



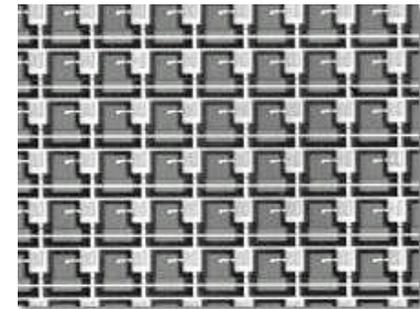
FASwitch Technologies

Company and Technology Overview

Flexible Array Switches  **Changing How You See the World**

Why FASwitch?

- ❑ Many products use arrays of switches to turn components on and off
- ❑ Silicon transistors are the most common switch for “active matrix” backplanes and sensors, however...
- ❑ Transistors on glass are expensive, rigid, & breakable
- ❑ Silicon transistors are very difficult to make on a plastic substrate
- ❑ “Organic” (plastic) transistors are not yet ready for commercial products



Market Opportunity

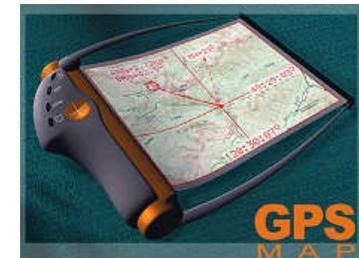
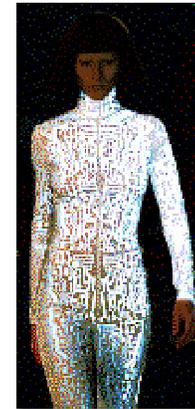
- ❑ Flat panel display market was \$31 billion in 2003
- ❑ Growing at 12% per year due to strong demand
- ❑ Growing need for improved switch arrays for displays and other products
- ❑ New display technologies from Kodak, Xerox, E Ink, Philips, Canon, and Sony enable new markets, but lack a key technology: low-cost, flexible backplanes
- ❑ **FASwitch technology fills this need with thin film electro-mechanical switches on plastic**



Potential Applications...

Product applications include:

- ❑ Cell phones, laptops, handhelds
- ❑ Toys like Gameboys and learning toys
- ❑ Electronic billboards, signs, and labels
- ❑ Electronic paper, newspapers and eBooks
- ❑ Military: wearable PCs, electronic maps, camouflage
- ❑ Transparent displays for windows and heads-up
- ❑ Architectural "wallpaper" decorations and art
- ❑ Home theatres, large-area displays, movie theatres
- ❑ Sensors for biotech, fingerprint, palm, & security



Imagine the Possibilities...

A TV the size of your living-room wall, that can be layered on like wallpaper



Roll-up displays that fit in a tube →



Displays that create environments for living and working, with outdoor scenes like sea sides, forests, and mountains

FASwitch can make these products, and more, possible!

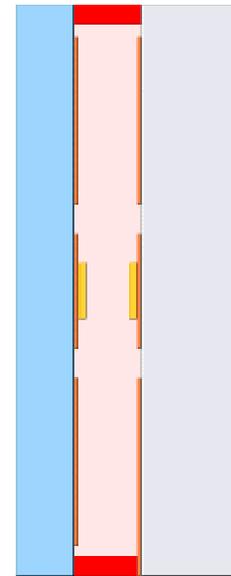
Well-Positioned

FASwitch is positioned to:

- Gain substantial market share, and
- Bring profits to the display industry and investors by:
 - ❑ Dramatically reducing capital costs by 10x
 - ❑ Lowering the production costs of backplanes by 50%
 - ❑ Offering features that other backplane companies can't
 - ❑ Licensing our technology to existing display companies

FASwitch Technology

How does FASwitch work?



FASwitch Technology

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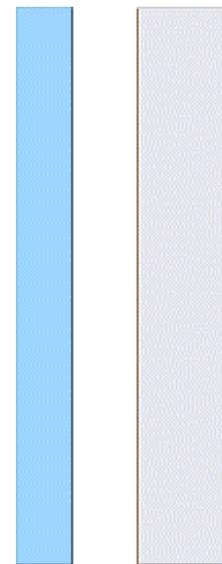
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 - Blue layer: thin and flexible



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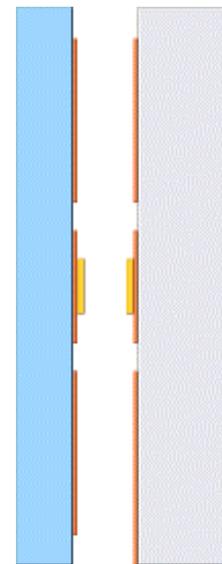
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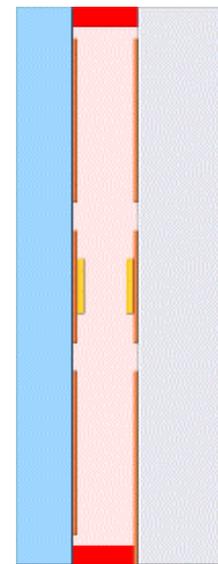
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- ❑ Deposit copper (or aluminum) on each layer



