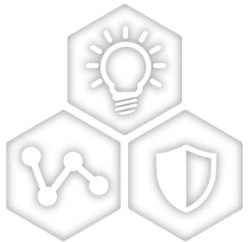


PolarFire SoC



A Leading Provider of Smart, Connected and Secure Embedded Control Solutions



SMART | CONNECTED | SECURE

Open. Lowest Power. Programmable RISC-V Solutions

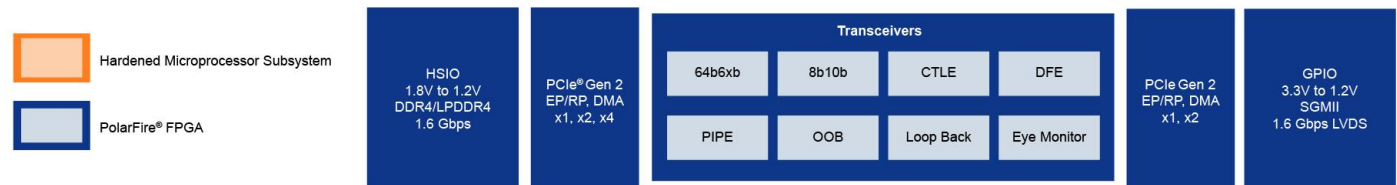
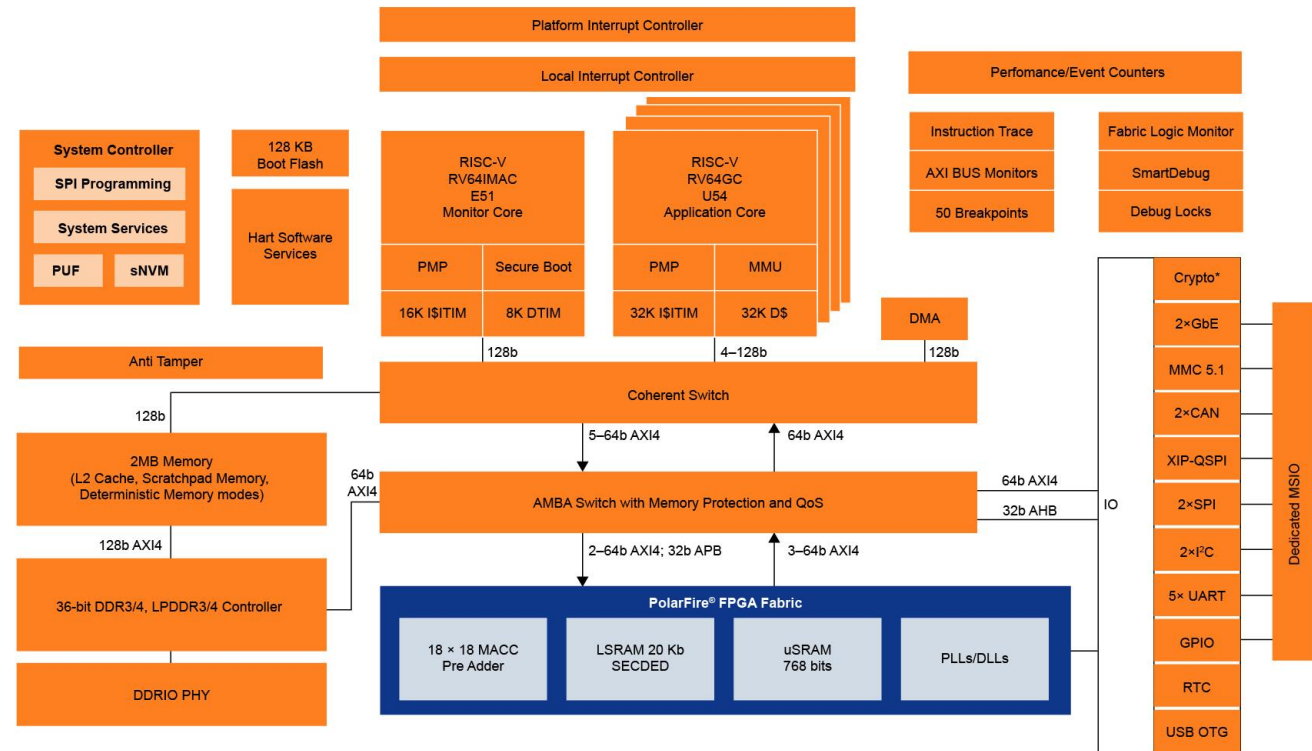
PolarFire SoC - RISC-V Enabled Innovation Platform

