



## FPGA Processors Resource Usage

### Summary

This quick reference provides detailed information about resource usage of all pre-synthesized Processors cores.

Core Reference  
CR0140 (v1.11) July 17, 2008

### Processors

The available Processors cores are listed as follows:

<i>ARM720T_LH79520</i>	<i>MICROBLAZE</i>	<i>NIOS2</i>	<i>PPC405A</i>
<i>PPC405CR</i>	<i>TSK51A</i>	<i>TSK51A_D</i>	<i>TSK52A</i>
<i>TSK52A_D</i>	<i>TSK52B_W</i>	<i>TSK52B_WD</i>	<i>TSK80A</i>
<i>TSK80A_D</i>	<i>TSK165A</i>	<i>TSK165A_D</i>	<i>TSK165B</i>
<i>TSK165B_D</i>	<i>TSK165C</i>	<i>TSK165C_D</i>	<i>TSK3000A</i>

**FPGA Processors Resource Usage**

**ARM720T\_LH79520**

**Sharp LH79520 with ARM 720T**

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		368	368	26		8							2
Cyclone2		364	364	25		8							4
Stratix		368	368	26		8							4
Stratix2		316	299	26		8							4
StratixGX		368	368	26		8							4
Spartan2		308	280			8							1
Spartan2E		308	278			8							1
Spartan3		308	278		4								1
Spartan3E		308	278		4								1
Virtex		308	278			8							1
Virtex2		308	278		4								1
Virtex2p		308	278		4								1
VirtexE		308	278			8							1
Virtex4		298	268		4								
EC		466	410	134			4						
ECP		466	410	134			4						
XP		466	410	134			4						

## MICROBLAZE

### MicroBlaze Processor

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Spartan3		3,581	2,569	1035	4				3			2	
Virtex2		3,478	2,415	1032	4				3			2	
Virtex2p		3,480	2,419	1032	4				3			2	
Virtex4		3,499	2,510	1003	4				3				

FPGA Processors Resource Usage

**NIOS2**

**Nios2 RISC Processor**

With On-chip Debug System  
Hardware MDU  
Breakpoints on Hard Reset Disabled  
4K Bytes Internal Memory

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		3302		1676		21						2	
Cyclone2		2853	2714	1462		21			8			4	
Stratix		2725		1396		21			8			4	
Stratix2		2295	1908	1396		21			8			4	
StratixGX		2725		1396		21			8			4	

With On-chip Debug System  
No Hardware MDU  
Breakpoints on Hard Reset Disabled  
4K Bytes Internal Memory

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		2615		1283		21						2	
Cyclone2		2362	2254	1283		21						4	
Stratix		2343		1283		21						4	
Stratix2		1958	1570	1283		21						4	
StratixGX		2343		1283		21						4	

With On-chip Debug System  
Hardware MDU  
Breakpoints on Hard Reset Enabled  
4K Bytes Internal Memory

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		3302		1676		21						2	
Cyclone2		2853	2714	1462		21			8			4	
Stratix		2725		1396		21			8			4	
Stratix2		2295	1908	1396		21			8			4	
StratixGX		2725		1396		21			8			4	

## PPC405A

### PowerPC PPC405 RISC Processor

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Virtex2p		8,110	4,356	2486	8							
Virtex4		8,038	4,338	2470	8							

**FPGA Processors Resource Usage**

**PPC405CR**

**AMCC PowerPC PPC405 RISC Processor**

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		172	172	24		8							2
Cyclone2		172	172	24		8							2
Stratix		172	172	24		8							2
Stratix2		147	127	24		8							2
StratixGX		172	172	24		8							2
Spartan2		233	192	25		8							1
Spartan2E		233	192	25		8							1
Spartan3		231	192	25	4								1
Spartan3E		231	192	25	4								1
Virtex		233	192	25		8							1
Virtex2		233	192	25	4								1
Virtex2p		233	192	25	4								1
VirtexE		233	192	25		8							1
Virtex4		233	192	25	4								
EC		288	273	25			4						
ECP		288	273	25			4						
XP		422	382	25			4						