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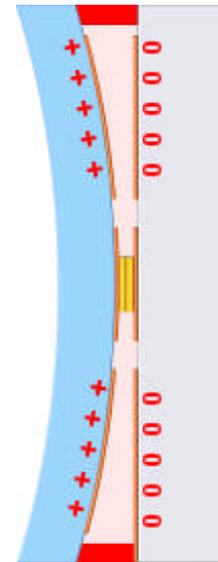
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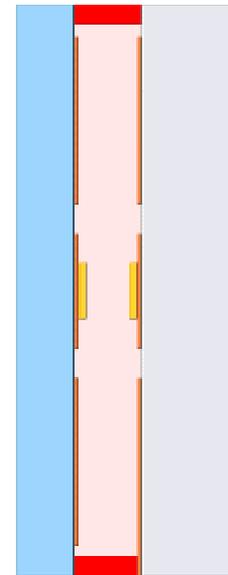
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- ❑ The blue layer flexes until it touches the gray layer



FASwitch Technology

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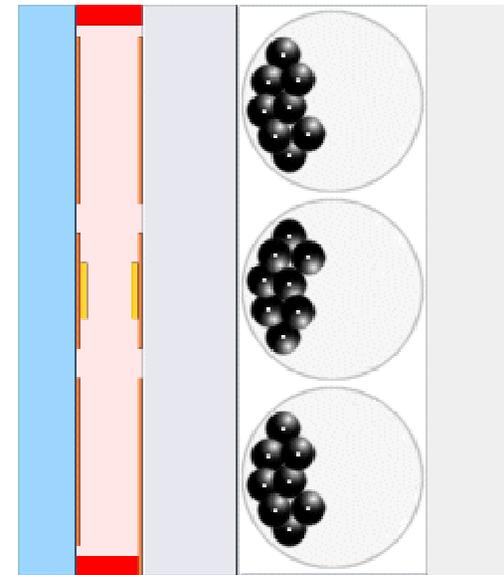
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- ❑ Print an epoxy spacer and laminate the layers
- ❑ Create electrostatic attraction between the layers
- ❑ The blue layer flexes until it touches the gray layer
- ❑ This forms an ON switch at that point in the array
- ❑ The contacts stay closed until the voltage is removed



FASwitch Backplanes

For display backplane applications:

- ❑ FASwitch turns on 1 pixel in the display
- ❑ Latches ON, until it is told to turn off
- ❑ This creates a black dot on the display
- ❑ The black bar in the animation represents the black pixel, seen from the side



The FASwitch Advantage

Compelling advantages:

- ❑ Flexible & durable
- ❑ Low power
- ❑ Extremely thin & light
- ❑ Bistable (non-volatile)
- ❑ High resolution color or b&w
- ❑ Cleaner manufacturing means = Green Technology
- ❑ Perfect for large area displays, signs, billboards
- ❑ Works with all FPD technologies: LCD, OLED, E-paper



ROI Advantage

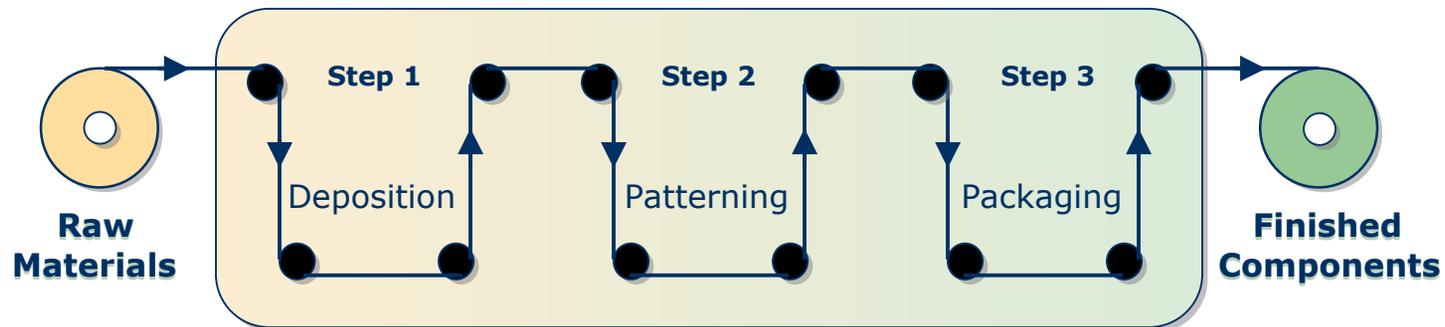
Better ROI is projected due to:

- ❑ Dramatically lower production & capital costs
- ❑ Uses common materials and well-known chemicals
- ❑ Simpler design and structure than transistors
- ❑ Efficient high-volume roll-to-roll processes
- ❑ Enables new markets and product categories
- ❑ High margins on new tech = huge profit potential

Roll-to-Roll

A Continuous Manufacturing Process

A simplified overview of roll-to-roll manufacturing



The process begins with rolls of plastic, 3,000 ft. long by several feet wide

The plastic passes around rollers and through processing chambers as devices are deposited on the surface

The finished goods are display backplanes, thin film batteries, sensors, and more.

