

American Semiconductor Inc.

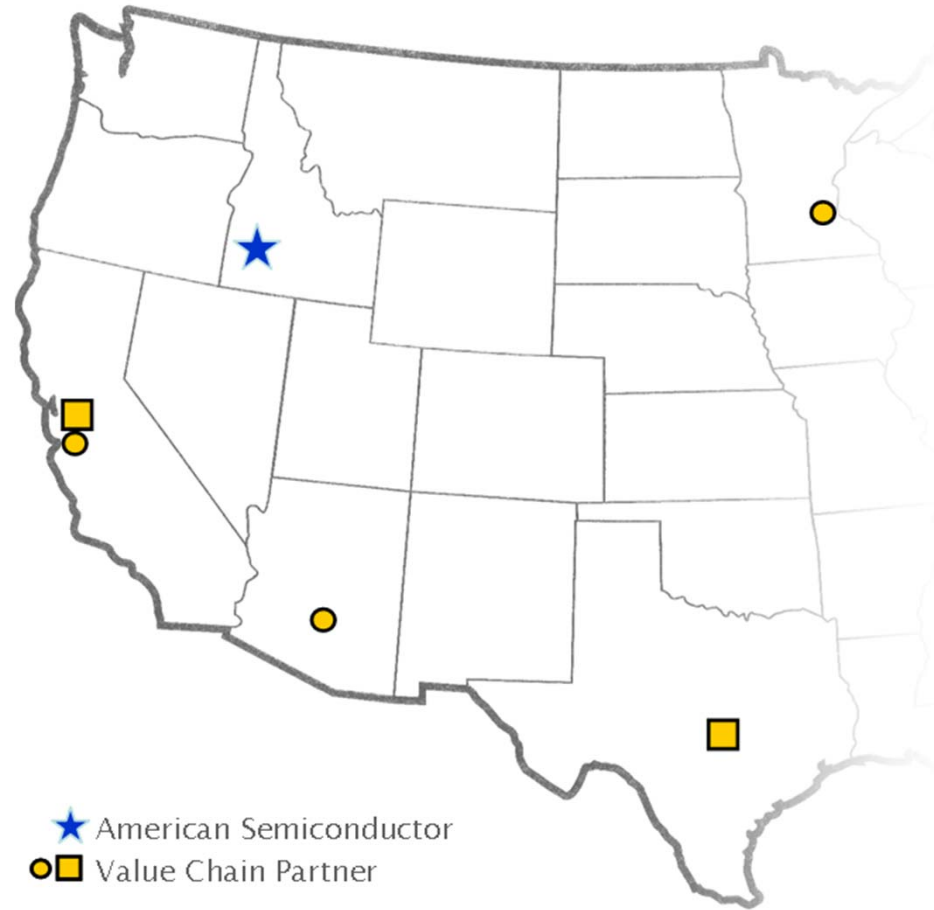
High Performance Electronics Integration in Flexible Technology

February 10, 2011

2011 FLEX
Presented by FlexTech Alliance
February 7-10, 2011

10th
ANNUAL

www.americansemi.com



- ★ Corporate Headquarters – Boise, ID
 - ▶ Engineering – Design, Process, Modeling
 - ▶ Operations/Fab Management
 - ▶ Test & Characterization Cleanroom
 - ▶ Sales, Marketing, Administration
- Manufacturing – San Jose, CA; Austin, TX
 - ▶ Fab/Process Engineering
- Manufacturing – Specialty Process Modules

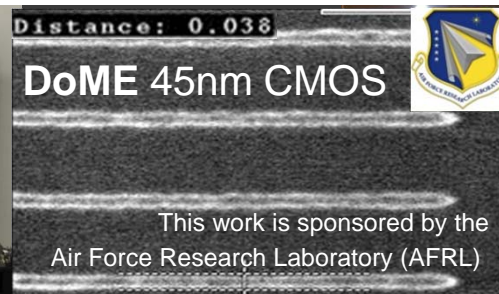
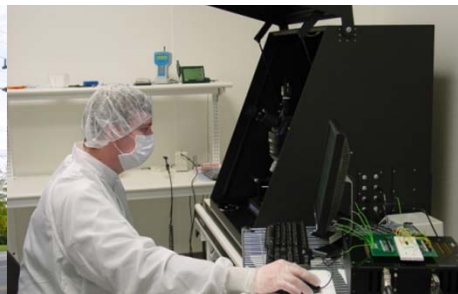
Privately Held

