CLAIMS

Claim 1:

A display panel, comprising:

a substrate, having a bonding pad area, a repair area, and a pixel array area, wherein the repair area is located between the bonding pad area and the pixel array area;

a plurality of first bonding pads and a plurality of repair pads, located over the bonding pad area, wherein the plurality of repair pads are located between the plurality of first bonding pads;

a pixel array, located over the pixel array area;

a plurality of first data lines, extending from the bonding pad area to the pixel array area, wherein the plurality of first data lines electrically connect the plurality of first bonding pads to the pixel array respectively, each of the plurality of first data lines comprises a first fan-out line segment, a first repair area line segment, a second fan-out line segment, and a pixel array area line segment, the first fan-out line segment is connected to a corresponding one of the plurality of first bonding pads and extends from the bonding pad area to the repair area, the first repair area line segment is disposed over the repair area and connected between the first fan-out line segment and the second fan-out line segment, and the pixel array area line segment is disposed over the pixel array area and electrically connected to the second fan-out line segment and a light-emitting element, wherein by setting the second fan-out line segment, a distance between adjacent pixel array area line segments is less than a distance between adjacent first repair area line segments;

a plurality of transfer lines, located over the repair area and across the plurality of first data lines, wherein the plurality of transfer lines extend along a first direction, and the first repair area line segment extends along a second direction perpendicular to the first direction;

a plurality of repair signal lines, extending from the bonding pad area to the repair area and electrically connected to the plurality of repair pads respectively, wherein an end of each of the plurality of repair signal lines is located over the repair area, wherein each of the plurality of repair signal lines comprises a fan-out line segment and a second repair area line segment, the fan-out line segment is connected to a corresponding one of the plurality of repair pads and extends from the bonding pad area to the repair area without extending into the repair area, the second repair area line segment is disposed over the repair area without extending into the pixel array area, and the second repair area line segment is connected to the fan-out line segment, wherein the first repair area line segments are arranged in a first group of the plurality of first data lines and a second group of the plurality of first data lines separated from the first group of the plurality of first data lines and the second repair area line segment of each of the plurality of repair signal lines is located between the first repair area line segments of the first group of the plurality of first data lines and the first repair area line segments of the second group of the plurality of first data lines; and

an isolation layer, located between the plurality of transfer lines and the plurality of repair signal lines.

Claim 2:

The display panel of claim 1, wherein at least a part of the plurality of repair signal lines is electrically insulated from the plurality of transfer lines due to the isolation layer.

Claim 3:

The display panel of claim 1, further comprising:

a second data line, extending from the bonding pad area to the pixel array area and

comprising a first line segment and a second line segment separated from each other, wherein the second line segment is electrically connected to the pixel array, wherein one of the plurality of repair signal lines is electrically connected to one of the plurality of transfer lines through a first connection point located in the isolation layer, and the one of the plurality of transfer lines is electrically connected to the second line segment through a second connection point located in the isolation layer.

Claim 4:

The display panel of claim 3, wherein a position where the first line segment and the second line segment are separated is located between the bonding pad area and the repair area.

Claim 5:

The display panel of claim 3, further comprising:

a second bonding pad, located over the bonding pad area, wherein the first line segment is electrically connected to the second bonding pad.

Claim 6:

The display panel of claim 1, further comprising:

a chip-on-film package structure, bonded to the plurality of first bonding pads and the plurality of repair pads.

Claim 7:

A fabrication method of a display panel, comprising:

providing a pixel array substrate, the pixel array substrate comprising:

a substrate, having a bonding pad area, a repair area, and a pixel array area, wherein the repair area is located between the bonding pad area and the pixel array area;

a plurality of first bonding pads and a plurality of repair pads, located over the bonding pad area, wherein the plurality of repair pads are located between the plurality of first bonding pads;

a second bonding pad, located over the bonding pad area;

a pixel array, located over the pixel array area;

a plurality of first data lines, extending from the bonding pad area to the pixel array area, wherein the plurality of first data lines electrically connect the plurality of first bonding pads to the pixel array respectively, each of the plurality of first data lines comprises a first fan-out line segment, a first repair area line segment, a second fan-out line segment, and a pixel array area line segment, the first fan-out line segment is connected to a corresponding one of the plurality of first bonding pads and extends from the bonding pad area to the repair area, the first repair area line segment is disposed over the repair area and connected between the first fan-out line segment and the second fan-out line segment, and the pixel array area line segment is disposed over the pixel array area and electrically connected to the second fan-out line segment and a light-emitting element, wherein by setting the second fan-out line segment, a distance between adjacent pixel array area line segments is less than a distance between adjacent first repair area line segments;

a second data line, extending from the bonding pad area to the pixel array area;

a plurality of transfer lines, located over the repair area and across the plurality of first data lines and the second data line, wherein the plurality of transfer lines extend along a first direction, and the first repair area line segment extends along a second direction

perpendicular to the first direction;

a plurality of repair signal lines, extending from the bonding pad area to the repair area and electrically connected to the plurality of repair pads respectively, wherein an end of each of the plurality of repair signal lines is located over the repair area, wherein each of the plurality of repair signal lines comprises a fan-out line segment and a second repair area line segment, the fan-out line segment is connected to a corresponding one of the plurality of repair pads and extends from the bonding pad area to the repair area without extending into the repair area, the second repair area line segment is disposed over the repair area without extending into the pixel array area, and the second repair area line segment is connected to the fan-out line segment, wherein the first repair area line segments are arranged in a first group of the plurality of first data lines and a second group of the plurality of first data lines separated from the first group of the plurality of first data lines and the second repair area line segment of each of the plurality of repair signal lines is located between the first repair area line segments of the first group of the plurality of first data lines and the first repair area line segments of the second group of the plurality of first data lines; and

an isolation layer, located between the plurality of transfer lines and the plurality of repair signal lines;

performing a detection procedure on the pixel array substrate to detect an open circuit or a short circuit of the second data line; and

performing a welding process to form a first connection point and a second connection point in the isolation layer, wherein one of the plurality of repair signal lines is electrically connected to one of the plurality of transfer lines through the first connection point, and the one of the plurality of transfer lines is electrically connected to a part of the second data line

through the second connection point.

Claim 8:

The fabrication method of claim 7, further comprising:

performing a cutting process to cut the second data line into a first line segment and a second line segment separated from each other, wherein the first line segment is electrically connected to the second bonding pad, and the second line segment is electrically connected to the pixel array and the second connection point.

Claim 9:

The fabrication method of claim 7, further comprising:

providing a data line signal for the one of the plurality of repair signal lines, wherein another one of the plurality of repair signal lines is floating.