Highly Differentiated

- Low power, high performance SoC
 - Thermal efficiency
 - Solutions ~50% power of competition
- Unique AMP mode for mixed real-time and Linux operation
- Defense grade security with Spectre/Meltdown immunity
- Exceptional reliability (SEU Configuration Immune)
- Smallest form factors

Freedom to Innovate in

- Linux and Real-Time
- Thermal and Power Constrained Systems
- Securely Connected IoT Systems
- Mixed Criticality Systems

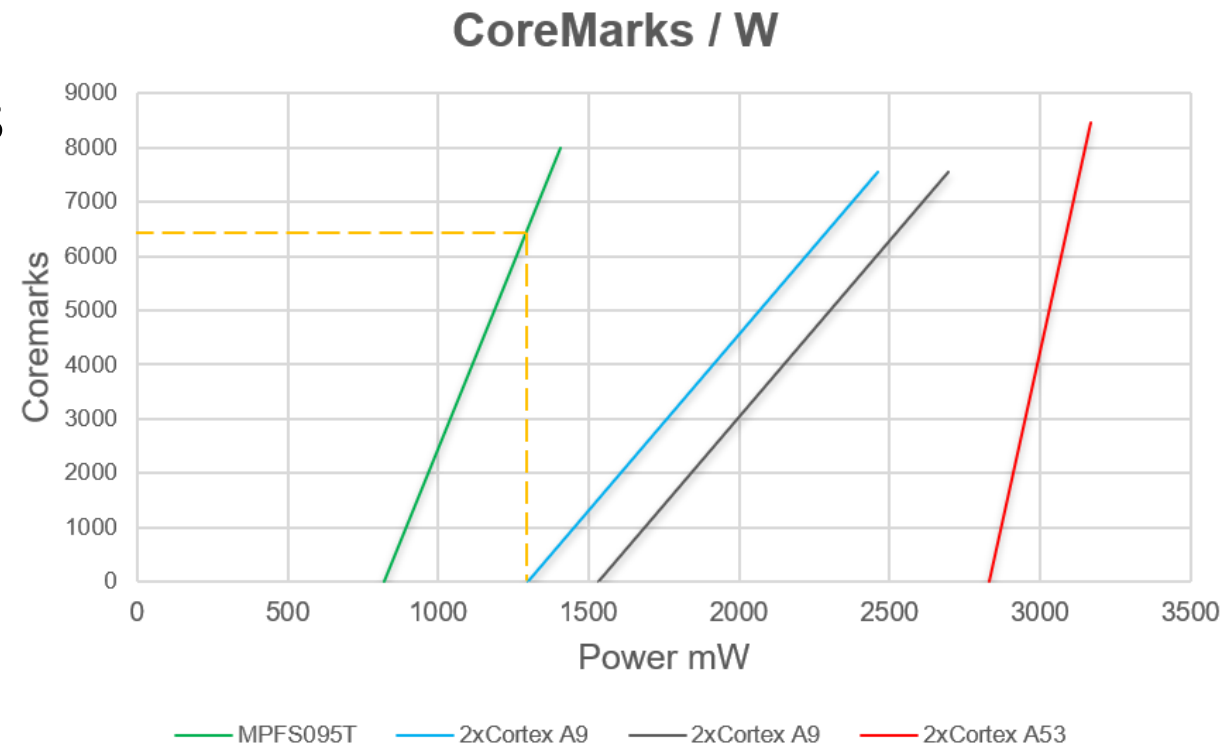


*DPA-Safe Crypto co-processor supported in S devices
 **SECDED supported on all MSS memories

Open. Lowest Power. Programmable RISC-V Solutions.