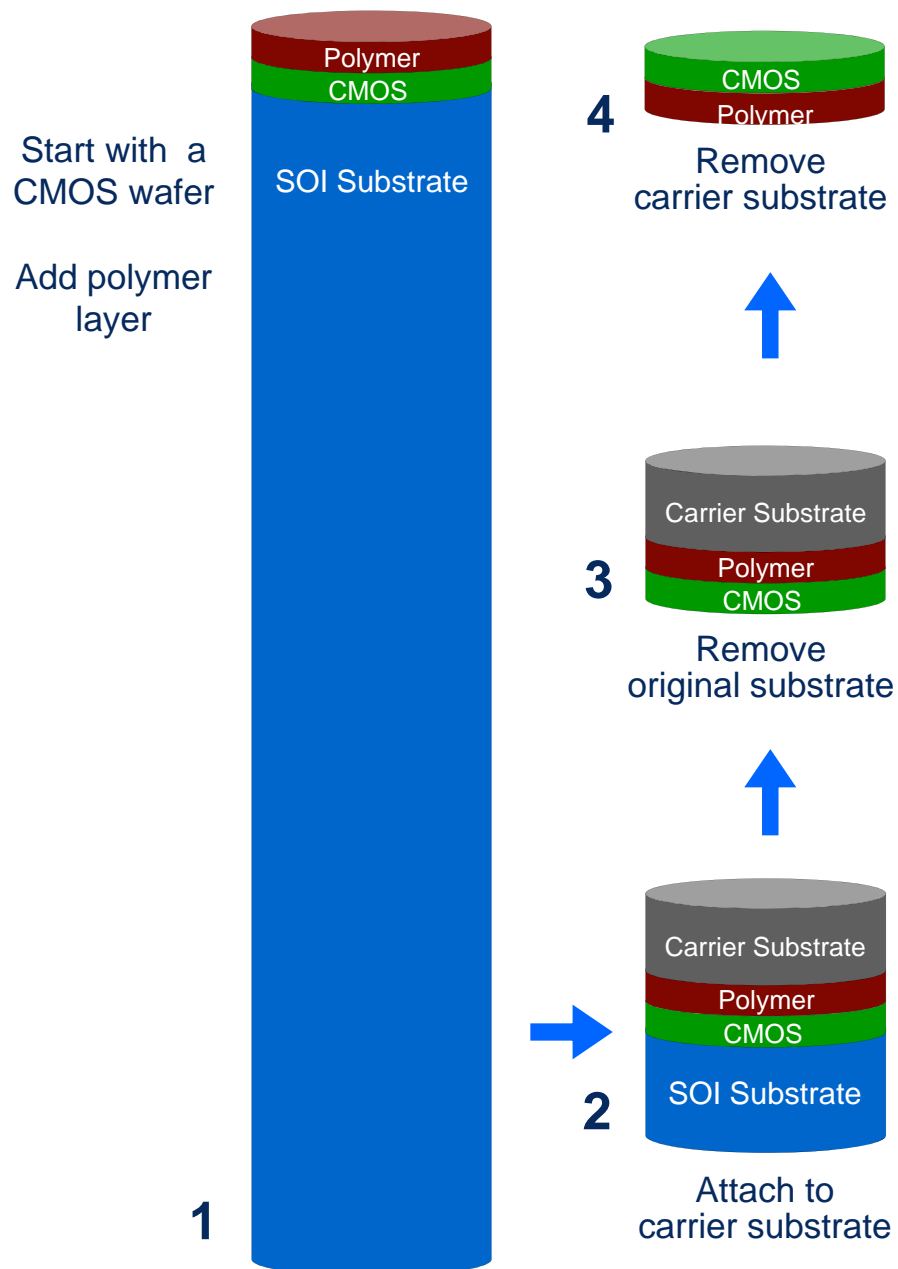
Founded November, 2001

Product Lines

- ▶ Design Services – Turnkey Design Solutions
- ▶ Custom Fabrication – Your Silicon Made. Simple.
- ▶ FleX™ – Silicon on Polymer