## TSK51A

### TSK51A Microprocessor

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		2209	2192	492		1						1	
Cyclone2		2137	2135	490		1						1	
Cyclone3		2012	1997	491								1	
Stratix		2212	2195	492		1						1	
Stratix2		1749	1745	495		1						1	
StratixGX		2158	2141	495		1						1	
Spartan2		2344	1894	521		1						1	
Spartan2E		2268	1879	484		1						1	
Spartan3		2210	1890	482	1							1	
Spartan3A		2527	2260	487									
Spartan3E		2680	2319	496	1								
Spartan3L		2487	2219	483									
Virtex		2322	1896	500		1						1	
Virtex2		2194	1819	485	1							1	
Virtex2p		2184	1817	485	1							1	
VirtexE		2248	1855	484		1						1	
Virtex4		2699	2372	495	1								
Virtex5		2867	1272	489									
ProAsicPlus		4862						1					
ProAsic3		4283				1							
ProAsic3E		4343						1					
EC		2714	2466	556			1						
ECP		2714	2466	556			1						
ECP2		2326	1900	509			1						
ECP2M		2326	1900	509			1						
XP		2684	2322	495			1						
SC		2450	2133	508			1						

**FPGA Processors Resource Usage**

**TSK51A\_D**

**TSK51A OCD Microprocessor**

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		2616	2543	716		1							4
Cyclone2		2466	2463	716		1							4
Cyclone3		2047	2047	718									
Stratix		2598	2527	716		1							4
Stratix2		1940	1936	719		1							4
StratixGX		2595	2525	714		1							4
Spartan2		2888	2289	767		1							1
Spartan2E		2744	2198	710		1							1
Spartan3		2644	2194	709	1								1
Spartan3A		3231	2839	713									
Spartan3E		3400	2914	722	1								
Spartan3L		3163	2769	701									
Virtex		2828	2261	734		1							1
Virtex2		2650	2160	713	1								1
Virtex2p		2644	2159	713	1								1
VirtexE		2716	2186	712		1							1
Virtex4		3297	2856	721	1								
Virtex5		3312	1515	715									
ProAsicPlus		5538						1					
ProAsic3		5316				1							
ProAsic3E		5403						1					
EC		3216	2890	833			1						
ECP		3216	2890	833			1						
ECP2		2796	2208	752			1						
ECP2M		2796	2208	752			1						
XP		3184	2788	743			1						
SC		3008	2583	744			1						



## TSK52A

### TSK52A Microprocessor

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		2464	2442	402		1						2	
Cyclone2		2341	2338	410		1			1			2	
Cyclone3		2107	2058	395					1			2	
Stratix		2333	2311	410		1			1			2	
Stratix2		1839	1836	402		1			1			2	
StratixGX		2333	2311	410		1			1			2	
Spartan2		2737	2201	426								1	
Spartan2E		2583	2122	371								1	
Spartan3		2379	2044	346	1				1			1	
Spartan3A		2596	2288	346					1				
Spartan3E		2798	2445	380	1				1				
Spartan3L		2580	2283	346									
Virtex		2589	2118	358								1	
Virtex2		2383	2026	346	1				1			1	
Virtex2p		2399	2039	346	1				1			1	
VirtexE		2581	2112	356								1	
Virtex4		2773	2429	377	1				1				
Virtex5		3299	1474	355									
ProAsic3		9581											
ProAsic3E		9793											
EC		3182	2936	485									
ECP		2934	2739	487					1				
ECP2		2474	2115	405			1						
ECP2M		2474	2115	405			1						
XP		2896	2710	414									
SC		2792	2424	394			1						

FPGA Processors Resource Usage

TSK52A\_D

TSK52A OCD Microprocessor

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		2833	2761	632		1						5	
Cyclone2		2639	2635	642		1		1				5	
Cyclone3		2269	2269	625				1					
Stratix		2766	2694	640		1		1				5	
Stratix2		2054	2050	632		1		1				5	
StratixGX		2766	2694	640		1		1				5	
Spartan2		3211	2548	674								1	
Spartan2E		3153	2494	655								1	
Spartan3		2751	2293	587	1			1				1	
Spartan3A		3255	2827	587				1					
Spartan3E		3479	3020	611	1			1					
Spartan3L		3216	2791	580									
Virtex		3049	2465	598								1	
Virtex2		2773	2307	588	1			1				1	
Virtex2p		2773	2291	588	1			1				1	
VirtexE		3041	2454	598								1	
Virtex4		3389	2946	609	1			1					
Virtex5		4005	1741	896									
ProAsic3		10451											
ProAsic3E		10707											
EC		3636	3327	722									
ECP		3400	3135	731				1					
ECP2		2850	2358	634			1						
ECP2M		2850	2358	634			1						
XP		3206	2816	630			1						
SC		3208	2805	632			1						

