

resistance layer 503, and resistance layer 504. Substrate 501 has upper surface 501A and lower surface 501B opposite to upper surface 501A. Substrate 502 has upper surface 502A and lower surface 502B opposite to upper surface 502A. Substrate 501 is made of light-transmittable insulating film, such as polyethylene terephthalate or polycarbonate. Substrate 502 is made of light-transmittable insulating material, such as glass, acrylic, or polycarbonate. Resistance layer 503 is provided on lower surface 501B of substrate 501 and is made of light-transmittable resistance material, such as indium tin oxide or tin oxide. Resistance layer 4 is provided on upper surface 502A of substrate 502, and is made of light-transmittable resistance material, such as indium tin oxide or tin oxide. Resistance layers 503 and 504 are formed by sputtering.

[0043] Electrodes 532A and 532B made of electrically conductive material, such as silver or carbon, are provided at both ends of resistance layer 503 along direction 2001A. Electrodes 533A and 533B made of electrically conductive material, such as silver or carbon, are provided at both ends of resistance layer 504 along direction 2001B perpendicular to direction 2001A.

[0044] Spacer 515 has substantially a frame shape and is made of insulating material, such as non-woven fabric or polyester film. Adhesive material, such as acrylic or rubber, is applied onto upper surface 515A of spacer 515, and an outer periphery of substrate 501 is attached onto upper surface 515A. Similarly, adhesive material, such as acrylic or rubber, is applied onto lower surface 515B of spacer 515, and an outer periphery of substrate 502 is attached onto lower surface 515B. Lower surface 503B of resistance layer 503 faces upper surface 504A of resistance layer 504 by a predetermined gap between the surfaces. Plural dot spacers 531 made of insulating resin, such as epoxy or silicone, are provided on upper surface 504A of resistance layer 504 at predetermined intervals.

[0045] Light-transmittable sheet 516 is made of film, such as polyethylene terephthalate or polycarbonate film, and has upper surface 516A and lower surface 516B opposite to upper surface 516A. Strong adhesive layer 517A, such as acrylic, having a strong adhesion property having an adhesive strength to glass ranging from 0.1 N/cm to 20 N/cm, is formed on upper surface 516A of sheet 516. Sheet 516 is thus attached onto lower surface 502B of substrate 502 with strong adhesive layer 517A having the strong adhesion property.

[0046] Weak adhesive layer 517B, such as olefin-based material or styrene-based material, having a weak adhesion having an adhesive strength to glass ranging from 0.01 N/cm to 0.5 N/cm is formed on lower surface 516B of sheet 516. Removable sheet 508 made of flexible sheet, such as paper or film, is attached onto weak adhesive layer 517B. That is, an adhesion property of weak adhesive layer 517B is determined to be weaker than that of strong adhesive layer 517A.

[0047] FIG. 9 is a sectional view of input device 3001 in accordance with Embodiment 2. Removable sheet 508 of touch panel 2001 is peeled off, and then weak adhesive layer 517B is attached onto display screen 510A of display element 510, such as an LCD. Electrodes 532A, 532B, 533A, and 533B are connected to an electronic circuit of an electronic device, and thus, input device 3001 is mounted to the electronic device.

[0048] While looking at a display on display screen 510A of display element 510 through touch panel 2001, an opera-

tor presses upper surface 501A of substrate 501 with a finger or a pen to cause substrate 501 sag, thereby causing resistance layer 503 to contact resistance layer 504 at a pressed portion. The electronic circuit applies a voltage between electrodes 532A and 532B, and detects a voltage via electrode 533A or electrode 533B. The electronic circuit calculates the position of the pressed portion along direction 2001A based on the detected voltage. Then, the circuit applies a voltage between electrodes 533A and 533B, and detects a voltage via electrode 532A or 532B. The circuit calculates the position of the pressed portion along direction 2001B based on the detected voltage. As a result, the circuit calculates the respective positions of the pressed portion in directions 2001A and 2001B, so that the electronic circuit switches various functions of the electronic device in response to the calculated position.

[0049] Touch panel 2001 may be mounted to display element 510 with misalignment due to a positional deviation. Lower surface 516B of sheet 516 has weak adhesive layer 517B having the weak adhesion property, and touch panel 2001 is attached onto display element 510 with weak adhesive layer 517B. This arrangement allows touch panel 2001 to be removed from display element 510 easily and attached onto display element 510 again.

[0050] Sheet 516 is bonded to substrate 502 with strong adhesive layer 517A having a strong adhesion property, and sheet 516 is bonded to display element 510 with weak adhesive layer 517B having the adhesion property weaker than that of strong adhesive layer 517A. When touch panel 2001 is removed from display element 510, sheet 516 keeps adhering to substrate 502 and removes from display element 510. Therefore, after touch panel 2001 is removed, sheet 516 is not necessarily peeled off from display element 510.

[0051] Weak adhesive layer 517B has a weak adhesive property to glass ranging from 0.01 N/cm to 0.5 N/cm, and is applied on lower surface 516B of sheet 516, hence being neither transcribed nor attached onto display element 510. After sheet 516 is peeled off, it is not necessary to remove weak adhesive layer 517B since weak adhesive layer 517B does not remain on display element 510.

[0052] Weak adhesive layer 517B may be made of single material, such as silicone rubber or urethane rubber. According to Embodiment 2, weak adhesive layer 517B is made of thermoplastic elastomer, such as olefin-based material, styrene-based material, ester-based material, or polyvinyl chloride-based material, and hence having its adhesive property adjusted easily.

[0053] Weak adhesive layer 517B contains soft segment and hard segment which has an adhesive property stronger than that of the soft segment. Weak adhesive layer 517B made of the olefin-based thermoplastic elastomer contains ethylene propylene as the hard segment and polyethylene propylene as the soft segment. Weak adhesive layer 517B made of the styrene thermoplastic elastomer contains polybutadiene as the hard segment and polystyrene as the soft segment. Weak adhesive layer 517B made of the urethane-based thermoplastic elastomer contains polyester-polyether as the hard segment and polyurethane as the soft segment. Weak adhesive layer 517B made of the ester-based thermoplastic elastomer contains polyether-polyester as the hard segment and polyester as the soft segment. Weak adhesive layer 517B made of the polyvinyl chloride-based thermoplastic elastomer contains noncrystalline polyvinyl chloride as the hard segment and crystalline polyvinyl chloride as the soft segment.