

Profile	Feature	RVA23U64	RVA23S64	RVB23U64	RVB23S64	"Extension option" name
Base ISA	RV64I	Mandatory, little-endian	Mandatory, little-endian	Mandatory, little-endian	Mandatory, little-endian	
Mandatory Extensions	M Integer multiplication and division	✓	✓	✓	✓	
	A Atomic instructions	✓	✓	✓	✓	
	F Single-precision floating-point instructions	✓	✓	✓	✓	
	D Double-precision floating-point instructions	✓	✓	✓	✓	
	C Compressed instructions	✓	✓	✓	✓	
	Zicr CSR instructions	✓	✓	✓	✓	
	Zicnr Base counters and timers	✓	✓	✓	✓	
	Zihpm Hardware performance counters	✓	✓	✓	✓	
	Ziccif Instruction fetch	✓	✓	✓	✓	
	Ziccrse RsvrEventual	✓	✓	✓	✓	✓
	Ziccamoa All atomics in A	✓	✓	✓	✓	✓
	Zicclsm Mismatched loads and stores	✓	✓	✓	✓	✓
	Za64rs Reservation sets	✓	✓	✓	✓	✓
	Zihintpause Pause hint	✓	✓	✓	✓	
	Zba Address generation	✓	✓	✓	✓	
	Zbb Basic bit-manipulation	✓	✓	✓	✓	
	Zbs Single-bit instructions	✓	✓	✓	✓	
	Zic64b Cache blocks 64 bytes	✓	✓	✓	✓	✓
	Zicbom Cache-block management	✓	✓	✓	✓	
	Zicbop Cache-block prefetch	✓	✓	✓	✓	
	Zicboz Cache-block zero	✓	✓	✓	✓	
	Zkt Data-independent execution latency	✓	✓	✓	✓	
	Zihintntl Non-temporal locality hints	✓	✓	✓	✓	
	Zicond Integer conditional operations	✓	✓	✓	✓	
	Zimop May-be-operations	✓	✓	✓	✓	
	Zcmop Compressed may-be-operations	✓	✓	✓	✓	
	Zcb Additional compressed instructions	✓	✓	✓	✓	
	Zfa Additional floating-point instructions	✓	✓	✓	✓	
	Zawrs Wait-on-reservation-set instructions	✓	✓	✓	✓	
	V Vector extension	✓	✓	Optional	Optional	
	Zvfhmin Vector minimal half-precision floating-point	✓	✓	Optional	Optional	
	Zvbb Vector basic bit-manipulation instructions	✓	✓	Optional	Optional	
	Zvkt Vector data-independent execution latency	✓	✓	Optional	Optional	
	Supm Pointer masking	✓	✓	Optional	Optional	
Optional Extensions	Zvkng Vector crypto NIST Algorithms with GCM	Optional	Optional	Optional	Optional	
	Zvksg Vector crypto ShangMi Algorithms with GCM	Optional	Optional	Optional	Optional	
	Zfh Scalar half-precision floating-point	Optional	Optional	Optional	Optional	
	Zbc Scalar carryless multiplication	Optional	Optional	Optional	Optional	
	Zicfilp Landing Pads	Optional	Optional	Optional	Optional	
	Zicfiss Shadow Stack	Optional	Optional	Optional	Optional	
	Zvfh Vector half-precision floating-point	Optional	Optional	Optional	Optional	
	Zfbfmin Scalar BF16 converts	Optional	Optional	Optional	Optional	
	Zvfbfmin Vector BF16 converts	Optional	Optional	Optional	Optional	
	Zvfbfwma Vector BF16 widening mul-add	Optional	Optional	Optional	Optional	
Development Options	Zabha Byte and halfword atomic memory operations	Development	Development	Development	Development	
	Zacas Compare-and-Swap instructions	Development	Development	Development	Development	
	Ziccamoc AMOCASQ level PMA support	Development	Development	Development	Development	✓
	Zama16b Mismatched loads, stores, and AMOs	Development	Development	Development	Development	✓
	Zvbc Vector carryless multiplication	Development	Development	Expansion	Expansion	
Expansion Options	Sv48 Page-based 48-bit virtual-memory system	Expansion	Expansion	Expansion	Expansion	
	Sv57 Page-based 57-bit virtual-memory system	Expansion	Expansion	Expansion	Expansion	
	Zkr Entropy CSR	Expansion	Expansion	Expansion	Expansion	
	Sdtrig Debug triggers	Expansion	Expansion	Expansion	Expansion	
	Ssstrict No non-conforming extensions	Expansion	Expansion	Expansion	Expansion	✓
	Svpptc Transitions from invalid to valid PTEs	Expansion	Expansion	Expansion	Expansion	
	Sspm Supervisor-mode pointer masking	Expansion	Expansion	Expansion	Expansion	
Recommendations	Illegal-instruction exceptions	Strongly recommended	Strongly recommended	Strongly recommended	Strongly recommended	