**TSK52B\_W**

**TSK52B\_W Microprocessor Wishbone**

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		2597	2575	465		1							2
Cyclone2		2462	2459	474		1			1				2
Cyclone3		2213	2213	457					1				
Stratix		2500	2478	473		1			1				2
Stratix2		1966	1963	465		1			1				2
StratixGX		2501	2478	473		1			1				2
Spartan2		2962	2388	483									1
Spartan2E		2860	2343	440									1
Spartan3		2548	2172	402	1				1				1
Spartan3A		2851	2513	405					1				
Spartan3E		3072	2645	460	1				1				
Spartan3L		2810	2484	394									
Virtex		2850	2319	445									1
Virtex2		2522	2149	395	1				1				1
Virtex2p		2544	2151	395	1				1				1
VirtexE		2806	2310	424									1
Virtex4		2924	2581	396	1				1				
Virtex5		3538	1570	404									
ProAsic3		9903											
ProAsic3E		10133											
EC		3382	3114	557									
ECP		3152	2922	578					1				
ECP2		2666	2244	465			1						
ECP2M		2666	2244	465			1						
XP		3004	2595	482			1						
SC		3030	2600	482			1						

**FPGA Processors Resource Usage**

**TSK52B\_WD**

**TSK52B\_WD OCD Microprocessor Wishbone**

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		3057	2985	695		1						5	
Cyclone2		2776	2772	706		1			1			5	
Cyclone3		2374	2374	687					1				
Stratix		3003	2931	703		1			1			5	
Stratix2		2194	2190	695		1			1			5	
StratixGX		3004	2931	703		1			1			5	
Spartan2		3426	2729	716								1	
Spartan2E		3354	2724	680								1	
Spartan3		2930	2452	636	1				1			1	
Spartan3A		3467	3008	643					1				
Spartan3E		3828	3297	698	1				1				
Spartan3L		3449	3006	639									
Virtex		3312	2679	681								1	
Virtex2		2912	2421	638	1				1			1	
Virtex2p		2920	2422	638	1				1			1	
VirtexE		3286	2674	666								1	
Virtex4		3534	3078	638	1				1				
Virtex5		4041	1826	637									
ProAsic3		10941											
ProAsic3E		11222											
EC		3842	3525	804									
ECP		3610	3352	807					1				
ECP2		3080	2529	710			1						
ECP2M		3080	2529	710			1						
XP		3432	3005	710			1						
SC		3448	2960	717			1						

## TSK80A

### TSK80A Microcontroller

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		2626	2594	298								1	
Cyclone2		2568	2568	300								1	
Cyclone3		2257	2257	300									
Stratix		2655	2622	298								1	
Stratix2		1969	1968	300								1	
StratixGX		2618	2618	300								1	
Spartan2		2970	2672	392								1	
Spartan2E		2802	2497	379								1	
Spartan3		2722	2558	300								1	
Spartan3A		2572	2403	300									
Spartan3E		2876	2617	350									
Spartan3L		2528	2375	300									
Virtex		2506	2319	298								1	
Virtex2		2460	2285	298								1	
Virtex2p		2478	2296	298								1	
VirtexE		2470	2285	298								1	
Virtex4		2866	2673	300									
Virtex5		3271	1510	300									
ProAsicPlus		4941											
ProAsic3		5036											
ProAsic3E		5167											
EC		3408	3058	539									
ECP		3408	3058	539									
ECP2		2606	2200	372									
ECP2M		2606	2200	372									
XP		2950	2586	428									
SC		2638	2401	342									

