

preferred embodiment is the monitoring of the temperature of the liquid crystal and the integral heating of the device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] The above and other objects and features of the invention will be better understood and appreciated by those skilled in the art in view of the description of the preferred embodiments given below in conjunction with the accompanying drawings, in which:

[0025] **FIG. 1** is a perspective view of a single wafer having a plurality of display devices formed thereon in accordance with the invention.

[0026] **FIG. 2A** is a schematic illustration of a die for an integrated active matrix panel display which includes optional control signal circuitry therein.

[0027] **FIG. 2B and 2C** illustrate preferred embodiments of display control circuits in accordance with the invention.

[0028] **FIG. 2D** illustrates a method for selectively displaying an image on a display in accordance with the invention.

[0029] **FIG. 2E** illustrates a timing diagram for the display control circuit illustrated in **FIG. 2D**.

[0030] **FIG. 2F** illustrates an alternative preferred embodiment of the display control circuit in accordance with the invention.

[0031] **FIG. 2G** illustrates a timing diagram for the display control circuit illustrated in **FIG. 2F**.

[0032] **FIG. 2H** illustrates a portion of the display control circuit shown in **FIG. 2F**.

[0033] **FIG. 2I** illustrates an alternative timing diagram for the display control circuit illustrated in **2F**.

[0034] **FIG. 2J** illustrates an alternative preferred embodiment of the display with a heat gate.

[0035] **FIG. 2K** illustrates a portion of the display shown in **FIG. 2J**.

[0036] **FIG. 2L** illustrates an alternative embodiment of a portion of the display shown in **FIG. 2J**.

[0037] **FIG. 2M** is an enlarged sectional view of the display in its housing.

[0038] **FIGS. 3A and 3B** are exploded views of a video display device and pager in accordance with a preferred embodiment of the invention.

[0039] **FIGS. 4A-4K** are exterior views of hand-held imaging devices in accordance with the invention.

[0040] **FIG. 4Ba** is a partial cross section rear view of a preferred embodiment of a pager with integrated camera in accordance with the invention.

[0041] **FIG. 4L** is a functional block diagram of a preferred pager according to the invention.

[0042] **FIG. 5A** is a side view of a lens suitable for magnifying a microdisplay in accordance with the invention.

[0043] **FIG. 5B** is a side view of a multi element lens providing an increased field of view.

[0044] **FIG. 5C** is a cross-sectional view of a display assembly with a fixed lens.

[0045] **FIG. 5D** is a schematic view of an LED backlighting system for a liquid crystal display in accordance with the invention.

[0046] **FIGS. 5E-5P** illustrate additional preferred embodiments of a backlighting system in accordance with the invention.

[0047] **FIG. 5Q** illustrates a single lens positioned adjacent the kinoform.

[0048] **FIG. 5R** illustrates the first three zones of a kinoform.

[0049] **FIG. 6A** is an optical diagram of a lighting system for a reflective liquid crystal display.

[0050] **FIG. 6B** is an enlarged sectional view of a reflective liquid crystal display in its housing.

[0051] **FIG. 6C** is an enlarged sectional view of a reflective liquid crystal display with an alternative backlight.

[0052] **FIGS. 7A-7G** illustrate preferred LED backlighting systems for a transmission type display.

[0053] **FIG. 8A** is a perspective view of a preferred embodiment mobile telephone having a display device in accordance with the invention.

[0054] **FIGS. 8B-8C** illustrate an alternative embodiment of a mobile telephone having a display device in accordance with the invention.

[0055] **FIGS. 8D-8G** illustrate the changing of the resolution of the display from high resolutions to low resolutions.

[0056] **FIGS. 8H-8I** illustrate an alternative embodiment of a mobile telephone having a display device in accordance with the invention.

[0057] **FIGS. 9A-9J** are illustrations of further preferred embodiments of a telephone microdisplay system in accordance with the invention.

[0058] **FIGS. 10A and 10B** illustrate another preferred embodiment of a telephone microdisplay system.

[0059] **FIG. 11** illustrates another preferred embodiment of a telephone microdisplay system in accordance with the invention.

[0060] **FIGS. 12A and 12B** illustrate rear views of another preferred embodiment of a telephone microdisplay.

[0061] **FIGS. 13A-13K** illustrate other preferred embodiments of the invention including a display docking system for a cellular telephone.

[0062] **FIGS. 13L-13N** illustrate a folding keyboard with a touchpad for uses with phone, display docking system, or pager.

[0063] **FIGS. 13O-13S** illustrate other preferred embodiments of the invention including a display docking system for a cellular telephone.

[0064] **FIG. 13T** illustrates an alternative embodiment of a display control circuit for a telephone or docking station capable of receiving an analog phone or a digital phone.