

[0025] Therefore, the invention provides for a touch screen or touch screen assembly for an electronic device. The touch screen assembly has a first outer layer of transparent insulator with a first trace of transparent conductor disposed thereon on an inside surface, and a second outer layer of transparent insulator having a second trace of transparent conductor disposed thereon on an inside surface. The two outer layers are separated by a separator layer formed of transparent insulator. The separator has a plurality of openings formed therethrough, and each of the openings corresponds to one of a plurality of button locations. To detect the press of one of the buttons defined by the button locations, a voltage is applied to the first trace of transparent conductor thereby creating a voltage gradient across it. The voltage level at the pressed button location may be read via the second trace of transparent conductor when the first and second traces of transparent conductor make contact upon being pressed together. To perform the detection, the second trace of transparent conductor is electrically coupled to a detection circuit for detecting the voltage level at the button location. In the preferred embodiment, the first and second traces of transparent conductor are formed of indium tin oxide. To enhance the likelihood that the first and second traces will make contact, it is preferred that the first and second traces of transparent conductor form pad segments at the button locations.

[0026] Furthermore, it is contemplated that the invention provides a transparent push button apparatus for an electronic device comprised of a first outer layer of transparent insulator having a first trace of transparent conductor disposed thereon on an inside surface and a second outer layer of transparent insulator having a second trace of transparent conductor disposed thereon on an inside surface. The two outer layers being separated by a separator layer formed of transparent insulator disposed between the first and second outer layers and having an opening formed therethrough, and wherein the opening corresponds to a button location. Located in correspondence with the button location is a display means or display element for displaying a first image when the electronic device is operated in a first configuration of operation, and for displaying a second image when the electronic device is operated in a second configuration of operation. In the instance where more than one push button or touch button is needed, the invention further provides that the separator layer comprises a plurality of openings, and each of the plurality of opening corresponds to a different one of a plurality of button locations. The display means displays a first image set having a plurality of images when the electronic device is operated in the first configuration of operation, and a second image set having a plurality of images when the electronic device is operated in the second configuration of operation. Each of the plurality of images in the first and second image sets are displayed at a different one of the plurality of button locations so as to be visible to a user of the electronic device.

[0027] Furthermore, the inventions provides for a multi-configuration portable electronic device having a first portion and a second portion. The first and second portions are hingeably joined and moveable with respect to each other, and can be moved into at least a first configuration and a second configuration. The multi-configuration portable electronic device also has a touch screen display disposed on the first portion. The touch screen display includes a display element with a touch screen assembly disposed on the

display element. The touch screen assembly is comprised of a first outer layer of transparent insulator having a first trace of transparent conductor disposed thereon on an inside surface, and a second outer layer of transparent insulator having a second trace of transparent conductor disposed thereon on an inside surface. The outer layers are separated by a separator layer formed of transparent insulator disposed between the first and second outer layers and having a plurality of openings formed therethrough. Each of the openings corresponding to one of a plurality of button locations.

[0028] While the preferred embodiments of the invention have been illustrated and described, it will be clear that the invention is not so limited. Numerous modifications, changes, variations, substitutions and equivalents will occur to those skilled in the art without departing from the spirit and scope of the present invention as defined by the appended claims.

What is claimed is:

1. A touch screen for an electronic device, comprising:

- a first outer layer of transparent insulator having a first trace of transparent conductor disposed thereon on an inside surface;
- a second outer layer of transparent insulator having a second trace of transparent conductor disposed thereon on an inside surface; and
- a separator layer formed of transparent insulator disposed between the first and second outer layers and having a plurality of openings formed therethrough, each of the openings corresponding to one of a plurality of button locations;

wherein the first and second transparent conductor traces intersect at the button locations.

2. A touch screen as defined in claim 1, wherein a voltage is applied to the first trace of transparent conductor thereby creating a voltage gradient across the first trace of transparent conductor, and wherein a voltage level at the button location may be read via the second trace of transparent conductor when the first and second traces of transparent conductor make contact upon being pressed together by a user of the touch screen display.

3. A touch screen as defined in claim 2, wherein the second trace of transparent conductor is electrically coupled to a detection circuit for detecting the voltage level at the button location.

4. A touch screen as defined in claim 1, wherein the first and second traces of transparent conductor are formed of indium tin oxide.

5. A touch screen as defined in claim 1, wherein the first and second traces of transparent conductor form pad segments corresponding to the button locations.

6. A transparent push button apparatus for an electronic device, comprising:

- a first outer layer of transparent insulator having a first trace of transparent conductor disposed thereon on an inside surface;
- a second outer layer of transparent insulator having a second trace of transparent conductor disposed thereon on an inside surface;