

Small soft core uP Inventory

Opencore and other soft core processors

Only cores in the "usable" category included

Highest KIPS per LUT or ALUT (above 200)		©2014 James Brakefield				
Work in progress: KIPS/LUT only approximate, many of the small designs will move down on the list						
Caution: these are bare cores, Fmax will probably drop with additional LUT count						
		wd sz	LUT-ALUT	KIPS/LUT	Fmax	style
cray1	homebrew Cray1	64	13463	57	127	RISC
microblaze	Xilinx proprietary, area optimized, 70 configuration options, fltg-pt & MMU optional	32	546	603	320	RISC
ARM_Cortex_A9	ASIC, LUTs number based on relative area, dual issue, includes fltg-pt & MMU & caches	32	4500	583	1050	RISC
nios2	Altera proprietary, speed optimized, fltg-pt, cache & MMU options	32	895	390	310	RISC
hive	4-8 symmetrical stacks, eight threads via pipeline barrel	32	628	345	217	stack
microcore	Forth machine with indexing into return stack, auto inc/dec, variable length imm	32	644	231	149	stack
iDEA	A Lean FPGA Soft Processor Built Using a DSP Block (academic paper only)	16	190	1883	534	RISC
leros	Leros: A Tiny Microcontroller for FPGAs	16	112	1089	182	accum
Lutiac	Lutiac – Small Soft Processors for Small Programs (academic paper only)	16	140	948	198	2 reg
octavo	Octavo: an FPGA-Centric Processor Family, eight thread barrel pipeline	16	500	737	550	register
cpu16	16-bit forth machine, 5-bit inst	16	367	648	355	forth
mssl16	16-bit forth machine, 4-bit inst	16	303	566	256	forth
alwcpu	small simple 16-bit RISC	16	298	533	237	RISC
micro16b	minimal	16	205	349	434	accum
J1	16-bit forth machine with 16-bit inst, 38% code size of microblaze	16	333	280	117	forth
diogenes	student RISC system	16	807	246	297	RISC
sayeh_processor	simple RISC	16	479	230	164	RISC
atlas_core	ARM thumb like inst set, also MMU version	16	648	208	148	RISC
usimplez	8 inst, part of university course	12	48	476	134	accum
eric5	entner-electronics.com proprietary	9	110	229	60	forth
avr8	not a full AVR clone, doc is opencores page	8	174	792	418	AVR
mcpu	fits into 32 macrocell CPLD, only 8 inst	8	41	749	384	accum
lwisc	ClaiRISC	8	88	444	230	accum
popcorn	small 8 bit uP	8	267	428	347	accum
picoblaze	PIC18 like, two clocks per inst	8	150	338	250	picoBlaze
risc16f84	PIC16 clone	8	331	332	333	PIC16
pacoBlaze	picoblaze clone	8	177	218	117	picoBlaze
gumnut		8	420	216	275	RISC
dfp	8-bitter, generates a custom VHDL stack machine, compiler is in Forth	8	297	213	192	forth
lem1_9	logic emulation machine, single stage pipe	1	40	358	358	accum