Mi-V RISC-V Ecosystem
Open. Lowest Power. Programmable RISC-V Solutions.

The Mi-V RISC-V Ecosystem of FPGA and embedded systems solutions advances the adoption of the RISC-V ISA by giving you all the resources you need to implement your designs.

Design Tools
The Mi-V Ecosystem includes several design tools for use with Microchip FPGAs and SoCs.

**SoftConsole IDE**—Microchip’s free software development environment that enables the rapid production of C and C++ executables and includes GNU ARM Eclipse Plug-in, GCC compiler, and GDB debugger.

**Libero Design Suite**—Microchip’s comprehensive, easy-to-use FPGA design suite. A firmware catalog with all our available drivers is included with installation.

Virtual platforms help you develop high-quality firmware even prior to silicon availability. The antmicro Renode PolarFire™ SoC modeling platform and Imperas EPK Model are available integrated with Microchip’s SoftConsole IDE.

Operating Systems
Operating systems for RISC-V include the most popular commercial and open-source options.

**Commercial Operating Systems for RISC-V:**

**Open-Source Operating Systems for RISC-V:**

Solutions
Microchip posts various designs, solutions, demos and example projects for RISC-V on the GitHub website to provide easy access for designers as well as regular updates of solutions. github.com/RISCV-on-Microsemi-FPGA

Solutions provided include:

- Buildroot Linux SDK
- Libero projects
- RTOS source files
- Example schematics and layouts
- RISC-V bare metal boot loader
- RISC-V hardware abstraction layer
- Third-party solutions

Design Services
The Mi-V Embedded Experts Networks consists of organizations that provide design services encompassing FPGA IP designs, embedded firmware, drivers and BSP designs, hardware design and System-on-Modules. Their services range from small consulting projects all the way to turn-key designs. Their decades of expertise range from IoT, medical, imaging, low power, security and reliability.
CPUs
IP design companies such as SiFive and UltraSoC are critical members of the Mi-V Ecosystem and provide support for custom IP and CPU designs. SiFive offers modern and customizable RISC-V CPU Core IP for use in Microchip FPGAs and UltraSoC provides a suite of IPs that help you design robust, safe, low-power solutions.

Softcore RISC-V CPUs
32-bit integer machines with and without floating point:

<table>
<thead>
<tr>
<th>RISC-V Soft CPU</th>
<th>LE's</th>
<th>CoreMark Score</th>
<th>Cache Size</th>
<th>Mul/Div</th>
<th>Floating Point</th>
<th>Availability</th>
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</thead>
<tbody>
<tr>
<td>CORE_RISCV_AXI4*</td>
<td>10K</td>
<td>2.01</td>
<td>8K I and D</td>
<td>Yes</td>
<td>N/A</td>
<td>Now</td>
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<td>2.01</td>
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<td>Single Precision</td>
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<tr>
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<td>2.01</td>
<td>8K I and D</td>
<td>Yes</td>
<td>N/A</td>
<td>Now</td>
</tr>
<tr>
<td>Mi_V_RV32IMA_L1_AXI*</td>
<td>10K</td>
<td>2.01</td>
<td>8K I and D</td>
<td>Yes</td>
<td>N/A</td>
<td>Now</td>
</tr>
</tbody>
</table>

*Available in the Libero SoC and Libero SoC PolarFire Design Suite IP Catalog. Click the RISC-V Soft CPU to download the Handbook. Additional cores can be added based on your demand.

PolarFire SoC
PolarFire™ SoC FPGAs integrate a versatile, low-power multicore RISC-V CPU subsystem with the low-power PolarFire FPGA fabric.

Development Boards and Kits
Low-cost and full-featured boards which run RISC-V cores are available from Microsemi and distribution partners.

PolarFire Splash Kit
Device: MPF300TS-1FCG484EES

PolarFire Evaluation Kit
Device: MPF300TS-1FCG1152EES

RTG4 Development Kit
Device: RTG4-DEV-Kit

Future Electronics
IGLOO2 Creative Board
Device: M2S025

Future Electronics
PolarFire Avalanche Board
Device: MPF300TS-FCG484EES

For more information about the Mi-V Ecosystem, visit www.microsemi.com/mi-v.

Featuring a unique deterministic L2 memory subsystem and single coherent deterministic CPU cluster, the PolarFire FPGA architecture brings real-time to Linux® to give you the freedom to innovate in low-power, secure and reliable designs.