



## Weebit ReRAM IP in SkyWater 130nm Product Brief

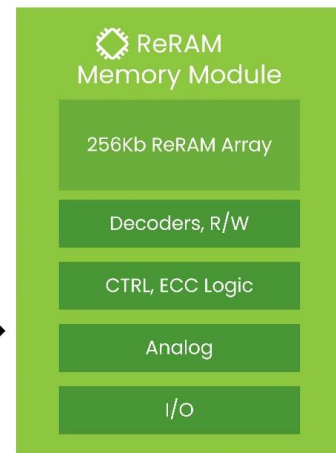
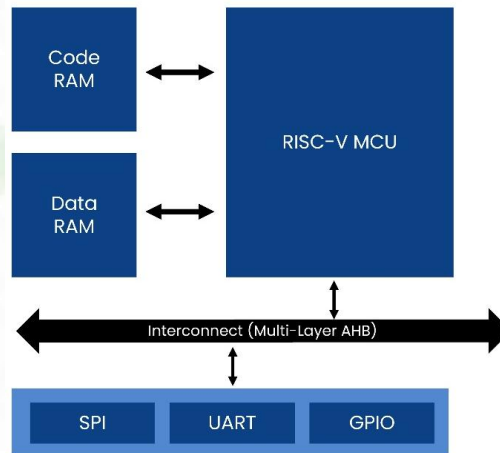
### Innovative Non-Volatile ReRAM Memory IP for Advanced SoC Applications

#### Overview

Weebit Resistive RAM (ReRAM) is a new type of Non-Volatile Memory (NVM) that is designed to be the successor to flash memory. Weebit ReRAM IP can provide a high level of differentiation for System-on-Chip (SoC) designs, with performance, power, cost, security, environmental, and a range of additional advantages compared to flash and other NVMs.

Weebit's ReRAM IP product is available now in SkyWater Technology's 130nm CMOS process (S130).

The technology is fully qualified, both per JEDEC and AEC-Q100, available for integration in SkyWater users' SoCs, and ready for production.



#### Key Benefits

- ✓ High write endurance, supporting applications with frequent memory updates
- ✓ Excellent data retention, including at high temperatures
- ✓ Ultra-low power consumption, including standby power
- ✓ Fast access time for quick boot-up
- ✓ Fast programming, byte-addressable
- ✓ Tolerant to ionizing radiation and electromagnetic interference (EMI)
- ✓ Inherently secure technology, deeply embedded between two metal layers

#### Target Applications

Weebit ReRAM IP for the SkyWater S130 process can provide advantages for a broad number of customer applications, including:

- ✓ Analog, power management, mixed-signal designs
- ✓ IoT, industrial, medical
- ✓ Automotive
- ✓ Aerospace and defense; radiation tolerant designs
- ✓ Heterogeneous computing
- ✓ Data logging applications

## SkyWater 130nm CMOS Process

SkyWater is a U.S. investor-owned semiconductor manufacturer and a DMEA-accredited Category 1A Trusted Foundry. The company's proven CMOS technologies have enabled novel and disruptive products across demanding automotive, industrial, medical and defense markets for decades. These technologies run in high volume and at world-class quality levels, as demonstrated by SkyWater's numerous quality-driven certifications. With Weebit ReRAM IP, SkyWater customers can develop highly integrated SoCs at ultra-low power for a new generation of advanced products.

SkyWater's 130nm technology node is a dual-gate technology with 1.8V and 3.3V/5.0V devices. The technology supports up to five aluminum metal layers and is mixed-signal enabled with native, extended drain, NPN and PNP BJTs, inductors, MIMs, etc. The technology offers a variety of thresholds to optimize for power and performance.

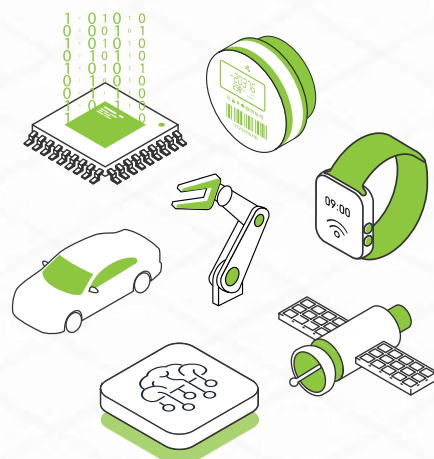
### Specifications

Technology	130nm, SkyWater S130
Mask Adder	2
Supply Voltage	Read: 1.8V+/-10% Program 3.3V+/-10%
Read Access Time	<20nS
Operation Temp.	-40°C to 150°C
Capacity	256Kb (can be customized for 64Kb-2Mb)
Data Bus Width (Read)	32-bit (can be customized to 16-bit to 128-bit)
System Interface	APB (can be customized AHB / AXI / OBI / QSPI)
Endurance (Write cycles)	≥100K
Data Retention	≥10 years @125°C 1000Hrs @ 175°C
Qualifications	JEDEC: 10K cycles, 10yr @ 125°C AEC-Q100: 100K cycles 150°C

### Getting Started

Weebit ReRAM IP is delivered as an embedded module with a complete set of collateral and EDA views to enable smooth integration by SoC architects using state-of-the-art EDA tools. Upon request, the module is available as part of a complete subsystem including a RISC-V microcontroller (MCU), system interfaces, Static Random-Access Memory (SRAM), and peripherals.

Weebit ReRAM technology is highly scalable and customizable by storage capacity, foundry, and process node. In addition to being available in SkyWater's 130nm CMOS process, the technology is fully qualified in 130nm in CEA-Leti's state-of-the-art fab. It has also been proven in 28nm and taped-out in an advanced 22nm FD-SOI process.



### About Weebit Nano

Weebit Nano Ltd. is a leading developer of next-generation semiconductor memory technology. The company's ground-breaking ReRAM addresses the growing need for significantly higher performance and lower power memory solutions in a range of new electronic products such as Internet of Things (IoT) devices, smartphones, robotics, autonomous vehicles, 5G communications, and artificial intelligence.

