and the dielectric layers, and an electrically conductive paste applied to the multilayer chip, or alternatively may be obtained by firing the multilayer chip including the internal electrode layers and the dielectric layers to thus obtain a multilayer body, followed by the electrically conductive paste being applied to the multilayer body and then firing being performed. In a case in which the multilayer chip including the internal electrode layers and the dielectric layers, and the electrically conductive paste applied to the multilayer chip are fired simultaneously, it is preferable that the firing layer is formed by firing a material to which a ceramic material is added instead of the glass component. In this case, it is particularly preferable to use the same type of ceramic material as the dielectric layer **20** as the ceramic material to be added. Furthermore, the fired layer may include a plurality of layers.

[0077] The thickness in the length direction of the first base electrode layer **50**A located on the first end surface LS**1** is preferably, for example, about 10 μm or more and about 200 μm or less at the middle portion in the height direction T and the width direction W of the first base electrode layer **50**A.

[0078] The thickness in the length direction of the second base electrode layer **50**B located on the second end surface LS**2** is preferably, for example, about 10 μm or more and about 200 μm or less at the middle portion in the height direction T and the width direction W of the second base electrode layer **50**B.

[0079] In a case in which the first base electrode layer **50**A is provided on a portion of the surface of at least the first main surface TS**1** or the second main surface TS**2**, it is preferable that the thickness in the height direction of the first base electrode layer **50**A on the provided surface is, for example, about 5 μm or more and about 40 μm or less at the middle portion in the length direction L and the width direction W of the first base electrode layer **50**A on the provided surface.

[0080] In a case in which the first base electrode layer **50**A is provided on a portion of the surface of at least the first lateral surface WS**1** or the second lateral surface WS**2**, it is preferable that the thickness in the width direction of the first base electrode layer **50**A on the provided surface is, for example, about 5 μm or more and about 40 μm or less at the middle portion in the length direction L and the height direction T of the first base electrode layer **50**A on the provided surface.

[0081] In a case in which the second base electrode layer **50**B is provided on a portion of the surface of at least the first main surface TS**1** or the second main surface TS**2**, it is preferable that the thickness in the height direction of the second base electrode layer **50**B on the provided surface is, for example, about 5 μm or more and about 40 μm or less at the middle portion in the length direction L and the width direction W of the second base electrode layer **50**B on the provided surface.

[0082] In a case in which the second base electrode layer **50**B is provided on a portion of the surface of at least the first lateral surface WS**1** or the second lateral surface WS**2**, it is preferable that the thickness in the width direction of the second base electrode layer **50**B on the provided surface is, for example, about 5 μm or more and about 40 μm or less at the middle portion in the length direction L and the height direction T of the second base electrode layer **50**B on the provided surface.

[0083] The first base electrode layer **50**A and the second base electrode layer **50**B are not limited to the fired layer, and each may be a thin film layer, for example. The thin film layer is a layer in which metal particles are deposited, and which is formed by, for example, a thin film forming method such as a sputtering method or a deposition method. The thin film layer preferably includes, for example, at least one metal of Mg, Al, Ti, W, Cr, Cu, Ni, Ag, Co, Mo, or V. Thus, it is possible to increase the adhesion force of the external electrodes **40** to the multilayer body **10**. The thin film layer may be a single layer or may include a plurality of layers. For example, the thin film layer may include a two-layer structure of a layer of NiCr and a layer of NiCu.

[0084] In a case in which the thin film layer defining and functioning as a base electrode is formed by, for example, a sputtered electrode by a sputtering method, the sputtered electrode is preferably formed on a portion of the first main surface TS**1** and on a portion of the second main surface TS**2** of the multilayer body **10**. The sputtered electrode preferably includes at least one metal of Ni, Cr, or Cu, for example. The thickness of the sputtered electrode is, for example, preferably about 50 nm or more and about 400 nm or less, and more preferably about 50 nm or more and about 130 nm or less.

[0085] As the base electrode layer, a sputtered electrode may be provided on a portion of the first main surface TS**1** and on a portion of the second main surface TS**2** of the multilayer body **10**, while a fired layer may be provided on the first end surface LS**1** and the second end surface LS**2**. Alternatively, the base electrode layer may not be provided on the first end surface LS**1** and the second end surface LS**2**, and a plated layer, which will be described later, may be provided directly on the multilayer body **10**. In addition, in a case in which a fired layer is provided on the first end surface LS**1** and the second end surface LS**2**, the fired layer may be provided not only on the first end surface LS**1** and the second end surface LS**2**, but also on a portion of the first main surface TS**1** and on a portion of the second main surface TS**2**. In this case, the sputtered electrode may overlap the fired layer.

[0086] The first plated layer **60**A covers the first base electrode layer **50**A.

[0087] The second plated layer **60**B covers the second base electrode layer **50**B.

[0088] The first plated layer **60**A and the second plated layer **60**B may include at least of Cu, Ni, Sn, Ag, Pd, Ag—Pd alloy, or Au, for example. Each of the first plated layer **60**A and the second plated layer **60**B may include a plurality of layers. The first plated layer **60**A and the second plated layer **60**B are, for example, preferably a two-layer structure including a Sn-plated layer on the Ni-plated layer.

[0089] The first plated layer **60**A covers the first base electrode layer **50**A. In the present example embodiment of the present invention, the first plated layer **60**A includes a first Ni-plated layer **61**A and a first Sn-plated layer **62**A located on the first Ni-plated layer **61**A.

[0090] The second plated layer **60**B covers the second base electrode layer **50**B. In the present example embodiment of the present invention, the second plated layer **60**B includes a second Ni-plated layer **61**B and a second Sn-plated layer **62**B located on the second Ni-plated layer **61**B.

[0091] The Ni-plated layer prevents the first base electrode layer **50**A and the second base electrode layer **50**B from being eroded by solder defining and functioning as the bonding material **5** (to be described later) for bonding the multilayer ceramic capacitor main body **2** and the metal terminal **100**. Furthermore, the Sn-plated layer improves the wettability of the solder defining and functioning as the bonding material **5** for bonding the multilayer ceramic capacitor main body **2** and the metal terminal **100**. This facilitates the bonding of the multilayer ceramic capacitor main body **2** and the metal terminal **100**. In a case in which each of the first plated layer **70**A and the second plated layer **70**B is a two-layer structure including the Ni-plated layer and the Sn-plated layer, the thickness of each of the Ni-plated layer and the Sn-plated layer is, for example, preferably about 1 μm or more and about 15 μm or less.

[0092] Furthermore, each of the first external electrode **40**A and the second external electrode **40**B of the present example embodiment may include an electrically conductive resin layer including, for example, electrically conductive particles and a thermosetting resin. In a case in which the electrically conductive resin layer is provided as the base electrode layer (the first base electrode layer **50**A, the second base electrode layer **50**B), the electrically conductive resin layer may cover the fired layer or may be provided directly on the multilayer body **10** without providing the fired layer. In a case in which the electrically conductive resin layer covers the fired layer, the conductive resin layer is provided between the fired layer and the plated layer (the first plated layer **60**A, the second plated layer **60**B). The electrically conductive resin layer may completely cover the fired layer or may partially cover the fired layer.

[0093] The electrically conductive resin layer including a thermosetting resin is more flexible than an electrically conductive layer made of, for example, a plating film or a fired product of an electrically conductive paste. Therefore, even when an impact caused by physical shock or thermal cycle to the multilayer ceramic capacitor **1** is applied, the electrically conductive resin layer defines and functions as a buffer layer. Accordingly, crack generation of the multilayer ceramic capacitor **1** is reduced or prevented.

[0094] The metal of the electrically conductive particles may be, for example, Ag, Cu, Ni, Sn, Bi, or an alloy including them. The electrically conductive particles preferably include Ag, for example. The electrically conductive particles are metal powders of Ag, for example. Ag is suitable for electrode materials because of its lowest specific resistance among metals. Since Ag is a noble metal, it is difficult to oxidize and the weatherability is high. Therefore, the metal powder of Ag is suitable as electrically conductive particles.

[0095] Furthermore, the electrically conductive particles may be, for example, a metal powder in which the surface of the metal powder is coated with Ag. In a case in which the metal powder coated with Ag is used, the metal powder is, for example, preferably Cu, Ni, Sn, Bi or an alloy powder thereof. In order to make the metal of the base material inexpensive while maintaining the Ag characteristics, it is preferable to use a metal powder coated with Ag, for example.

[0096] Furthermore, the electrically conductive particles may be provided by, for example, subjecting Cu or Ni to an oxidation prevention treatment. The electrically conductive particles may be a metal powder obtained by coating the surface of the metal powder with Sn, Ni, or Cu, for example. In a case in which the metal powder coated with Sn, Ni, or Cu is used, the metal powder is, for example, preferably Ag, Cu, Ni, Sn, or Bi or an alloy powder thereof.

[0097] The shape of the electrically conductive particles is not particularly limited. The electrically conductive particles may have a spherical shape, a flat shape, or the like. However, it is preferable to use a mixture of spherical and flat metal powders.

[0098] The electrically conductive particles included in the electrically conductive resin layer mainly provide the electric conductivity of the electrically conductive resin layer. More specifically, the plurality of electrically conductive particles are brought into contact with each other to provide an electric current-carrying path inside the electrically conductive resin layer.

[0099] The resin of the electrically conductive resin layer may include, for example, at least one of various known thermosetting resins such as epoxy resin, phenol resin, urethane resin, silicone resin, and polyimide resin. Among them, epoxy resins excellent in heat resistance, moisture resistance, adhesiveness and the like are the most suitable resins. Furthermore, the resin of the electrically conductive resin layer preferably includes a curing agent together with the thermosetting resin. In a case in which an epoxy resin is used as the base resin, the curing agent of the epoxy resin may be any of various known compounds such as phenolic, amine-based, acid anhydride-based, imidazole-based, active ester-based, and amideimide-based compounds, for example.

[0100] In addition, the electrically conductive resin layer may include a plurality of layers. The thickness of the thickest portion of the electrically conductive resin layer is, for example, preferably about 10 μm or more and about 150 μm or less.

[0101] In addition, the first plated layer **60**A and the second plated layer **60**B (to be described later) may be directly provided on the multilayer body **10** without providing the first base electrode layer **50**A and the second base electrode layer **50**B. In other words, the multilayer ceramic capacitor **1** may include a plated layer that is electrically connected directly to the first internal electrode layers **31** and the second internal electrode layers **32**. In such a case, a plated layer may be provided after placing a catalyst on the surface of the multilayer body **10** as a pretreatment.

[0102] Also in this case, the plated layer preferably includes a plurality of layers. Each of a lower plated layer and a lower plated layer preferably includes, for example, at least one metal of Cu, Ni, Sn, Pb, Au, Ag, Pd, Bi, Zn, or the like, or an alloy including these metals. The lower plated layer more preferably includes, for example, Ni having solder barrier performance. The upper plated layer more preferably includes, for example, Sn or Au having good solder wettability. Furthermore, for example, in a case in which, for example, the first internal electrode layers **31** and the second internal electrode layers **32** includes Ni, it is preferable that the lower plated layer includes Cu having good bonding property with Ni. In addition, the upper plated layer may be provided as necessary, and the external electrode **40** may only include the lower plated layer. Furthermore, in the plated layer, the upper plated layer may be the outermost layer, or another plated layer may be further provided on the surface of the upper plated layer.
[0103] The thickness per layer of the plated layer without providing the base electrode layer is, for example, preferably about 2 μm or more and about 10 μm or less. The plated layer preferably does not include glass. The proportion of metal per unit volume of the plated layer is, for example, preferably about 99% by volume or more.
[0104] In a case in which the plated layer is provided directly on the multilayer body **10**, it is possible to reduce the thickness of the base electrode layer. Therefore, it is possible to reduce the dimension in the height direction T of the multilayer ceramic capacitor main body **2** by the amount of the reduction in thickness of the base electrode layer, thus reducing the height of the multilayer ceramic capacitor main body **2**. Alternatively, it is possible to increase the thickness of the dielectric layers **20** sandwiched between the first internal electrode layers **31** and the second internal electrode layers **32** by the amount of the reduction in thickness of the base electrode layer, thus improving the thickness of the base body. In this way, by providing the plated layer directly on the multilayer body **10**, it is possible to improve the degree of freedom in designing the multilayer ceramic capacitor.
[0105] When the dimension in the length direction of the multilayer ceramic capacitor main body **2** including the multilayer body **10** and the external electrode **40** is defined as the dimension L, L is, for example, preferably about 0.2 mm or more and about 10 mm or less. When the dimension in the height direction of the multilayer ceramic capacitor main body **2** is defined as the dimension T, T is, for example, preferably about 0.1 mm or more and about 10 mm or less. When the dimension in the width direction of the multilayer ceramic capacitor main body **2** is defined as the dimension W, W is, for example, preferably about 0.1 mm or more and about 10 mm or less.
[0106] In the present example embodiment, the first surface S**1** on the first end surface LS**1** of the multilayer ceramic capacitor main body **2** is defined by the surface of the first external electrode **40**A provided on the first end surface LS**1**. The second surface S**2** on the second end surface LS**2** of the multilayer ceramic capacitor main body **2** is defined by the surface of the second external electrode **40**B provided on the second end surface LS**2**.
[0107] The metal terminal **100** will be described with reference to FIG. **11** in addition to FIGS. **1** to **6**. FIG. **11** is a view corresponding to FIG. **4**, and is an arrow view as seen in the height direction from the second main surface TS**2** toward the first main surface TS**1**, showing the metal terminal **100** when the exterior material **3** and the multilayer ceramic capacitor main body **2** are excluded. In FIG. **11**, the profile of the multilayer body **10** and the external electrode **40** of the multilayer ceramic capacitor main body **2** are indicated by a two-dot chain line.
[0108] The metal terminal **100** includes a first metal terminal **100**A and a second metal terminal **100**B.
[0109] The first metal terminal **100**A and the second metal terminal **100**B are metal terminals to be mounted on a mounting surface of a mounting substrate (refer to the mounting substrate **310** in FIGS. **14**A and **14**B) to be described later on which the multilayer ceramic capacitor **1** is to be mounted. The first metal terminal **100**A and the second metal terminal **100**B are, for example, plate-shaped lead frames. In an example embodiment of the present invention, the first main

surface TS**1** of the multilayer body **10** is a surface opposed to the mounting surface of the mounting substrate on which the multilayer ceramic capacitor **1** is to be mounted.

