Flash/AES	Scrubbing	Grades	Part	suffix	low price	min pkg size mm	user pin cnt	K LUTs	K Logic Cells	LC/$	embed uP	mults	PLL/DLL	SERDES	I/Os	small RAM	med. RAM	large RAM	CLBs	highest volume pricing	LUTs per dollar	LC per Mult	I/Os per RAM	ram BITS	M confg BITS	BITS / LUT	
Altera			**APEX20K**		(100+)			16bits		**67**							128x16		10x				**9.7**				
			EP20K30E	ETC144-3	$20			1,200	1,200	60					128		12		120				10.7	24,576			
			EP20K60E	ETC144-3	$37			2,560	2,560	69					204		16		256				12.8	32,768			
			EP20K100E	EFC144-3	$50			4,160	4,160	83					252		26		416				9.7	53,248			
			EP20K160E	ETC144-3	$118			6,400	6,400	54					316		40		640				7.9	81,920			
			EP20K200E	EQC208-3	$120			8,320	8,320	69					382		52		832				7.3	106,496			
Altera			**MAX II**	180nm	(1+)	1.8, 1.5 - 3.3		16bits		**45**								flash	10x	(250,000+)				flash			
F		A	EPM240, -Z	ZM68I3	$6	5	80	0.24	0.24	40					80				24	1.50	160			8,192			
F		A	EPM570, -Z	GT100C5	$13	6	76	0.57	0.57	43					160				57	2.30	248			8,192			
F		A	EPM1270	F256C5ES	$30	11	212	1.27	1.27	42					212				127	4.25	299			8,192			
F		A	EPM2210	F256C5	$41	17	204	2.21	2.21	54					272				221	7.00	316			8,192			
			Cyclone		(1+)			16bits		**299**							128x36		10x	(250,000+)			**8.9**				
			EP1C3	T100C8	$11			2,910	2,910	272			1		104		13		291	4.00	728		8.0	59,904			
			EP1C4	F324C8	$19			4,000	4,000	208			2		301		17		400	7.50	533		17.7	78,336			
			EP1C6	T144C8	$18			5,980	5,980	342			2		185		20		598	7.50	797		9.3	92,160			
			EP1C12	Q240C8	$36			12,060	12,060	340			2		249		52		1,206	12.00	1005		4.8	239,616			
			EP1C20	F324C8	$60			20,060	20,060	334			2		301		64		2,006	20.00	1003		4.7	294,912			
Altera			**Stratix**	130nm	(1+)			16bits		**103**		18x18DSP		3.1875Ghz		32x18	128x36	4Kx14	10x			**440**	**7.03**			35.3	
			EP1S10	F484C7N	$205	23	335	21.1	21.1	103		24	6		422	94	60	1	1057			440	7.03	0.920	4	35.3	
Altera			**Cyclone II**	90nm	(1+)			16bits		**366**		18x18					128x36		16x			**583**	**4.82**	10^6 bits			
			EP2C5	T144C8	$13			4,608	4,608	360		13	2		158		26		288			354	6.08	0.120			
			EP2C8	T144C8	$19			8,256	8,256	430		18	2		182		36		516			459	5.06	0.166			
			EP2C15	F256C8	$40	17	152	14,448	14,448	362		26	4		315		52		903			556	6.06	0.240			
			EP2C20	F256C8	$43			18,752	18,752	439		26	4		315		52		1,172			721	6.06	0.240			Altium NB2: EP2C35F672C8
			EP2C35	F484C8N	$91			33,216	33,216	366		35	4		475		105		2,076	22.00	1510	949	4.52	0.484			
			EP2C50	F484C8	$160			50,528	50,528	316		86	4		450		129		3,158			588	3.49	0.594			
			EP2C70	F672C8N	$235			68,416	68,416	291		150	4		622		250		4,276			456	2.49	1.152			
Altera			**Stratix II**	90nm	(1+)	1.2v core		16-32bits	1/2 ALM	**82**		18x18DSP		6.375Ghz		32x18	128x36	4Kx14	16x			**163**	**4.68**	10^6 bits		54.9	
		M	EP2S15	F484C5N	$190	23	342	15.6	15.6	82		48	6		365	104	78	0	780			163	4.68	0.419	5	54.9	
Altera			**Cyclone III**	65nm	(1+)	1.2, 1.2 - 3.3		16bits		**504**		18x18DSP					256x36		16x			**332**	**3.84**	10^6 bits		59.9	
			EP3C5	E144C8	$13	8	106	5.14	5.14	401		23	2		182		46		321	4.00	1284	223	3.96	0.424	2.8	115.7	
			EP3C10	E144C8	$19	8	106	10.32	10.32	538		23	2		182		46		645	5.00	2064	449	3.96	0.424	2.8	57.6	
			EP3C16	E144C8	$27	8	92	15.41	15.41	577		56	4		346		56		963			275	6.18	0.516	3.9	54.9	
			EP3C25	E144C8NES	$40	14	156	24.62	24.62	623		66	4		215		66		1,539			373	3.26	0.608	5.5	49.7	Altium NB2: EP3C40F780C8N
			EP3C40	F324C8	$81	19	215	39.60	39.60	487		126	4		535		126		2,475			314	4.25	1.161	9.1	50.1	
			EP3C55	F484C8	$142	19	195	55.86	55.86	395		156	4		377		260		3,491			358	1.45	2.396	14.2	52.8	
			EP3C80	F780C8	$246	19	295	81.26	81.26	331		244	4		429		305		5,079			333	1.41	2.811	19.0	49.8	
			EP3C120	F484C7ES	$387	23	283	119.09	119.09	308		288	4		531		432		7,443			414	1.23	3.981	27.2	48.7	
Altera			**Arria**		(1+)	1.2v core		16-32bits	1/2 ALM			18x18DSP		2.5Ghz		32x18	128x36	4Kx14	16x			**208**	**2.17**	10^6 bits			
			EP1AGX20	CF484C6	$84			8,632	17,264			40	4	4	341	166	118	1				216	2.89	1.229			
			EP1AGX35	CF484C6N	$123			13,408	26,816			56	4	8	341	197	140	1				239	2.44	1.348			
			EP1AGX50					20,064	40,128			104	8	8	514	313	242	2				193	2.12	2.475			
			EP1AGX60					24,040	48,080			128	8	12	514	326	252	2				188	2.04	2.529			
			EP1AGX90					36,088	72,176			176	8	12	538	478	400	4				205	1.35	4.478			
Altera			**Stratix III**	65nm	(1+)	1.1v core		ALMs	1/2.65 AL	**165**		18x18DSP				32x20	256x36	2K*72	10x			**150**	**3.82**	10^6 bits		149.5	
A	Y	MI	EP3SL/SE50	F780C4	$354	23	288	23.8	62.9	178		216	4		480	928	108	6	2375			146	4.44	2.474	22	176.9	Indust:-40..100 Junction temp
A	Y	MI	EP3SL70	F484C4N	$586	23	288	33.8	89.4	153		288	4		480	1,318	150	6	3375			155	3.20	3.111	22	122.2	small RAM is 20x5LUT blocks
Altera			**Cyclone IV**	40nm	(1+)	1.2, 1.2 - 3.3		16bits		**516**		18x18DSP		2.5-3.125Gl		PCI exp	256x36		16x			**374**	**4.64**	10^6 bits		74.7	
			EP4CE6	E22C8N	$13	11	94	6.27	6.27	499		15	2		182		30		392	3.00	2091	418	6.07	0.276			
			EP4CE10	E22C8N	$22	11	94	10.32	10.32	460		23	2		182		46		645			449	3.96	0.424			
			EP4CE15	E22C9LN	$23	17	168	15.41	15.41	666		56	4		346		56		963			275	6.18	0.516	3.8	53.4	