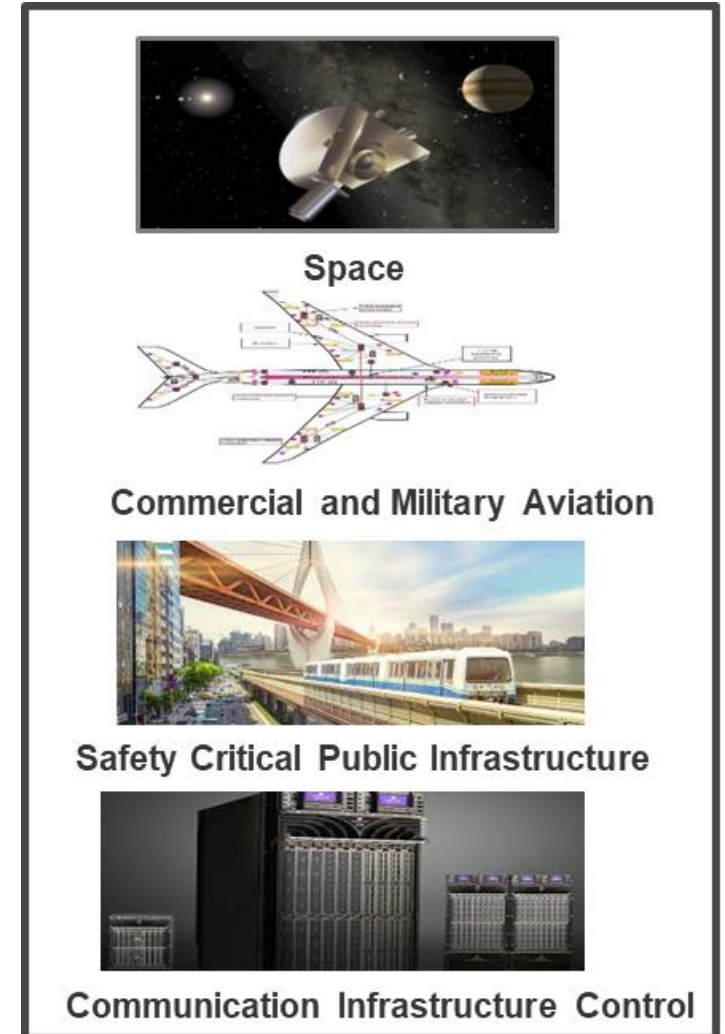
Best in Class Performance / Power

- **PolarFire® SoC offers significant power saving with superior feature enhancements**
 - DDR4/LPDDR4 vs DDR3/LPDDR3
 - 12.7 Gbps vs 6.25 Gbps transceivers
 - 2x PCIe vs 1x PCIe
 - 416 vs 328 user IO
 - 33% more DSP
 - 37% more fabric RAM
 - GPIO CDR for low cost SGMII
 - Smaller packages



PolarFire SoC Reliability

- **Zero Fit SEU neutron immune FPGA configuration**
- **All MSS memories have SECEDED protection**
 - Exceptions generated and
 - Error signals routed to the fabric for hardware responses



