

a second transparent, conductive sheet disposed to define a gap between the first and second transparent, conductive sheets, the first transparent, conductive sheet being flexible to allow local deformation towards the second transparent, conductive sheet due to a touch force without contacting the second transparent, conductive sheet so as to produce a change in capacitance between the first and second transparent, conductive sheets.

12. The touch sensor of claim 11, wherein the thickness of the supporting layer is greater than the thickness of the gap between the first and second conductive sheets.

13. The touch sensor of claim 11, wherein the supporting layer is comprised of PET.

14. The touch sensor of claim 11, further comprising at least one protective coating provided on at least one of the first and second conductive sheets, within the gap between the first and second conductive sheets.

15. The touch sensor of claim 14, wherein the thickness of the at least one protective coating is in the range of approximately $1\ \mu\text{m}$ to $4\ \mu\text{m}$.

16. The touch sensor of claim 14 wherein the at least one protective coating has a refractive index less than the refractive index of its associated conductive sheet.

17. The touch sensor of claim 14, wherein at least one element is disposed within the gap to prevent the first and second conductive sheet from touching when the first conductive sheet is moved towards the second conductive sheet.

18. The touch sensor of claim 17, wherein the at least one element includes a plurality of spacers disposed in the gap between the first and second conductive sheets.

19. The touch sensor of claim 17, wherein the at least one element includes a layer of material disposed in the gap between the first and second conductive sheets.

20. The touch sensor of claim 14, wherein a dielectric material is disposed in the gap between the first and second conductive sheet.

21. The touch sensor of claim 20, wherein the dielectric material is a fluid.

22. The touch sensor of claim 20, wherein the fluid is a deformable, elastic material.

23. The touch sensor of claim 22, wherein the electrical properties of the dielectric material change when the dielectric material is compressed.

24. The touch sensor of claim 23, wherein the dielectric material is loaded with conductive particles.

25. The touch sensor of claim 24, wherein the conductive particles include at least one of metal particles, metal oxide particles, metal coated particles and metal oxide coated particles.

26. The touch sensor of claim 20, wherein the dielectric material is a piezoelectric material.

27. The touch sensor of claim 20, wherein the refractive index of the dielectric material is less than the refractive index of at least one of the first and second conductive sheets.

28. The touch sensor of claim 11, further comprising:

a controller coupled to the first and the second conductive sheets through a plurality of contacts to determine a two-dimensional position of the portion of the first conductive sheet moving towards the second conductive sheet.

29. The touch sensor of claim 28, wherein the controller drives one of the first and second conductive sheets with an

electrical signal referenced to the other of the first and second conductive sheets, and measures capacitive current flow between the first and the second conductive sheets.

30. The touch sensor of claim 29, wherein capacitive current flow is measured at two or more peripheral locations on at least one of conductive sheets.

31. The touch sensor of claim 11, wherein the second conductive sheet shields the touch sensor from electromagnetic interference caused by a display device disposed below the touch sensor.

32. The touch sensor of claim 11, wherein at least one of the first and second conductive layers has a resistivity of no more than 2,000 ohms/square.

33. A touch sensor, comprising:

a first conductive layer, the first conductive layer being transparent and flexible;

a second conductive layer, the second conductive layer being transparent and disposed relative to the first conductive layer to define a gap between the first and second conductive layers, the first transparent, conductive layer being flexible to allow local deformation towards the second transparent, conductive layer due to a touch force without contacting the second transparent, conductive layer so as to produce a change in capacitance between the first and second transparent, conductive layers; and

a plurality of spacers located within the gap, the plurality of spacers being transparent and permitting movement of the first conductive layer towards the second conductive layer under a touch while maintaining a predetermined minimum distance between the first and second conductive layers.

34. The touch sensor of claim 33, wherein the predetermined distance is in a range of 5 to $500\ \mu\text{m}$.

35. The touch sensor of claim 33, wherein a separation distance between adjacent spacers is in a range of 20 to $5000\ \mu\text{m}$.

36. The touch sensor of claim 33, wherein the plurality of spacers is formed on a layer of the touch sensor.

37. The touch sensor of claim 36, wherein the spacers are formed of a UV curable material.

39. The touch sensor of claim 33, wherein at least one of the first and second conductive layers includes a protective coating.

40. The touch sensor of claim 39, wherein the plurality of spacers is formed integrally with the protective coating.

41. The touch sensor of claim 40, wherein a surface of the protective coating with integrated spacers is roughened so as to reduce glare and occurrence of Newton's rings.

42. The touch sensor of claim 33, wherein the spacers are formed of a particle loaded material.

43. The touch sensor of claim 42, wherein the spacers are formed of a material loaded with silica particles.

44. A touch screen display system, comprising:

a touch screen for sensing a touch, including

a first transparent, conductive sheet supported on a flexible, transparent supporting layer;

a second transparent, conductive sheet disposed relative to the first transparent, conductive layer and defines a gap therebetween, the first transparent, conductive sheet being flexible to allow local defor-