			EP4CE22	E22C7N	$44	14	72	22.32	22.32	503		66	3		153		66		1,395			338	2.32	0.608	7.6	78.3	
			EP4CE30	F23C8N	$42	23	331	28.85	28.85	687		66	4		535		66		1,803			437	8.11	0.608	7.6	60.6	
			EP4CE40	F29C7N	$97	23	331	39.60	39.60	408		116	4		535		123		2,475			341	4.35	1.134			
			EP4CE55	F23C7N	$144	23	327	55.86	55.86	387		154	4		377		254		3,491			363	1.48	2.341			
			EP4CE75	F23C7N	$227	23	295	75.41	75.41	332		200	4		429		298		4,713			377	1.44	2.746	24.5	72.1	
			EP4CE115	F23C8N	$316	23	283	114.48	114.48	363		266	4		531		423		7,155			430	1.26	3.898	47.6	95.4	
			EP4CGX15	BN11C8N	$24	11	72	14.40	14.40	601		0	4	2	72	1	58		900	6.00	2400	#####	1.24	0.535	3.8	56.8	
			EP4CGX22	F22C8N	$51	14	72	21.28	21.28	418		40	3	4	150	1	82		1,330			532	1.83	0.756	7.6	80.4	
			EP4CGX30	BF14C7N	$79	14	72	29.44	29.44	373		80	4	4	150	1	117		1,840			368	1.28	1.078	7.6	55.4	
			EP4CGX50	CF23C7N	$162	23	290	49.89	49.89	309		140	4	8	310	1	272		3,118			356	1.14	2.507	24.5	110.2	
			EP4CGX75	DF27C7N	$199	23	290	73.92	73.92	372		198	8	8	310	1	451		4,620			373	0.69	4.156	24.5	68.8	

Flash/AES	Scrubbing	Grades	Part	suffix	low price	min pkg size mm	user pin cnt	K LUTs	K Logic Cells	LC/$	embed uP	mults	PLL/DLL	SERDES	I/Os	small RAM	med. RAM	large RAM	CLBs	highest volume pricing	LUTs per dollar	LC per Mult	I/Os per RAM	ram BITS	M confg BITS	confg BITS / LUT input	
			EP4CGX110	DF31C7N	$279	23	270	109.42	109.42	393		280	8	8	475	1	596		6,839			391	0.80	5.493	47.6	96.2	
			EP4CGX150	DF27C7N	$370	23	270	149.76	149.76	405		360	8	8	475	1	703		9,360			416	0.68	6.479	47.6	68.6	
Altera			**Arria II**	40nm	(1+)	1.2v core		ALMs	1/2.38 Al	**143**		18x18DSP		3.75Ghz		32x20	256x36	2K*72	10x			**185**	**1.14**	10^6 bits			half of CLBs can be MLABs
	Y		EP2AGX45	CU17C6N	$300	17	156	18.05	43.0	143		232	4	8	364	903	319		1,805			185	1.14	3.518			small RAM is 20x5LUT blocks
Altera			**MAX V**	180nm	(1+)	1.8, 1.5 - 3.3		16bits		**88**								flash	10x	(250,000+)				flash			internal oscillator, flash, LUT RAM
F		I	5M40Z	E64C5N	$1	5	30	0.04	0.04	44			IP		54				4					8,192			
F		A	5M80Z	E64C5N	$2	5	30	0.08	0.08	47			IP		79				8					8,192			
F		A	5M160Z	E64C5N	$4	5	52	0.16	0.16	46			IP		79				16					8,192			
F		I	5M240Z	T144C5N	$5	5	52	0.24	0.24	49			IP		114				24					8,192			
F		I	5M570Z	T100C5N	$8	6	74	0.57	0.57	76			IP		159				57					8,192			
F		A	5M1270Z	T144C5N	$11	17	114	1.27	1.27	115			IP		271				127					8,192			
F		I	5M2210Z	F256C5N	$20	17	203	2.21	2.21	111			IP		271				221					8,192			
Altera			**Cyclone V**	28nm	(1+)	1.1v core		ALMs	1/2.65 Al	**762**	uP	18x18DSP		3,5 Gbps		mem ct	256x40	PCI ex	10x			**386**	**1.27**	10^6 bits		####	
A		I	5CEBA/CSEBA/	256FBGA	35	15	144	9.4	25.0	718		50	4		224	1	166		943			500	1.83	1.700			840 Mbps LVDS
A		I	5CGXBC3	484FPGA	60	15	112	11.9	31.0	520		102	4	3,0	208	1	138	1	1,170			304	1.62	1.413			
A		I	5CSEBA/CSXF0	484UBGA	62	19	227	15.1	40.0	648	2	168	8		326	2	220		1,509			238	1.42	2.253			dual ARM A9 @800Mhz, 512K cache
A		I	5CEBA4	256FBGA	49	15	144	18.5	48.0	972		132	4		224	1	264		1,811			364	1.15	2.703			ALM equivlent to 2 5LUTs or single 6LU
A		I	5CGXBC4	484BGA	94	19	240	18.9	50.0	532		140	6	6,0	336	2	244	1	1,887			357	1.51	2.499			
A		I	5CEBA/CGXBC/	484BGA	88	19	238	29.1	76.5	869		300	6		240	2	372		2,887			255	0.97	3.809			DDR3 at 400 Mhz
A		I	5CSEBA/CSXF0	484UBGA	97	19	227	32.1	85.0	873	2	174	9		469	2	388		3,208			488	1.23	3.973			dual ARM A9 @800Mhz, 512K cache
A		I	5CSEBA/CSXF0	484UBGA	140	19	227	41.5	110.0	788	2	224	9		469	2	502		4,151			491	0.95	5.140			dual ARM A9 @800Mhz, 512K cache
A		I	5CEBA/CGXFC/	484UBGA	159	19	230	56.5	149.5	938		312	7		480	2	636		5,642			479	0.77	6.513			9x9,18x18,27x27 multiply support
Altera			**MAX X**	55nm	(1+)	1.2, 1.2 - 3.3		16bits		**646**		18x18		A2D		ext mer	256x36	KB flas	10x	(250,000+)		**305**	**6.8**	10^6 bits			internal oscillator, flash, 12bit A2D, AES
FA	Y	A	10M02	DCV36C8G	$4	3.00	27	2.00	2.00	529		16	2		160		12	12	200	1.50	1333	125	13.3	0.111			600Mbps DDR, 800Mbps LVDS
FA	Y	A	10M04	SCU169C8G	$10	8.00	112	4.00	4.00	415		20	2	1	246		21	156	400			200	11.7	0.194			no accumulator on multiplier
FA	Y	A	10M08	SCU169C8G	$11	4.00	56	8.00	8.00	717		24	2	1	250		42	172	800			333	6.0	0.387			
FA	Y	A	10M16	SCU169C8G	$27	11	130	16.00	16.00	585		45	4	1	320	DDR	61	296	1,600			356	5.2	0.562			
FA	Y	A	10M25	SCE144C8G	$40	17	178	25.00	25.00	633		55	4	2	380	DDR	75	400	2,500			455	5.1	0.691			
FA	Y	A	10M40	SCE144C8G	$52	17	178	40.00	40.00	774		125	4	2	500	DDR	140	736	4,000			320	3.6	1.290			
FA	Y	A	10M50	SCE144C8G	$58	17	178	50.00	50.00	867		144	4	2	500	DDR	182	736	5,000			347	2.7	1.677			
Altera			**Cyclone X LP**	20nm	(1+)	1.2, 1.2 - 3.3		4LUT		**1,144**		18x18					256x36		10x	(250,000+)		#####	**3.39**	10^6 bits			no accumulator, plain 4LUT+Dff
			10CL006	YU256C8G	$7	14	176	6.27	6.27	893		15	2		176		30					418	5.87	0.276			
			10CL010	YU256I7G	$9	8	71	10.32	10.32	1,100		23	2		176		46					449	3.83	0.424			
			10CL016	YM164I7G	$14	8	71	15.41	15.41	1,102		56	4		340		56					275	6.07	0.516			
			10CL025	YU256I7G	$20	14	150	24.62	24.62	1,251		66	4		325		66					373	4.92	0.608			
