Similarly, when keyboard keys **952** or **953** are pressed, the button areas **942** or **943** are detected as conductive objects by the sensor elements **932** or **933** of the routing layer.

[0129] In one embodiment, a plastic film layer **904** is coupled between the keyboard keys **951-953** and the pad layer **903**. The plastic film layer **904** is used to evenly distribute the force applied to the keyboard key to be applied to the pad layer **903** at the portion that includes the button areas (e.g., copper of pad layer). Despite the size of the object (e.g., finger) that is applied to keyboard key, a uniform application of force is applied to the pad layer **903**. This provides consistency in the capacitance measured on the routing layer **901**.

[0130] The keyboard keys **951-953** are mechanical buttons that can be pressed towards the sensing device. These buttons are known by those of ordinary skill in the art, and accordingly, details regarding the buttons are not included so as to not obscure the description of the present embodiments. Similarly, the insulation layer **902** and plastic film layer **904** are known by those of ordinary skill in the art, and details regarding these layers have not been included.

[0131] The embodiments illustrated and described with respect to FIG. **9** may be a simpler and/or more economical than traditional keyboard designs. The sensing device **900** that is used for keyboard functionality may include fewer pins than conventional keyboards. For example, in a full-size keyboard of 101 keys, the conventional keyboards requires 101 pins, while the sensing device **900** may be implemented with less than 101 pins, depending on the sensitivity ranges of the sensor elements of the pad layer **901**. For example, 20 pins may be used to implement a full-size keyboard of 101 keys. Alternatively, other number of pins may be used, such as 16. The number of pins may also depend on the number of keyboard keys that may be pressed at the same time, such as keys that are pressed with "CNTRL" or "Shift" buttons (e.g., S, V, C, X, or the like).

[0132] The embodiments describe herein with respect to FIG. **9**A may be implemented in a sensing device having one keyboard key. Alternatively, the sensing device may have two or more keyboard keys. For example, a full-size keyboard may be implemented using the sensing device, for example, 48, 83, 84, 101, 102, 104, 105, 107, or more keyboard keys. They keyboard may have a layout, such as QWERTY, Dvorak, foreign-language layouts (e.g. "keyboard AZERTY" in French-speaking countries), a space-cadet, or APL keyboard layouts. Alternatively, other customized layouts may be used.

[0133] In one embodiment, the keyboard may be a PC keyboard. The PC keyboard has evolved over time to include more keys. For example, the PC/XT keyboard layout has 83 keyboard keys. It includes original left hand side function key (F key) columns with 10 keys F**1** through F**10**. These types of keyboards may not be compatible with later keyboard types. The PC/AT keyboard layout includes 84 keys, and the 84^{th} key is the system request key (e.g., SysRq). The numerical block is clearly separated from the main keyboard, and they PC/AT layout includes indicator LEDs for Caps/Scroll/NumLock. One enhanced keyboard layout includes 101 keyboard keys. This enhanced layout includes additional navigation and control keys, 12 function keys in row along the top of the main keyboard, often grouped as F**1**-F**4**, F**5**-F**8**, and F**9**-**12**. Another enhanced layout includes 102 keyboard keys. This layout is similar to the layout of 101 keys, but includes an additional key to the right of the left Shift key for European layouts. Another enhanced layout is the Windows® keyboard layout, which includes additional keys for the Windows® key (which provides a shortcut to open the "Start" menu in Windows® standard Explorer shell) and menu keys. Correspondingly, the European layouts included 105 keys for the additional key to the right of the left Shift key. An additional enhanced layout includes 107 keyboard keys, which includes the additional keys, such as Wake, Sleep, and Power keys for power management functionality. Alternatively, there are additional enhanced layouts that are called multimedia keyboard layouts, which may offer additional buttons to the 104 or 107 "standard" keys, often providing volume control, media player buttons, and miscellaneous user-configurable shortcuts, e.g., to email clients, web browsers, document folders, applications, etc. It should be noted that the embodiments described herein are not limited to PC keyboards, and PC keyboard keys, but may include other keyboard keys for other platforms and other systems.

[0134] FIG. **9**B illustrates a graph **950** of one embodiment of the sensitivities of the three sensor elements **931-933** of the sensing device **900** of FIG. **9**A. As described above, since the three sensor elements **931-933** are coupled together, in order to distinguish between the three button operations of the three keyboard keys **951-953**, the sensor elements **931-933** have different surface areas. By having different surface areas the sensor elements **931-933** have different sensitivity ranges. In one embodiment, the sensor element **933** has a sensitivity **943** that is above a first sensitivity threshold **945**. A button operation that corresponds to the keyboard key **953** being pressed is recognized and performed if the capacitance variation (sensitivity **941**) is within the sensitivity range **951** (T**1**). The sensor element **932** has a sensitivity **942** that is above a second sensitivity threshold **946** and below the first sensitivity threshold **945**. A button operation that corresponds to the keyboard key **952** being pressed is recognized and performed if the capacitance variation (sensitivity **942**) is within the sensitivity range **952** (T**2**). The sensor element **931** has a sensitivity **941** that is above a third sensitivity threshold (e.g., presence threshold **645** or a threshold above the presence threshold **645**) and below the second sensitivity threshold **946**. A button operation that corresponds to the keyboard key **951** being pressed is recognized and performed if the capacitance variation (sensitivity **941**) is within the sensitivity range **953** (T**3**).

[0135] In another embodiment, the sensor element are not electrically coupled together in a multiple-button per pin configuration as described with respect to FIGS. **9**A and **9**B, but are configured in a one-button per pin configuration. In this embodiment, the number of pins is equal to the number of buttons implemented in the sensing device. This configuration may allow the user to have a mechanical feel for pressing the physical button. This configuration, however, may increase the cost of the device due to the increased number of pins. Alternatively, some sensor elements of the sensing device may be electrically coupled in multiple-button per pin configuration and others in one-button per pin configurations.

[0136] Embodiments of the present invention, described herein, include various operations. These operations may be performed by hardware components, software, firmware, or a combination thereof. As used herein, the term "coupled to" may mean coupled directly or indirectly through one or more intervening components. Any of the signals provided