[0110] The first metal terminal **100**A includes a first bonding portion **110**A that is opposed to the first main surface TS**1** and connected to the first external electrode **40**A, a first rising portion **120**A that is connected to the first bonding portion **110**A, extends away from the mounting surface of the mounting substrate, and is opposed to the first end surface LS**1**, a first extension portion **130**A that is connected to the first rising portion **120**A and extends away from the multilayer ceramic capacitor main body **2** in the length direction L, a first falling portion **140**A that is connected to the first extension portion **130**A and extends toward the mounting surface side of the mounting substrate, and a first mounting portion **150**A that is connected to the first falling portion **140**A and extends in the direction along the mounting surface of the mounting substrate. As shown in FIGS. **6**, a gap portion G exists between the first rising portion **120**A and the first surface S**1** on the first end surface LS**1** of the multilayer ceramic capacitor main body **2**. Details of the first metal terminal **100**A will be described later.

[0111] The second metal terminal **100**B includes a second bonding portion **110**B that is opposed to the first main surface TS**1** and connected to the second external electrode **40**B, a second rising portion **120**B that is connected to the second bonding portion **110**B, extends away from the mounting surface of the mounting substrate, and is opposed to the second end surface LS**2**, a second extension portion **130**B that is connected to the second rising portion **120**B an extends away from the multilayer ceramic capacitor main body **2** in the length direction L, a second falling portion **140**B that is connected to the second extension portion **130**B and extends toward the mounting surface side of the mounting substrate, and a second mounting portion **150**B that is connected to the second falling portion **140**B and extends in the direction along the mounting surface of the mounting substrate. As shown in FIGS. **6**, a gap portion G exists between the second rising portion **120**B and the second surface S**2** on the second end surface LS**2** of the multilayer ceramic capacitor main body **2**. Details of the second metal terminal **100**B will be described later.

[0112] In addition, the first falling portion **140**A and the second falling portion **140**B preferably extend toward the mounting surface of the mounting substrate to an extent such that a gap can be provided between the exterior material **3** of the multilayer ceramic capacitor **1** and the mounting surface of the mounting substrate.

[0113] By providing such a first metal terminal **100**A and a second metal terminal **100**B, it is possible to lengthen the distance between the mounting substrate and the multilayer ceramic electronic component main body **2** such that it is possible to achieve an advantageous effect of relieving stress from the mounting substrate. Furthermore, the thickness of the exterior material **3** provided adjacent to the mounting border can be increased such that the insulating property can be ensured.

[0114] As shown in FIG. **11**, the separation distance L**4** between the first mounting portion **150**A of the first metal terminal **100**A and the second mounting portion **150**B of the second metal terminal **100**B is longer than the separation distance L**3** between the first external electrode **40**A and the second external electrode **40**B of the multilayer ceramic capacitor main body **2**.

[0115] The bonding material **5** joins the multilayer ceramic capacitor main body **2** and the metal terminal **100**. The bonding material **5** includes a first bonding material **5**A and a second bonding material **5**B.

[0116] As shown in FIG. **6**, the first metal terminal **100**A is connected to the first external electrode **40**A through the first bonding material **5**A. The second metal terminal **100**B is connected to the second external electrode **40**B via the second bonding material **5**B.

[0117] The bonding material **5** is, for example, preferably solder. For example, Pb-free solder may be used. As the Pb-free solder, lead-free solder such as, for example, Sn—Sb solder, Sn—Ag—Cu solder, Sn—Cu solder, and Sn—Bi solder is preferable. For example, Sn-**10**Sb to Sn-**15**Sb solder can be used.

[0118] The exterior material **3** will be described with reference to FIGS. **1** to **6**.
[0119] The exterior material **3** includes a first main surface MTS**1** and a second main surface MTS**2** which are opposed to each other in the height direction T, a first lateral surface MWS**1** and a second lateral surface MWS**2** which are opposed to each other in the width direction W orthogonal or substantially orthogonal to the height direction T, and a first end surface MLS**1** and a second end surface MLS**2** which are opposed to each other in the length direction L orthogonal or substantially orthogonal to the height direction T and the width direction W. The first end surface MLS**1** of the exterior material **3** is a surface of the exterior material **3** and is located adjacent to the first end surface LS**1** of the multilayer body **10**. The second end surface MLS**2** of the exterior material **3** is a surface of the exterior material **3** and is located adjacent to the second end surface LS**2** of the multilayer body **10**.
[0120] The first lateral surface MWS**1**, the second lateral surface MWS**2**, the first end surface MLS**1**, and the second end surface MLS**2** of the exterior material **3** include a parting line PL in the middle portion in the height direction T. The parting line PL is a line corresponding to a split surface of a mold for use in molding the exterior material **3**. The surface of the exterior material **3** is provided with a draft angle with the parting line PL serving as a boundary.
[0121] The first lateral surface MWS**1** of the exterior material **3** includes a first main surface-side surface MWS**1**A and a second main surface-side surface MWS**1**B. The second lateral surface MWS**2** of the exterior material **3** includes a first main surface-side surface MWS**2**A and a second main surface-side surface MWS**2**B. The first end surface MLS**1** of the exterior material **3** includes a first main surface-side surface MLS**1**A and a second main surface-side surface MLS**1**B. The second end surface MLS**2** of the exterior material **3** includes a first main surface-side surface MLS**2**A and a second main surface-side surface MLS**2**B. The surface on the first main surface side and the surface on the second main surface side are separated from each other with the parting line PL as a boundary.
[0122] Each of the surfaces MWS**1**A, MWS**2**A, MLS**1**A and MLS**2**A on the first main surface side is provided with a draft angle such that the cross-sectional area of the cross section LW of the exterior material **3** becomes smaller as it approaches the first main surface TS**1** from the parting line PL. Each of the surfaces MWS**1**B, MWS**2**B, MLS**1**B, and MLS**2**B on the second main surface side is provided with a draft angle such that the cross-sectional area of the cross section LW of the exterior material **3** becomes smaller as it approaches the second main surface TS**2** from the parting line PL.
[0123] The exterior material **3** covers the multilayer ceramic capacitor main body **2**, the bonding material **5** connecting the multilayer ceramic capacitor main body **2** and the metal terminal **100** with each other, and a portion of the metal terminal **100**. More specifically, the exterior material **3** covers the entire or substantially the entire multilayer ceramic capacitor main body **2**, the entire or substantially the entire first bonding material **5**A and second bonding material **5**B, a portion of the first metal terminal **100**A, and a portion of the second metal terminal **100**B.
[0124] For example, the exterior material **3** covers the entire or substantially the entire first bonding portion **110**A, the entire or substantially the entire first rising portion **120**A, and at least a portion of the first extension portion **130**A of the first metal terminal **100**A. Furthermore, the exterior material **3** covers the entire or substantially the entire second bonding portion **110**B, the entire or substantially the entire second rising portion **120**B, and at least a portion of the second extension portion **130**B of the second metal terminal **100**B.
[0125] In the present example embodiment, the first extension portion **130**A of the first metal terminal **100**A protrudes from the first end surface MLS**1** of the exterior material **3** and is partially exposed. The second extension portion **130**B of the second metal terminal **100**B protrudes from the second end surface MLS**2** of the exterior material **3** and is partially exposed. More specifically, the first extension portion **130**A of the first metal terminal **100**A protrudes from the parting line PL of the first end surface MLS**1** of the exterior material **3** and is partially exposed. The second extension

portion **130**B of the second metal terminal **100**B protrudes from the parting line PL of the second end surface MLS**2** of the exterior material **3** and is partially exposed.
[0126] The second main surface MTS**2** of the exterior material **3** is preferably formed in a planar shape having a predetermined flatness. With such a configuration, it is possible to prevent improper suction adhesion of the mounter of the mounting machine for use in mounting the multilayer ceramic capacitor **1** on the mounting substrate. Therefore, it is possible to reliably mount the multilayer ceramic capacitor **1** on the mounting substrate. As a result, it is possible to reduce or prevent the occurrence of mounting defects.
[0127] The minimum distance from the second main surface MTS**2** of the exterior material **3** to the surface of the multilayer ceramic capacitor main body **2** is, for example, preferably about 100 μm or more and about 4000 μm or less. The minimum distance from the first main surface MTS**1** of the exterior material **3** to the first bonding portion **110**A of the first metal terminal **100**A is, for example, preferably about 100 μm or more and about 4000 μm or less. The minimum distance from the first lateral surface MWS**1** of the exterior material **3** to the surface of the multilayer ceramic capacitor main body **2** is, for example, preferably about 100 μm or more and about 4000 μm or less. The minimum distance from the second lateral surface MWS**2** of the exterior material **3** to the surface of the multilayer ceramic capacitor main body **2** is, for example, preferably about 100 μm or more and about 4000 μm or less. The minimum distance from the first end surface MLS**1** of the exterior material **3** to the surface of the multilayer ceramic capacitor main body **2** is, for example, preferably about 300 μm or more and about 5000 μm or less. The minimum distance from the second end surface MLS**2** of the exterior material **3** to the surface of the multilayer ceramic capacitor main body **2** is, for example, preferably about 300 μm or more and about 5000 μm or less. The average distance in the length direction L from the surface MLS**1**A on the first main surface side of the first end surface MLS**1** of the exterior material **3** to the first rising portion **120**A of the first metal terminal **100**A is, for example, preferably about 200 μm or more and about 4900 μm or less. The average distance in the length direction L from the surface MLS**2**A on the first main surface side of the second end surface MLS**2** of the exterior material **3** to the second rising portion **120**B of the second metal terminal **100**B is, for example, preferably about 200 μm or more and about 4900 μm or less.
[0128] The exterior material **3** is preferably made of resin. For example, the exterior material **3** may be formed by molding engineering plastic by transfer molding, injection molding, or the like. In particular, the material of the exterior material **3** preferably includes a thermosetting epoxy resin, for example. With such a configuration, adhesion between the exterior material **3**, and the multilayer ceramic capacitor main body **2** and the metal terminal **100** can be ensured, such that it is possible to achieve the advantageous effect of improving the withstand voltage and moisture resistance. The exterior material **3** may be formed, for example, by applying a liquid or powdery silicone-based or epoxy-based resin.
[0129] In this way, by the exterior material **3** covering the conductive metal portion such as the external electrode **40** and the metal terminal **100** over a wide range, it is possible to ensure the insulating surface distance (creeping distance) between the conductors. Furthermore, by covering the conductive metal portion over a wide range with the exterior material **3**, it is possible to avoid the risk of surface discharge.
[0130] The shape of the exterior material **3** is not particularly limited. For example, a truncated cone such as a truncated pyramid may be used. The shape of the corner portion of the exterior material **3** is not particularly limited, and may be rounded.
[0131] In addition to FIG. **5**, FIG. **6**, and FIG. **11**, with reference to FIGS. **12**A to **12**F, a description will be provided of a configuration around the bonding portion between the metal terminal **100** and the external electrode **40** of the multilayer ceramic capacitor main body **2**, and details of the metal terminal **100**.
[0132] FIG. **12**A is an enlarged view of a portion XIIA of the multilayer ceramic capacitor **1** shown

in FIG. **6**, and is a view for explaining the configuration around the bonding portion between the first external electrode **40**A and the first metal terminal **100**A, and the details of the first metal terminal **100**A. FIG. **12**B is an enlarged view of a portion XIIB of the multilayer ceramic capacitor **1** shown in FIG. **6**, and is a view for explaining the configuration around the bonding portion between the second external electrode **40**B and the second metal terminal **100**B, and the details of the second metal terminal **100**B. FIG. **12**C is a partial external perspective view of the first metal terminal **100**A.

[0133] As shown in FIG. **12**A, a gap portion G exists between the first rising portion **120**A of the first metal terminal **100**A and the first surface S**1** on the first end surface LS**1** of the multilayer ceramic capacitor main body **2**, and the gap portion G is filled with the exterior material **3**. In the present example embodiment, the first surface S**1** is the surface of the first external electrode **40**A on the first end surface LS**1**. That is, in the present example embodiment, the gap portion G is provided between the first rising portion **120**A and the first surface S**1** of the first external electrode **40**A on the first end surface LS**1**, and the gap portion G is filled with the exterior material **3**. The average distance in the length direction L of the gap portion G is, for example, preferably about 50 μm or more and about 1500 μm or less. With such a configuration, it is possible to reliably prevent the contact between the first external electrode **40**A and the first rising portion **120**A without increasing the dimensions of the multilayer ceramic capacitor **1**. In addition, it is possible to appropriately fill the gap portion G with the exterior material **3**, and it is possible to reduce or prevent the occurrence of solder splash or other problems during reflow at the time of substrate mounting.

[0134] The first rising portion **120**A is sloped away from the first surface S**1** on the first end surface LS**1** of the multilayer ceramic capacitor main body **2** from the connection portion with the first bonding portion **110**A toward the connection portion with the first extension portion **130**A. With such a configuration, the distance in the length direction L of the gap portion G increases from a position closer to the mounting surface of the mounting substrate to a position farther from the mounting surface. That is, a distance G**2** in the length direction L at a position farther from the mounting surface of the gap portion G is longer than a distance G**1** in the length direction L at a position closer to the mounting surface of the gap portion G. The angle x between the first rising portion **120**A and the first surface S**1** on the first end surface LS**1** of the multilayer ceramic capacitor main body **2** is, for example, preferably about 1° or more and about 40° or less.