			10CL040	YU484I7G	$29	19	325	39.60	39.60	1,359		126	4		325		126					314	2.58	1.161			
			10CL055	YU484I7G	$46	19	321	55.86	55.86	1,209		156	4		321		260					358	1.23	2.396			
			10CL080	YU484I7G	$71	19	289	81.26	81.26	1,140		244	4		423		305					333	1.39	2.811			
			10CL120	YF484I7G	$108	23	277	119.09	119.09	1,101		288	4		525		432					414	1.22	3.981			
Gowin			**Arora**	55nm	(1+)	1.0 - 3.3		16bits		#####		18x18					1Kx18	flash	8X				**6.54**	10^6 bits			LUT RAM, 9x9-18x18-36x36 mults, 1%
			GW2A-18	MG196		8	114	20,736	20736			48	4+4		319		46		2,592				6.93	0.848			package determines pSRAM & flash
			GW2AR-18	QN88		10	66	20,736	20736			48	4+4		384		46	42M	2,592				8.35	0.848			64Mb pSRAM or 128Mb SDRAM
			GW2A-55	PG484		15	319	54,720	54720			40	6+4		608		140		6,840				4.34	2.580			
Gowin			**Littlebee**	55nm	(1+)	1.2,1.2 - 3.3		16bits		#####	M3	18x18		yes			1Kx18	flash	8X				**15.2**	10^6 bits			LUT RAM, 9x9-18x18-36x36 mults, 1%
F			GW1NZ-1	CS16		1.80	11	1152	1152				1+0		25		4	64Kb	144				6.3	0.074			many variations with flash and/or PSRA
F			GW1NSR-2	CS36		2.50	30	1728	1728				1+2		95		4	1Mb	216				23.8	0.074			osc, usb2.0, A2D
F			GW1NSR-2C	CS36		2.50	30	1728	1728		1		1+2		95		4	1Mb	216				23.8	0.074	Cortex-M3		osc, usb2.0, A2D, 60MHz cortex M3, 3
F			GW1NNR-4	MG81		4.50	68	4068	4068			16	2+2		70		10	256Kb	509			254	7.0	0.184			64Mb pSRAM/SDRAM
F			GW1NSR-4C	MG81		4.50	68	4068	4068		1	16	2+2		70		10	256Kb	509			254	7.0	0.184	Cortex-M3		64Mb pSRAM/SDRAM
F			GW1NR-9	QN88		10.0	70	8640	8640			20	2+4		120		26	608Kb	1,080			432	4.6	0.479			64Mb pSRAM/SDRAM
F			GW1N-1	CS30		2.40	24	1152	1152				1+0		119		4	96Kb	144				29.8	0.074			osc, i3c, spi, DDR, IO gearing
F			GW1N-2	CS72		3.60	57	2304	2304			16	2+2		207		10	256Kb	288			144	20.7	0.184			osc, i3c, spi, DDR, IO gearing
F			GW1N-4	CS72		3.60	57	4606	4606			16	2+2		207		10	256Kb	576			288	20.7	0.184			osc, i3c, spi, DDR, IO gearing
F			GW1NRF-LV4B	CS72		3.60	57	4606	4606		1	16	2+2		207		10	256Kb	576			288	20.7	0.184	32bit ARC uP		osc, i3c, spi, DDR, IO gearing
F			GW1N-6	CM64		4.10	55	6912	6912			26	2+4		273		26	608Kb	864			266	10.5	0.479			osc, i3c, spi, DDR, IO gearing
F			GW1N-9	CM64		4.10	55	8640	8640			26	2+4		273		26	608Kb	1,080			332	10.5	0.479			osc, i3c, spi, DDR, IO gearing
Lattice			**MachXO**	130nm	(1+)	1.2 - 3.3		16bits		**90**							256x36	flash	8X				**151**				ua idle mode, onchip flash
F		A	LCMXO256	3TN100C	$5	8	78	256	256	49			0		78		0		32					0			Auto:-40..125 Junction temp
F		A	LCMXO640	3TN100C	$9	8	101	640	640	69			0		159		0		80					0			
F		A	LCMXO1200	3T100C4	$13	8	101	1,200	1,200	95			1		211		1		150	3.50	343		211	9,216			
F		A	LCMXO2280	3FT324C	$16	8	101	2,280	2,280	144			2		271		3		285	5.00	456		90.3	27,648			
Lattice			**MachXO2**	65nm	(1+)	1.2 - 3.3		16bits		**146**		I2C,SPI,timer			8x gea	LUT rar	512x18	flash	8X				**27.1**	10^6 bits			ua idle mode, onchip flash & clk

Flash/AES	Scrubbing	Grades	Part	suffix	low price	min pkg size mm	user pin cnt	K LUTs	K Logic Cells	LC/$	embed uP	mults	PLL/DLL	SERDES	I/Os	small RAM	med. RAM	large RAM	CLBs	highest volume pricing	LUTs per dollar	LC per Mult	I/Os per RAM	ram BITS	M confg BITS	confg BITS / LUT input	
F		I	LCMXO2-256	4SG32C	$3	4.00	22	0.256	256	91		4	0		56		0	0	32	0.75	341						
F		I	LCMXO2-640	4TG100C	$6	8.00	79	0.640	640	109		4	0		80		2	24	80				40.0	0.018				
F		I	LCMXO2-1200	1UW25ITR	$7	2.50	18	1.280	1,280	174		4	1		108		7	64	160	2.00	640		15.4	0.065				
F		I	LCMXO2-2000	4TG100C	$10	3.10	29	2.112	2,112	207		4	1		207		8	80	264				25.9	0.074				
F		I	LCMXO2-4000	csBGA132	$11	8.00	105	4.320	4,320	406		4	2		279		10	96	540				27.9	0.092				
F		I	LCMXO2-7000	4TG144C	$14	14.0	115	6.864	6,864	475		4	2		335		26	256	858				12.9	0.240				
Lattice			**MachXO3**		(1+)	1.2 - 3.3		16bits		**551**		# I2C,S	PLL		8x gea	LUT ran	512x18	flash	8X				**24.5**	10^6 bits			PLL idle mode, 1ms boot, LVDS, DDR
F		I	LCMXO3L-640	5MG121I	$3	6.00	100	0.640	640	188		5	1		100		7	64	80	1.00	640		14	0.065				2X I2C, 1X: SPI, timer, oscillator
F		I	LCMXO3L-1300	5UWG36C	$3	2.50	25	1.300	1,300	500		5	1		206		7	64	163				29	0.065				LF version has flash & 1ms boot
F		I	LCMXO3L-2100	5BG324C	$4	3.20	38	2.112	2,112	571		5	1		269		8	80	264				34	0.074				MachXO3D-4300 & 9400 w/hw securit
F		I	LCMXO3L-4300	5UWG81C	$5	3.80	60	4.320	4,320	873		5	2		325		10	96	540				33	0.092				
F		I	LCMXO3L-6900	5BG256C	$11	9.00	206	6.864	6,864	626		5	2		325		26	256	858				13	0.240				
F		I	LCMXO3L-9400	5BG256C	$12	9.00	206	9.400	9,400	754		5	2		384		48	448	1,175				8	0.442				
Lattice			**MachXO3D**		(1+)	1.2 - 3.3		16bits		**687**		# I2C,S	PLL		8x gea	LUT ran	512x18	flash	8X				**21.9**	10^6 bits			For the secure hardware market
F		I	LCMXO3L-6900		$11	10.0	58	6.864	6,864	621		5	2		206		10	1,122	858				21	0.092				
F		I	LCMXO3L-9400		$12	10.0	58	9.400	9,400	754		5	2		383		46	2,693	1,175				8	0.424				
Lattice			**MachXO5-NX**		(1+)	1.2 - 3.3		16bits		**313**		18x18[	PLL		8x gea	LUT ran	512x36	16K*3(	8X				**22.3**	10^6 bits			2 ATD, 450MHz & 128KHz osc, I2C, SI
F		I	LFMXO5			14.0		25.00	25.00			20	2		206		80	0.590	3,125				3	2.064			
