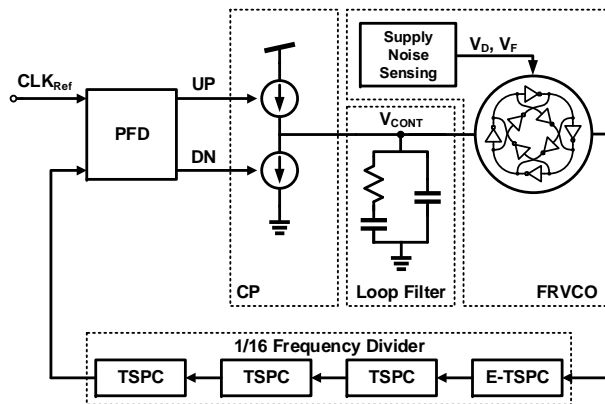


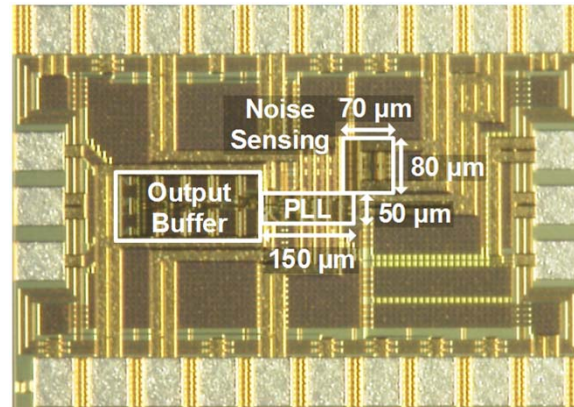
# Low-Voltage PLL

- A Low-Voltage PLL with a Supply-Noise Compensated Feedforward Ring VCO – TCAS-II

Block Diagram



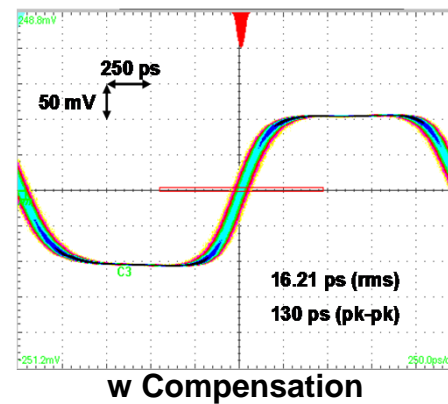
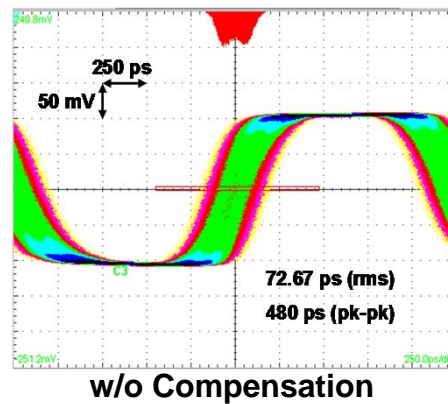
Chip Microphotograph



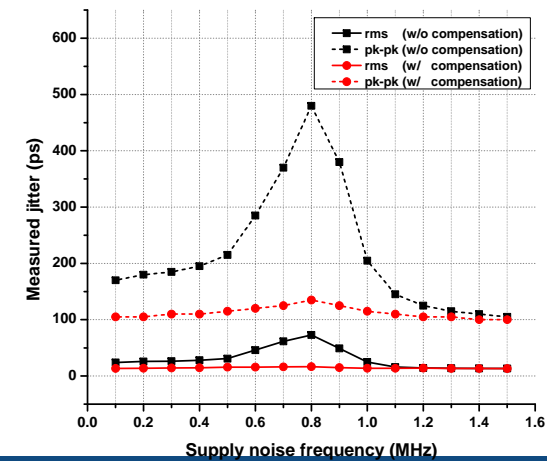
Performance Summary

Performance Parameters	This work
Technology (nm) (Nominal Supply Voltage)	180 (1.8 V)
Supply Voltage (V)	0.65
Core Area (mm <sup>2</sup> ) *	0.0075 **
Output Freq. (GHz)	0.4
Phase Noise @ 1-MHz offset (dBc/Hz)	-90.3
RMS Jitter (ps)	13.1 (0.0052 UI)
Power (mW)	0.14 **
Power Efficiency (mW/GHz)	0.35 **