[0135] Here, the surface MLS**1**A, which is a surface of the first end surface MLS**1** of the exterior material **3**, defines and functions as a first sloped surface of the exterior material **3**, and is located adjacent to the first main surface and closer to the mounting surface than the portion where the first extension portion **130**A protrudes. The first sloped surface MLSIA is sloped away from the first surface S**1** of the multilayer ceramic capacitor main body **2** from a position closer to the mounting surface to a position farther away from the mounting surface. The draft angle β of the first sloped surface MLSIA is, for example, preferably about 1° or more and about 20° or less. The angle between the first rising portion **120**A and the first sloped surface MLSIA is, for example, preferably about 30° or less. In this way, the first rising portion **120**A and the first sloped surface MLSIA are sloped in the same or a similar direction, and the difference between the slope angles of the first rising portion **120**A and the first sloped surface MLS**1**A is reduced, such that it is possible to make the distance from the first sloped surface MLSIA of the exterior material **3** to the first rising portion **120**A of the first metal terminal **100**A constant or substantially constant. With such a configuration, it is possible to improve the strength around the first rising portion **120**A to which a force is easily applied.

[0136] As shown in FIG. **12**B, a gap portion G exists between the second rising portion **120**B of the second metal terminal **100**B and the second surface S**2** on the second end surface LS**2** of the multilayer ceramic capacitor main body **2**, and the gap portion G is filled with the exterior material **3**. In the present example embodiment, the second surface S**2** is the surface of the second external electrode **40**B on the second end surface LS**2**. That is, in the present example embodiment, the gap portion G is provided between the second rising portion **120**B and the second surface S**2** of the second external electrode **40**B provided on the second end surface LS**2**, and the gap portion G is filled with the exterior material **3**. The average distance in the length direction L of the gap portion G is, for example, preferably about 50 μm or more and about 1500 μm or less. With such a configuration, it is possible to reliably prevent the contact between the second external electrode **40**B and the second rising portion **120**B without increasing the dimensions of the multilayer ceramic capacitor **1**. In addition, it is possible to appropriately fill the gap portion G with the exterior material **3**, and it is possible to reduce or prevent the occurrence of solder splash or other problems during reflow at the time of substrate mounting.

[0137] The second rising portion **120**B is sloped away from the second surface S**2** on the second end surface LS**2** of the multilayer ceramic capacitor main body **2** from the connection portion with the second bonding portion **110**B as it approaches the connection portion with the second extension portion **130**B. With such a configuration, the distance in the length direction L of the gap portion G increases from a position closer to the mounting surface of the mounting substrate to a position farther away from the mounting surface. That is, a distance G**2** in the length direction L at a position farther away from the mounting surface of the gap portion G is longer than a distance G**1** in the length direction L at a position closer to the mounting surface of the gap portion G. The angle x between the second rising portion **120**B and the second surface S**2** on the second end surface LS**2** of the multilayer ceramic capacitor main body **2** is, for example, preferably about 1° or more and about 40° or less.

[0138] Here, the surface MLS**2**A, which is a surface of the second end surface MLS**2** of the exterior material **3**, defines and functions as a second sloped surface of the exterior material **3**, and is located adjacent to the first main surface side and closer to the mounting surface than the portion where the second extension portion **130**B protrudes. The second sloped surface MLS**2**A is sloped away from the second surface S**2** of the multilayer ceramic capacitor main body **2** from a position closer to the mounting surface to a position farther away from the mounting surface. The draft angle β of the second sloped surface MLS**2**A is, for example, preferably about 1° or more and about 20° or less. The angle between the second rising portion **120**B and the second sloped surface MLS**2**A is, for example, preferably about 30° or less. In this way, the second rising portion **120**B and the second sloped surface MLS**2**A are sloped in the same or a similar direction, and the difference between the slope angles of the second rising portion **120**B and the second sloped surface MLS**2**A is reduced, such that it is possible to make the distance from the second sloped surface MLS**2**A of the exterior material **3** to the second rising portion **120**B of the second metal terminal **100**B constant or substantially constant. With such a configuration, it is possible to improve the strength around the second rising portion **120**B to which a force is easily applied.

[0139] The average distance in the length direction L from the surface MLS**1**A of the first main surface side of the first end surface MLS**1** of the exterior material **3** to the first rising portion **120**A of the first metal terminal **100**A is, for example, preferably about 0.133 times or more the average distance in the length direction L of the gap portion G. More preferably, for example, it is about 4 times or more and about 98 times or less. More preferably, for example, it is about 6 times or more and about 98 times or less. With such a configuration, it is possible to improve the strength around the first rising portion **120**A to which a force is easily applied. It is also possible to improve moisture resistance.

[0140] The average distance in the length direction L from the surface MLS**2**A on the first main surface side of the second end surface MLS**2** of the exterior material **3** to the second rising portion **120**B of the second metal terminal **100**B is, for example, preferably about 0.133 times or more the average distance in the length direction L of the gap portion G. More preferably, for example, it is about 4 times or more and about 98 times or less. More preferably, for example, it is about 6 times or more and about 98 times or less. With such a configuration, it is possible to improve the strength around the second rising portion **120**B to which a force is easily applied. It is also possible to improve moisture resistance.

[0141] The measurement of the average distance in the length direction L of each of the measurement target portions such as the gap portion G and a predetermined portion of the exterior material **3** is performed by the following method, for example. First, the multilayer ceramic capacitor **1** is cross-sectionally polished to about one half in the W dimension to expose a specific LT cross section in which the cross section of the metal terminal **100** can be confirmed. Then, the LT cross section of the multilayer ceramic capacitor **1** exposed by polishing is observed by SEM. Next, in the measurement target portion, ten lines extending in the length direction L are drawn at equal or substantially equal intervals in the height T direction, and an average of distances of the ten lines is set as an average distance in the length direction L of the measurement target portion in the present example embodiment.

[0142] FIG. **12**C is an external perspective view showing a portion of the appearance of the first metal terminal **100**A as an example of the metal terminal **100**. The first metal terminal **100**A and the second metal terminal **100**B are generally plane-symmetrical with respect to the cross section WT at the middle in the length direction L of the multilayer ceramic capacitor **1**. Therefore, the external perspective view (not shown) of the second metal terminal **100**B is the same or substantially the same as the external perspective view of the first metal terminal **100**A.

[0143] The first metal terminal **100**A includes a first notch **160**A, a first opening portion **170**A, and a third notch **180**A.

[0144] The first notch **160**A continuously extends from the end of the first bonding portion **110**A to a position in the middle of the first rising portion **120**A. With such a configuration, for example, when the exterior material **3** is molded, the resin of the exterior material **3** flows through the first notch **160**A, such that the gap portion G is easily filled with the resin. Furthermore, since the resin of the exterior material **3** is provided in the first notch **160**A, the resin on one surface side and the resin on the other surface side of the first rising portion **120**A of the first metal terminal **100**A are connected by the resin in the first notch **160**A, such that the structure becomes stronger. Since the cut-away portion of the first notch **160**A extends to a position in the middle of the first rising portion **120**A, the strength of the first metal terminal **100**A is ensured. Since the first rising portion **120**A of the present example embodiment is sloped as described above, for example, during molding of the exterior material **3**, the resin of the exterior material **3** is likely to enter the gap portion G and flow through the first notch **160**A.

[0145] As shown in FIG. **12**C, the rising height T**3** of the first notch **160**A in the height direction T is preferably about half or less the rising height T**2** of the first rising portion **120**A in the height direction T. With such a configuration, for example, when the exterior material **3** is molded, it is possible to ensure the strength of the first metal terminal **100**A, while ensuring the flowability of the resin of the exterior material **3**.

[0146] The first bonding portion **110**A includes a first bonding piece **111**A adjacent to the first lateral surface WS**1** and a second bonding piece **112**A adjacent to the second lateral surface WS**2** which are divided by the first notch **160**A.

[0147] The first opening portion **170**A is provided at the first extension portion **130**A. As described above, by providing the first opening portion **170**A in addition to the first notch **160**A in the first metal terminal **100**A, it is possible to further enhance the flowability of the resin of the exterior material **3** during molding of the exterior material **3**, for example. Furthermore, since the resin of the exterior material **3** is provided in the first opening portion **170**A, the resin on one surface side and the resin on the other surface side of the first extension portion **130**A of the first metal terminal **100**A are connected by the resin provided in the first opening portion **170**A, such that the structure becomes stronger. According to the above configuration, it is preferable that the same material of the exterior material **3** is provided in the portion of the first notch **160**A provided in the first rising portion **120**A and the first opening portion **170**A. With such a configuration, the structure of the

multilayer ceramic capacitor **1** becomes strong.
[0148] The third notch **180**A continuously extends from the end of the first mounting portion **150**A to a position in the middle of the first falling portion **140**A.
[0149] As shown in FIGS. **11** and **12**C, the length W**2** in the width direction of the first bonding portion **110**A of the first metal terminal **100**A is longer than the length W**3** in the width direction of the first rising portion **120**A. With such a configuration, it is possible to provide a wide bonding area between the first external electrode **40**A and the first metal terminal **100**A by the first bonding material **5**A. In particular, even when the first notch **160**A is provided as described above, it is still possible to provide a wide bonding area between the first external electrode **40**A and the first metal terminal **100**A by the first bonding material **5**A.
[0150] The length W**4** in the width direction W of the first notch **160**A may be equal to or substantially equal to the length W**5** in the width direction W of the first opening portion **170**A. The rising height T**3** of the first notch **160**A in the height direction T may be the same or substantially the same as the length L**6** in the length direction L of the first opening portion **170**A. For example, the area of the first notch **160**A in the first rising portion **120**A may fall within a range from about 50% to about 200% of the area of the first opening portion **170**A. With such a configuration, for example, when the exterior material **3** is molded, the resin of the exterior material **3** flows in a well-balanced manner.
[0151] The second metal terminal **100**B includes a second notch **160**B, a second opening portion **170**B, and a fourth notch **180**B.
[0152] The second notch **160**B continuously extends from the end of the second bonding portion **110**B to a position in the middle of the second rising portion **120**B. With such a configuration, for example, when the exterior material **3** is molded, the resin of the exterior material **3** flows through the second notch **160**B, such that the gap portion G is easily filled with the resin. Furthermore, since the resin of the exterior material **3** is provided in the second notch **160**B, the resin on one surface side and the resin on the other surface side of the second rising portion **120**B of the second metal terminal **100**B are connected by the resin in the second notch **160**B, such that the structure becomes stronger. Since the cut-away portion of the second notch **160**B extends to a position in the middle of the second rising portion **120**B, the strength of the second metal terminal **100**B is ensured. Since the second rising portion **120**B of the present example embodiment is sloped as described above, for example, during molding of the exterior material **3**, the resin of the exterior material **3** is likely to enter the gap portion G and flow through the second notch **160**B.
[0153] The rising height T**3** of the second notch **160**B in the height direction T is, for example, preferably about half or less the rising height T**2** of the second rising portion **120**B in the height direction T. With such a configuration, for example, when the exterior material **3** is molded, it is possible to improve the strength of the second metal terminal **100**B while ensuring the flowability of the resin of the exterior material **3**.
[0154] The second bonding portion **110**B includes a third bonding piece **111**B adjacent to the first lateral surface WS**1** and a fourth bonding piece **112**B adjacent to the second lateral surface WS**2** which are divided by the second notch **160**B.
[0155] The second opening portion **170**B is provided at the second extension portion **130**B. With such a configuration, by providing the second metal terminal **100**B with the second opening portion **170**B in addition to the second notch **160**B described above, it is possible to further improve the flowability of the resin of the exterior material **3** during molding of the exterior material **3**, for example. Furthermore, since the resin of the exterior material **3** is provided in the second opening portion **170**B, the resin on one surface side and the resin on the other surface side of the second extension portion **130**B of the second metal terminal **100**B are connected by the resin in the second opening portion **170**B, such that the structure becomes stronger. According to the above configuration, it is preferable that the same material of the exterior material **3** is provided in the portion of the second notch **160**B provided in the second rising portion **120**B and the second

opening portion **170**B. With such a configuration, the structure of the multilayer ceramic capacitor **1** becomes strong.

[0156] The fourth notch **180**B continuously extends from the end of the second mounting portion **150**B to a position in the middle of the second falling portion **140**B.

[0157] As shown in FIG. **11**, the length W**2** in the width direction of the second bonding portion **110**B of the second metal terminal **100**B is longer than the length W**3** in the width direction of the second rising portion **120**B. With such a configuration, it is possible to provide a wide bonding area between the second external electrode **40**B and the second metal terminal **100**B by the second bonding material **5**B. In particular, even when the second notch **160**B is provided as described above, it is still possible to provide a wide bonding area between the second external electrode **40**B and the second metal terminal **100**B by the second bonding material **5**B.

[0158] The length W**4** in the width direction W of the second notch **160**B may be equal to or substantially equal to the length W**5** in the width direction W of the second opening portion **170**B. The rising height T**3** of the second notch **160**B in the height direction T may be the same or substantially the same as the length L**6** in the length direction L of the second opening portion **170**B. For example, the area of the second notch **160**B provided in the second rising portion **120**B may fall within a range from about 50% to about 200% of the area of the second opening portion **170**B. With such a configuration, for example, when the exterior material **3** is molded, the resin of the exterior material **3** flows in a well-balanced manner.