Lattice			**LatticeECP/EC**		(1+)	1.2, 1.2 - 3.3		16bits		**313**		18x18	DSP				256x36		8X				**16.6**	10^6 bits			EC6..EC40 also
A			LFEC1E	3TN100C	$7	14	67	1,536	1,536	216		0	2		112		2		192				56.0	0.018			
A			LFEC3E	4TN100C	$12	14	67	3,072	3,072	257		0	2		160		6		384				26.7	0.055			
A			LFEC6E	3TN144C	$18	17	195	6,144	6,144	343		0	2		224		10		768				22.4	0.092			
A			LFECP6E	3TN144C	$19	17	195	6,144	6,144	322		16	2		224		10		768			384	22.4	0.092			
A			LFEC10E	3FN484C	$32	17	195	10,240	10,240	324		0	4		288		30		1,280				9.6	0.276			
A			LFECP10E	3FN484C	$331	17	195	10,240	10,240	31		20	4		288		30		1,280			512	9.6	0.276			
A			LFEC15E	3FN256C	$40	17	195	15,360	15,360	384		0	4		352		38		1,920				9.3	0.350			
A			LFECP15E	3FN484C	$44	17	195	15,360	15,360	347		24	4		352		38		1,920			640	9.3	0.350			
A			LFEC20E	3FN484C	$53	23	360	19,712	19,712	374		0	4		400		46		2,464				8.7	0.424			
A			LFECP20E	3FN484C	$56	23	360	19,712	19,712	352		28	4		400		46		2,464			704	8.7	0.424			
A			LFEC33E	3FN484C	$80	23	360	32,768	32,768	410		0	4		496		58		4,096				8.6	0.535			
A			LFECP33E	3FN484C	$84	23	360	32,768	32,768	390		32	4		496		58		4,096			1024	8.6	0.535			Altium NB2: LFECP33E-3FN672C
Lattice			**LatticeECP2**	90nm	(1+)	1.2, 1.2 - 3.3		16bits		**507**		18x18	DSP	3.125	Ghz		512x36		8X				**14.1**	10^6 bits			DDR2 support
A	Y	I	LFE2-6E	5TN144C	$10	17	90	6,048	6,048	590		12	2		190		3		756			504	63.3	0.055			Indust:-40..100 Junction temp
A	Y	I	LFE2-12E	5TN144C	$21	17	93	12,096	12,096	590		24	2		297		12		1,512			504	24.8	0.221			
A	Y	I	LFE2-20E	6FN256C	$39	17	193	21,168	21,168	539		28	2		402		15		2,646			756	26.8	0.276			
A	Y	I	LFE2-35E	5FN672CES	$80	23	331	32,256	32,256	404		32	2		450		18		4,032			1008	25.0	0.332			
A	Y	I	LFE2-50E	5FN484C	$105	23	339	47,952	47,952	456		72	4		500		21		5,994	23.95	2002	666	23.8	0.387			
A	Y	I	LFE2-70SE	5FN672C	$147	27	500	68,112	68,112	463		88	6		588		60		8,514			774	9.8	1.106			
Lattice			**LatticeECP5**	40nm	(1+)	1.2, 1.2 - 3.3		16bits		**2316**		18x18	DSP	5Gb			512x36		8X	25K+			**636**	**3.03**	10^6 bits			DDR2, DDR3 & LPDDR support (1066,
			LFE5U-12F	6BG381C	$7	10	118	12,000	12,000	1,846		28	2		197		32		1,500	3.92	3065	429	6.16	0.590			
			LFE5U-25F	6BG381C	$9	10	118	24,288	24,288	2,640		28	2		197		56		3,036	7.51	3235	867	3.52	1.032			DSP: 36x36, 2X 18x18, 4X 9x9
			LFE5U-45F	6BG381C	$16	10	118	44,000	44,000	2,803		72	4		245		108		5,500	12.34	3566	611	2.27	1.991			DSP: ALU & Booleans
			LFE5U-85F	6BG381C	$30	10	118	84,000	84,000	2,770		156	4		365		208		10,500	23.63	3555	538	1.75	3.834			SERDES: 85mw per channel
			LFE5UM-25F	6BG381C	$13	10	118	24,000	24,000	1,879		28	2	2	197		56		3,000			857	3.52	1.032			
			LFE5UM-45F	6BG381C	$24	10	118	44,000	44,000	1,850		72	4	4	245		108		5,500			611	2.27	1.991			
			LFE5UM-85F	8BG381I	$35	10	118	84,000	84,000	2,421		156	4	4	365		208		10,500			538	1.75	3.834			
Lattice			**LatticeXP**		(1+)	1.2, 1.2 - 3.3		16bits		**257**							256x36		8X				**14.5**				ua idle mode, onchip flash
			LFXP3	3TN100C	$14	14	62	3,072	3,072	213			2		136		6		384				22.7	55,296			
			LFXP6	3Q208CES	$24	17	188	5,760	5,760	235			2		188		8		720				23.5	73,728			
			LFXP10	3F256CES	$37	17	188	9,728	9,728	266			4		244		24		1,216	15.00	649		10.2	221,184			
			LFXP15	3FN256C	$56	17	188	15,456	15,456	278			4		300		36		1,932				8.3	331,776			
			LFXP20	3F388C	$67	17	188	19,712	19,712	295			4		340		44		2,464				7.7	405,504			
Lattice			**LatticeXP2**	90nm	(1+)	1.2, 1.2 - 3.3		16bits		**443**		18x18	DSP				512x36	flash	8X				**810**	**18.7**	10^6 bits		49.9	ua idle mode, onchip flash
F	Y	I	LFXP2-5	5TN144C	$13	8	86	5,000	5,000	379		12	2		172		9		625			417	19.1	0.166	1.27	55.2	Indust:-40..100 Junction temp
F	Y	I	LFXP2-8	5TN144C	$17	8	86	8,000	8,000	473		16	2		201		12		1,000			500	16.8	0.221	1.99	55.3	
F	Y	I	LFXP2-17	5QN208C	$36	17	201	17,000	17,000	474		20	4		358		15		2,125	12.00	1417	850	23.9	0.276	3.54	48.0	
F	Y	I	LFXP2-30	5FTN256	$65	17	201	29,000	29,000	445		28	4		472		21		3,625			1036	22.5	0.387	5.79	46.6	
F	Y	I	LFXP2-40	5FN484C	$90	23	363	40,000	40,000	446		32	4		540		48		5,000			1250	11.3	0.885	8.03	44.7	
Silicon Blue				40nm		1.-1.2,1.-3.3		16bits		**678**		16x16	DSP				256x16	16Kx1	8X	5K+					10^6 bits		90.3	2 I2C, 2 SPI, 48M & 10K OSC
F		i	iCE40LP384	SG32	$1.51	2.5	25	384	384	254					37				48						0.1	41.0	LM series has I2C, SPI & no boot flash
F		i	iCE40LP/UL640	CM36	$1.41	1.4	10	640	640	454					63		14		80	1.10	582		4.5	0.057	0.3	106.6	now LatticeSemi

Flash/AES	Scrubbing	Grades	Part	suffix	low price	min pkg size mm	user pin cnt	K LUTs	K Logic Cells	LC/$	embed uP	mults	PLL/DLL	SERDES	I/Os	small RAM	med. RAM	large RAM	CLBs	highest volume pricing	LUTs per dollar	LC per Mult	I/Os per RAM	ram BITS	M confg BITS	confg BITS / LUT input	
F		i	ICE40LP/UL1K	CM36	$1.46	1.4	10	1,280	1,280	877			1		95		14		160	1.10	1164		6.8	0.057	1.1	213.2	
F		i	iCE40LM2K	CM36	$4.55	1.7	18	2,000	2,000	440			1		35		20		250						0.5	68.2	
F		i	iCE40LP/LM/HX	CM121	$5.03	5.0	93	3,520	3,520	700			2		137		20		440	4.49	784		6.9	0.082	1.1	77.5	
F		i	iCE40LP/HX8K	CM121	$7.07	5.0	93	7,680	7,680	1,086			2		178		32		960	5.38	1428		5.6	0.131	1.1	35.5	
