## **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.



**SoftConsole** 

**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 highquality 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.

# Libero



### **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.









HEX-Five



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#### **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:

RISC-V Soft CPU	LE's	CoreMark <sup>™</sup> Score	Cache Size	Mul/Div	Floating Point	Availability
CORE_RISCV_AXI4*	10K	2.01	8K I and D	Yes	N/A	Now
Mi_V_RV32IMAF_L1_AHB*	26K	2.01	8K I and D	Yes	Single Precision	Now
Mi_V_RV32IMA_L1_AHB*	10K	2.01	8K I and D	Yes	N/A	Now
Mi_V_RV32IMA_L1_AXI*	10K	2.01	8K I and D	Yes	N/A	Now
*Available in the Libero SoC and Libero SoC PolarFire Design Suite IP Catalog Citck the RISC-V Soft CPU to download the Handbook Additional cores can be added based on your demand M_V = MuTEy and Divide A = MuTEy and Divide A = Single Procession Floating T D = Compressed Instructions C = Compressed Instructions						

C = Compressed Instructions L1 = Instruction and Data Cache AHB = AHB Bus Interface AXI = AXI Bus Interface

## **PolarFire SoC**

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





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

### **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.

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