[0159] The first mounting portion **150**A may extend parallel or substantially parallel to the mounting surface along the mounting surface, or may extend to be sloped in a direction away from the mounting surface as it approaches the connection portion with the first falling portion **140**A. The second mounting portion **150**B may extend parallel or substantially parallel to the mounting surface along the mounting surface, or may extend to be sloped in a direction away from the mounting surface as it approaches the connection portion with the second falling portion **140**B. With such a configuration, when the multilayer ceramic capacitor **1** is mounted on the mounting substrate, it is possible for the bonding material to extend to this portion, and thus, it is possible to increase the strength in mounting. The slope angle θ is, for example, preferably about 1° or more and about 10° or less.

[0160] Next, with reference to FIGS. **12**D to **12**F in addition to FIGS. **12**A and **12**B, the state of the surface of the metal terminal **100** and the like will be described as further details of the metal terminal **100**.

[0161] FIG. **12**D is an enlarged view of a portion R**1** of the first metal terminal **100**A of the multilayer ceramic capacitor **1** shown in FIG. **12**A. FIG. **12**E is an enlarged view of a portion R**2** of the first metal terminal **100**A of the multilayer ceramic capacitor **1** shown in FIG. **12**A. FIG. **12**F is an enlarged view of a portion R**3** of the first metal terminal **100**A of the multilayer ceramic capacitor **1** shown in FIG. **12**A. As described above, the first metal terminal **100**A and the second metal terminal t **100**B are plane-symmetric or substantially plane-symmetric with respect to the WT cross section at the middle in the length direction L of the multilayer ceramic capacitor **1**. Therefore, the enlarged view of the second metal terminal **100**B has the same or substantially the same shape as the enlarged view of the first metal terminal **100**A, which is left/right symmetrical with respect to the plane of the drawing. Therefore, in FIGS. **12**D to **12**F, in addition to the reference numerals denoted to the respective configurations of the first metal terminal **100**A, the reference numerals in the second metal terminal **100**B are also denoted, and FIGS. **12**D to **12**F are used as enlarged views for explaining the first metal terminal **100**A and the second metal terminal **100**B.

[0162] As shown in FIG. **12**A, the first metal terminal **100**A is a plate-shaped member including a first front surface FS**1** adjacent to a first bonding surface **110**A**1** to which the first external electrode **40**A is bonded, a first opposite surface BS**1** which is a surface opposite to the first front surface FS**1**, and a first terminal lateral surface TSS**1** connecting the first front surface FS**1** and the first opposite surface BS**1**. The first bonding portion **110**A of the first metal terminal **100**A includes the first bonding surface **110**A**1** bonded to the first bonding material **5**A on the first front surface FS**1**.

[0163] As shown in FIG. **12**B, the second metal terminal **100**B is a plate-shaped member including a second front surface FS**2** on a second bonding surface **110**B**1** to which the second external electrode **40**B is bonded, a second opposite surface BS**2** which is a surface opposite to the second front surface FS**2**, and a second terminal lateral surface TSS**2** connecting the second front surface FS**2** and the second opposite surface BS**2**. The second bonding portion **110**B of the second metal terminal **100**B includes a second bonding surface **110**B**1** bonded to the second bonding material **5**B on the second front surface FS**2**.

[0164] As shown in FIGS. **12**D to **12**F, the first metal terminal **100**A includes a first base material **100**Aa defining a terminal main body and a first plating film **100**Ab provided on a surface of the terminal main body.

[0165] The first plating film **100**Ab of the first metal terminal **100**A is provided at least at a portion of the first bonding portion **110**A where the first bonding material **5**A is provided and at a portion of the first mounting portion **150**A that is opposed to the mounting surface of the mounting substrate.

[0166] As shown in FIGS. **12**D to **12**F, the second metal terminal **100**B includes a second base material **100**Ba defining a terminal main body and a second plating film **100**Bb provided on a surface of the terminal main body.

[0167] The second plating film **100**Bb of the second metal terminal **100**B is provided at least at a portion of the second bonding portion **110**B where the second bonding material **5**B is provided and at a portion of the second mounting portion **150**B that is opposed to the mounting surface of the mounting substrate.

[0168] The plating film preferably includes an upper plating film provided on the outermost surface of the plating film and a lower plating film provided below the upper plating film. For example, the plating film may include a two-layer structure in which an upper plating film is provided on a lower plating film.

[0169] In the first metal terminal **100**A according to the present example embodiment, the first plating film **100**Ab includes a first base plating film **100**Ab**1** defining and functioning as a lower plating film covering the surface of the first base material **100**Aa and a first outermost surface plating film **100**Ab**2** defining and functioning as an upper plating film covering the surface of the first base plating film **100**Ab**1**. In other words, the first outermost surface plating film **100**Ab**2** defining and functioning as the first outermost surface metal film includes at least the outermost surface portion of the first plating film **100**Ab.

[0170] Further, in the second metal terminal **100**B according to the present example embodiment, the second plating film **100**Bb includes a second base plating film **100**Bb**1** defining and functioning as a lower plating film covering the surface of the second base material **100**Ba and a second outermost surface plating film **100**Bb**2** defining and functioning as an upper plating film covering the surface of the second base plating film **100**Bb**1**. In other words, the second outermost surface plating film **100**Bb**2** defining and functioning as the second outermost surface metal film includes at least the outermost surface portion of the second plating film **100**Bb.

[0171] In the two-layer configuration of the plating films, the upper layer plating film provided on the outermost surface of the plating film includes a surface higher in solder wettability than the surface of the metal of the base material of the terminal body. Further, in the two-layer configuration, the upper plating film provided on the outermost surface of the plating film includes a surface higher in solder wettability than the surface of the lower plating film.

[0172] The lower plating film is, for example, preferably made of Ni, Fe, Cu, Ag, Cr, or an alloy including at least one of these metals as a main component. More preferably, for example, the lower plating film is made of Ni, Fe, Cr, or an alloy including at least one of these metals as a main

component.
[0173] When the lower plating film is made of Ni, Fe, Cr, or an alloy including at least one of these metals as a main component, the heat resistance of the metal end can be improved.
[0174] In the first metal terminal **100**A according to the present example embodiment, the first base plating film **100**Ab**1** defining and functioning as the lower layer plating film is, for example, a Ni plating film. In addition, the thickness of the lower plating film is, for example, preferably about 0.2 μm or more and about 5.0 μm or less. In the second metal terminal **100**B according to the present example embodiment, the second base plating film **100**Bb**1** defining and functioning as the lower layer plating film is, for example, a Ni plating film. In addition, the thickness of the second base plating film **100**Bb**1** as the lower plating film is, for example, preferably about 0.2 μm or more and about 5.0 μm or less.
[0175] The upper plating film is, for example, preferably made of Sn, Ag, Au, or an alloy including at least one of these metals as a main component. More preferably, the upper plating film is, for example, made of Sn or an alloy including Sn as a main component. By forming the upper plating film with Sn or an alloy including Sn as a main component, the solderability between the external electrode and the metal terminal can be improved.
[0176] In the first metal terminal **100**A according to the present example embodiment, the first outermost surface plating film **100**Ab**2** defining and functioning as the upper layer plated layer is a Sn plating film. The thickness of the upper plating film is, for example, preferably about 1.0 μm or more and about 5.0 μm or less. In the second metal terminal **100**B according to the present example embodiment, the second outermost surface plating film **100**Bb**2** defining and functioning as the upper layer plated layer is, for example, a Sn plating film. The thickness of the upper plating film is, for example, preferably about 1.0 μm or more and about 5.0 μm or less.
[0177] The terminal body is, for example, preferably made of Ni, Fe, Cu, Ag, Cr, or an alloy including at least one of these metals as a main component. Examples of the metal of the base material of the terminal body include an Fe-**42**Ni alloy, an Fe-**18**Cr alloy, or a Cu-**8**Sn alloy. In addition, from the viewpoint of heat dissipation, the metal of the base material of the terminal main body may be, for example, oxygen-free copper or a Cu-based alloy having high thermal conductivity. By making the material of the terminal main body a copper-based material having good thermal conductivity in this way, it is possible to achieve a reduction in ESR and a reduction in thermal resistance. Further, in the present example embodiment, the metal of the base material of the terminal main body may be, for example, stainless steel or aluminum which have low solder wettability. At least the surface of the metal of the base material of the terminal main body is a surface having lower wettability of solder than the plating film of the outermost surface. The thickness of the terminal body is, for example, preferably about 0.05 mm or more and about 0.5 mm or less.
[0178] Further, the first metal terminal **100**A includes a first contact surface CS**1** in contact with the exterior material **3**. The first contact surface CS**1** of the first metal terminal **100**A according to the present example embodiment includes, as surfaces in contact with the exterior material **3**, the first base material **100**Aa, a surface of the first base plating film **100**Ab**1**, and a surface of the first outermost surface plating film **100**Ab**2**.
[0179] The first metal terminal **100**A includes exposed surfaces E**1***a*, E**1***b*, and E**1***c* where a material located on the inner side of the first outermost surface plating film **100**Ab**2** of the first plating film **100**Ab is exposed to the surface in a portion of the surface in contact with the exterior material **3**. FIG. **12**A shows an example of the arrangement position of the exposed surfaces of the first metal terminal **100**A.
[0180] The exposed surfaces E**1***a*, E**1***b*, and E**1***c* may be surfaces on which the lower first base plating film **100**Ab**1** is exposed. The first base plating film **100**Ab**1** has lower solder wettability than the first outermost surface plating film **100**Ab**2** defining and functioning as the upper layer. Therefore, it is possible to prevent the first bonding material **5**A from further spreading along the

first rising portion **120**A of the first metal terminal **100**A, and it is possible to further reduce or prevent the occurrence of solder splash or other problems.

[0181] The exposed surfaces E**1***a*, E**1***b*, and E**1***c* may be surfaces to which the first base material **100**Aa of the terminal main body is exposed. The solder wettability of the surface of the first base material **100**Aa of the terminal main body is lower than that of the first outermost surface plating film **100**Ab**2** defining and functioning as the upper layer. Therefore, it is possible to prevent the first bonding material **5**A from further spreading along the first rising portion **120**A of the first metal terminal **100**A, and it is possible to further reduce or prevent the occurrence of solder splash or other problems.

[0182] In the present example embodiment, the first contact surface CS**1** in contact with the exterior material **3** includes a plurality of first exposed surfaces which are provided spaced apart from each other in the extending direction of the first metal terminal **100**A and on which the first base plating film **100**Ab**1** defining and functioning as a surface of a metal, different from the first outermost surface plating film **100**Ab**2** defining and functioning as the first outermost surface metal film, is exposed. As the first exposed surface, for example, the exposed surface E**1***a*, the exposed surface E**1***b*, and the exposed surface E**1***c* are provided.

[0183] The first contact surface CS**1** in contact with the exterior material **3** includes the first outermost surface plating film **100**Ab**2** defining and functioning as a first outermost surface metal film on at least a portion of the surface.

[0184] The exposed surfaces E**1***b* and E**1***a*, each defining and functioning as the first exposed surfaces provided on the first contact surface CS**1**, are provided to be separated on at least a portion of the surface between the middle of the first rising portion **120**A and the first bonding portion **110**A, and the first extension portion **130**A, respectively, on the first front surface FS**1**. The exposed surfaces E**1***c* and E**1***a*, each defining and functioning as the first exposed surfaces provided on the first contact surface CS**1**, are provided to be separated respectively on the first bonding portion **110**A and the first extension portion **130**A, on the first opposite surface BS**1**.

[0185] More specifically, as shown in FIG. **12**D, the exposed surface E**1***a* defining and functioning as the first exposed surface provided on the first contact surface CS**1** is provided on the first front surface FS**1** and the first opposite surface BS**1** of the first extension portion **130**A. The exposed surface E**1***a* is provided on the first extension portion **130**A adjacent to the first rising portion **120**A. In the present example embodiment, the exposed surface E**1***a* is covered with the exterior material **3**. That is, the exposed surface E**1***a* is not exposed from the exterior material **3**.

[0186] In another example embodiment, on the first extension portion **130**A, the first contact surface CS**1** includes the first base plating film **100**Ab**1** and the first outermost surface plating film **100**Ab**2** located on the first front surface FS**1**, the first base plating film **100**Ab**1** and the first outermost surface plating film **100**Ab**2** located on the first opposite surface BS**1**, and a surface of the first base material **100**Aa located on the first terminal lateral surface TSS**1**. As described above, the exposed surface is preferably provided over the entire or substantially the entire circumference of the first metal terminal **100**A in a portion of the extending direction of the first metal terminal **100**A. Thus, the first outermost surface plating film **100**Ab**2** is divided in the middle in the extending direction of the first metal terminal **100**A.

[0187] As shown in FIG. **12**E, the exposed surface E**1***b* defining and functioning as the first exposed surface provided on the first contact surface CS**1** is provided on the first rising portion **120**A of the first metal terminal **100**A on the first front surface FS**1**. For example, the exposed surface E**1***b* is provided to the first rising portion **120**A adjacent to the connection-portion with the first bonding portion **110**A.

[0188] In another example embodiment, the first contact surface CS**1** includes the first base plating film **100**Ab**1** located on the first front surface FS**1**, the first outermost surface plating film **100**Ab**2** located on the first opposite surface BS**1**, and the surface of the first base material **100**Aa located on the first terminal lateral surface TSS**1**, in at least a portion of the surface between the middle of the first rising portion **120**A and the first bonding portion **110**A.

[0189] Further, as shown in FIG. **12**F, the exposed surface E**1***c* defining and functioning as a first exposed surface provided on the first contact surface CS**1** is provided on the first opposite surface BS**1** of the first bonding portion **110**A. For example, the exposed surface E**1***c* is provided on the first contact surface CS**1** of the first opposite surface BS**1** of the first bonding portion **110**A.