ITAR Compliant; Trusted Certification in Progress

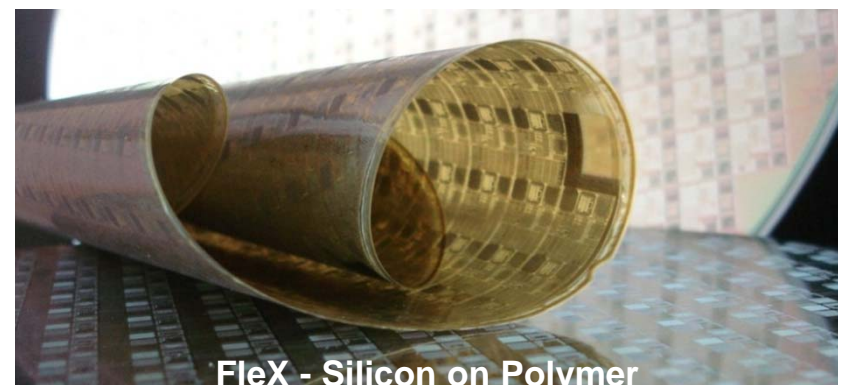




FleX is a substrate conversion process that delivers low cost, high performance CMOS in a flexible format.

FleX enables a new generation of durable, pliable ICs that greatly improves the ability to integrate CMOS functionality in flexible electronics.

FleX technology combined with Flexfet Advanced CMOS provides an Ultra Low Power solution that further benefits portable and battery powered applications.



©2011 American Semiconductor, Inc. All rights reserved.

Flexibility.

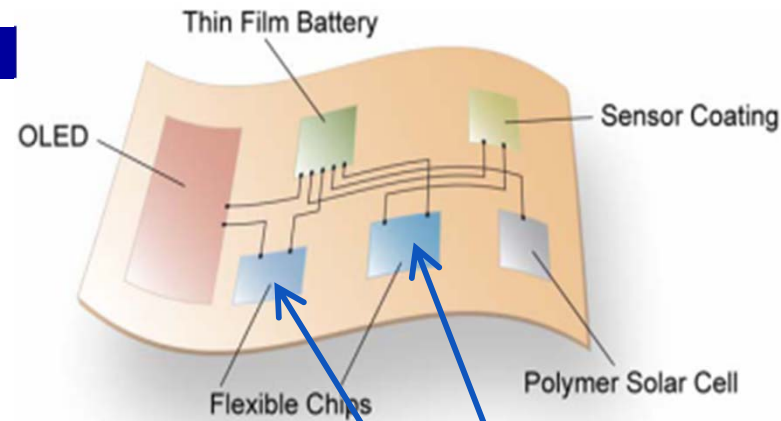
For integration into flexible systems or conformal on mounting of non-flat surfaces.

Durability.

