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News Release from DKN Research, Haverhill, Massachusetts

Cut & Paste Printed Resistors and Capacitors for Flexible Film Substrates

DKN Research, a leading engineering firm specializing in micro electronics and packaging technology, recently developed a new passive component series of Printed Resistors and Capacitors built with fine silver thick film circuits on flexible film substrates for cut & paste applications. This is possible through an advanced screen-printing process using special silver inks, carbon inks, dielectric inks and related materials that include substrates and insulating materials as the fundamental technology for Printable Electronics.

Polymer thick film circuits were always considered an economical solution, but performance levels from the printed circuit technology were sub par due to poor resolution and electrical conductivity. Traditional thick film circuits were intended for typical low end items such as keyboard membrane switches and touch panels on microwaves. Technical advances with ink materials and printing equipment over the last few years has trickled down, and the wiring capabilities from the new thick film circuits are closer to traditional etched copper circuits.

DKN Research developed an “Advanced Screen-Printing Technology” and can build functional thick film circuits by partnering with equipment and material manufacturers. DKN’s Advanced Screen-Printing Technology can produce fine silver traces down to 30 micron lines and spaces for double and multilayer circuits with 80 micron via holes. The conductivity of the new silver traces is one order higher compared to traditional thick film circuits. Surprisingly, the conductor traces are available for soldering, unlike traditional polymer thick film circuits where soldering is impossible. Additionally, the new Advanced Screen-Printing Technology makes it possible to build embedded passive components and EL based optical components on flexible substrates. The Advanced Screen-Printing Technology is valuable in building new electronic devices such as high-density touch panel switches, functional sensor modules, large size signboards, flexible displays and more. The technology is also beneficial to build additional fine conductive traces on other circuit devices including multi-layer rigid boards, flexible circuits, ceramic circuits and monolithic IC chips.

DKN Research continues to develop broad ranges of printable passive components that are truly value added with Advanced Screen-Printing Technology. Currently, a wide range of ohms is available in the form of printed resistors (from 100 ohms to 10 mega ohms), as well as a large capacitance of Farads (up to 5000 pico Farads) as printed capacitors with fine line silver circuits built on flexible substrates. The look and performance from these printed components are slightly different from traditional discrete components, so DKN Research now markets a set of printed resistors and capacitors built on polyimide film for a better understanding of their new product. A set of resistors (from 1 kilo ohms to 100 kilo ohms) and capacitors (from 100 pico Farads to 1000 pico Farads) are screen-printed on 4 inches square silver conductor flexible circuits. Users can measure the performances from these printed components built on the films, and cut the appropriate items simply by using a knife or scissors. Each resistor or capacitor can be pasted on circuit boards using glue. Conductive glue, conductive sticky tape or low temperature soldering are recommended for the component’s electrical