[0190] In another example embodiment, the first contact surface CS**1** includes the first outermost surface plating film **100**Ab**2** located on the first front surface FS**1**, the first base plating film **100**Ab**1** located on the first opposite surface BS**1**, and a surface of the first base material **100**Aa located on the first terminal lateral surface TSS**1**, in the first bonding portion **110**A.

[0191] In addition, for example, since the first base plating film **100**Ab**1** is a Ni plating film, the exposed surfaces E**1***a*, E**1***b*, and E**1***c* defining and functioning as the first exposed surfaces are Ni plating films of the first metal terminal **100**A.

[0192] The exposed surfaces E**1***a*, E**1***b*, and E**1***c* are not limited thereto. For example, on the exposed surfaces E**1***a*, E**1***b*, and E**1***c*, the first base material **100**Aa may be exposed without providing the first plating film **100**Ab on the first base material **100**Aa. In other words, the exposed surfaces E**1***a*, E**1***b*, and E**1***c* defining and functioning as the first exposed surfaces may be the first base material **100**Aa of the first metal terminal **100**A.

[0193] In addition, the exposed surfaces E**1***a*, E**1***b*, and E**1***c* defining and functioning as the first exposed surfaces provided on the first contact surface CS**1** are separated in the width direction by holes or notches provided in the first metal terminal **100**A.

[0194] Further, the second metal terminal **100**B includes a second contact surface CS**2** in contact with the exterior material **3**. The second contact surface CS**2** of the second metal terminal **100**B according to the present example embodiment includes, as surfaces in contact with the exterior material **3**, the second base material **100**Ba, the surface of the second base plating film **100**Bb**1**, and the surface of the second outermost surface plating film **100**Bb**2**.

[0195] The second metal terminal **100**B includes exposed surfaces E**2***a*, E**2***b*, and E**2***c* where the material located on the inner side of the second outermost surface plating film **100**Bb**2** of the second plating film **100**Bb is exposed to the surface, in a portion of the surface in contact with the exterior material **3**. FIG. **12**B shows an example of the arrangement position of the exposed surfaces of the second metal terminal **100**B.

[0196] The exposed surfaces E**2***a*, E**2***b*, and E**2***c* may be surfaces where the lower second base plating film **100**Bb**1** is exposed. The solder wettability of the second base plating film **100**Bb**1** is lower than that of the second outermost surface plating film **100**Bb**2** defining and functioning as the upper layer. Therefore, it is possible to prevent the second bonding material **5**B from further spreading along the second rising portion **120**B of the second metal terminal **100**B, and it is possible to further reduce or prevent the occurrence of solder splash or other problems.

[0197] The exposed surfaces E**2***a*, E**2***b*, and E**2***c* may be surfaces to which the second base material **100**Ba of the terminal main body is exposed. The solder wettability of the surface of the second base material **100**Ba of the terminal main body is lower than that of the second outermost surface plating film **100**Bb**2** defining and functioning as the upper layer. Therefore, it is possible to prevent the second bonding material **5**B from further spreading along the second rising portion **120**B of the second metal terminal **100**B, and it is possible to further reduce or prevent the occurrence of solder splash or other problems.

[0198] In the present example embodiment, the second contact surface CS**2** in contact with the exterior material **3** includes a plurality of second exposed surfaces which are provided spaced apart from each other in the extending direction of the second metal terminal **100**B and on which the second base plating film **100**Bb**1** defining and functioning as a surface of a metal, different from the second outermost surface plating film **100**Bb**2** defining and functioning as the second outermost surface metal film, is exposed. As the second exposed surface, for example, the exposed surface E**2***a*, the exposed surface E**2***b*, and the exposed surface E**2***c* are provided.

[0199] The second contact surface CS**2** in contact with the exterior material **3** includes the second outermost surface plating film **100**Bb**2** defining and functioning as a second outermost surface metal film on at least a portion of the surface.
[0200] The exposed surfaces E**2***b* and E**2***a* each defining and functioning as the second exposed surfaces provided on the second contact surface CS**2** are provided to be separated on at least a portion of the surface between the middle of the second rising portion **120**B and the second bonding portion **110**B, and the second extension portion **130**B, respectively, on the second front surface FS**2**. The exposed surfaces E**2***c* and E**2***a* each defining and functioning as the second exposed surfaces provided on the second contact surface CS**2** are provided to be separated respectively on the second bonding portion **110**B and the second extension portion **130**B, on the second opposite surface BS**2**.
[0201] More specifically, as shown in FIG. **12**D, the exposed surface E**2***a* defining and functioning as the second exposed surface provided on the second contact surface CS**2** is provided on the second front surface FS**2** and the second opposite surface BS**2** of the second extension portion **130**B. The exposed surface E**2***a* is provided on the second extension portion **130**B adjacent to the second rising portion **120**B. In the present example embodiment, the exposed surface E**2***a* is covered with the exterior material **3**. That is, the exposed surface E**2***a* is not exposed from the exterior material **3**.
[0202] In another example embodiment, on the second extension portion **130**B, the second contact surface CS**2** includes the second base plating film **100**Bb**1** and the second outermost surface plating film **100**Bb**2** located on the second front surface FS**2**, the second base plating film **100**Bb**1** and a second outermost surface plating film **100**Bb**2** located on the second opposite surface BS**2**, and a surface of the second base material **100**Ba located on the second terminal lateral surface TSS**2**. As described above, the exposed surface is preferably provided over the entire or substantially the entire circumference of the second metal terminal **100**B in a portion in the extending direction of the second metal terminal **100**B. Thus, the second outermost surface plating film **100**Bb**2** is divided in the middle in the extending direction of the second metal terminal **100**B.
[0203] As shown in FIG. **12**E, an exposed surface E**2***b* defining and functioning as the second exposed surface provided on the second contact surface CS**2** is provided on the second rising portion **120**B of the second metal terminal **100**B on the second front surface FS**2**. For example, the exposed surface E**2***b* is provided to the second rising portion **120**B adjacent to the connection-portion with the second bonding portion **110**B.
[0204] In another example embodiment, the second contact surface CS**2** includes the second base plating film **100**Bb**1** located on the second front surface FS**2**, the second outermost surface plating film **100**Bb**2** located on the second opposite surface BS**2**, and the surface of the second base material **100**Ba located on the second terminal lateral surface TSS**2**, in at least a portion of the surface between the middle of the second rising portion **120**B and the second bonding portion **110**B.
[0205] Further, as shown in FIG. **12**F, an exposed surface E**2***c* defining and functioning as a second exposed surface provided on the second contact surface CS**2** is provided on the second opposite surface BS**2** of the second bonding portion **110**B. For example, the exposed surface E**2***c* is provided on the second contact surface CS**2** of the second opposite surface BS**2** of the second bonding portion **110**B.
[0206] In another example embodiment, the second contact surface CS**2** includes the second outermost surface plating film **100**Bb**2** located on the second front surface FS**2**, the second base plating film **100**Bb**1** located on the second opposite surface BS**2**, and a surface of the second base material **100**Ba located on the second terminal lateral surface TSS**2**, in the second bonding portion **110**B.
[0207] In addition, since the second base plating film **100**Bb**1** is, for example, a Ni plating film, the exposed surfaces E**2***a*, E**2***b*, and E**2***c* defining and functioning as the second exposed surfaces are

Ni plating films of the second metal terminal **100**B.
[0208] The exposed surfaces E**2***a*, E**2***b*, and E**2***c* are not limited thereto. For example, on the exposed surfaces E**2***a*, E**2***b*, and E**2***c*, the second base material **100**Ba may be exposed without providing the second plating film **100**Bb on the second base material **100**Ba. In other words, the exposed surfaces E**2***a*, E**2***b*, and E**2***c* defining and functioning as the second exposed surfaces may be the second base material **100**Ba of the second metal terminal **100**B.
[0209] In addition, the exposed surfaces E**2***a*, E**2***b*, and E**2***c* defining and functioning as the second exposed surfaces provided on the second contact surface CS**2** are separated in the width direction by holes or notches provided in the second metal terminal **100**B.
[0210] The exposed surface may be formed by forming a plating film on the terminal body, and then removing the plating film. Examples of the removal process include various kinds of removal processes such as a mechanical removal process by grinding, polishing, or the like, a removal process by laser trimming, and a removal process by a plating stripping agent such as sodium hydroxide. Before the plating film is formed, a portion to be an exposed surface may be covered with a resist. In this case, the exposed surface is formed by removing the resist after the plating film is formed.
[0211] When the dimension in the length direction of the multilayer ceramic capacitor **1** including the exterior material **3** and the metal terminal **100** is defined as L, the L dimension is, for example, preferably about 3.2 mm or more and about 20 mm or less. When the dimension in the lamination direction of the multilayer ceramic capacitor **1** is defined as T, the T dimension is, for example, preferably about 1.0 mm or more and about 10 mm or less. When the dimension in the width direction of the multilayer ceramic capacitor **1** is defined as W, the W dimension is, for example, preferably about 1.5 mm or more and about 20 mm or less.
[0212] Next, an example of a method of manufacturing the multilayer ceramic capacitor **1** of the present example embodiment will be described. First, a method of manufacturing the multilayer ceramic capacitor main body **2** will be described.
[0213] A dielectric sheet for manufacturing the dielectric layer **20** and an electrically conductive paste for manufacturing the internal electrode layer **30** are provided. The electrically conductive paste for manufacturing the internal electrode and the dielectric sheet includes a binder and a solvent. Known binders and solvents may be used.
[0214] The electrically conductive paste for manufacturing the internal electrode layer **30** is printed on the dielectric sheet in a predetermined pattern by, for example, screen printing or gravure printing. Thus, the dielectric sheet in which the pattern of the first internal electrode layer **31** is formed, and the dielectric sheet in which the pattern of the second internal electrode layer **32** is formed are provided.
[0215] A predetermined number of dielectric sheets in which the pattern of the internal electrode layer is not printed are laminated (stacked), such that a portion defining and functioning as the first main surface-side outer layer portion **12** close to the first main surface TS**1** is formed. The dielectric sheet in which the pattern of the first internal electrode layer **31** is printed and the dielectric sheet in which the pattern of the second internal electrode layer **32** is printed are sequentially laminated thereon, such that a portion defining and functioning as the inner layer portion **11** is formed. A predetermined number of the dielectric sheets in which the pattern of the internal electrode layer is not printed are laminated on the portion defining and functioning as the inner layer portion **11**, such that a portion defining and functioning as the second main surface-side outer layer portion **13** close to the second main surface TS**2** is formed.
[0216] Thus, a multilayer sheet is manufactured.
[0217] The multilayer sheets are pressed in the lamination direction by hydrostatic pressing, for example, such that a multilayer block is manufactured.
[0218] The multilayer block is cut to a predetermined size, such that a multilayer chip is cut out. At this time, corner portions and ridge portions of the multilayer chip may be rounded by, for example,

barrel polishing or the like.

[0219] The multilayer chip is fired to manufacture the multilayer body **10**. The firing temperature depends on the materials of the dielectric layer **20** and the internal electrode layer **30**. However, the firing temperature is, for example, preferably about 900° C. or more and about 1400° C. or less.

[0220] The electrically conductive paste defining and functioning as the first base electrode layer **50**A and the second base electrode layer **50**B is applied to both end surfaces of the multilayer body **10**. In the present example embodiment, the first base electrode layer **50**A and the second base electrode layer **50**B are fired layers. For example, an electrically conductive paste including a glass component and metal is applied to the multilayer body **10** by, for example, a method such as dipping. Thereafter, a firing process is performed to form the first base electrode layer **50**A and the second base electrode layer **50**B. The temperature of the firing process at this time is, for example, preferably about 700° C. or higher and about 900° C. or lower.

[0221] In addition, in a case in which the multilayer chip before firing and the electrically conductive paste applied to the multilayer chip are fired simultaneously, it is preferable that the fired layer is formed by firing a ceramic material added instead of a glass component. At this time, as the ceramic material to be added, it is particularly preferable to use the same type of ceramic material as the dielectric layer **20**. In this case, the electrically conductive paste is applied to the multilayer chip before firing, and the multilayer chip and the electrically conductive paste applied to the multilayer chip are fired simultaneously to form the multilayer body **10** including the fired layer formed therein.

[0222] In addition, when a thin film layer is formed as the first base electrode layer **50**A and the second base electrode layer **50**B, a thin film layer may be formed on a portion of the first main surface TS**1** and a portion of the second main surface TS**2** of the multilayer body **10**. The thin film layer may be, for example, a sputtered electrode fabricated by a sputtering method. In a case in which the sputtered electrode is formed on a portion of the first main surface TS**1** and a portion of the second main surface TS**2** of the multilayer body **10** as the first base electrode layer **50**A and the second base electrode layer **50**B, a fired layer is formed on the first end surface LS**1** and on the second end surface LS**2**. Alternatively, a plated layer, which will be described later, may be formed directly on the multilayer body **10** without forming the base electrode layer on the first end surface LS**1** and the second end surface LS**2**.

[0223] Thereafter, the first plated layer **60**A is formed on the first base electrode layer **50**A. Furthermore, the second plated layer **60**B is formed on the second base electrode layer **50**B. In the present example embodiment, for example, the Ni plated layer and the Sn plated layer are formed as the plated layers. The Ni plated layer and the Sn plated layer are sequentially formed, for example, by a barrel plating method.

[0224] Through such a manufacturing process, the multilayer ceramic capacitor main body **2** is manufactured.

[0225] Next, an example of a method of manufacturing the first metal terminal **100**A and the second metal terminal **100**B will be described with reference to FIGS. **13**A and **13**B. FIG. **13**A is a front view of the metal terminal before being folded. FIG. **13**B is a view showing an opposite surface of the metal terminal before being folded.

