

**Small soft core uP Inventory**  
**Opencore and other soft core processors**

Only cores in the "usable" category included  
 These results probably do not generalize to larger designs and/or designs with high utilization

FPGA Family Comparisons													4LUT vs 6LUT vs ALUT and fast vs slow parts												©2014 James Brakefield												normalized to Arria II			
													Spartan-3				Spartan-6				Kintex-7				Cyclone II				Cyclone IV				Arria II				weighted equivalent*		weighted ratio**	
													90nm		45nm		28nm		90nm		40nm		40nm																	
design	S-3	S-6	K-7	C-2	C-4	A-2	S-3	S-6	K-7	C-2	C-4	A-2	LUT4s	Fmax	LUT6s	Fmax	LUT6s	Fmax	LUT4s	Fmax	LUT4s	Fmax	ALUT	Fmax	ALUT	Fmax	ALUT	Fmax	ALUT	Fmax										
atlas_2K_base	1.50	0.95	0.93	1.67	1.68	1.00	0.72	0.85	1.26	0.60	0.83	1.00	2434	85	1545	100	1512	149	2711	71	2730	98	1624	118	1649	143	1.02	1.21												
eco32	1.12	0.84	0.82		1.90	1.00	0.47	0.79	1.38		0.68	1.00	3034	55	2271	92	2210	160			5153	79	2711	116	2482	123	0.92	1.06												
leros	1.15	0.68	1.03	1.48	1.15	1.00	0.48	0.68	1.03	0.52	0.60	1.00	188	129	112	182	169	274	243	137	189	160	164	266	143	258	0.87	0.97												
mips32r1	1.70	1.30	1.30		2.57	1.00	0.48	0.54	1.13		0.61	1.00	6322	38	4823	43	4822	90			9556	48	3716	79	4946	73	1.33	0.92												
navre		0.92	0.88	1.33	1.39	1.00		0.75	1.34	0.47	0.66	1.00			1038	116	990	207	1502	73	1561	102	1126	154	1021	159	0.91	1.03												
next186	1.41	1.38	1.27	1.46	1.65	1.00	0.45	0.57	1.22	0.50	0.62	1.00	2763	34	2716	44	2500	94	2865	39	3252	48	1966	77	2168	73	1.10	0.95												
nios balanced					1.83	1.00					0.76	1.00									1915	130	1045	170	1110	184	1.06	1.08												
pdp11-34verilo	1.52	1.17	1.22	1.35	1.36	1.00	0.44	0.51	1.21	0.39	0.51	1.00	3842	56	2966	64	3089	153	3410	49	3439	64	2532	126	2609	109	1.03	0.87												
risc5	1.27	0.97	1.03		1.48	1.00	0.47	0.76	1.26		0.74	1.00	3005	34	2283	55	2441	92			3503	54	2362	73	2253	76	0.95	1.04												
t65	1.50	1.18	0.93	1.29	1.35	1.00	0.44	0.67	1.53	0.46	0.58	1.00	923	83	725	128	575	291	795	88	831	109.9	617	190	601	189	0.97	0.99												
tv80	1.48	0.84	0.85	1.52	1.55	1.00	0.39	0.60	1.30	0.43	0.62	1.00	2095	54	1180	83	1207	182	2148	61	2193	86	1413	139	1345	129	0.95	0.93												
averages	1.40	1.02	1.03	1.44	1.63	1.00	0.48	0.67	1.27	0.48	0.66	1.00																												

**LUT ratio summaries**

S-3 1.40 average Xilinx 4LUTs per ALUT  
 S-6 & K-7 1.02 average Xilinx 6LUTs per ALUT  
 C-2 & C-4 1.56 average Altera 4LUTs per ALUT

**Fmax ratio summaries**

S-3 0.48 average Spartan-3 Fmax to Arria Fmax  
 S-6 0.67 average Spartan-6 Fmax to Arria Fmax  
 K-7 1.27 average Kintex-7 Fmax to Arria Fmax  
 C-2 0.48 average Cyclone-2 Fmax to Arria Fmax  
 C-4 0.66 average Cyclone-4 Fmax to Arria Fmax

\* e.g., an average value normalized to Arria results  
 \*\* e.g., a indication of variation in Arria numbers across all designs