

# Product Selection Guides





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## Virtex-6 LXT FPGAs

Optimized for High-Performance Logic and DSP with Low-Power Serial Connectivity (1.0 Volt, 0.9 Volt)

## Virtex-6 SXT FPGAs

Optimized for Ultra High-Performance DSP with Low-Power Serial Connectivity (1.0 Volt, 0.9 Volt)

## Virtex-6 HXT FPGAs

Optimized for Communications Systems Requiring Highest-Bandwidth Serial Connectivity (1.0 Volt)

	Part Number	Virtex-6 LXT FPGAs						Virtex-6 SXT FPGAs		Virtex-6 HXT FPGAs				
		XC6VLX75T	XC6VLX130T	XC6VLX195T	XC6VLX240T	XC6VLX365T	XC6VLX550T	XC6VLX760	XC6VVSX315T	XC6VVSX475T	XC6VHX250T	XC6VHX255T	XC6VHX380T	XC6VHX565T
	EasyPath™ FPGA Cost Reduction Solutions <sup>(1)</sup>	XC6VLX75T	XC6VLX130T	XC6VLX195T	XC6VLX240T	XC6VLX365T	XC6VLX550T	XC6VLX760	XC6VVSX315T	XC6VVSX475T	XC6VHX250T	XC6VHX255T	XC6VHX380T	XC6VHX565T
Logic Resources	Slices <sup>(2)</sup>	11,640	20,000	31,200	37,680	56,880	85,920	118,560	49,200	74,400	39,360	39,600	59,760	88,560
	Logic Cells <sup>(3)</sup>	74,496	128,000	199,680	241,152	364,032	549,888	758,784	314,880	476,160	251,904	253,440	382,464	566,784
	CLB Flip-Flops	93,120	160,000	249,600	301,440	455,040	687,360	948,480	393,600	595,200	314,880	316,800	478,080	708,480
Memory Resources	Maximum Distributed RAM (Kbits)	1,045	1,740	3,040	3,650	4,130	6,200	8,280	5,090	7,640	3,040	3,050	4,570	6,370
	Block RAM/FIFO w/ECC (36Kbits each)	156	264	344	416	416	632	720	704	1,064	504	516	768	912
	Total Block RAM (Kbits)	5,616	9,504	12,384	14,976	14,976	22,752	25,920	25,344	38,304	18,144	18,567	27,648	32,832
Clock Resources	Mixed Mode Clock Managers (MMCM)	6	10	10	12	12	18	18	12	18	12	12	18	18
I/O Resources <sup>(4,5)</sup>	Maximum Single-Ended I/O	360	600	600	720	720	1,200	1,200	720	840	320	480	720	720
	Maximum Differential I/O Pairs	180	300	300	360	360	600	600	360	420	160	240	360	360
Embedded Hard IP Resources <sup>(6)</sup>	DSP4BE1 Slices	288	480	640	768	576	864	864	1,344	2,016	576	576	864	864
	PCI Express® Interface Blocks	1	2	2	2	2	2	-	2	2	4	2	4	4
	10/100/1000 Ethernet MAC Blocks	4	4	4	4	4	4	-	4	4	4	2	4	4
	GTX Low-Power Transceivers	12	20	20	24	24	36	-	24	36	48	24	48	48
	GTH High-Speed Transceivers	-	-	-	-	-	-	-	-	-	-	24	24	24
Speed Grades	Commercial	-L1, -1, -2, -3	-L1, -1, -2, -3	-L1, -1, -2, -3	-L1, -1, -2, -3	-L1, -1, -2, -3	-L1, -1, -2	-L1, -1, -2	-L1, -1, -2, -3	-L1, -1, -2	-1, -2, -3	-1, -2, -3	-1, -2, -3	-1, -2
	Industrial	-L1, -1, -2	-L1, -1, -2	-L1, -1, -2	-L1, -1, -2	-L1, -1, -2	-L1, -1	-L1, -1	-L1, -1, -2	-L1, -1	-1, -2	-1, -2	-1, -2	-1
Configuration	Configuration Memory (Mbits)	25.0	41.7	58.7	70.4	91.6	137.4	176.3	99.6	149.4	76.2	76.2	114.2	153.2
	Package <sup>(7)</sup>	Area		Available User I/O: SelectIO Pins <sup>(4,5)</sup> (GTX Low-power Transceivers, GTH High-speed Transceivers)										
FFA Packages (FF): flip-chip fine-pitch BGA (1.0 mm ball spacing)														
	FF484	23 x 23 mm	240 (8, 0)	240 (8, 0)										
	FF784	29 x 29 mm	360 (12, 0)	400 (12, 0)	400 (12, 0)	400 (12, 0)								
	FF1156	35 x 35 mm		600 (20, 0)	600 (20, 0)	600 (20, 0)	600 (20, 0)		600 (20, 0)	600 (20, 0)				
	FF1759	42.5 x 42.5 mm				720 (24, 0)	720 (24, 0)	840 (36, 0)		720 (24, 0)	840 (36, 0)			
	FF1760	42.5 x 42.5 mm						1,200 (0, 0)	1,200 (0, 0)					
	FF1154	35 x 35 mm									320 (48, 0)		320 (48, 0)	
	FF1155	35 x 35 mm										440 (24, 12)	440 (24, 12)	
	FF1923	45 x 45 mm										480 (24, 24)	720 (40, 24)	720 (40, 24)
	FF1924	45 x 45 mm											640 (48, 24)	640 (48, 24)