[0226] A plating film is applied to the terminal main bodies of the first metal terminal **100**A and the second metal terminal **100**B. After the plating film is formed on the surface of the base material of the terminal main body, the base material is cut along the shape of the metal terminal by shearing using a punching die or the like, for example. Thus, an exposed surface from which the surface of the base material of the terminal main body is exposed is formed on the lateral surface of the metal terminal main body. As shown in FIG. **13**A, for a desired region of the surface of the metal terminal (the first front surface FS**1** and the second front surface FS**2**), the film defining at least the outermost surface of the plating film is removed, and an exposed surface where the surface with low solder wettability is exposed is formed. Further, as shown in FIG. **13**B, for a desired region of

the back surface (the first opposite surface BS**1** and the second opposite surface BS**2**) of the metal terminal, the film defining at least the outermost surface of the plating film is removed, and an exposed surface where the surface with low solder wettability is exposed is formed. Alternatively, a plating process may be performed on the terminal main body in a state in which a portion of the surface is masked with a resist or the like, thus forming an exposed surface where the surface with low solder wettability is exposed.
[0227] More specifically, for example, the removal process may be various kinds of removal processes such as a mechanical removal process by grinding, polishing, or the like, a removal process by laser trimming, and a removal process by a plating stripping agent such as sodium hydroxide. The plating film is removed by the removal process, and the exposed surface can be used as a base material of the metal terminal.
[0228] In addition, the outermost surface plating film may be removed by the removal process so that the base plating film remains. For example, in a case of laser trimming, it is possible to selectively remove only the Sn plating film defining and functioning as the outermost surface plating film among the Ni plating film defining and functioning as the base plating film and the Sn plating film defining and functioning as the outermost surface plating film by adjusting conditions such as laser output, for example.
[0229] Before the plating film is formed, a portion to be an exposed surface may be covered with a resist. In this case, the exposed surface is formed by removing the resist after the plating film is formed. In addition, the exposed surface can be used as the base material of the terminal main body of the metal terminal by covering a portion of the surface of the base material of the terminal main body defining the metal terminal to be used as the exposed surface with a resist.
[0230] In addition, film defining and functioning as the base plating film is formed, a portion to be the exposed surface is covered with a resist, and then the outermost surface plating film is formed, so that the exposed surface can be used as the Ni plating film defining and functioning as the base plating film.
[0231] Next, a process of bonding the multilayer ceramic capacitor main body **2** to the first metal terminal **100**A and the second metal terminal **100**B will be described.
[0232] The first external electrode **40**A and the first metal terminal **100**A are bonded to each other by the first bonding material **5**A. The second external electrode **40**B and the second metal terminal **100**B are bonded by the second bonding material **5**B. In the present example embodiment, the first bonding material **5**A and the second bonding material **5**B are solder. For example, when the bonding is performed by reflow soldering, the first bonding material **5**A and the second bonding material **5**B are heated, for example, at a temperature of about 270° C. or more and about 290° C. or less for about 30 seconds or more.
[0233] The heating during the reflow process melts the first bonding material **5**A and the second bonding material **5**B. At this time, since the exposed surface E**1***b* is provided on the surface of the first rising portion **120**A of the first metal terminal **100**A, which is a surface opposed to the first surface S**1** of the multilayer ceramic electronic component main body **2**, the first bonding material **5**A is difficult to spread along the first rising portion **120**A of the first metal terminal **100**A. In addition, since the exposed surface E**2***b* is provided on the surface of the second rising portion **120**B of the second metal terminal **100**B, which is a surface opposed to the second surface S**2** of the multilayer ceramic electronic component main body **2**, the second bonding material **5**B is difficult to spread along the second rising portion **120**B of the second metal terminal **100**B. Similarly, the exposed surface E**1***a* and the exposed surface E**2***a* prevent solder from spreading during reflow. Similarly, the exposed surface E**1***c* and the exposed surface E**2***c* prevent solder from spreading during reflow. Similarly, the surface of the first base material **100**Aa located on the first terminal lateral surface TSS**1** and the surface of the second base material **100**Ba located on the second terminal lateral surface TSS**2** prevent solder from spreading during reflow.
[0234] After the heating, the first bonding material **5**A is solidified in a state where the gap portion

G remains between the first rising portion **120**A of the first metal terminal **100**A and the first surface S**1** of the multilayer ceramic capacitor main body **2** on the first end surface LS**1** such that the multilayer ceramic capacitor main body **2** and the first metal terminal **100**A are bonded to each other. In addition, the second bonding material **5**B is solidified in a state where the gap portion G remains between the second rising portion **120**B of the second metal terminal **100**B and the second surface S**2** on the second end surface LS**2** of the multilayer ceramic capacitor main body **2** such that the multilayer ceramic capacitor main body **2** and the second metal terminal **100**B are bonded to each other. With such a configuration, it is possible to fill the gap portion G more reliably with the exterior material **3** in the subsequent step.

[0235] Next, a process of covering the multilayer ceramic capacitor main body **2**, the first bonding material **5**A and the second bonding material **5**B, a portion of the first metal terminal **100**A, and a portion of the second metal terminal **100**B with the exterior material **3** will be described.

[0236] The exterior material **3** is formed by, for example, a transfer molding method. Specifically, the multilayer ceramic capacitor before being covered with the exterior material **3**, that is, the multilayer ceramic capacitor main body **2** to which the metal terminal **100** is bonded via the bonding material **5**, is arranged in a mold, and then the resin of the exterior material **3** is filled in the mold, and the resin is cured. Thus, the exterior material **3** is provided so as to cover the multilayer ceramic capacitor main body **2**, the first bonding material **5**A and the second bonding material **5**B, a portion of the first metal terminal **100**A, and a portion of the second metal terminal **100**B. At this time, the gap portion G can also be filled with the exterior material **3**.

[0237] Finally, if there is an unnecessary portion in the metal terminal **100**, the unnecessary portion is cut using a stamping die or the like. Then, the metal terminal **100** is bent into a desired shape using a bending die or the like. Thus, the metal terminal **100** may be formed by bending. That is, each connection portion of the metal terminal **100** formed by bending may be formed by bending. The bending process is partially performed before molding the exterior material **3**.

[0238] According to the above-described manufacturing method, the multilayer ceramic capacitor **1** of an example embodiment of the present invention is manufactured.

[0239] FIGS. **14**A and **14**B each show a mounting structure **300** of the multilayer ceramic capacitor **1**. FIG. **14**A is an external perspective view of a mounting structure **300** in which the multilayer ceramic capacitor **1** of the present example embodiment is mounted on a mounting substrate **310**. FIG. **14**B is a view corresponding to FIG. **6**, and is an imaginary arrow view when the mounting structure **300** of the multilayer ceramic capacitor **1** of FIG. **14**A is viewed in the direction of the arrow XIIIIB.

[0240] Thereafter, the multilayer ceramic capacitor **1** which is covered with the exterior material **3** and completed is reflow-mounted as a component on the mounting substrate **310** via a substrate mounting bonding material **320**.

[0241] More specifically, the first metal terminal **100**A and the second metal terminal **100**B are bonded to a wiring member **312** provided on the mounting surface **311** of the mounting substrate **310** via the substrate mounting bonding material **320**. The second metal terminal **100**B is bonded to the wiring member **312** provided on the mounting surface **311** of the mounting substrate **310** via the substrate mounting bonding material **320**.

[0242] At this time, the bonding material **5** may melt and the volume of the bonding material **5** may expand. However, with the configuration including the plurality of exposed surfaces shown in the present example embodiment, it is possible to reduce or prevent the occurrence of solder splash or other problems.

[0243] Hereinafter, a modified example of the multilayer ceramic capacitor **1** of the present example embodiment will be described. In the following description, the same or corresponding components as those in the above example embodiments are denoted by the same reference numerals, and a detailed description thereof is omitted. FIG. **15**A is a view showing a modified example of the multilayer ceramic capacitor **1** of the present example embodiment, and corresponds to FIG. **2**. FIG. **15**B is an arrow view when the multilayer ceramic capacitor **1** of FIG. **15**A is viewed in the direction of the arrow XVB, and corresponds to FIG. **4**.

[0244] In this modified example, the configuration of the metal terminal is different from that of the above example embodiments. The metal terminal of the modified example includes a first metal terminal **200**A and a second metal terminal **200**B.

[0245] The configuration of a portion of the first metal terminal **200**A provided inside the exterior material **3** is the same or substantially the same as the configuration of the first metal terminal **100**A of the above example embodiment. The configuration of the portion of the second metal terminal **200**B provided inside the exterior material **3** is the same or substantially the same as the configuration of the second metal terminal **100**B of the above example embodiment.

[0246] The first metal terminal **200**A includes a first extension portion **230**A, a first falling portion **240**A, and a first mounting portion **250**A. The first extension portion **230**A is connected to the first falling portion **240**A immediately after protruding from the first end surface MLS**1** of the exterior material **3**. The connection portion between the first extension portion **230**A and the first falling portion **240**A is formed by bending at a right angle or substantially a right angle. The first falling portion **240**A extends in a direction orthogonal or substantially orthogonal to the mounting surface toward the mounting surface. The first mounting portion **250**A extends along the mounting surface toward the middle side in the length direction L of the multilayer ceramic capacitor **1**.

[0247] The second metal terminal **200**B includes a second extension portion **230**B, a second falling portion **240**B, and a second mounting portion **250**B. The second extension portion **230**B is connected to the second falling portion **240**B immediately after protruding from the second end surface MLS**2** of the exterior material **3**. The connection portion between the second extension portion **230**B and the second falling portion **240**B is formed by bending at a right angle of a substantially right angle. The second falling portion **240**B extends in a direction orthogonal or substantially orthogonal to the mounting surface toward the mounting surface. The second mounting portion **250**B extends along the mounting surface toward the middle side in the length direction L of the multilayer ceramic capacitor **1**.

[0248] This makes it possible to shorten the dimension L**8** in the length direction of the multilayer ceramic capacitor **1** including the first metal terminal **200**A and the second metal terminal **200**B. Therefore, it is possible to reduce the mounting area required for mounting the multilayer ceramic capacitor **1** on the mounting substrate.

[0249] Also in this case, the separation distance L**7** between the end of the first mounting portion **250**A of the first metal terminal **200**A and the end of the second mounting portion **250**B of the second metal terminal **200**B is preferably longer than the separation distance L**3** between the first external electrode **40**A and the second external electrode **40**B of the multilayer ceramic capacitor main body **2** shown in FIG. **7**.

[0250] The first mounting portion **250**A may extend in parallel or substantially in parallel to the mounting surface along the mounting surface, or may extend to be sloped away from the mounting surface toward the middle in the length direction L of the multilayer ceramic capacitor **1**. The second mounting portion **250**B may extend in parallel or substantially in parallel to the mounting surface along the mounting surface, or may extend to be sloped away from the mounting surface toward the middle in the length direction L of the multilayer ceramic capacitor **1**. With such a configuration, when the multilayer ceramic capacitor **1** is mounted on the mounting substrate, it is possible to extend the bonding material to this portion, and it is possible to increase the strength in mounting. In addition, it is possible to stably provide the multilayer ceramic capacitor **1** on the mounting surface of the mounting substrate. The slope angle θ is, for example, preferably about 1° or more and about 40° or less.

[0251] The metal terminal may include an exposed surface at a position different from that of the first example embodiment. FIG. **15**A shows an example of the arrangement position of an additional exposed surface ES**3** of the first metal terminal **200**A and the arrangement position of an additional exposed surface ES**4** of the second metal terminal **200**B.

[0252] The additional exposed surface ES**3** is provided on a surface of the first falling portion **240**A of the first metal terminal **200**A, which is a surface opposed to the first sloped surface MLSIA of the exterior material **3** of the multilayer ceramic electronic component **1**. The additional exposed surface ES**3** may also be provided on a surface of the first mounting portion **250**A opposite to the mounting surface, that is, a surface opposed to the first main surface MTS**1** of the exterior material **3**.

[0253] The additional exposed surface ES**4** is provided on a surface of the second falling portion **240**B of the second metal terminal **200**B, which is a surface opposed to the second sloped surface MLS**2**A of the exterior material **3** of the multilayer ceramic capacitor **1**. The additional exposed surface ES**4** may also be provided on a surface of the second mounting portion **250**B opposite to the mounting surface, that is, a surface opposed to the first main surface MTS**1** of the exterior material **3**.

[0254] With such a configuration, when the multilayer ceramic capacitor **1** is mounted, it is possible to prevent the solder from entering between the first metal terminal **200**A and the exterior material **3** and between the second metal terminal **200**B and the exterior material **3**.

[0255] In the multilayer ceramic capacitor main body **2** of the present example embodiment, the plurality of the first internal electrode layers **31** and the plurality of the second internal electrode layers **32** are provided alternately in the height direction T of the multilayer body **10**. However, the configuration of the multilayer ceramic capacitor main body **2** is not limited thereto. The plurality of the first internal electrode layers **31** and the plurality of the second internal electrode layers **32** may be alternately provided in the width direction W of the multilayer body **10**.

[0256] In this case, the first extension portion of each of the first internal electrode layers **31** may extend out toward the first main surface TS**1** adjacent to the first end surface LS**1**, and the first external electrode **40**A may be provided only on the first main surface TS**1** adjacent to the first end surface LS**1**. That is, the first end surface LS**1** may not be provided with the first external electrode **40**A. In such a case, the first surface S**1** on the first end surface LS**1** of the multilayer ceramic capacitor main body **2** is composed of the first end surface LS**1** of the multilayer body **10**. Further, the second extension portion of the second internal electrode layers **32** may extend out toward the first main surface TS**1** adjacent to the second end surface LS**2**, and the second external electrode **40**B may be provided only on the first main surface TS**1** adjacent to the second end surface LS**2**. That is, the second end surface LS**2** may not be provided with the second external electrode **40**B. In such a case, the first surface S**1** on the second end surface LS**2** of the multilayer ceramic capacitor main body **2** includes the second end surface LS**2** of the multilayer body **10**. In this case, the bonding material **5** is difficult to spread in the gap portion G.

