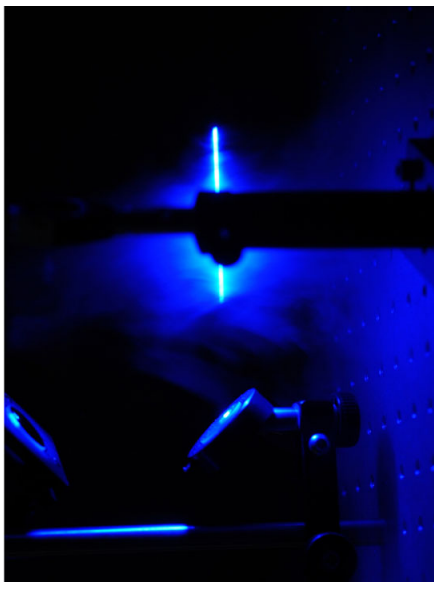


Semiconductor Intellectual Property Conference



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About True Circuits, Inc.



- Leading supplier of analog/mixed-signal IP
- Significant focus on R&D to develop superior circuit technologies
- Powerful circuit characterization platform
- Automated layout generation technology
- Fully tested hard macros in a variety of process technologies

Analog IP Panel:

Time for Analog IP is Now



- Increased functional requirements and aggressive process technologies make analog design difficult
- Non-leveraged development of analog functionality in companies too expensive
- High degrees of specialization required to design analog circuits
- Analog IP must be portable across process generations and foundries
- Portability reduces development costs ... but is challenging

Analog IP Panel:



Why analog IP is hard to port and not very reusable

- Analog circuits don't scale well
- Traditional analog design techniques limit design flexibility
- Analog IP is often tuned for a narrow performance range
- Analog IP often lacks robustness and features resulting in need for design customization

Analog IP Panel:

Robust circuit technology is critical



- Self-tracking circuits lead to process tolerance and wide operating characteristics
- Analog building blocks should be very tightly coupled
- Key features/performance specs must be an integral part of design
- Designs must have features and flexibility to minimize customization
- Design and product standardization across process technologies can be achieved

Analog IP Panel:

Design automation possible through standardization



- Technology independent schematic and layout databases possible
- Complete automated circuit characterizations lead to better understood designs
- Automated porting of analog/digital layout to different design rules
- Automation and standardization lead to IP quality and reusability
- Standard IP documentation promotes successful use/reuse while minimizing support

Analog IP Panel:



Close foundry relationships can facilitate better IP

- Full utilization of process options/features available to designers
- Correlation of characterization/silicon data (e.g., device matching)
- Sharing of best design practices for yield
- Better tracking of IP performance

Analog IP Panel: Conclusions



- Traditional analog design techniques limit IP porting and reuse
- Robust circuit technologies are basis for design standardization
- Improved CAD tools enable characterization and layout porting
- Standardized designs lead to quality and more easily supported IP
- Close foundry relationships can facilitate better performing and yielding IP

Thank You!