PolarFire SoC Family

	Features	MPFS025T	MPFS095T	MPFS160T	MPFS250T	MPFS460T
FPGA Fabric	K Logic Elements (4LUT + DFF)	23	93	161	254	461
	Math Blocks (18x18 MACC)	68	292	498	784	1420
	LSRAM Blocks (20k bit)	84	308	520	812	1460
	uSRAM Blocks (64x12)	204	876	1494	2352	4260
	Total RAM Mbits	1.8	6.7	11.3	17.6	31.6
	uPROM Kbits	194	387	415	470	553
	User DLL's/PLL's	8 each	8 each	8 each	8 each	8 each
High Speed IO	250 Mbps to 12.5 Gbps SERDES Lanes	4	4	8	16	20
	PCIe Gen2 End Points/Root Ports	2	2	2	2	2
Total FPGA IO	HSIO+GPIO	108	276	312	372	468
Total MSS IO	MSS IO	136	136	136	136	136
MSS DDR DB	MSS DDR Data Bus	16	32	32	32	32
Packaging Commerical & Industrial RoHS	Type/Size/Pitch	MSS IO / HSIO / GPIO / XCVRs				
	FCSG325 (11x11, 11x14.5*, 0.5 mm)	102 / 32 / 48 / 2	102 / 32 / 48 / 2			
	FCSG536 (16x16, 0.5 mm)		136 / 60 / 108 / 4	136 / 60 / 108 / 4	136 / 60 / 108 / 4	
	FCVG484 (19x19, 0.8 mm)	136 / 60 / 48 / 4	136 / 60 / 84 / 4	136 / 60 / 84 / 4	136 / 60 / 84 / 4	
	FCVG784 (23x23, 0.8 mm)		136 / 144 / 132 / 4	136 / 144 / 168 / 8	136 / 144 / 180 / 8	
	FCG1152 (35x35, 1.0 mm)				136 / 144 / 228 / 16	136 / 180 / 288 / 20

Extended Commercial (0°C-100°C) and Industrial (-40°C-100°C) Temperature Support for all Die Package Combinations - RoHS only