[0257] In the present example embodiment, one multilayer ceramic capacitor main body **2** is covered with the exterior material **3** to provide the multilayer ceramic capacitor **1**. However, the present invention is not limited thereto. The multilayer ceramic capacitor main body **2** defining as the plurality of the multilayer ceramic electronic component main bodies may be covered with the exterior material **3** to provide the multilayer ceramic capacitor **1** defining as a multilayer ceramic electronic component. For example, a plurality of the multilayer ceramic capacitor main bodies **2** provided in parallel or substantially in parallel may be covered with the exterior material **3** to provide the multilayer ceramic capacitor **1**. For example, multilayer ceramic capacitor main bodies **2** stacked in two or more stages may be covered with the exterior material **3** to provide the multilayer ceramic capacitor **1**.

[0258] The configuration of the multilayer ceramic capacitor main body is not limited to the configuration shown in FIGS. **7** to **10**. For example, the multilayer ceramic capacitor main body may be a multilayer ceramic capacitor of a two-portion structure, a three-portion structure, or a four-portion structure as shown in FIGS. **16**A to **16**C.

[0259] The multilayer ceramic capacitor main body **2** shown in FIG. **16**A is a multilayer ceramic

capacitor main body **2** with a two-portion structure, and includes, as the internal electrode layer **30**, in addition to the first internal electrode layer **33** and the second internal electrode layer **34**, a floating internal electrode layer **35** that is not exposed at either of the first end surface LS**1** and the second end surface LS**2**. The multilayer ceramic capacitor main body **2** shown in FIG. **16**B is a multilayer ceramic capacitor main body **2** with a three-portion structure including a first floating internal electrode layer **35**A and a second floating internal electrode layer **35**B as the floating internal electrode layers **35**. The multilayer ceramic capacitor main body **2** shown in FIG. **16**C is a multilayer ceramic capacitor main body **2** with a four-portion structure including a first floating internal electrode layer **35**A, a second floating internal electrode layer **35**B, and a third floating internal electrode layer **35**C as the floating internal electrode layers **35**. As described above, by providing the floating internal electrode layer **35** defining and functioning as the internal electrode layer **30**, the multilayer ceramic capacitor main body **2** has a structure in which the counter electrode portion is divided into a plurality of portions. With such a configuration, a plurality of capacitor components are provided between the opposing internal electrode layers **30**, and these capacitor components are connected in series. Therefore, the voltage applied to each capacitor component becomes low, and the breakdown voltage of the multilayer ceramic capacitor main body **2** can be increased. The multilayer ceramic capacitor main body **2** of the present example embodiment may have a multiple-portion structure of four or more portions.
[0260] In addition, the multilayer ceramic capacitor main body **2** may be of a two-terminal capacitor including two external electrodes, or may be of a multi-terminal capacitor including a large number of external electrodes.
[0261] According to the multilayer ceramic capacitor **1** of the present example embodiment, the following advantageous effects are obtained.
[0262] (1) The multilayer ceramic capacitor **1** (the multilayer ceramic electronic component **1**) according to an example embodiment of the present invention includes the multilayer ceramic capacitor main body **2** (the multilayer ceramic electronic component main body **2**) including the multilayer body **10** including the plurality of dielectric layers **20** (the ceramic layers **20**) and the plurality of internal electrode layers **30** (the internal conductive layers **30**) that are each laminated on a corresponding one of the plurality of dielectric layers **20**, the first main surface TS**1** and the second main surface TS**2** opposed to each other in the height direction T, the first lateral surface WS**1** and the second lateral surface WS**2** opposed to each other in the width direction W orthogonal or substantially orthogonal to the height direction T, and the first end surface LS**1** and the second end surface LS**2** opposed to each other in the length direction L orthogonal or substantially orthogonal to the height direction T and the width direction W, the first external electrode **40**A on the first end surface LS**1**, and the second external electrode **40**B on the second end surface LS**2**, the first metal terminal **100**A connected to the first external electrode **40**A via the bonding material **5** (the first bonding material **5**A), the second metal terminal **100**B connected to the second external electrode **40**B via the bonding material **5** (the second bonding material **5**B), and the exterior material **3** that covers the multilayer ceramic capacitor main body **2**, the bonding material **5**, a portion of the first metal terminal **100**A, and a portion of the second metal terminal **100**B. The first metal terminal **100**A includes the first bonding surface **110**A**1** bonded to the bonding material **5** (the first bonding material **5**A), and the first contact surface CS**1** in contact with the exterior material **3**. The first contact surface CS**1** in contact with the exterior material **3** includes the first outermost surface plating film **100**Ab**2** (the first outermost surface metal film **100**Ab**2**) on at least a portion of a surface of the first contact surface CS**1**. The second metal terminal **100**B includes the second bonding surface **110**B**1** bonded to the bonding material **5** (the second bonding material **5**B), and the second contact surface CS**2** in contact with the exterior material **3**. The second contact surface CS**2** in contact with the exterior material **3** includes the second outermost surface plating film **100**Bb**2** (the second outermost surface metal film **100**Bb**2**) on at least a portion of a surface of the second contact surface CS**2**. The first contact surface CS**1** in contact with the exterior material

3 includes the plurality of first exposed surfaces E**1***a*, E**1***b*, and E**1***c* which are spaced apart from each other in the extending direction of the first metal terminal **100**A and each including an exposed surface of a metal different from the first outermost surface plating film **100**Ab**2**. The second contact surface CS**2** in contact with the exterior material **3** includes the plurality of second exposed surfaces E**2***a*, E**2***b*, and E**2***c* which are spaced apart from each other in the extending direction of the second metal terminal **100**B and each including an exposed surface of a metal different from the second outermost surface plating film **100**Bb**2**. With such a configuration, it is possible to provide a multilayer ceramic electronic component that is able to appropriately reduce or prevent excessive outflow of a bonding material such as solder and reduce or prevent the occurrence of solder splash. For example, in a case where the exposed surface is formed by processing such as laser trimming, by exposing only a minimum necessary portion without exposing the entire surface of the metal different from the outermost surface plating film, it is possible to provide a multilayer ceramic electronic component that is able to reduce or prevent the occurrence of solder splash at low cost.

[0263] (2) In a multilayer ceramic capacitor **1** according to an example embodiment of the present invention, the first metal terminal **100**A includes the first base material **100**Aa and the first plating film **100**Ab on a surface of the first base material **100**Aa. The first outermost surface plating film **100**Ab**2** includes at least an outermost surface portion of the first plating film **100**Ab. The second metal terminal **100**B includes the second base material **100**Ba and the second plating film **100**Bb on a surface of the second base material **100**Ba. The second outermost surface plating film **100**Bb**2** includes at least an outermost surface portion of the second plating film **100**Bb. With such a configuration, it is possible to provide a multilayer ceramic electronic component that is able to appropriately reduce or prevent excessive outflow of solder and reduce or prevent the occurrence of solder splash, while maintaining wettability of solder in a necessary portion.

[0264] (3) In a multilayer ceramic capacitor **1** according to an example embodiment of the present invention, the first plating film **100**Ab includes the first base plating film **100**Ab**1** that covers a surface of the first base material **100**Aa and the first outermost surface plating film **100**Ab**2** that covers a surface of the first base plating film **100**Ab**1**. The first outermost surface metal film is the first outermost surface plating film **100**Ab**2**. The second plating film **100**Bb includes the second base plating film **100**Bb**1** that covers a surface of the second base material **100**Ba and the second outermost surface plating film **100**Bb**2** that covers a surface of the second base plating film **100**Bb**1**. The second outermost surface metal film is the second outermost surface plating film **100**Bb**2**. With such a configuration, it is possible to provide a multilayer ceramic electronic component that is able to appropriately reduce or prevent excessive outflow of solder and reduce or prevent the occurrence of solder splash, while maintaining wettability of solder in a necessary portion.

[0265] (4) In a multilayer ceramic capacitor according to an example embodiment of the present invention, the first outermost surface plating film **100**Ab**2** is a Sn plating film, and the second outermost surface plating film **100**Bb**2** is a Sn plating film. As a result, the solder wettability of the necessary portion can be appropriately ensured.

[0266] (5) In a multilayer ceramic capacitor **1** according to an example embodiment of the present invention, the first base plating film **100**Ab**1** is a Ni plating film, and the second base plating film **100**Bb**1** is a Ni plating film. With such a configuration, it is possible to provide a multilayer ceramic electronic component that is able to appropriately reduce or prevent the outflow of solder and reduce or prevent the occurrence of solder splash, while maintaining solder barrier performance.

[0267] (6) In a multilayer ceramic capacitor **1** according to an example embodiment of the present invention, each of the exposed surfaces E**1***a*, E**1***b*, and E**1***c* defining and functioning as the first exposed surface is the first base plating film **100**Ab**1** of the first metal terminal **100**A, and each of the exposed surfaces E**2***a*, E**2***b*, and E**2***c* defining and functioning as the second exposed surface is the second base plating film **100**Bb**1** of the second metal terminal **100**B. With such a configuration, since it is possible to lower the solder wettability of the exposed portion, it is possible to provide a multilayer ceramic electronic component that is able to appropriately reduce or prevent the outflow of the bonding material and reduce or prevent the occurrence of solder splash.

[0268] (7) In a multilayer ceramic capacitor according to an example embodiment of the present invention, each of the first exposed surfaces E**1***a*, E**1***b*, and E**1***c* is the first base material **100**Aa of the first metal terminal **100**A, and each of the second exposed surfaces E**2***a*, E**2***b*, and E**2***c* is the second base material **100**Ba of the second metal terminal **100**B. With such a configuration, since it is possible to further lower the solder wettability of the exposed portion, it is possible to provide a multilayer ceramic electronic component that is able to appropriately reduce or prevent the outflow of solder and reduce or prevent the occurrence of solder splash.

[0269] (8) In a multilayer ceramic capacitor **1** according to an example embodiment of the present invention, each of the first metal terminal **100**A and the second metal terminal **100**B is a metal terminal mounted on a mounting surface **311** of a mounting substrate **310** on which the multilayer ceramic capacitor **1** is mounted. The first main surface TS**1** of the multilayer body **10** is a surface opposed to the mounting surface **311**. The first external electrode **40**A is provided at least on a portion of the first main surface TS**1** adjacent to the first end surface LS**1**. The second external electrode **40**B is provided at least on a portion of the first main surface TS**1** adjacent to the second end surface LS**2**. The first metal terminal **100**A includes the first bonding portion **110**A that is opposed to the first main surface TS**1** and connected to the first external electrode **40**A, the first rising portion **120**A that is connected to the first bonding portion **110**A and extends away from the mounting surface **311**, and the first extension portion **130**A that is connected to the first rising portion **120**A and extends away from the multilayer ceramic capacitor main body **2**. The second metal terminal **100**B includes the second bonding portion **110**B that is opposed to the first main surface TS**1** and connected to the second external electrode **40**B, the second rising portion **120**B that is connected to the second bonding portion **110**B and extends away from the mounting surface **311**, and the second extension portion **130**B that is connected to the second rising portion **120**B and extends away from the multilayer ceramic capacitor main body **2**. With such a configuration, it is possible to lengthen the path of the solder spreading, and it is possible to reliably prevent the solder from flowing out to an unnecessary portion.

[0270] (9) In a multilayer ceramic capacitor **1** according to an example embodiment of the present invention, the first metal terminal **100**A is plate shaped and includes the first front surface FS**1** adjacent to the first bonding surface **110**A**1** to which the first external electrode **40**A is bonded, the first opposite surface BS**1** which is a surface opposite to the first front surface FS**1**, and the first terminal lateral surface TSS**1** connecting the first front surface FS**1** and the first opposite surface BS**1**. The second metal terminal **100**B is plate shaped and includes the second front surface FS**2** adjacent to the second bonding surface **110**B**1** to which the second external electrode **40**B is bonded, the second opposite surface BS**2** which is a surface opposite to the second front surface FS**2**, and the second terminal lateral surface TSS**2** connecting the second front surface FS**2** and the second opposite surface BS**2**. This makes it possible to easily form the exposed surface. For example, the exposed surface can be easily formed by processing using laser trimming, a punching die, or the like.

[0271] (10) In a multilayer ceramic capacitor **1** according to an example embodiment of the present invention, the first exposed surfaces E**1***a* and E**1***b* provided on the first contact surface CS**1** are spaced apart from each other on the first front surface FS**1**, and respectively provided on at least a portion of a surface between the first bonding portion **110**A and a middle of the first rising portion **120**A, and on the first extension portion **130**A. The second exposed surfaces E**2***a* and E**2***b* provided on the second contact surface CS**2** are spaced apart from each other on the second front surface FS**2**, and respectively provided on at least a portion of a surface between the second bonding portion **110**B and a middle of the second rising portion **120**B, and on the second extension portion

130B. With such a configuration, it is possible to further lower the solder wettability in a plurality of portions on the surface of the metal terminal **100** including a solder joint surface, such that it is possible to provide a multilayer ceramic electronic component that is able to more appropriately reduce or prevent the outflow of solder and reduce or prevent the occurrence of solder splash. In particular, since the exposed surfaces E**1***b* and E**2***b* are present at positions close to the solder bonding surfaces, they are effective to reduce or prevent the initial outflow of solder. Since the exposed surfaces E**1***a* and E**2***a* are close to a portion where the metal terminal **100** is exposed from the exterior material **3**, it is effective to reduce or prevent the outflow of the solder from the exterior material **3**.