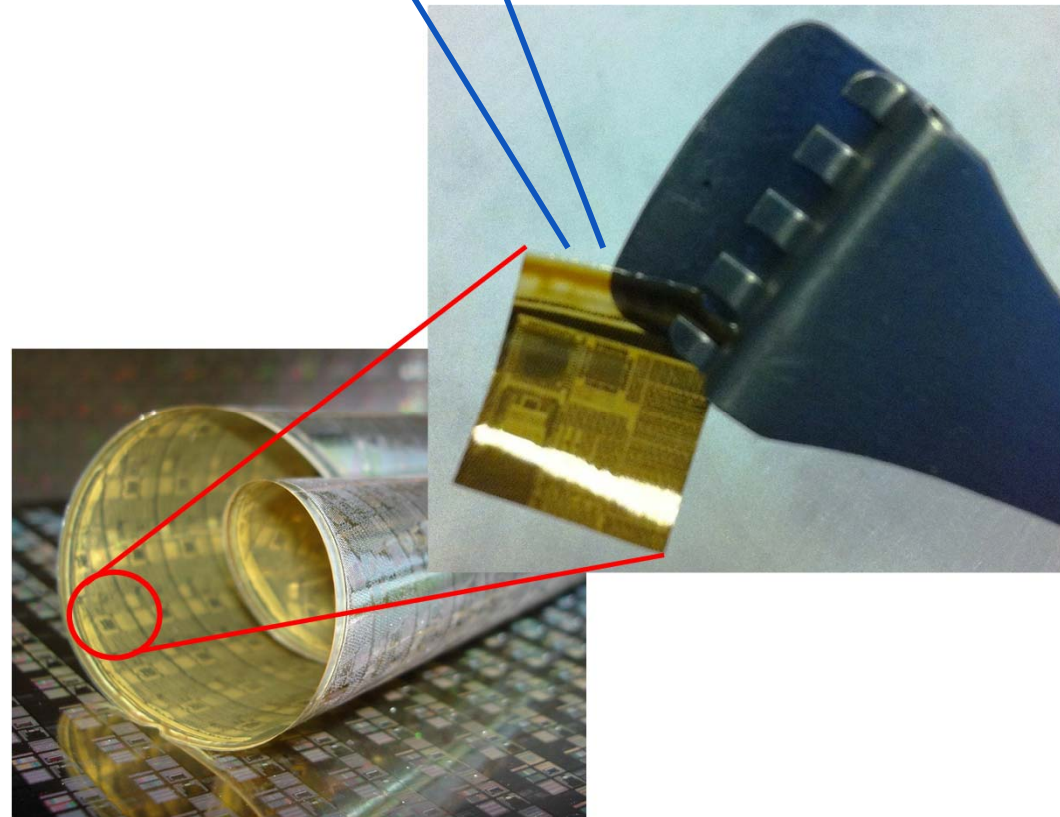
No silicon substrate improves tolerance to both mechanical and thermal shock.

Size.

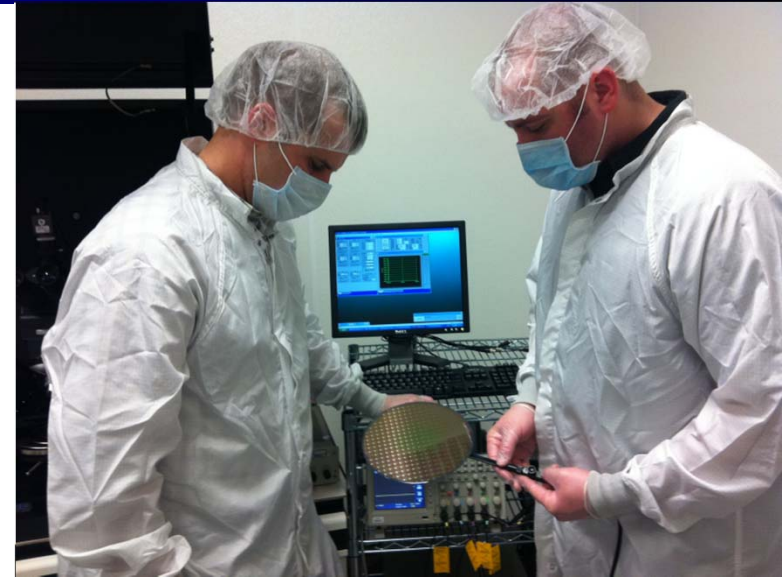
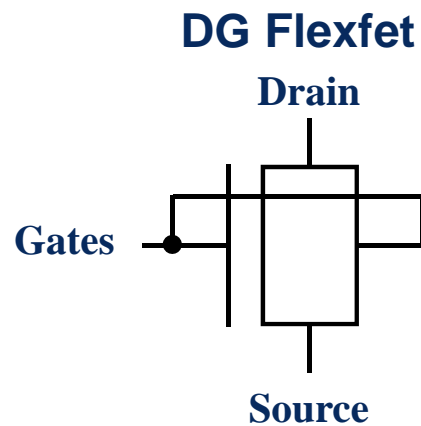
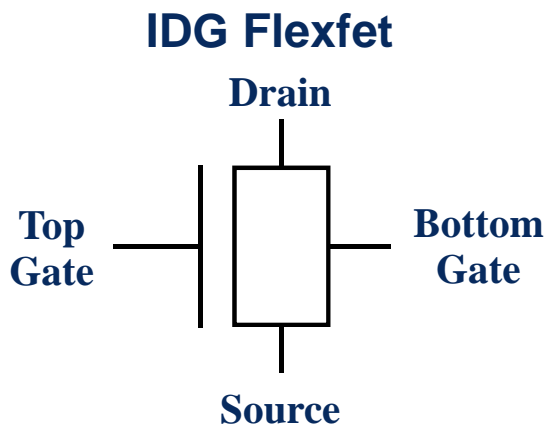
Ultra thin form factor is useful in multi-chip packages and 3DIC.