**FPGA Processors Resource Usage**

**TSK80A\_D**

**TSK80A OCD Microcontroller**

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		3125	2996	652									3
Cyclone2		2875	2875	652									3
Cyclone3		2544	2544	652									
Stratix		3170	3043	652									3
Stratix2		2174	2173	652									3
StratixGX		3039	2879	652									3
Spartan2		3571	3021	765									1
Spartan2E		3283	2817	700									1
Spartan3		3588	3201	652									1
Spartan3A		3575	3166	665									
Spartan3E		4034	3561	700									
Spartan3L		3532	3146	638									
Virtex		3043	2608	678									1
Virtex2		3089	2695	651									1
Virtex2p		3107	2704	651									1
VirtexE		2977	2589	651									1
Virtex4		3721	3310	653									
Virtex5		4215	1812	652									
ProAsicPlus		6249											
ProAsic3		6326											
ProAsic3E		6482											
EC		3944	3530	877									
ECP		3944	3530	877									
ECP2		3260	2582	777									
ECP2M		3260	2582	777									
XP		3912	3271	806									
SC		3370	2903	692									

## TSK165A

### TSK165A Microprocessor

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		608	573	262		1						1	
Cyclone2		431	428	262		1						1	
Cyclone3		367	367	225									
Stratix		617	582	262								1	
Stratix2		322	320	261								1	
StratixGX		617	583	262								1	
Spartan2		600	417	213								1	
Spartan2E		600	417	213								1	
Spartan3		592	416	211								1	
Spartan3A		602	490	148									
Spartan3E		772	558	198									
Spartan3L		605	495	147									
Virtex		600	417	213								1	
Virtex2		606	422	213								1	
Virtex2p		610	424	213								1	
VirtexE		600	417	213								1	
Virtex4		887	624	261									
Virtex5		694	286	145									
ProAsicPlus		1342						1					
ProAsic3		1068				1							
ProAsic3E		1093						1					
EC		658	538	263			1						
ECP		658	538	263			1						
ECP2		566	375	198			1						
ECP2M		566	375	198			1						
XP		676	501	205			1						
MACHXO		640	500				1						
SC		626	477	201			1						

FPGA Processors Resource Usage

TSK165A\_D

TSK165A OCD Microprocessor

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		993	921	498		1							4
Cyclone2		754	750	500		1							4
Cyclone3		610	610	530									
Stratix		990	910	498									4
Stratix2		582	579	497									4
StratixGX		990	911	498									4
Spartan2		1091	743	476									1
Spartan2E		1073	739	469									1
Spartan3		1095	762	466									1
Spartan3A		1477	1165	475									
Spartan3E		1651	1203	507									
Spartan3L		1474	1163	474									
Virtex		1077	741	469									1
Virtex2		1071	747	469									1
Virtex2p		1071	747	469									1
VirtexE		1073	739	469									1
Virtex4		1572	1201	498									
Virtex5		1434	548	473									
ProAsicPlus		2336						1					
ProAsic3		2153				1							
ProAsic3E		2191						1					
EC		1150	935	512			1						
ECP		1150	935	512			1						
ECP2		1142	730	520			1						
ECP2M		1142	730	520			1						
XP		1230	977	533			1						
MACHXO		1208	978				1						
SC		1232	942	531			1						



## TSK165B

### TSK165B Microprocessor

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		670	635	284		1						1	
Cyclone2		451	448	284		1						1	
Cyclone3		375	375	235									
Stratix		663	628	284		1						1	
Stratix2		349	347	283		1						1	
StratixGX		663	629	284								1	
Spartan2		672	445	235								1	
Spartan2E		672	445	235								1	
Spartan3		660	429	233								1	
Spartan3A		652	509	154									
Spartan3E		822	572	204									
Spartan3L		661	515	153									
Virtex		674	443	235								1	
Virtex2		662	435	235								1	
Virtex2p		662	435	235								1	
VirtexE		668	441	235								1	
Virtex4		977	670	283									
Virtex5		704	295	151									
ProAsicPlus		1442						1					
ProAsic3		1132				1							
ProAsic3E		1156						1					
EC		708	574	285			1						
ECP		708	574	285			1						
ECP2		590	399	204			1						
ECP2M		590	399	204			1						
XP		700	519	213			1						
MACHXO		668	520				1						
SC		738	569	208									