Notes:

- EasyPath™ solutions provide a conversion-free, low-risk path for volume production.
- A single Virtex-6 FPGA CLB comprises two slices, with each containing four 6-input LUTs and eight Flip-Flops (twice the number found in a Virtex-4 FPGA slice), for a total of eight 6-LUTs and 16 Flip-Flops per CLB.
- Virtex-6 FPGA logic cell ratings reflect the increased logic capacity offered by the 6-input LUT architecture.
- Digitally Controlled Impedance (DCI) is available on I/Os of all devices.
- I/O standards supported: HT, LVCMOS (2.5V, 1.8V, 1.5V, 1.2V), HSTL I (1.2V, 1.5V, 1.8V), HSTL II (1.5V, 1.8V), HSTL III (1.5V, 1.8V), LVDS, Extended LVDS, RSDS, Bus LVDS, LVPECL, SSTL I (1.8V, 2.5V), SSTL II (1.8V, 2.5V), SSTL (1.5V).
- One system monitor block included in all devices.
- All products available Pb-free and RoHS-Compliant (FFG).
- Preliminary product information, subject to change. Please contact your Xilinx representative for the latest information.

Important: Verify all data in this document with the device data sheets found at [www.xilinx.com/virtex6](http://www.xilinx.com/virtex6)