F			ICE5LP1K	UWG20	$2.95	2.1	12	1,100	1,100	373		2	1		26		16		138	2.41	456	550	1.6	0.066			1 I2C, 1 SPI, 48M & 10K OSC
F			ICE5LP2K	UWG20	$4.25	2.1	12	2,048	2,048	482		4	1		26		20		256			512	1.3	0.082			2 I2C, 2 SPI, 48M & 10K OSC
F			ICE5LP4K	UWG20	$4.65	2.1	12	3,520	3,520	757		4	1		26		20		440			880	1.3	0.082			2 I2C, 2 SPI, 48M & 10K OSC
			ICE40UP3K	30WLCSP	$4.35	2.3	21	2,800	2,800	644		4	1		21		20	4	350	3.44	814	700	1.1	1.130			large RAM is single port
			ICE40UP5K	30WLCSP	$5.45	2.3	21	5,280	5,280	969		8	1		39		30	4	660	4.42	1195	660	1.3	1.171			large RAM is single port
Renesas			ForgeFPGA			1.8-5		64bits												10K							standby current of <20uA, under $.50 i
						2.0	18	1,000												0.37							2DAC, comparators, macrocells
Xilinx			**Spartan-2E**	180nm	(25+)			16bits	logic cell	**178**						16x1	256x16		4x			**21.2**			77.3	Previous chips: XC2064, XC3K, XC4K,
			XC2S50E	7TQ144C	$14			1,536	1,728	124					182		8		384			22.8	32,768	0.6	97.2	and 5K, 6K, 7K,
			XC2S100E	6TQ144C	$16			2,400	2,700	165					202		10		600			20.2	40,960	0.9	85.7	and Spartan-1, Virtex-1
			XC2S150E	6TQ144C	$16			3,456	3,888	238					265		12		864			22.1	49,152	1.1	78.5	
			XC2S200E	6PQ208C	$27			4,704	5,292	198					289		14		1,176			20.6	57,344	1.4	73.6	
			XC2S300E	6PQ208C	$42			6,144	6,912	164					329		16		1,536			20.6	65,536	1.9	73.7	
			XC2S400E	6FT256C	$66			9,600	10,800	164					410		40		2,400			10.3	163,840	2.7	65.9	
			XC2S600E	6FG456C	$162			13,824	15,552	96					514		72		3,456			7.1	294,912	4.0	66.3	
Xilinx			**Spartan-3**	90nm	(100+)	1.2, 1.5 - 3.3		16bits	logic cell	**338**		18x18				16x1	512x36	AN flas	8x	(250,000+)		**574**	**18.2**	10^6 bits		53.2	622 Mbps LVDS
			XC3S50	4VQ100C	$8	8	89	1.536	1.728	205		4	2		124		4		192	2.95	521	432	31.0	0.074	0.4	59.1	
			XC3S50A/N	4TQG144I	$12	17	144	1.408	1.584	131		3	2		144		3	1.081	176	1.50	939	528	48.0	0.055	0.4	68.1	stacked flash
			XC3S100E	4VQ100C	$10	8	83	1.920	2.160	219		4			108		4		240	2.00	960	540	27.0	0.074	0.6	66.1	
			XC3S200	4VQG100C	$11	16	63	3.840	4.320	385		12	4		173		12		480	4.00	960	360	14.4	0.221	1.0	53.8	
			XC3S200A/N	4FT256C	$19	17	195	3.584	4.032	214		16	4		248		16	4.325	448	3.00	1195	252	15.5	0.295	1.2	62.9	stacked flash
			XC3S250E	4PQ208C	$19	8	92	4.896	5.508	289		12			172		12		612			459	14.3	0.221	1.4	57.8	
			XC3S400	4TQ144C	$18	17	173	7.168	8.064	442		16	4		264		16		896	6.50	1103	504	16.5	0.295	1.7	49.0	
			XC3S400A/N	4FT256I	$31	17	195	7.168	8.064	264		20	4		311		16	4.325	896			403	19.4	0.295	1.9	55.5	stacked flash
			XC3S500E	4CP132C	$22	8	92	9.312	10.476	484		20			232		20		1,164			524	11.6	0.369	2.3	51.0	
			XC3S700A/N	5FGG400C	$51	21	311	11.776	13.248	259		20	8		372		20	8.651	1,472	6.00	1963	662	18.6	0.369	2.7	50.2	stacked flash
			XC3S1000	4FT256C	$39	17	173	15.360	17.280	446		24	4		391		24		1,920	12.00	1280	720	16.3	0.442	3.2	45.3	
			XC3S1200E	4FG400C	$52	17	190	17.344	19.512	373		28			304		28		2,168	9.00	1927	697	10.9	0.516	3.8	47.9	
			XC3S1400A/N	4FG484I	$71	23	375	22.528	25.344	358		32	8		502		32	1.730	2,816	9.00	2503	792	15.7	0.590	4.8	46.2	Altium NB2: XC3S1400AN-4FGG676C
			XC3S1500	4FG320C	$62	19	221	26.624	29.952	487		32	4		487		32		3,328	18.00	1479	936	15.2	0.590	5.2	43.4	Altium NB2: XC3S1500-4FGG676C
			XC3S1600E	4FG320C	$64	19	250	29.504	33.192	523		36			376		36		3,688			922	10.4	0.664	6.0	45.0	
			XC3SD1800A	4CS484C	$114	19	309	33.280	37.440	329		84	8		519		84		4,160	29.85	1115	446	6.2	1.548	8.2	50.0	Altium NB2: XC3SD1800-4FGG676C
Xilinx			**Virtex-II**	130nm	pr100+)	1.2v core		16bits	logic cell	**43**		18x18				16x1	512x36		8x			**162**	**13.4**	10^6 bits		103.1	840 Mbps LVDS
			XC2V40	4FG256C	$27			512	576	22		4	4		88		4		64	10.00	51	144	22.0	0.074	0.3	129.1	
			XC2V80	4CS144C	$28			1,024	1,152	41		8	4		120		8		128			144	15.0	0.147	0.6	109.9	
			XC2V250	4FG256C	$70			3,072	3,456	50		24	8		200		24		384			144	8.3	0.442	1.6	93.5	
			XC2V500	4FG256C	$118			6,144	6,912	59		32	8		264		32		768			216	8.3	0.590	2.6	80.1	
Xilinx			**Virtex-II Pro**	130nm	(25+)	1.2v core		16bits	logic cell	**61**	PP	18x18		3.125Ghz		16x1	512x36		8x			**244**	**11.2**	10^6 bits		92.2	622 to 3125 Mbps SERDES
			XC2VP2	5FG256C	$62			2,816	3,168	51	0	12	4	4	204		12		352			264	17.0	0.221	1.3	95.9	
			XC2VP4	5FG256CES	$113			6,016	6,768	60	1	28	4	4	348		28		752			242	12.4	0.516	3.0	103.2	
			XC2VP7	5FG456CES	$176			9,856	11,088	63	1	44	4	8	396		44		1,232			252	9.0	0.811	4.5	93.0	
			XC2VP20	5FG676CES	$299			18,560	20,880	70	2	88	8	8	564		88		2,320			237	6.4	1.622	8.2	88.8	
			XC2VP30	5FG676C	$508			27,392	30,816	61	2	136	8	8	644		136		3,424			227	4.7	2.507	11.3	80.3	
Xilinx			**Virtex-4**	90nm	(100+)	1.2, 1.5 - 3.3		16bits	logic cell	**110**	PP	18x18DSP		11.1Ghz		16x1	512x36		8x	(25,000+)		**393**	**6.07**	10^6 bits		79.3	622 to 11100 Mbps SERDES
A			XC4VLX15	10SF363C	$105	17	240	12,288	13,824	131		32	4		320		48		1,536			432	6.67	0.885	4.8	79.7	450MHz PowerPC core(s)
A		M	XC4VLX25	10SF363C	$235	17	240	21,504	24,192	103		48	8		448		72		2,688	39.99	538	504	6.22	1.327	7.8	75.3	Altium NB2: XC4VLX25-10FF668C