Jitter Measurement Results



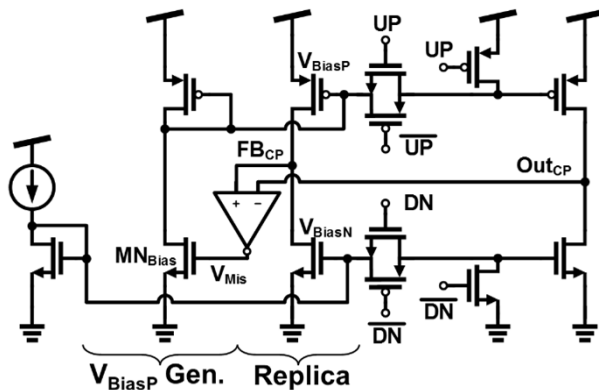
Jitter Peaking Result



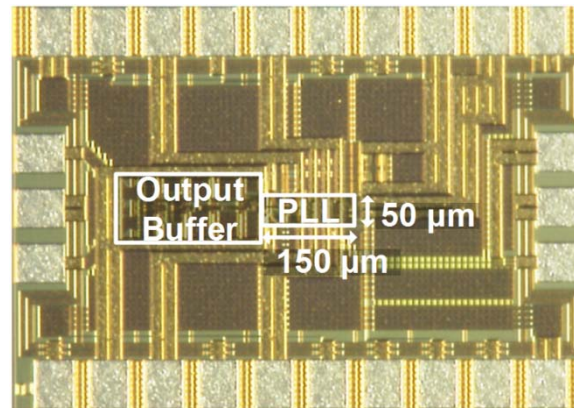
# Low-Voltage PLL

- A Low-Voltage PLL with a Current Mismatch Compensated Charge Pump – ISOCC

Block Diagram



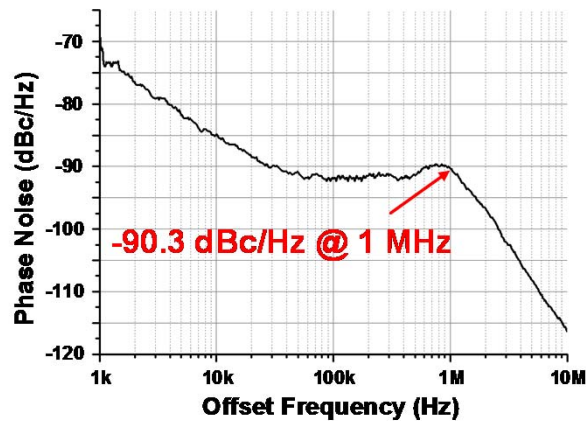
Chip Microphotograph



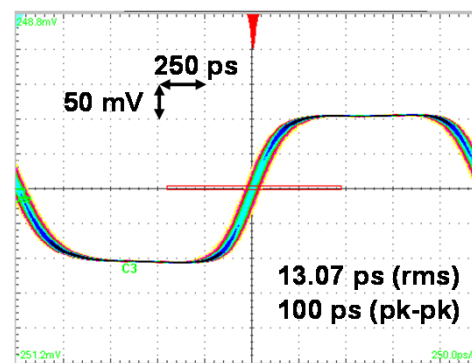
Performance Summary

Technology [nm]	180
Supply [V]	0.65
Frequency [MHz]	400
Area [mm <sup>2</sup> ]	0.0075
Power [μW]	140

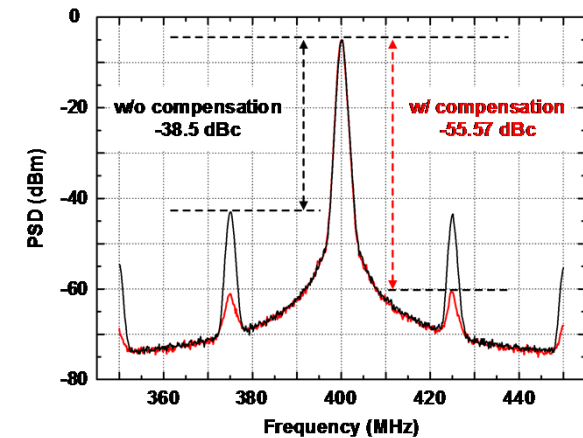
Phase Noise Measurement Result



Jitter Measurement Result



Reference Spur with Compensation



# Low-Power Transmitter

- A 0.202-0.333 pJ/bit, 5-8 Gb/s Transmitter with 2-Tap Pre-Emphasis Based on Data Toggle Information  
→ International patent pending