Burghartz "Ultra-Thin Chips and Related Applications, A New Paradigm in Silicon Technology," IEEE 2009



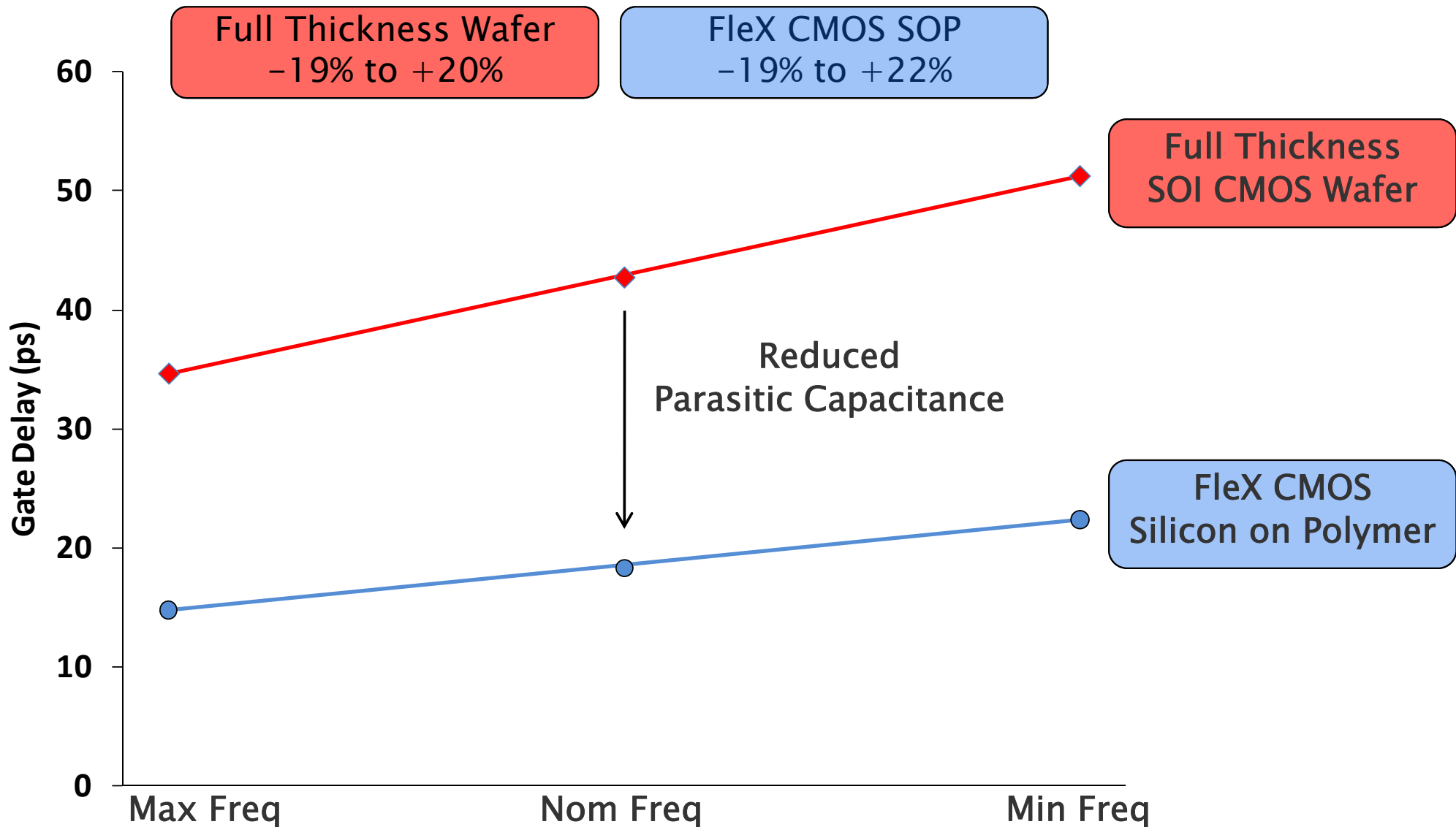
- Signatone manual wafer probe station
- JD Instruments mixed-signal tester
- Tektronix digital oscilloscope
- Flexfet™ SOI CMOS process
 - Planar double gate transistors
 - 3-level metal aluminum interconnect
 - Tungsten contacts and local interconnect
- 101-stage inverter ring oscillators
 - Independent Double-Gate (IDG) @ 0.5–1.8V
 - Double-Gate (DG) Flexfet @ 0.3–0.6V



