way that the first and second capacitor electrodes are arranged opposite one another with respect to the opening or recess.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Further details and advantages of the present invention will be apparent from the following detailed description of several not limiting embodiments with reference to the attached drawings, wherein:

[0012] FIG. **1** is a schematic cross-sectional view of a laminated capacitive proximity and pressure sensor, connected to an evaluation circuit;

[0013] FIG. **2** is a cross-sectional view of a variant of the capacitive proximity and pressure sensor shown in FIG. **1**;

[0014] FIG. **3** is an illustration of different examples of electrically insulating patterns;

[0015] FIG. **4** is a schematic cross-sectional view of a laminated pressure sensor carried out as a capacitive touchpad;

[0016] FIG. **5** is a schematic cross-sectional view of a variant of the capacitive touchpad of FIG. **4**;

[0017] FIG. **6** is a schematic cross-sectional view of a laminated capacitive touchpad according to another embodiment;

[0018] FIG. **7** is a schematic cross-sectional view of a variant of the touchpad represented in FIG. **6**;

[0019] FIGS. **8***a*-**8***c* are illustrations of examples of linear layouts for the first capacitor electrodes;

[0020] FIGS. **9***a*-**9***d* are illustrations of examples of circular layouts for the first capacitor electrodes;

[0021] FIGS. **10***a*-**10***c* are illustrations of examples of layouts for the first and second capacitor electrodes for detecting position or movement in 2 dimensions.

[0022] It should be noted that the drawings are not to scale. In particular, no scale should be derived from the human finger depicted in certain of the drawings.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0023] FIG. **1** shows a first example of a laminated capacitive proximity and pressure sensor **10**. The device comprises first and second carrier films **12**, **14**, made of substantially flexible, electrically insulating material, such as e.g. PET, PEN, PI or the like. A double-sided adhesive layer **16** is sandwiched as a spacer film between the first and second carrier films **12**, **14** so as to keep these apart from one another. The double-sided adhesive layer **16** is provided with an opening **18** therein, which delimits an active zone of the proximity and pressure sensor **10**. In the active zone, the first carrier foil **12** carries a first capacitor electrode **20** on the side directed towards the second carrier film **14**, while the second carrier film **14** carries a second capacitor electrode **22** on the side directed towards the first carrier film **12**. The first and second capacitor electrodes **20**, **22** are formed from conductive material (e.g. silver ink) applied directly on the first and second carrier films **12**, **14**, respectively. The second capacitor electrode has a layer **24** of electrically insulating material (dielectric, e.g. PET, PEN, PI, etc.) formed thereon.

[0024] The right-hand side of FIG. **1** shows an evaluation circuit **26** connected to the first and second capacitor electrodes **20**, **22** by leads **28**, **30**. The evaluation circuit **26** comprises a microprocessor, an application-specific integrated circuit (ASIC) or a programmable chip, configured so as to operate in at least a first and a second mode of operation.

[0025] The evaluation circuit **26** determines, while in the first mode of operation, a quantity indicative of a capacitance between the first capacitor electrode **20** and ground and, while in the second mode of operation, a quantity indicative of a capacitance between the first capacitor electrode **20** and the second capacitor electrode **22**. The evaluation circuit **26** may operate in the first mode of operation before and/or after operating in the second mode of operation. The evaluation circuit **26** may cyclically switch between the modes of operation, e.g. several times per second. Preferably, however, the evaluation circuit **26** remains in the proximity-sensing mode (first mode) until the proximity of a body having an electric-field-changing property is detected. Alternatively, the evaluation circuit **26** could remain in the pressure-sensing mode (second mode) until a force or pressure exceeding a predefined threshold has been detected. It shall be noted that the recited "quantity indicative of a capacitance" can be any physical quantity that is linked to the capacitance by the laws of physics, such as, for instance, amplitude and/or phase of a current, amplitude and/or phase of a voltage, charge, impedance, and so forth.

[0026] The first mode of operation is associated to sensing an object having an electric-field-influencing property in the vicinity of the first capacitor electrode **20**, e.g. a user's finger **32**, a conductive stylus, or the like. In the first mode of operation, the evaluation circuit **26** keeps the first and second capacitor electrodes **20**, **22** essentially at the same electric potential, so that the electric field substantially cancels between the first and second electrodes **20**, **22**. The second electrode **22** thus acts as a driven shield for the first electrode **20** and the sensitivity of the latter is directed away from the second electrode **22**. If an oscillating voltage is applied to the first capacitor electrode **20**, an oscillating electric field to ground is built up. The object to be sensed modifies the capacitance between the first capacitor electrode **20** and ground, which is sensed by the evaluation circuit **26**. It should be noted that in the first mode of operation detecting the proximity of the object to be sensed does not require the object touching or being in contact with the proximity and pressure sensor **10**.

[0027] The second mode of operation is associated with sensing pressure exerted on the sensor **10** by some kind of actuator, such as e.g. the user's finger **32** or stylus (in order to detect the amount of pressure exerted upon the active zone of the sensor **10**). In the second mode of operation, the evaluation circuit **26** essentially determines the capacitance of the capacitor formed by the first and the second capacitor electrodes **20**, **22**. It is well known that the capacitance of a capacitor depends upon the distance between its electrodes. In the illustrated case, the distance between the first and second capacitor electrodes **20**, **22** decreases with increasing pressure exerted upon the pressure sensor **10**. As a consequence, the capacitance between the capacitor electrodes increases, which is detected by the evaluation circuit **26**.

[0028] FIG. **2** shows a variant of the proximity and pressure sensor of FIG. **1**. The construction is the same, except that the first capacitor electrode **20**, like the second capacitor electrode **22**, has formed thereon a layer **24** of electrically insulating material. Those skilled will appreciate that patterning one of the electrically insulating layers **24** allows tailoring the response of the proximity and pressure sensor **10** in the second mode of operation. As long as the electrically insulating layers **24** are spaced from one another (i.e. for low pressures exerted by the user) the pattern has no significant influence on sensor response. However, as the pressure increases the electrically insulating layers **24** come into contact and a contact