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			
	LUT ratio to Arria II						Fmax ratio to Arria II						Spartan-3 90nm		Spartan-6 45nm		Kintex-7 28nm		Cyclone II 90nm		Cyclone IV 40nm		Arria II 40nm		weighted equivalent*		weighted ratio**	
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
altor32	1.66	1.09	1.11	1.68	1.65	1.00	0.43	0.65	1.25	0.48	0.58	1.00	3897	61	2546	91	2602	176	3952	68	3874	81	2346	141	2493	134	1.06	0.95
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	1620	144	1.00	1.22
eco32	1.12	0.84	0.82	1.72	1.90	1.00	0.47	0.79	1.38	0.51	0.68	1.00	3034	55	2271	92	2210	160	4653	59	5153	79	2711	116	2478	123	0.91	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	140	261	0.85	0.98
m1_core	2.23	1.66	1.64	1.79	1.81	1.00	0.37	0.69	1.22	0.37	0.49	1.00	4688	70	3483	131	3456	233	3752	70	3795	94	2101	190	2808	168	1.34	0.88
mblite	1.74	1.16	1.20	1.59	1.60	1.00	0.44	0.63	1.24	0.48	0.63	1.00	1367	80	911	114	941	227	1250	88	1255	115	784	183	852	178	1.09	0.97
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	1006	160	0.89	1.04
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	2134	74	1.09	0.96
nios balanced					1.83	1.00					0.76	1.00									1915	130	1045	170	1125	188	1.08	1.10
pic16c5x	0.75	0.54	0.58	1.87	1.85	1.00	0.51	0.75	1.43	0.50	0.58	1.00	487	90	352	133	378	252	1216	89	1201	102	649	176	702	168	1.08	0.95
pdp11-34verilog	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	2566	110	1.01	0.88
risc5	1.27	0.97	1.03	1.59	1.48	1.00	0.47	0.76	1.26	0.43	0.74	1.00	3005	34	2283	55	2441	92	3749	32	3503	54	2362	73	2243	77	0.95	1.05
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	110	617	190	591	190	0.96	1.00
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	1321	130	0.93	0.94
averages	1.44	1.03	1.04	1.56	1.59	1.00	0.47	0.68	1.28	0.47	0.63	1.00																

LUT ratio summaries

S-3	1.44			average Xilinx 4LUTs per ALUT
S-6 & K-7		1.03		average Xilinx 6LUTs per ALUT
C-2 & C-4			1.58	average Altera 4LUTs per ALUT

Fmax ratio summaries

S-3	0.47					average Spartan-3 Fmax to Arria Fmax
S-6		0.68				average Spartan-6 Fmax to Arria Fmax
K-7			1.28			average Kintex-7 Fmax to Arria Fmax
C-2				0.47		average Cyclone-2 Fmax to Arria Fmax
C-4					0.63	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

Large Designs	**Vivado versus ISE ©2014 James Brakefield**		**ISE**				**Vivado**				**top module**	**comment**
folder name	**description**	**part**	**LUT cnt**	**Fmax**	**DSP**	**RAM**	**LUT cnt**	**Fmax**	**DSP**	**RAM**		
amber	ARM7 clone, no cache	k7-3	12045	97.54		4	7926	92.09		320	a25_core	
cray1	homebrew Cray1, double precision	k7-3	13463	127.02	19	10					cray_sys_top	
pdp2011	clone of PDP11/34 with floating-point	k7-3	13495	6.29	1	3	13327	45.45	1	0	unibus	vivado: 1186 LUTs as RAM, arria-2 fmax: 35
rtf65002	32-bit 6502 + 6502 emulation	k7-3	13615	77.95	4	4	11216	111.11	4	6	rtf65002d	
s1_core	reduced version of OpenSPARC T1	k7-3	54434	50.09	8	57	52845	55.56	8	59	s1_top	