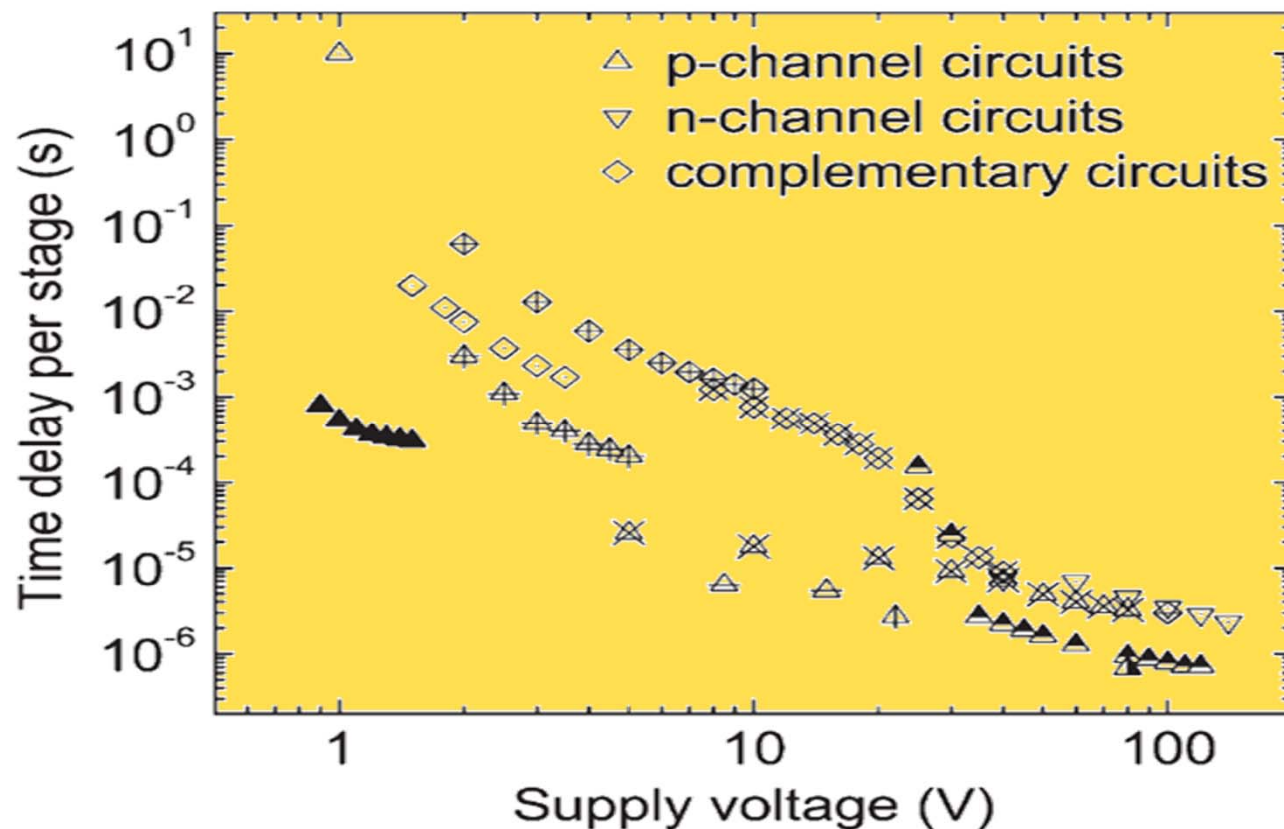
FleX: First circuit test demonstration – Feb 2011

