with the invention (touch pad **800**), raised structures **655** may be replaced by beads or polymer dots **805** (also referred to as rubber or elastomer dots). In this embodiment, beads **805** operate in a manner similar to that of raised structures **655** (see FIG. **6**). As shown, beads **805** rest on a thin adhesive layer **810** and are sized to keep layers **630** and **640** at a specified distance when no applied force is present. One illustrative layout and spacing of beads **805** is shown in FIGS. **8**B (lop view) and **8**C (cross-section). Table 2 identifies the approximate dimensions for each component of touch pad **800** that is different from prior illustrated touch pad **600**.

TABLE 2

Dimensions for Illustrative Touch Pad 800

Layer	Material	Thickness (mm)
805	Rubber or polymer (e.g., elastomer)	
810	Pressure sensitive adhesive ("PSA") or ultraviolet ("UV") light cured adhesive	0.015
a	Column bead separation	1.0
b	Row bead separation	5.0
c	Bead offset	2.5 ± 0.15
d	Bead height	0.15

Active touch pad surface: 271 mm × 69 mm
No of drive traces (620 and 650): 13
Number of sense traces (625): 54
Pixel separation: 5 mm

[**0032**] Referring to FIG. **9**A, in yet another embodiment of a combined touch and force sensitive touch pad in accordance with the invention (touch pad **900**), a single layer of deformable beads or elastomer dots **905** are used. In touch pad **900**, thin adhesive layers **910** are used to mechanically couple the beads to the rest of the touch pad structure and the structure itself to base **665**. One illustrative layout and spacing of deformable beads **905** is shown in FIGS. **9**B (lop view) and **9**C (cross-section). Table 3 identifies the approximate dimensions for each component of touch pad **900** that is different from prior illustrated touch pad **600**.

TABLE 3

Dimensions for Illustrative Touch Pad 900

Layer	Material	Thickness (mm)
905	Rubber or polymer (e.g., elastomer)	
910	Pressure sensitive adhesive ("PSA") or ultraviolet ("UV") light cured adhesive	0.015
a	Column bead separation	1.0
b	Row bead separation	1.0
c	Bead offset	0.5
d	Bead width	0.5
e	Bead height	0.15

Active touch pad surface: 271 mm × 69 mm
No of drive traces (620 and 650): 13
Number of sense traces (625): 54
Pixel separation: 5 mm

[**0033**] Referring to FIG. **10**A, in another embodiment of a combined touch and force sensitive touch pad in accordance with the invention (touch pad **1000**), spring membrane **1005** is used instead of raised structures (e.g., **530** and **655**) or deformable beads (e.g., **805** and **905**). In touch pad **1000**, thin adhesive layers **1010** are used to mechanically couple PET spring **1005** to layers **635** and **640** as well as to mechanically couple layer **645** to base **665**. Referring to FIG. **10**B, in one embodiment spring membrane comprises a single rippled sheet of PET whose run-to-rise ratio (i.e., a/b) is typically in the range of approximately 10:1 to 50:1. One of ordinary skill in the art will recognize that the exact value used in any given embodiment may change due to a variety of factors such as, for example, the physical size of the touch pad surface, the amount of weight specified for full deflection (e.g., 200 grams) and the desired sense of "stiffness" presented to the user. Table 4 identifies the approximate dimensions for each component of touch pad **1000** that is different from prior illustrated touch pad **600**.

TABLE 4

Dimensions for Illustrative Touch Pad 1000

Layer	Material	Thickness (mm)
1005	PET	0.75
1010	Pressure sensitive adhesive ("PSA") or ultraviolet ("UV") light cured adhesive	0.025
a/b	Spring run-to-rise ratio	10:1 → 50:1

Active touch pad surface: 271 mm × 69 mm
No of drive traces (620 and 650): 13
Number of sense traces (625): 54
Pixel separation: 5 mm

[**0034**] Referring to FIG. **11**A, in another embodiment rippled spring membrane **1005** may be replaced by dimpled spring membrane **1105**. In this implementation, spring membrane **1105** is a single sheet of deformable material (e.g., PET) that has dimples formed in it by, for example, thermal or vacuum forming techniques. FIGS. **11**B and **11**C show top views of two possible dimple arrangements. Two illustrative layouts (lop view) for dimpled membrane **1105** are shown in FIGS. **11**B and **11**C. As used in FIGS. **11**A-**11**C, the "+" symbol represents a raised region and a "−" symbol represents a depressed region. Table 5 identifies the approximate dimensions "a" through "e" specified in FIG. **11**A.

TABLE 5

Dimensions for Illustrative Spring Membrane 1100

Layer	Material	Thickness (mm)
1105	PET	0.075
a	Dimple top length	1.0
b	Dimple width	1.25
c	Dimple separation	2.5
d	Dimple rise and fall length	0.075

[**0035**] Various changes in the materials, components and circuit elements are possible without departing from the scope of the following claims. For example, drive traces and sense traces in accordance with FIGS. **1**-**10** have been described as being orthogonal. The manner in which drive traces and cut across or intersect with sense traces, however, generally depends on the coordinate system used. In a Cartesian coordinate system, for example, sense traces are orthogonal to the driving traces thereby forming nodes with distinct x and y coordinates. Alternatively, in a polar coordinate system, sense traces may be concentric circles while drive traces may be radially extending lines (or vice versa).

[**0036**] In addition, in the embodiments of FIGS. **1** and **2**, drive layer **135** and drive traces **140** (and, therefore, con-