[0272] (11) In a multilayer ceramic capacitor **1** according to an example embodiment of the present invention, the first exposed surfaces E**1***a* provided on the first contact surface CS**1** are respectively provided on the first front surface FS**1** and the first opposite surface BS**1** of the first extension portion **130**A. The second exposed surfaces E**2***a* provided on the second contact surface CS**2** are respectively provided on the second front surface FS**2** and the second opposite surface BS**2** of the second extension portion **130**B. With such a configuration, since it is possible to further lower the solder wettability on the front surface and the back surface of the metal terminal **100**, it is possible to provide a multilayer ceramic electronic component that is able to more appropriately reduce or prevent the outflow of solder and reduce or prevent the occurrence of solder splash.

[0273] (12) In a multilayer ceramic capacitor **1** according to an example embodiment of the present invention, one of the exposed surfaces E**1***c* defining and functioning as the first exposed surface provided on the first contact surface CS**1** is provided on the first opposite surface BS**1** of the first bonding portion **110**A. One of the exposed surfaces E**2***c* defining and functioning as the second exposed surface provided on the second contact surface CS**2** is provided on the second opposite surface BS**2** of the second bonding portion **110**B. With such a configuration, it is possible to appropriately reduce or prevent the solder from flowing out to the back surface of the solder bonding surface of the metal terminal **100**.

[0274] (13) In a multilayer ceramic capacitor **1** according to an example embodiment of the present invention, the first contact surface CS**1** includes, as surfaces in contact with the exterior material **3**, a surface of the first outermost surface plating film **100**Ab**2**, a surface of the first base plating film **100**Ab**1**, and a surface of the first base material **100**Aa. The second contact surface CS**2** includes, as surfaces in contact with the exterior material **3**, a surface of the second outermost surface plating film **100**Bb**2**, a surface of the second base plating film **100**Bb**1**, and a surface of the second base material **100**Ba. With such a configuration, since it is possible to provide a portion having high solder wettability and a portion having low solder wettability on the contact surface of the metal terminal, it is possible to appropriately control the outflow of the solder. In addition, it is possible to effectively reduce or prevent the outflow of the solder while reducing the amount of processing for processing the exposed surface.

[0275] (14) In a multilayer ceramic capacitor **1** according to an example embodiment of the present invention, the first contact surface CS**1** includes, at the first bonding portion **110**A, the first outermost surface plating film **100**Ab**2** located on the first front surface FS**1**, the first base plating film **100**Ab**1** located on the first opposite surface BS**1**, and a surface of the first base material **100**Aa located on the first terminal lateral surface TSS**1**. The second contact surface CS**2** includes, at the second bonding portion **110**B, the second outermost surface plating film **100**Bb**2** located on the second front surface FS**2**, the second base plating film **100**Bb**1** located on the second opposite surface BS**2**, and a surface of the second base material **100**Ba located on the second terminal lateral surface TSS**2**. With such a configuration, since it is possible to provide a portion having high solder wettability and a portion having low solder wettability in the bonding portion of the metal terminal, it is possible to appropriately control the outflow of the solder. In addition, it is possible to effectively reduce or prevent the outflow of the solder while reducing the amount of processing for processing the exposed surface.

[0276] (15) In a multilayer ceramic capacitor **1** according to an example embodiment of the present invention, the first contact surface CS**1** includes, on at least a portion of a surface between a middle of the first rising portion **120**A and the first bonding portion **110**A, the first base plating film **100**Ab**1** located on the first front surface FS**1**, the first outermost surface plating film **100**Ab**2** located on the first opposite surface BS**1**, and a surface of the first base material **100**Aa located on the first terminal lateral surface TSS**1**. The second contact surface CS**2** includes, on at least a portion of a surface between a middle of the second rising portion **120**B and the second bonding portion **110**B, the second base plating film **100**Bb**1** located on the second front surface FS**2**, the second outermost surface plating film **100**Bb**2** located on the second opposite surface BS**2**, and a surface of the second base material **100**Ba located on the second terminal lateral surface TSS**2**. With such a configuration, it is possible to provide a portion having a high solder wettability and a portion having a low solder wettability on the surface between the middle of the rising portion of the metal terminal and the bonding portion, such that it is possible to appropriately control the outflow of the solder. In addition, it is possible to effectively reduce or prevent the outflow of the solder, while reducing the amount of processing for processing the exposed surface.
[0277] (16) In a multilayer ceramic capacitor **1** according to an example embodiment of the present invention, the first exposed surfaces E**1***a*, E**1***b*, and E**1***c* provided on the first contact surface CS**1** are respectively separated in the width direction by a hole or a notch provided in the first metal terminal **100**A. The second exposed surfaces E**2***a*, E**2***b*, and E**2***c* provided on the second contact surface CS**2** are respectively separated in the width direction by a hole or a notch provided in the second metal terminal **100**B. With such a configuration, in a case where the exposed surface is formed by processing such as laser trimming, for example, it is possible to effectively prevent the solder from flowing out, while reducing the amount of processing for processing the exposed surface.
[0278] In addition, in the example embodiments described above, a multilayer ceramic capacitor including a dielectric ceramic has been exemplified as the multilayer ceramic electronic components. However, multilayer ceramic electronic components according to example embodiments of the present invention is not limited thereto, and is applicable to various multilayer ceramic electronic components such as, for example, a piezoelectric component including a piezoelectric ceramic, a thermistor including a semiconductor ceramic, and an inductor including a magnetic ceramic. Examples of the piezoelectric ceramics include PZT (lead zirconate titanate) ceramics, examples of semiconductor ceramics include spinel ceramics, and examples of magnetic ceramics include ferrite.
[0279] The present invention is not limited to the configurations of the example embodiments described above, and can be appropriately modified and applied without departing from the scope of the present invention. The present invention also includes combinations of two or more of the individual configurations described in the example embodiments.
[0280] While example embodiments of the present invention have been described above, it is to be understood that variations and modifications will be apparent to those skilled in the art without departing from the scope and spirit of the present invention. The scope of the present invention, therefore, is to be determined solely by the following claims.

Claims

1. A multilayer ceramic electronic component comprising: a multilayer ceramic electronic component main body including a multilayer body including a plurality of ceramic layers, and a plurality of internal conductive layers each laminated on a corresponding one of the plurality of ceramic layers, a first main surface and a second main surface opposed to each other in a height direction, a first lateral surface and a second lateral surface opposed to each other in a width direction orthogonal or substantially orthogonal to the height direction, and a first end surface and a second end surface opposed to each other in a length direction orthogonal or substantially orthogonal to the height direction and the width direction, a first external electrode on the first end surface, and a second external electrode on the second end surface; a first metal terminal connected to the first external electrode via a bonding material; a second metal terminal connected to the second external electrode via the bonding material; and an exterior material covering the multilayer ceramic electronic component main body, the bonding material, a portion of the first metal terminal, and a portion of the second metal terminal; wherein the first metal terminal includes: a first bonding surface bonded to the bonding material; and a first contact surface in contact with the exterior material; the first contact surface in contact with the exterior material includes a first outermost surface metal film on at least a portion of a surface of the first contact surface; the second metal terminal includes: a second bonding surface bonded to the bonding material; and a second contact surface in contact with the exterior material; the second contact surface in contact with the exterior material includes a second outermost surface metal film on at least a portion of a surface of the second contact surface; the first contact surface in contact with the exterior material includes a plurality of first exposed surfaces spaced apart from each other in an extending direction of the first metal terminal and each including an exposed surface of a metal different from the first outermost surface metal film; and the second contact surface in contact with the exterior material includes a plurality of second exposed surfaces spaced apart from each other in an extending direction of the second metal terminal and each including an exposed surface of a metal different from the second outermost surface metal film.

2. The multilayer ceramic electronic component according to claim 1, wherein the first metal terminal includes a first base material and a first plating film on a surface of the first base material, and the first outermost surface metal film includes at least an outermost surface portion of the first plating film; and the second metal terminal includes a second base material and a second plating film on a surface of the second base material, and the second outermost surface metal film includes at least an outermost surface portion of the second plating film.

3. The multilayer ceramic electronic component according to claim 2, wherein the first plating film includes a first base plating film covering a surface of the first base material and a first outermost surface plating film covering a surface of the first base plating film, the first outermost surface metal film being the first outermost surface plating film; and the second plating film includes a second base plating film covering a surface of the second base material and a second outermost surface plating film covering a surface of the second base plating film, the second outermost surface metal film being the second outermost surface plating film.

4. The multilayer ceramic electronic component according to claim 3, wherein the first outermost surface plating film includes a Sn plating film; and the second outermost surface plating film includes a Sn plating film.

5. The multilayer ceramic electronic component according to claim 3, wherein the first base plating film includes a Ni plating film; and the second base plating film includes a Ni plating film.

6. The multilayer ceramic electronic component according to claim 3, wherein each of the first exposed surfaces is defined by the first base plating film of the first metal terminal; and each of the second exposed surfaces is defined by the second base plating film of the second metal terminal.

7. The multilayer ceramic electronic component according to claim 2, wherein each of the first exposed surfaces is defined by the first base material of the first metal terminal; and each of the second exposed surfaces is defined by the second base material of the second metal terminal.

8. The multilayer ceramic electronic component according to claim 1, wherein each of the first metal terminal and the second metal terminal is mounted on a mounting surface of a mounting substrate on which the multilayer ceramic electronic component is mounted; the first main surface of the multilayer body is opposed to the mounting surface; the first external electrode is provided at least on a portion of the first main surface adjacent to the first end surface; the second external electrode is provided at least on a portion of the first main surface adjacent to the second end surface; the first metal terminal includes a first bonding portion opposed to the first main surface and connected to the first external electrode, a first rising portion connected to the first bonding portion and extending away from the mounting surface, and a first extension portion connected to the first rising portion and extending away from the multilayer ceramic electronic component; and the second metal terminal includes a second bonding portion opposed to the first main surface and connected to the second external electrode, a second rising portion connected to the second bonding portion and extending away from the mounting surface, and a second extension portion connected to the second rising portion and extending away from the multilayer ceramic electronic component.

9. The multilayer ceramic electronic component according to claim 1, wherein the first metal terminal is plate shaped and includes a first front surface adjacent to the first bonding surface to which the first external electrode is bonded, a first opposite surface opposite to the first front surface, and a first terminal lateral surface connecting the first front surface and the first opposite surface; and the second metal terminal is plate shaped and includes a second front surface adjacent to the second bonding surface to which the second external electrode is bonded, a second opposite surface opposite to the second front surface, and a second terminal lateral surface connecting the second front surface and the second opposite surface.

10. The multilayer ceramic electronic component according to claim 9, wherein the first exposed surfaces on the first contact surface are spaced apart from each other on the first front surface, and respectively provided on at least a portion of a surface between the first bonding portion and a middle of the first rising portion, and on the first extension portion; and the second exposed surfaces on the second contact surface are spaced apart from each other on the second front surface, and respectively provided on at least a portion of a surface between the second bonding portion and a middle of the second rising portion, and on the second extension portion.

11. The multilayer ceramic electronic component according to claim 9, wherein the first exposed surfaces on the first contact surface are respectively provided on the first front surface and the first opposite surface of the first extension portion; and the second exposed surfaces on the second contact surface are respectively provided on the second front surface and the second opposite surface of the second extension portion.

12. The multilayer ceramic electronic component according to claim 9, wherein one of the first exposed surfaces on the first contact surface is provided on the first opposite surface of the first bonding portion; and one of the second exposed surfaces on the second contact surface is provided on the second opposite surface of the second bonding portion.

13. The multilayer ceramic electronic component according to claim 3, wherein the first contact surface includes, as surfaces in contact with the exterior material, a surface of the first outermost surface plating film, a surface of the first base plating film, and a surface of the first base material; and the second contact surface includes, as surfaces in contact with the exterior material, a surface of the second outermost surface plating film, a surface of the second base plating film, and a surface of the second base material.

14. The multilayer ceramic electronic component according to claim 9, wherein the first contact surface includes, at the first bonding portion, the first outermost surface plating film located on the first front surface, the first base plating film located on the first opposite surface, and a surface of the first base material located on the first terminal lateral surface; and the second contact surface includes, at the second bonding portion, the second outermost surface plating film located on the second front surface, the second base plating film located on the second opposite surface, and a surface of the second base material located on the second terminal lateral surface.

15. The multilayer ceramic electronic component according to claim 9, wherein the first contact surface includes, on at least a portion of a surface between a middle of the first rising portion and the first bonding portion, the first base plating film located on the first front surface, the first outermost surface plating film located on the first opposite surface, and a surface of the first base material located on the first terminal lateral surface; and the second contact surface includes, on at least a portion of a surface between a middle of the second rising portion and the second bonding portion, the second base plating film located on the second front surface, the second outermost surface plating film located on the second opposite surface, and a surface of the second base material located on the second terminal lateral surface.

16. The multilayer ceramic electronic component according to claim 1, wherein the first exposed surfaces on the first contact surface are respectively separated in the width direction by a hole or a notch provided in the first metal terminal; and the second exposed surfaces provided on the second contact surface are respectively separated in the width direction by a hole or a notch provided in the second metal terminal.

17. The multilayer ceramic electronic component according to claim 1, wherein a dimension of each of the first external electrodes in the length is about 20 μm or more and about 4000 μm or less.

18. The multilayer ceramic electronic component according to claim 1, wherein a dimension of each of the first and second external electrodes in the width direction is about 0.1 mm or more and about 10 mm or less.

19. The multilayer ceramic electronic component according to claim 2, wherein a thickness of each of the first and second base materials is about 10 μm or more and about 200 μm or less at a middle portion in the height direction and the width direction of the first base electrode layer.

20. The multilayer ceramic electronic component according to claim 1, wherein each of the first and second plating films includes at least one of Cu, Ni, Sn, Ag, Pd, Ag—Pd alloy, or Au.