A			XC4VSX25	10FF668C	$276	27	320	20,480	23,040	83		128	4		320		128		2,560	59.99	341	180	2.50	2.359	9.1	82.3	
A			XC4VFX12	10SF363C	$119	17	240	12,944	14,562	123	1	32	4		320		36		1,618	29.99	432	455	8.89	0.664	4.8	79.9	
Xilinx			**Virtex-5**	65nm	(1+)	1.0, 1.2 - 3.3		64bits	logic cell	**96**	PP	25x18DSP		3G, FX&TX		PCI exp	(2)512x	10/100	8x	(1,000+)		**816**	**8.9**	10^6 bits		78.5	100 to 3200 Mbps SERDES
A			XC5VLX20T	1FF323C	$226	19	172	12.5	20.0	88		24	1	4	160	1	26	2	1,560			832	6.2	0.958	6.3	77.7	
A	Y	M	XC5VLX30T	1FFG324C	$250	19	220	19.2	30.7	123		32	2	8	400	1	32	4	2,400	159.00	121	960	12.5	1.180	8.4	67.8	
A			XC5VLX50T	1FFG676C	$453	19	440	28.8	46.1	102		48	6	12	560	1	48	4	3,600	149.00	193	960	11.7	1.769	12.6	67.8	
A			XC5VFX30T	1FF665CES	$473	27	360	20.5	32.8	69	1	64	2	8	360	1	68	4	2,560			512	5.3	2.507	13.6	100.5	6.5 Gbps SERDES
Xilinx			**Virtex-6**	40nm	(1+)	1.0, 1.2 - 2.5		2x32,64b	logic cell	**140**		25x18DSP		GTX/GTH		PCI exp	(2)512x	10/100	4x	(10K+)		**259**	**2.31**	10^6 bits		73.3	
A			XC6VLX75T	1FF484C	$531	23	240	46.6	74.5	140		288	6	12/0	360	1	156	4	11,640	50.00	931	259	2.31	5.751	26.2	73.3	4.0Gbs PCI express
Xilinx			**Spartan-6**	45nm	(1+)	1.0, 1.2 - 3.3		2x32,64b	logic cell	**734**		18x18DSP		3G, FX&TX		PCI exp	(2)256x36		4x	(10K+)		**664**	**4.3**	10^6 bits		67.0	622 to 3125 Mbps SERDES
A			XC6SLX4	2CPG192C	$11	8	100	2.4	3.8	355		4	1		120		8		600	3.00	800	960	15.0	0.147	2.7	177.3	2.0Gbs PCI express
A			XC6SLX9	2TQG144C	$15	8	100	5.7	9.2	620		16	2		200		32		1,430			572	6.3	0.590	2.7	61.5	1.05Gbs per differential pair

Flash/AES	Scrubbing	Grades	Part	suffix	low price	min pkg size mm	user pin cnt	K LUTs	K Logic Cells	LC/$	embed uP	mults	PLL/DLL	SERDES	I/Os	small RAM	med. RAM	large RAM	CLBs	highest volume pricing	LUTs per dollar	LC per Mult	I/Os per RAM	ram BITS	M confg BITS	BITS / LUT confg	
A			XC6SLX16	2CPG196C	$21	8	180	9.1	14.6	696		32	2		232		32		2,278			456	7.3	0.590	3.7	56.9	
A			XC6SLX25	2FTG256C	$32	15	180	15.0	24.0	746		38	2		264		52		3,750			632	5.1	0.958	6.4	60.5	
A			XC6SLX45	2CSG324C	$49	15	354	27.5	44.0	901		58	4		370		116		6,882			759	3.2	2.138	11.9	59.1	
A	Y	M	XC6SLX75	2CSG484C	$89	19	290	46.6	74.6	840		132	6		348		172		11,662			565	2.0	3.170	19.6	58.7	
A			XC6SLX100	2FG484C	$111	19	354	63.5	101.6	918		182	6		498		268		15,882			558	1.9	4.940	26.5	56.6	
A	Y	M	XC6SLX150	2FG484C	$159	19	345	92.2	147.4	929		182	6		498		268		23,038			810	1.9	4.940	33.8	52.2	
A			XC6SLX25T	2CSG324C	$45	15	174	15.0	24.0	528		38	2	2	264	1	52		3,750			632	5.1	0.958	6.4	60.5	
A			XC6SLX45T	2CSG324C	$63	15	174	27.3	43.7	696		58	4	4	370	1	116		6,822			753	3.2	2.138	11.9	59.6	
A	Y	M	XC6SLX75T	2CSG484C	$106	19	290	46.6	74.6	701		132	6	8	348	1	172		11,662			565	2.0	3.170	19.6	58.7	
A			XC6SLX100T	2FGG484C	$129	19	296	63.3	101.3	786		182	6	8	396	1	268		15,822			556	1.5	4.940	26.5	56.8	
A	Y	M	XC6SLX150T	2FGG484C	$180	19	296	92.2	147.4	819		182	6	8	396	1	268		23,038			810	1.5	4.940	33.8	52.2	
Xilinx			**Spartan-7**	28nm	(1+)	1.0, 1.2 - 3.3		2x32,64b	logic cell	**954**		25x18[	CMT			G1 PCI	(2)512x	XADC	8x	(10K+)		**526**	**7.4**	10^6 bits		132.6	automotive grades: XA7SddT-xxxx
A	Y		XC7S6	1FTGB196C	$15	8	86	3.8	6.0	408		10	2		100		5	1	469			600	20.0	0.184			DSP E1: ALU & Booleans
A	Y		XC7S15	1FTGB196C	$19	8	86	8.0	12.8	682		20	2		100		10	1	1,000			640	10.0	0.369	7.4	146.5	block RAM ECC logic
A	Y		XC7S25	1FTGB196C	$25	13	150	14.6	23.4	920		80	3		150	1	45	1	1,825			292	3.3	1.659	17.5	181.2	XADC: (2) 12-bit A2D, 17 inputs
A	Y		XC7S50	1CSGA324C	$41	15	210	32.6	52.2	1265		120	5		250	1	75	1	4,076			435	3.3	2.765			hdw FIFOs
A	Y		XC7S75	1FGGA484C	$62	23	338	48.0	76.8	1235		140	8		400	1	90	1	6,000			549	4.4	3.318			
A	Y		XC7S100	1FGGA484C	$84	23	338	64.0	102.4	1215		160	8		400	1	120	1	8,000			640	3.3	4.424	31.3	70.0	
Xilinx			**Artix-7**	28nm	(1+)	1.0, 1.2 - 3.3		2x32,64b	logic cell	**893**		25x18[	CM	GDP 3.75G		G1 PCI	(2)512x	XADC	8x	(10K+)		**365**	**4.5**	10^6 bits		87.9	GDP 3.75 Gbps SERDES
A	Y		XC7A12T	1CPG236C	$22	10	106	8.0	12.8	593		40	3	2	150	1	20	1	1,000			320	7.5	0.737			block RAM ECC logic
A	Y		XC7A15T	1FTG256C	$26	10	106	10.4	16.6	648		45	5	4	250	1	25	1	1,300			370	10.0	0.922	7.4	103.8	XADC: (2) 12-bit A2D, 17 inputs
A	Y		XC7A25T	1CPG238C	$25	10	106	14.6	23.4	916		80	3	4	150	1	45	1	1,825			292	3.3	1.659	7.4	65.5	hdw FIFOs
A	Y		XC7A35T	1FTG256C	$31	10	106	20.8	33.3	1084		90	5	4	250	1	50	1	2,600			370	5.0	1.843	17.5	125.7	DSP E1: ALU & Booleans
A	Y	M	XC7A50T	1FTG256C	$52	10	106	32.6	52.2	1011		120	5	4	250	1	75	1	4,075			435	3.3	2.765			
A	Y		XC7A75T	1FGG484C	$89	15	170	47.2	75.5	850		180	6	8	300	1	105	1	5,900			420	2.9	3.871			
A	Y	M	XC7A100T	1CSG324C	$109	15	210	63.4	101.4	929		240	6	8	300	1	135	1	7,925			423	2.2	4.977	31.3	69.2	
A	Y	M	XC7A200T	1FBG484C	$194	19	285	134.6	215.4	1112		740	10	16	500	1	365	1	16,825			291	1.4	13.455	74.2	75.2	
Xilinx			**Kintex-7**	28nm	(1+)	1.0, 1.2 - 3.3		2x32,64b	logic cell	**634**		25x18[	MM	GTX 10.312		G2 PCI	(2)512x	XADC	8x	(10K+)		**272**	**1.73**	10^6 bits		68.8	GTX 10.3125 Gbps SERDES