FPGA Processors Resource Usage

TSK165B\_D

TSK165B OCD Microprocessor

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		1059	976	528		1							4
Cyclone2		804	800	530		1							4
Cyclone3		633	633	564									
Stratix		1056	977	528		1							4
Stratix2		612	609	527		1							4
StratixGX		1056	978	528									4
Spartan2		1151	785	499									1
Spartan2E		1151	785	499									1
Spartan3		1157	774	496									1
Spartan3A		1591	1216	505									
Spartan3E		1755	1254	537									
Spartan3L		1586	1231	504									
Virtex		1153	785	499									1
Virtex2		1163	792	500									1
Virtex2p		1165	791	500									1
VirtexE		1151	785	499									1
Virtex4		1698	1285	528									
Virtex5		1562	585	503									
ProAsicPlus		2521						1					
ProAsic3		2298				1							
ProAsic3E		2333						1					
EC		1222	1003	541			1						
ECP		1222	1003	541			1						
ECP2		1214	767	550			1						
ECP2M		1214	767	550			1						
XP		1306	1035	565			1						
MACHXO		1280	1041				1						
SC		1378	1075	561									

## TSK165C

### TSK165C Microprocessor

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		730	672	332		1						1	
Cyclone2		516	513	332		1						1	
Cyclone3		413	413	283									
Stratix		731	675	332		1						1	
Stratix2		393	391	331		1						1	
StratixGX		731	676	332								1	
Spartan2		742	517	236								1	
Spartan2E		742	517	235								1	
Spartan3		744	507	233								1	
Spartan3A		678	530	154									
Spartan3E		990	641	252									
Spartan3L		695	538	153									
Virtex		742	518	236								1	
Virtex2		760	536	236								1	
Virtex2p		752	531	236								1	
VirtexE		742	517	236								1	
Virtex4		1145	742	331									
Virtex5		820	318	152									
ProAsicPlus		1644						1					
ProAsic3		1294				1							
ProAsic3E		1312						1					
EC		838	635	333			1						
ECP		838	635	333			1						
ECP2		708	424	252			1						
ECP2M		708	424	252			1						
XP		834	573	261			1						
MACHXO		800	581				1						
SC		810	566	258			1						

FPGA Processors Resource Usage

TSK165C\_D

TSK165C OCD Microprocessor

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		1230	1065	600								2	
Cyclone2		864	861	625		2						4	
Cyclone3		664	664	636									
Stratix		1154	1052	600		1						4	
Stratix2		705	702	599		1						4	
StratixGX		1154	1053	600								4	
Spartan2		1301	869	548								1	
Spartan2E		1291	868	547								1	
Spartan3		1299	853	544								1	
Spartan3A		1715	1322	553									
Spartan3E		1945	1388	609									
Spartan3L		1724	1329	552									
Virtex		1301	869	548								1	
Virtex2		1307	887	548								1	
Virtex2p		1309	888	548								1	
VirtexE		1295	868	548								1	
Virtex4		1920	1393	600									
Virtex5		1848	641	552									
ProAsic3		2486				1							
ProAsic3E		2519					1						
EC		1378	1087	616			1						
ECP		1378	1087	616			1						
ECP2		1382	828	625			1						
ECP2M		1382	828	625			1						
XP		1460	1104	647			1						
MACHXO		1426	1107				1						
SC		1542	1153	642									

## TSK3000A

### TSK3000A OCD Microprocessor

With JTAG-BASED On-Chip Debug System and with Hardware MDU:  
Logic Cells/Elements

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		4700	4274	1709		6						2	
Cyclone2		3809	3805	1711		6			4			3	
Stratix		4371	4202	1743		6			8			3	
Stratix2		2984	2979	1710		6						3	
StratixGX		6924	6753	2696		4			8			3	
Spartan2		4650	3549	1647		4							
Spartan2E		4662	3559	1645		4							
Spartan3		4600	3326	1776	4				4				
Spartan3E		6671	5322	1867	4				4				
Virtex2		4650	3401	1771	4				4				
Virtex2p		4666	3400	1781	4				4				
Virtex4		5865	4740	1603	4				4				
EC		6842	6078	1724			4		4				
ECP		6358	5823	1732			4		1				
XP		6264	5462	1724			4						