101-Stage Tunable Inverter Ring Oscillator Operating at 1.8V

Tuning range:



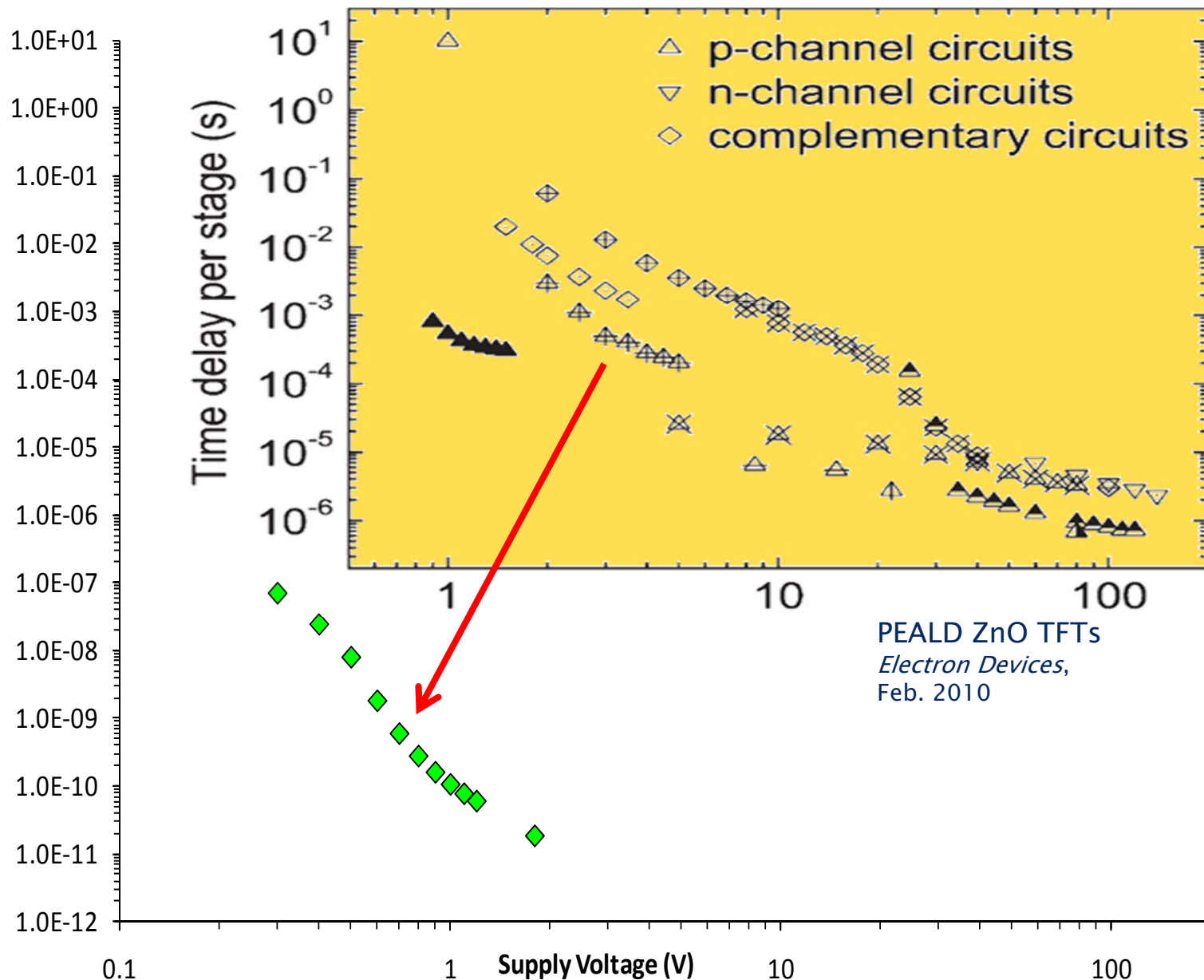
Organic Thin Film
Transistors



Low-Voltage Ring Oscillators Based on Polyelectrolyte-Gated Polymer Thin-Film Transistors, L. Herlogsson, et al, *Advanced Materials*, 2010, vol. 22, pp. 72-76

Organic Thin Film Transistors

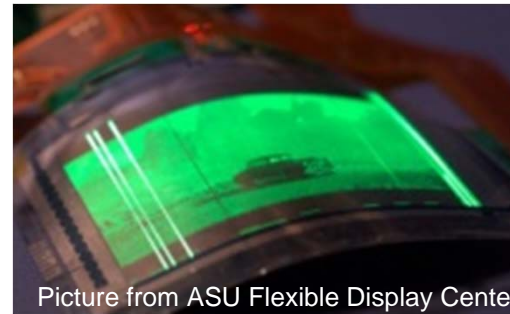
Flex CMOS
Feb. 2011





Smart Consumer Electronics

Flexible Displays



Picture from ASU Flexible Display Center

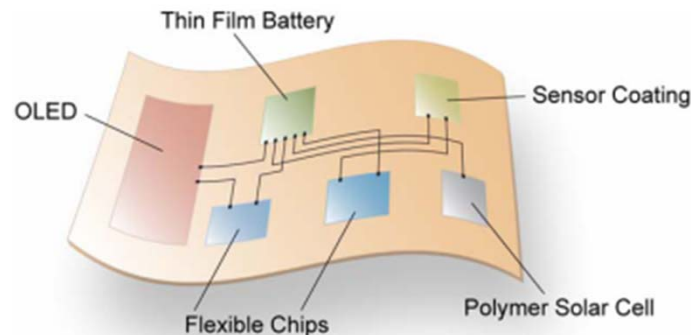


Picture from apple.com

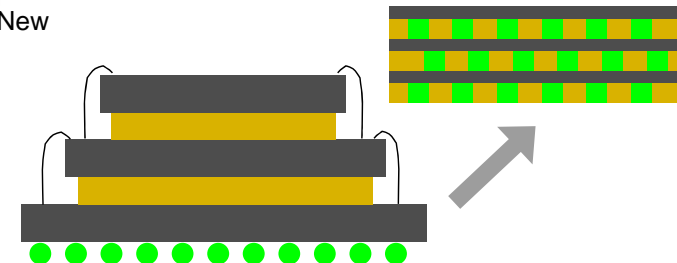


Picture from memagazine.org

Flexible Electronics



Burghartz "Ultra-Thin Chips and Related Applications, A New Paradigm in Silicon Technology," IEEE 2009



3-D IC Integration
Thin Multi-Chip Stacking

American Semiconductor Inc.

Thank You

© 2011 American Semiconductor, Inc. All rights reserved.
American Semiconductor Inc., the American Semiconductor logo, Flexfet, FleX, and the Flexfet logo are trademarks of American Semiconductor, Inc. All other trademarks are the property of their respective owners.

American Semiconductor, Inc.

3100 South Vista Avenue, Suite 230

Boise, ID 83705

Tel: 208.336.2773

Fax: 208.336.2752

www.americansemi.com