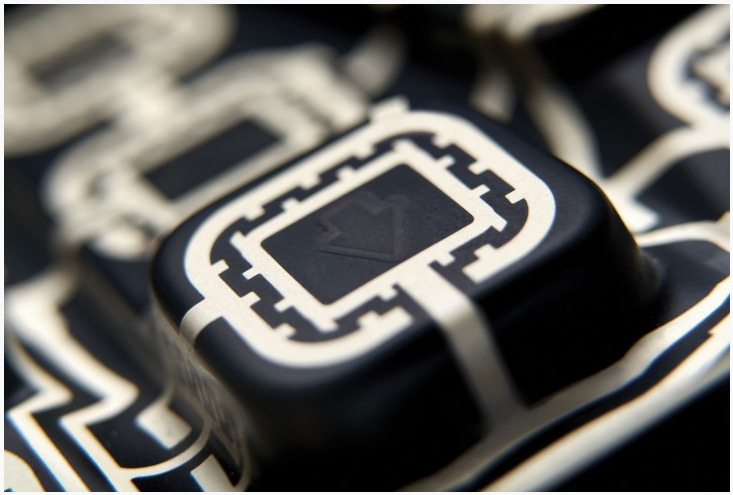
DuPont In-Mold Electronic Technology



Applications
Appliances
Automotive
Aerospace
Consumer Electronics

Beautiful when you see it.
Brilliant when you see it work.

Meet the perfect union of form and function. One that combines an innovative, more stretchable material with dramatic advancements in electronic ink to give interface designers new creative freedom, without any compromise in meeting functional switching needs. And because these new electronic inks work with existing in-mold decorative processes, there's no need for costly re-tooling. Now you can create products with greater eye appeal, simplicity, and performance—all at the same time.

Features and Benefits

More than 70% lighter
Buttons and wires account for most of the weight in conventional switches. Our In-Mold Electronic Technology eliminates them both.

Up to 30% less cost
With fewer parts and manufacturing steps, In-Mold Electronic Technology makes production simpler and more efficient than even before.

Part assembly time cut by 40%
Assembly is a single-connection, "snap-on" process, significantly reducing assembly time while increasing reliability and enhancing ease of service.

New design freedom
Your ideas are no longer constrained by the need to conform to bulky circuitry. Capacitive LED switches can now be arrayed anywhere, in virtually any shape.

Conductive Inks with low-T and rapid curing

DuPont offers electronic inks that cure quickly at low temperatures, expanding the possibility of printing electronics onto an entirely new group of plastic films

DuPont™ PE827 and PE828 low-temperature inks cure at as low as 60°C, opening up the possibility for printed electronics designers to use less expensive plastic films. By expanding substrate choices, the possibility for implementing printed electronics in new applications continues to grow. Potential applications could include printed antennas, sensor applications, heated surfaces, and smart packaging applications..

Key features of the low-temperature inks developed by DuPont include:

- Excellent print resolution
- High-throughput printing performance
- Excellent screen life

Material Solutions for Self-Limiting HeatersMaterial Solutions for Self-Limiting Heaters. Polymer thick film materials and PTC carbon resistors from DuPont are helping to enhance performance and safety for OEMs and auto drivers.

With a wide array of material solutions for self-limiting heaters, DuPont offers the most cost-effective and high-performing option for creators of self-limiting resistive-based heating systems. Auto OEMs depend on material solutions from DuPont for a wide variety of applications where low temperature, controlled thermal gradients, uniform heating and localized temperature control are crucial, without requiring complex electronic controllers or feedback loops.

The unique positive thermal coefficient of resistance (PTC) carbon compositions, coupled with high conductivity polymer thick film (PTF) silver conductors, along with industry-leading system compatibility at both substrate level (PET, PEN, polyimide) and adhesive layers deliver a self-limiting heater solution that is both reliable and simple.

The PTC carbon compositions generate resistive heat up to a specific temperature. Due to their molecular nature, they are not able to surpass this threshold. The total thermal mass of the system is determined by the shape, size, number and distribution of each individual printed heater element. Because each single resistive element is self-limiting, once the equilibrium temperature is reached, heat will only be applied where it's necessary without complicated electronic controllers or feedback loops.

Different temperature levels are possible via simplified selector switches and heater circuit layout. Safety is always top-of-mind with respect to resistive heat systems, and PTC-based heaters are inherently safe because of the way they function at the molecular level. Aside from being self-limiting, another important feature is that the heater elements/heater mat always fail to cold independent of the failure mode.

PTC-based heater solutions can be found in many aspects of daily life.

From automotive applications (such as external mirror heaters, seat heaters, etc.),
to structural home systems (including mirror heaters, floor heaters, bed heaters, etc.)
to small appliances (like rice or vegetable cookers)

PTC-based heater solutions are helping to keep people comfortable and safe.

Kapton™ Conductive Inks for High Temperature Applications

Extreme versatility and thermal performance provides unlimited potential.

For applications where extremes of heat and vibration are the norm, designers have relied on Kapton® film because of its ability to maintain its unique combination of mechanical and electrical properties under the harshest of conditions. Now DuPont brings these capabilities to a line of conductive and insulating electronic inks. DuPont™ Kapton™ KA801 is a screen printable polyimide silver conductor paste. This composition is particularly suited for applications requiring high operating temperatures or challenging environments.

Key benefits of Kapton™ inks developed by DuPont include:

Highly conductive silver for higher temperature operation up to 230OC
Good thermal/chemical stability
Developed for maximum compatibility with Kapton® films
Additive technology
Ideal for heater applications

DuPont Conductive Inks for Digital Printing

DuPont’s conductive inks for digital printing offer the high conductivity and strong adhesion required for rapid digital design, prototyping and full-scale manufacturing

DuPont’s newest conductive ink, PE410, enables rapid prototyping and a smooth transition from “lab to fab” with the versatility to scale up to industrial high-volume ink-jet print heads and machines. This allows circuit designers to immediately test a new design, quickly make necessary edits, and, due to reduced silver laydown, save on material costs.The technology also can be adapted to non-planar printing, enabling a series of new and emerging applications.

PE410 will enable digital printing for electronic components and circuits in applications where extremely fine lines are required, such as OLED panels, solar cells, printed antennae and touch panels.

Key features include:

Outstanding electrical conductivity
Good jet performance and ease of use
High print thickness for ink-jet process
Excellent adhesion to various substrates
Smooth sintered surface