With JTAG-BASED On-Chip Debug System and without MDU Hardware:

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		3468	3171	1265		6						2	
Cyclone2		2802	2809	1267		6						3	
Stratix		3337	3169	1267		6						3	
Stratix2		2188	2183	1266		6						3	
StratixGX		5983	5815	2252		4						3	
Spartan2		3630	2637	1206		4							
Spartan2E		3656	2652	1204		4							
Spartan3		3676	2654	1204	4								
Spartan3E		5189	4072	1295	4								
Virtex2		3726	2724	1199	4								
Virtex2p		3744	2729	1209	4								
Virtex4		4903	3844	1265	4								
EC		5046	4507	1232			4						
ECP		4996	4507	1232			4						
XP		4508	4018	1263			4						

**FPGA Processors Resource Usage**

**Without On-Chip Debug System and with Hardware MDU:**

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		4463	4090	1503		6						1	
Cyclone2		3631	3660	1500		6			4			1	
Stratix		4110	4018	1537		6			8			1	
Stratix2		2883	2914	1499		6						1	
StratixGX		6650	6533	2486		4			8			1	
Spartan2		4352	3323	1438		4							
Spartan2E		4360	3334	1436		4							
Spartan3		4298	3099	1567	4				4				
Spartan3E		6123	4838	1657	4				4				
Virtex2		4342	3174	1562	4				4				
Virtex2p		4352	3169	1572	4				4				
Virtex4		5336	4289	1394	4				4				
EC		6452	5682	1517			4						
ECP		5958	5427	1525			4		1				
XP		5816	5102	1513			4						

**Without On-Chip Debug System and without MDU Hardware:**

Device Family	Macrocells	Logic Cells/Elements	4-Input LUT	Registers	Block RAM (16K-Bit)	Block RAM (4K-Bit)	Block RAM (8Kx18)	Block RAM (256x9)	Block Multipliers	Total PLLs	Total DLLs	D/GCLK	DCMs
Cyclone		3231	2987	1059		6						1	
Cyclone2		2624	2664	1056		6						1	
Stratix		3076	2985	1061		6						1	
Stratix2		2087	2118	1055		6						1	
StratixGX		5709	5595	2042		4						1	
Spartan2		3332	2411	997		4							
Spartan2E		3352	2426	995		4							
Spartan3		3368	2426	995	4								
Spartan3E		4637	3587	1085	4								
Virtex2		3422	2497	990	4								
Virtex2p		3444	2498	1000	4								
Virtex4		4374	3393	1056	4								
EC		4652	4110	1025			4						
ECP		4628	4110	1025			4						
XP		4052	3656	1052			4						

## Tools Utilized

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The following vendor device tools were used to determine the resource usage statistics:

### **Actel**

Actel Designer Software Version 6.2

### **Altera**

Quartus II 5.0

### **Lattice**

ispLEVER 5.0

### **Xilinx**

Xilinx ISE 6.3

For Virtex4, Spartan3, Spartan3E the Xilinx ISE 7.1 was used.

## Revision History

Date	Version No.	Revision
6-Dec-2004	1.0	Service pack 2 release
12-Apr-2005	1.01	Added Virtex4 and Stratix2 resource usage
17-Jun-2005	1.02	Added EC and ECP resource usage
1-Jul-2005	1.03	TSK80A and TSK80A_D cores have been re-synthesized and optimized for use in Spartan-3 devices. Regenerated resource usage statistics to reflect these corrections.
15-Sep-2005	1.04	Added Spartan3E, Cyclone2 and StratixGX resource usage
14-Nov-2005	1.05	Introduced ARM720T_LH79520, PPC405CR and MICROBLAZE
20-Dec-2005	1.06	Added Proasic3 statistics
20-Apr-2006	1.07	Tools Utilized section added
15-Jun-2006	1.08	Proasic3E and XP added
1-Aug-2006	1.09	MACHXO added
8-Aug-2007	1.10	Cyclone3, ECP2, ECP2M, Spartan3A, Spartan3E, Spartan3L , SC and Virtex5 resource usage added
17-Jul-2008	1.11	Altium Designer Summer 08 SP1

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