A	Y		XC7K70T	1FB484C	$134	23	285	41.0	65.6	490		240	6	8	300	1	135	1	5,125			273	2.22	4.977	23.0	73.3	XADC: (2) 12-bit A2D, 17 inputs
A	Y		XC7K160T	1FB484C	$209	23	285	101.4	162.2	777		600	8	8	400	1	325	1	12,675			270	1.23	11.981	51.1	64.3	block RAM ECC logic
Xilinx			**Zynq-7000**	28nm	(1+)	1.0, 1.2 - 3.3		2x32,64b	logic cell	**610**	A9	25x18[	MM	GTX/GTH 6		G2 PCI	(2)512x	KB	8x	(10K+)		**318**	**1.92**	10^6 bits		97.9	(2) 800Mhz Cortex A9 per chip, boot 1s
A	Y		XC7Z007S	1CLG225C	$46	15	100	14.4	23.0	499	1	66	14		154		50	768	1,800			349	3.08	1.843	16.7		512KB L2 cache, 256KB other uP RAM
A	Y		XC7Z012S	1CLG485C	$99	19	150	34.4	55.0	558	1	120	14	4	204	4	72	768	4,300			459	2.83	2.654	28.1		
A	Y		XC7Z014S	1CLG400C	$89	15	200	40.6	65.0	731	1	170	14		254		107	768	5,075			382	2.37	3.944	32.4		
A	Y		XC7Z010	1CLG225C	$55	15	80	17.6	28.2	513	2	80	14		154		60	768	2,200	15.00	1173	352	2.57	2.212	16.7	136.9	(2)12-bit A2D, 17 chnls
A	Y		XC7Z015	1CLG485C	$124	19	204	46.2	73.9	598	2	160	14	4	204	4	95	768	5,775			462	2.15	3.502	28.1	88.7	DSP E1: ALU & Booleans
A	Y	M	XC7Z020	1CLG400C	$114	15	80	53.2	85.1	747	2	220	14		254		140	768	6,650			387	1.81	5.161	32.4	85.2	6.6, 10.3 or 12.5 Gbps SERDES
A	Y	M	XC7Z030	1FBG484C	$201	23	163	78.6	125.8	625	2	400	18	4	304	4	265	768	9,825			314	1.15	9.769	47.8	80.7	130 pins for Cortex A9
Xilinx			**Kintex-VU**	20nm	(1+)	.9-1, 1.0 - 3.3		2x32,64b	sys logic	**393**		25x18[	MM	GTH 16.3g		G2 PCI	(2)512x	XADC	8x	(10K+)		**261**	**0.96**	10^6 bits		####	GTH 16.3 Gbps SERDES
A		I	XCKU025	1FFVA1156C	$944	27	312	145.4	318.2	337		1,152	8	12	312	1	344	1	18,180			276	0.91	12.681	128.1		
A		I	XCKU035	1FBVA676I	$1,130	27	312	203.1	444.3	393		1,700	8	16	520	2	540	1	25,391			261	0.96	19.907	128.1		XADC: (2) 12-bit A2D, 17 inputs
Xilinx			**Zynq-US+**	16nm	(1+)	.72-.9	1.2-3.3	2x32,64b	sys logic	**344**	A5	27x18[	CMT			G3 PCI	(2)512x	4Kx72	8x	(10K+)		**324**	**2.84**	10^6 bits		89.8	(4) 1.5GHz Cortex A53, (2) 600MHz R5
A		I	XCZU1EG/CG	1SBVA484E	$226	12	245	37.0	81.0	358	4	216	3	0	394		106		4,629			375	3.72	3.908			
A		I	XCZU2EG/CG	1SBVA484E	$189	19	245	47.2	103.3	546	6	240	3	0	462		150		5,904			431	3.08	5.530	44.5		(2) Cortex A53 & no Mali for CG series
A		M	XCZU3EG/CG	1SBVA484E	$334	19	245	70.6	154.4	462	6	360	3	0	462		216		8,820			429	2.14	7.963	44.5	86.4	DSP E2: ALU & Booleans, 10-bit A2D
A		I	XCZU4EG/CG/E	1SFVC784E	$780	23	414	87.8	192.2	246	6	728	4	16	462	2	128	48	10,980			264	3.61	18.874	61.3		6, 16.3 or 32.75 Gbps SERDES
A		M	XCZU5EG/CG/E	1SFVC784E	$1,235	23	414	117.1	256.2	207	6	1,248	4	16	462	2	144	64	14,640			205	3.21	24.183	61.3	79.6	210 pins for Cortex A53
A		M	XCZU7EG/CG/E	1FFVB900E	$1,968	31	414	230.4	504.0	256	6	1,728	8	24	674	2	312	96	28,800			292	2.16	39.813	154.5	103.4	AMS system monitor
Xilinx			**Kintex--US+**	16nm	(1+)	.85, 1.2 - 3.3		2x32,64b	sys logic	**303**		27x18[	MMCM			G3 PCI	(2)512x	4Kx72	8x	(10K+)		**260**	**0.51**	10^6 bits		81.2	10-bit A2D
A		I	XCKU3P	1FFVD900E	$1,138	23	208	162.7	356.0	313		1,368		16	208	1	360	48	20,340			260	0.58	27.427	123.4		DSP E2: ALU & Booleans, 10-bit A2D
A		M	XCKU5P	1FFVA676E	$1,619	27	208	217.0	474.6	293		1,824		16	208	1	480	64	27,120			260	0.43	36.569	123.4	81.2	150G Interlaken
Actel			**ProASICplus (flash)**		24+	2.5, 2.5 - 3.3		tiles									256x9										
			APA075	FTQ100	$20	7	24	3,072	1,229	61			2		158		12						13.2	27,648			
			APA150	FFG256	$35	13	100	6,144	2,458	70			2		242		16						15.1	36,864			
		M	APA300	PQ208	$62	13	100	8,192	3,277	53			2		290		32						9.1	73,728			
Actel			**ProASIC3 (flash)**		(24+)	1.5, 1.5 - 3.3		tiles		**134**	ARM7 & M1 soft cores						256x18	1Kb flash					**14.2**	10^6 bits			
F			A3P010	QN48		6	34	260	104						49		0	1						0.000			
F			A3P015	QN68	$4	8	49	384	154	41					49		0	1						0.000			
F			A3P020	QN68		8	49	520	208						49		0	1						0.000			
F			A3P/N030	FVQ100	$3	6	71	768	307	93					81		0	1		1.50	512			0.000			
F/A			A3P/N060	FVQ100	$6	8	71	1,536	614	107			1		96		4	1					24.0	0.018			
F/A			A3P/N125	VQG1000	$8	8	68	3,072	1,229	156			1		133		8	1					16.6	0.037			

Flash/AES	Scrubbing	Grades	Part	suffix	low price	min pkg size mm	user pin cnt	K LUTs	K Logic Cells	LC/$	embed uP	mults	PLL/DLL	SERDES	I/Os	small RAM	med. RAM	large RAM	CLBs	highest volume pricing	LUTs per dollar	LC per Mult	I/Os per RAM	ram BITS	M confg BITS	confg BITS / LUT input	
F/A			A3P/N250/L	VQ100	$10	8	97	6,144	2,458	253	1		1		157		8	1		3.95	1555		19.6	0.037	soft core Cortex M1		
F/A			A3P400	1FGG144	$27	13	97	9,216	3,686	137	1		1		194		12	1					16.2	0.055			
F/A		S	A3P600/L	1FG144	$35	13	97	13,824	5,530	156	1+		1		227		24	1					9.5	0.111			
F/A			A3PE600	FFG256	$52	17	165	13,824	5,530	107	1+		6		270		24	1		10.00	1382		11.3	0.111			
F/A		M	A3P1000/L	FGG256	$54	13	97	24,576	9,830	181	1+		1		288		32	1					9.0	0.147			
F/A			A3PE1500	FG484	$138	27	280	38,400	15,360	111	1+		6		439		60	1					7.3	0.276			
Actel			**IGLOO (flash)**		(24+)	1.2, 1.5 - 3.3		tiles		**143**	ARM7 & M1 soft cores						256x18	1Kb flash		50K+			**12.5**	10^6 bits			
F			AGL010	uCS36		3	34	260	104						34		0	1		0.69	377						
F			AGL015	V5QN68		8	49	384	154						49		0	1		0.99	388			0.000			
F			AGL020	uCS81		4	52	520	208						52		0	1									