FASwitch technology is secured by proprietary IP:

- ❑ **FASwitch** – thin film, light-weight, low cost, versatile breakthrough technology, with more than 10 international patents pending.
- ❑ **R2R Process** – efficient production, cost reduction, higher yield and throughput by innovative and advanced methods of fabrication.



Environmentally Responsible

- ❑ Low temperature process: less than 200°C vs. more than 700°C
- ❑ No hazardous materials
- ❑ Materials recycled in R2R
- ❑ Energy-saving devices
- ❑ Cost-effective recycling



Business Model: Licensing

- ❑ License FASwitch technology to existing display companies:
 - Minimum capital, R&D, and labor costs
 - Recurring revenues
 - Maximum ROI
- ❑ FASwitch + Rolltronics R2R process = next-generation switch arrays
- ❑ Enables improved tech + cost savings

SHARP



SONY

Canon



HITACHI

SIEMENS

EPSON



NEC



FUJITSU



SiPix



Gyricon LLC



What does it mean for you?

- ❑ For display makers:
 - More profits
 - New markets
 - Low-cost large-area displays

- ❑ For consumers
 - Lower prices
 - Thinner and lighter devices
 - The Holy Grail: *flexible* displays.

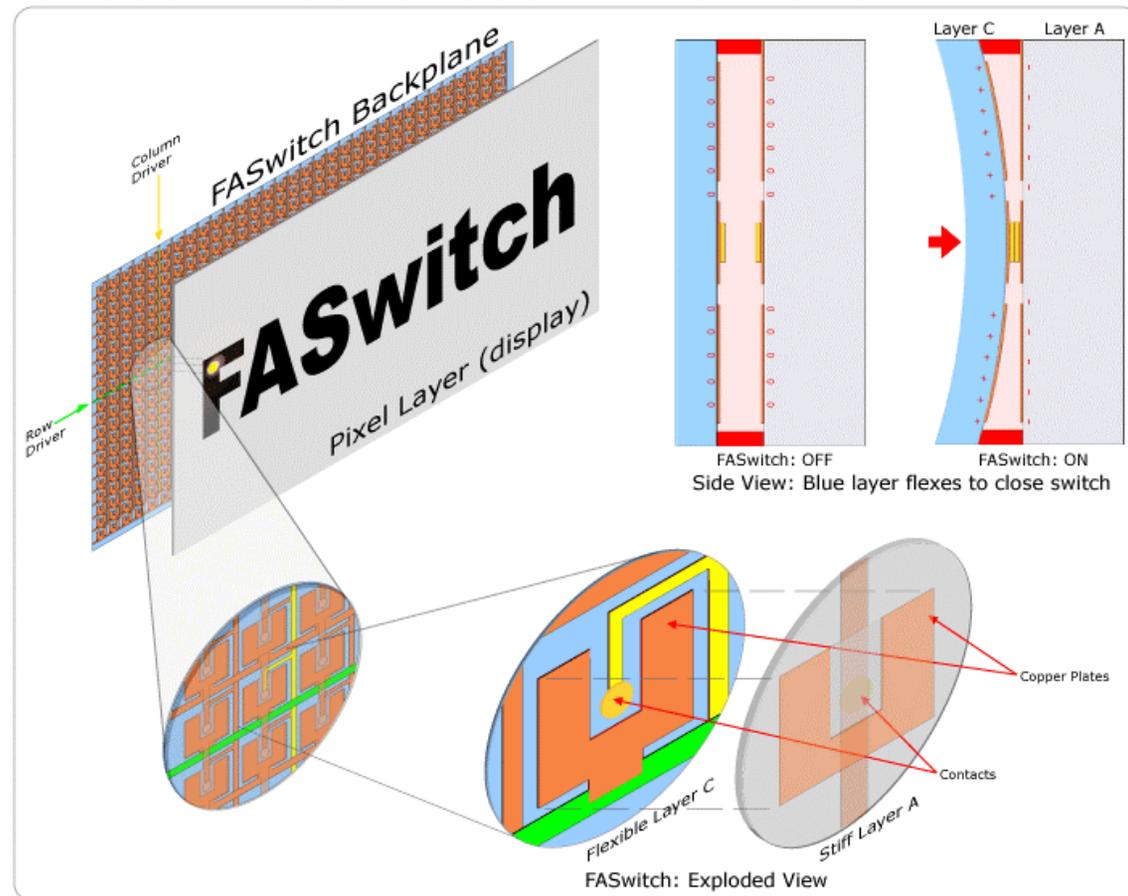
- ❑ For investors
 - Participate and profit from a major new growth market!





We have seen
the future,
and its name is

FASwitch





For More Information

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