

Racyics® ABX® Platform

GLOBALFOUNDRIES® 22FDX®



CHALLENGE

Body biasing is a disruptive 22FDX® feature enabling on-the-fly adaption of transistor threshold voltages. Racyics® adaptive body biasing platform (Racyics® ABX® Platform) provides reliable and predictable ultra-low voltage (ULV) operation down to 0.4 V, compensating process, supply voltage and temperature variations (PVT) to guarantee timing and power with high yield. For automotive applications, Racyics® ABX® enables significant leakage reduction at 0.8 V high temperature corners.



PLATFORM KIT

Standard Cells incl. PMK

Dual Rail SRAM

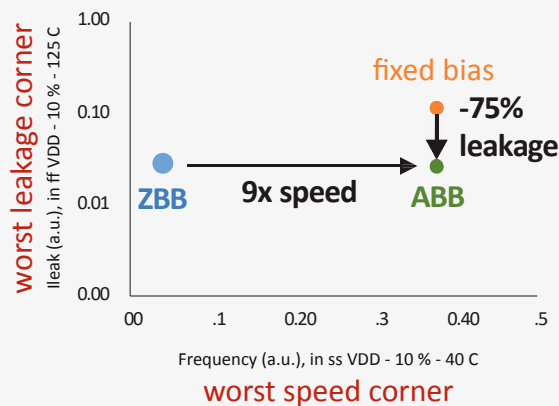
ABX® Generator IP

Single Rail SRAM

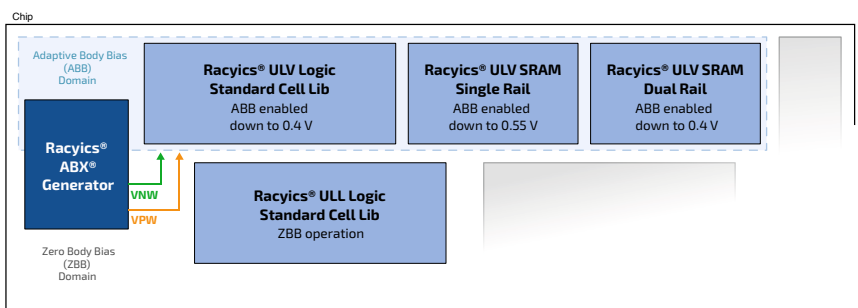
KEY FACTS

- ▶ Comprehensive Racyics® ABX® Platform for ULV operation
- ▶ Racyics® adaptive body bias generator, standard cells, SRAM
- ▶ Up to 9 X performance¹
- ▶ 75 % leakage reduction²
- ▶ Corner tightening and adaptive body biasing-aware implementation for improved PPA
- ▶ Guaranteed performance and power
- ▶ Easy-to use turnkey Racyics® ABX® solution based on standard design flow and sign-off
- ▶ No overhead in test and operation
- ▶ Automotive grade-1 compliant library available
- ▶ Interoperable with foundation IP standard cells and SRAM

ABX® SPEED AND LEAKAGE IMPROVEMENTS



EXAMPLE ULV SOC WITH RACYICS® ABX IP



¹ at 0.50 V compared to zero bias | ² at 0.50 V compared to fixed bias

TARGET APPLICATION

- ▶ Automotive
- ▶ Low Power
- ▶ IoT
- ▶ High Speed Computing

IP OFFERING

| IP Type | Supplier | Description | Ready for Evaluation | Ready for Test-chip | Ready for Production |
|-----------------------------------|----------|--|----------------------|---------------------|----------------------|
| Standard Cell Libraries incl. PMK | Racyics® | 116CPP 9T CNRX STD-cell library, fully ABX® enabled (RBB), supply voltage 0.80 V | now | now | now |
| | Racyics® | 116CPP 8T CNRX STD-cell library, fully ABX® enabled (FBB, RBB), supply 0.40 V / 0.45 V / 0.55 V / 0.60 V / 0.80 V | now | now | now |
| Single Rail SRAM | Racyics® | Single-Rail SP SRAM generator for ULV designs, supply 0.55 V / 0.65 V / 0.80 V | now | now | now |
| Dual Rail SRAM | Racyics® | Dual-Rail SP SRAM generator for ULV designs, supply 0.40 V / 0.45 V / 0.50 V / 0.60V / 0.80 V (core) 0.80 V (bitcells) | now | now | now |
| ABX® Generator IP | Racyics® | Racyics® ABB generator, includes PVT monitors, bias generator, digital control loop, supports FBB and RBB | now | now | now |



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