F			AGL030	V5QN48	$1.46	5	66	768	307	210					81		0	1		1.07	718			0.000			
F/A			AGL060	FVQ100	$4.66	5	66	1,536	614	132			1		96		4	1					24.0	0.018			
F/A			AGL125	V5VQ100	$8.52	5	66	3,072	1,229	144			1		133		8	1					16.6	0.037			
F/A			AGL250	V2VQG100	$15	5	66	6,144	2,458	159	1		1		143		8	1		3.70	1661		17.9	0.037			soft core Cortex M1
F			AGL600	V5FFG144	$60	13	97	13,824	5,530	92	1+		1		227		24	1					9.5	0.111			
F			AGLE600	V5FFG256	$80	17	165	13,824	5,530	69	1+		6		270		24	1					11.3	0.111			
F			AGL1000	V5FFG144	$51	13	97	24,576	9,830	193	1+		6		300		32	1					9.4	0.147			
Actel			**IGLOO2 (flash)**	65nm	(1+)	1.2, 1.2 - 3.3		4LUTs	4LUTs	**823**		18*18DSP		5Ghz		64x18	512x36	KB flash				**696**	**10.3**	10^6 bits	typ	82.3	4LUTs, SERDES, DSP
F/A			M2GL005	TQ144	$9	14	161	6,060	6,060	648		11	2	0	209	11	10	128		7.00	866	551	20.9	0.197	2.37	90.1	10/100/1000 ethernet, PCIe, 333Mhz D
F/A			M2GL010	TQ144	$19	14	138	12,084	12,084	625		22	2	4	233	22	21	256				549	11.1	0.412	4.45	84.0	AES-256, rand num gen, SEI immune
F/A			M2GL025	1FG484	$40	11	180	27,696	27,696	693		34	6	4	267	34	31	256				815	8.6	0.611	9.56	81.1	64KB ECC SRAM
F/A			M2GL050	1FG484I	$52	11	200	56,340	56,340	1,073		72	6	8	377	72	69	256				783	5.5	1.355	18.9	78.2	SPI, 2 DMA
F/A			M2GL060	1FCS325I	$52	11	200	56,520	56,520	1,077		72	6	4	387	72	69	256				785	5.6	1.355	18.9	78.0	confg for fabric only
Actel			**Fusion (flash)**	130nm	(1+)	1.5, 1.5 - 3.3		tiles		**58**	AR	12bit A2D		analog quad		analog	256x18	256KB flash					**11.9**	10^6 bits			
F		M	A2F060	TQG144	$20	17	70	1,536	614	31	**1**	1	1		102	10	8	64KBF/16KBR					12.8	0.037			100Mhz Cortex M3
F			AFS090	FQNG108	$30	8	37	2,304	922	31		1		5	93	20	8	1		5.00	461		11.6	0.037			
F		M	A2F200	PQG208	$30	11	117	4,608	1,843	61	**1**	2			161	24	8	256KBF/64KBR					20.1	0.037			100Mhz Cortex M3
F			AFS250	FQNG180	$60	10	65	6,144	2,458	41	1	1		6	134	24	8	1		3.95	1555		16.8	0.037			
F		M	A2F500	FGG256	$47	11	117	11,520	4,608	97	**1**	3			204	32	24	512KBF/64KBR					8.5	0.111			100Mhz Cortex M3
F		M	AFS600	FFG256	$90	17	119	13,824	5,530	61	1+	1		10	212	40	24	2					8.8	0.111			
F		M	AFS1500	FFG256	$270	17	119	38,400	15,360	57	1+	1		10	318	40	60	4					5.3	0.276			
Actel			**SmartFusion2**	65nm	(1+)	1.2, 1.2 - 3.3		4LUTs	4LUTs	**601**	AR	18*18DSP		5Ghz		64x18	512x36	KB flash				**696**	**10.3**	10^6 bits	typ	82.3	166Mhz Cortex M3, 4LUTs, SERDES,
F/A			M2S005	TQ144	$11	14	161	6,060	6,060	539	1	11	2	0	209	11	10	128				551	20.9	0.197	2.37	90.1	10/100/1000 ethernet, PCIe, 333Mhz D
F/A			M2S010	TQ144	$22	14	138	12,084	12,084	554	1	22	2	16	233	22	21	256				549	11.1	0.412	4.45	84.0	AES-256, rand num gen, SEI immune
F/A			M2S025	VFG400	$49	11	180	27,696	27,696	561	1	34	6	16	267	34	31	256				815	8.6	0.611	9.56	81.1	uP ECC 64KB SRAM
F/A			M2S050	VFG400	$90	11	200	56,340	56,340	628	1	72	6	32	377	72	69	256				783	5.5	1.355	18.9	78.2	2 UART, 2 SPI, 2 I2C, 1 CAN, 1 USB, 2
F/A			M2S060	1FCS325I	$78	11	200	56,520	56,520	725		72	6	4	387	72	69	256				785	5.6	1.355	18.9	78.0	one or two DDR controllers
Cypress			**PSoC 3**					MC	logic cell		I8051							uP RAM	uP flash							50-67MHz 8051, ALUs
F			CY8C32xx	QFN48	$6	7	25	96	192	31	1		Y		62			2KB	16KB							
F			CY8C38xx	TQFP100	$21	16	72	192	384	18	1		Y		62			16KB	64KB							USB, CAN, FIR/IIR
Cypress			**PSoC 4**				1.8-5	MC	logic cell		ARM Cortex M0							uP RAM	uP flash							16-48MHz Cortex M0, FIR/IIR, ALUs, 8X12-bit ATD
F			CY8C40xx	QFN40	$1.00	8	34				1		Y		36			2KB	16KB							I2C, no FIR/IIR, 16MHz
F			CY8C41xx	QFN40	$1.76	8	34				1		Y		51			32KB	256KB							I2C, IrDA, LIN, SPI, UART, no FIR/IIR, 24MHz
F			CY8C42xx	QFN40	$2.52	8	34	64	128	51	1		Y		98			32KB	256KB							I2C, IrDA, LIN, SPI, UART
F			CY8C4xx7_BLE	QFN56	$4.62	3.65	36	32	64	14	1		Y		36			32KB	256KB							I2C, IrDA, LIN, SPI, UART, BlueToothLE
Cypress			**PSoC 5LP**				1.8-5	MC	logic cell		M3							uP RAM	uP flash							40-80MHz Cortex M3, FIR/IIR, LCDio, USB, 12-bit A
F			CY8C526x	QFN68	$4.86	8	36	192	384	79	1		Y		62			64KB	256KB							I2C, IrDA, LIN, SPI, UART, no FIR/IIR
F			CY8C546x	QFN68	$8.49	8	36	192	384	45	1		Y		62			64KB	256KB							I2C, IrDA, LIN, SPI, UART
F			CY8C566x,586x	QFN68	$11	16	72	192	384	35	1		Y		62			64KB	256KB							I2C, IrDA, LIN, SPI, UART
F			CY8C588x	QFN68	$17	16	72	192	384	22	1		Y		62			64KB	256KB							I2C, IrDA, LIN, SPI, UART, CAN, 20-bit ATD, 0.1% v
Cypress			**PSoC 6**				1.7-3.3	MC	logic cell		M4 & M0							uP RAM	uP flash							150Hz Cortex M4, 100MHz Cortex M0, FIR/IIR, LCDi
F			CY8C60xx					96	192		1		Y					128KB	512KB							no Cortex M0, no USB
F			CY8C61xx			3.70	78	96	192		1		Y		104			288KB	1MB							Crypto, no Cortex M0, USB
F			CY8C62xx			5.00	78	96	192		2		Y		104			288KB	1MB							Crypto, USB
F			CY8C63xx			5.00	78	96	192		2		Y		78			512KB	2MB							Crypto, BLE, USB, TRNG, QSPI, I2S
Quicklogi			**EOS-S3**			1.8, 1.8 - 3.3		wide tile			M4	32x32		12bitA2D			512x18	uP RAM		1K+			**4.5**				512K RAM, SPI. I2S, I2C, A2D, DMA
			EOS3FLF512	WRN42	$5.63	2.50	27	1,200	2.40	426	1	2		2	36		8	512KB		3.24	741		4.5	73,728			DSP engine: 5KB prog ram, 16KB data