Additional Temp Grade: Military (-55°C-125°C) - Leaded packages only



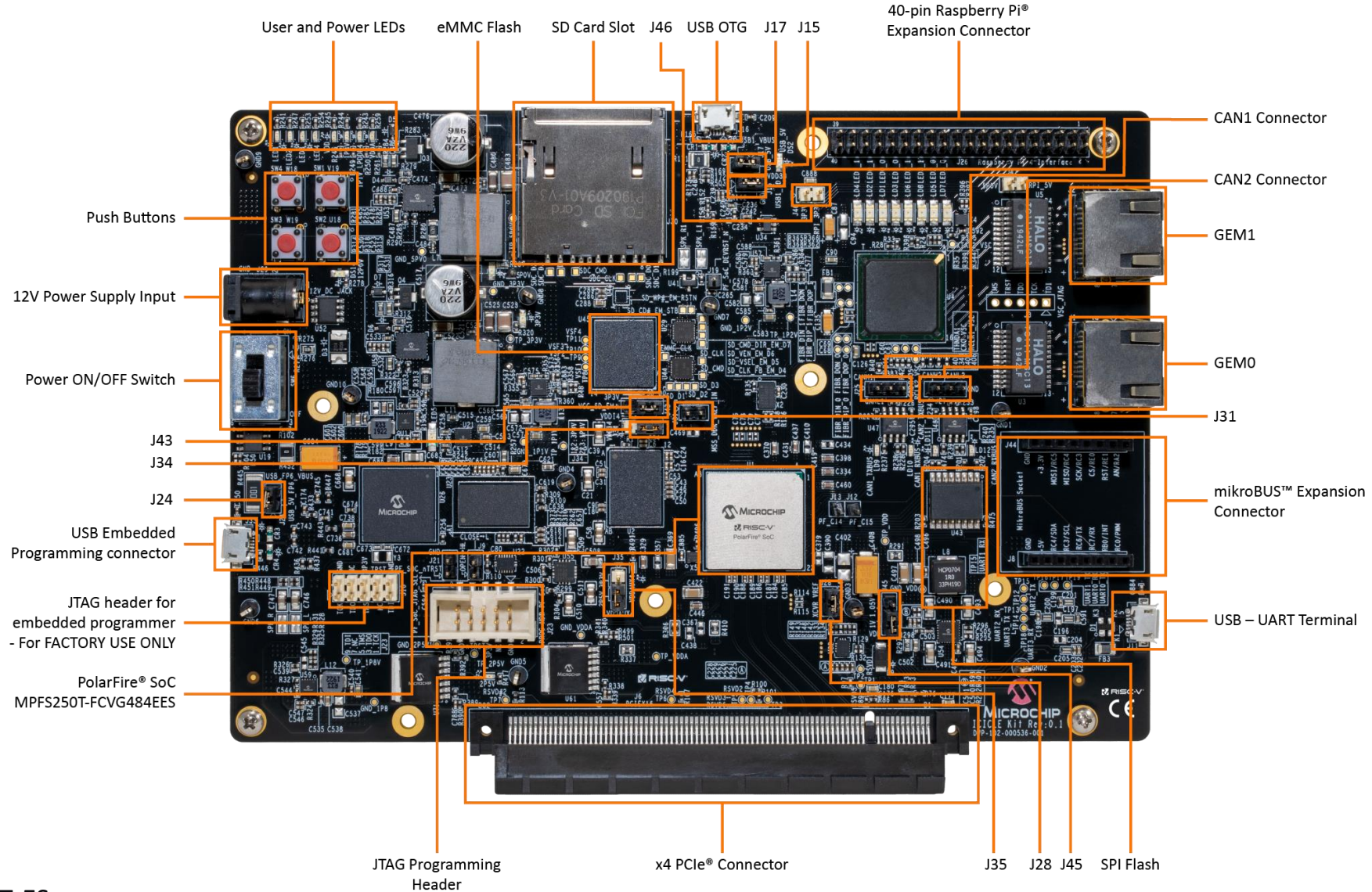
PolarFire SoC

Full temperature range offering

Features	MPFS025T	MPFS095T	MPFS160T	MPFS250T	MPFS460T
Extended Commercial / Industrial	MSS IO / HSIO / GPIO / XCVRs				
FCSG325 ⁺ (11x11, 0.5 mm)	102 / 32 / 48 / 2	102 / 32 / 48 / 2			
FCSG536 (16x16, 0.5 mm)		136 / 60 / 84 / 4	136 / 60 / 108 / 4	136 / 60 / 108 / 4	
FCVG484 (19x19, 0.8 mm)	136 / 60 / 48 / 4	136 / 60 / 84 / 4	136 / 60 / 84 / 4	136 / 60 / 84 / 4	
FCVG784 (23x23, 0.8 mm)		136 / 144 / 132 / 4	136 / 144 / 168 / 8	136 / 144 / 180 / 8	
FCG1152 (35x35, 1.0 mm)				136 / 144 / 228 / 16	136 / 180 / 288 / 20
Military "S" devices only	MSS IO / HSIO / GPIO / XCVRs				
FCSG325 (11x14.5, 0.5 mm)		102 / 32 / 48 / 2			
FCSG536 (16x16, 0.5 mm)				136 / 60 / 108 / 4	
FCVG484 (19x19, 0.8 mm)				136 / 60 / 84 / 4	
FCVG784 (23x23, 0.8 mm)				136 / 144 / 180 / 8	
FCG1152 (35x35, 1.0 mm)				136 / 144 / 228 / 16	136 / 180 / 288 / 20
Automotive T2	MSS IO / HSIO / GPIO / XCVRs				
FCSG325 ⁺ (11x11, 0.5 mm)	102 / 32 / 48 / 2	102 / 32 / 48 / 2			
FCSG536 (16x16, 0.5 mm)		136 / 60 / 84 / 4	136 / 60 / 108 / 4	136 / 60 / 108 / 4	
FCVG484 (19x19, 0.8 mm)	136 / 60 / 48 / 4	136 / 60 / 84 / 4	136 / 60 / 84 / 4	136 / 60 / 84 / 4	
FCVG784 (23x23, 0.8 mm)		136 / 144 / 132 / 4	136 / 144 / 168 / 8	136 / 144 / 180 / 8	
FCG1152 (35x35, 1.0 mm)					136 / 180 / 288 / 20

⁺ FCSG325 package dimension for MPFS095T: 11x14.5, 0.5mm)

PolarFire SoC Icicle Kit



MPFS-ICICLE-KIT-ES
MSRP \$489 – Shipping