<b>Virtex-5 LX FPGAs</b> Optimized for High-Performance Logic (1.0 Volt)	<b>Virtex-5 LXT FPGAs</b> Optimized for High-Performance Logic with Low-Power Serial Connectivity (1.0 Volt)
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		XC5VLX30	XC5VLX50	XC5VLX85	XC5VLX110	XC5VLX155	XC5VLX220	XC5VLX330	XC5VLX20T	XC5VLX30T	XC5VLX50T	XC5VLX85T	XC5VL110T	XC5VL155T	XC5VL220T	XC5VL330T
EasyPath™ Cost Reduction Solutions <sup>(1)</sup>		–	–	XC5VLX85	XC5VLX110	XC5VLX155	XC5VLX220	XC5VLX330	–	–	–	XC5VLX85T	XC5VL110T	XC5VL155T	XC5VL220T	XC5VL330T
Logic Resources	Slices <sup>(2)</sup>	4,800	7,200	12,960	17,280	24,320	34,560	51,840	3,120	4,800	7,200	12,960	17,280	24,320	34,560	51,840
	Logic Cells <sup>(3)</sup>	30,720	46,080	82,944	110,592	155,648	221,184	331,776	19,968	30,720	46,080	82,944	110,592	155,648	221,184	331,776
	CLB Flip-Flops	19,200	28,800	51,840	69,120	97,280	138,240	207,360	12,480	19,200	28,800	51,840	69,120	97,280	138,240	207,360
Memory Resources	Maximum Distributed RAM (Kbits)	320	480	840	1,120	1,640	2,280	3,420	210	320	480	840	1,120	1,640	2,280	3,420
	Block RAM/FIFO w/ECC (36Kbits each)	32	48	96	128	192	288	432	26	36	60	108	148	212	324	486
	Total Block RAM (Kbits)	1,152	1,728	3,456	4,608	6,912	9,888	15,120	936	1,296	2,160	3,888	5,328	7,632	10,656	15,984
Clock Resources	Digital Clock Managers (DCM)	4	12	12	12	12	12	12	2	4	12	12	12	12	12	12
	Phase Locked Loop (PLL)/PMCD	2	6	6	6	6	6	6	1	2	6	6	6	6	6	6
I/O Resources <sup>(4,5)</sup>	Maximum Single-Ended Pins	400	560	560	800	800	800	1,200	172	360	480	480	680	680	680	960
	Maximum Differential I/O Pairs	200	280	280	400	400	400	600	86	180	240	240	340	340	340	480
Embedded Hard IP Resources <sup>(6)</sup>	DSP48E Slices	32	48	48	64	128	128	192	24	32	48	48	64	128	128	192
	PowerPC® 440 Processor Blocks	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	PCI Express® Endpoint Blocks	–	–	–	–	–	–	–	1	1	1	1	1	1	1	1
	10/100/1000 Ethernet MAC Blocks	–	–	–	–	–	–	–	2	4	4	4	4	4	4	4
	RocketIO™ GTP Low-Power Transceivers	–	–	–	–	–	–	–	4	8	12	12	16	16	16	24
RocketIO™ GTX High-Speed Transceivers	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Speed Grades	Commercial	-1, -2, -3	-1, -2, -3	-1, -2, -3	-1, -2, -3	-1, -2, -3	-1, -2	-1, -2	-1, -2	-1, -2, -3	-1, -2, -3	-1, -2, -3	-1, -2, -3	-1, -2, -3	-1, -2	-1, -2
	Industrial	-1, -2	-1, -2	-1, -2	-1, -2	-1, -2	-1, -2	-1	-1, -2	-1, -2	-1, -2	-1, -2	-1, -2	-1, -2	-1, -2	-1
Configuration	Configuration Memory (Mbits)	8.4	12.6	21.9	29.1	41.1	53.2	79.8	6.3	9.4	14.1	23.4	31.2	43.1	55.2	82.7

Package <sup>(7)</sup>	Area	Available User I/O: SelectIO Interface Pins <sup>(4,5)</sup> (GTP/GTX Serial Transceivers)														
FFA Packages (FF): flip-chip fine-pitch BGA (1.0 mm ball spacing)																
FF324	19 x 19 mm	220	220													
FF676	27 x 27 mm	400	440	440	440											
FF1153	35 x 35 mm		560	560	800	800										
FF1760	42.5 x 42.5 mm				800	800	800	1,200								
FF323	19 x 19 mm								172 (4)	172 (4)						
FF665	27 x 27 mm									360 (8)	360 (8)					
FF1136	35 x 35 mm										480 (12)	480 (12)	640 (16)	640 (16)		
FF1738	42.5 x 42.5 mm												680 (16)	680 (16)	680 (16)	960 (24)
FF1156	35 x 35 mm															
FF1759	42.5 x 42.5 mm															

- Notes:
- EasyPath™ solutions provide a conversion-free, low-risk path for volume production.
  - A single Virtex-5 FPGA CLB comprises two slices, with each containing four 6-input LUTs and eight Flip-Flops (twice the number found in a Virtex-4 FPGA slice), for a total of eight 6-LUTs and 16 Flip-Flops per CLB.
  - Virtex-5 FPGA logic cell ratings reflect the increased logic capacity offered by the 6-input LUT architecture.
  - Digitally Controlled Impedance (DCI) is available on I/Os of all devices.
  - I/O standards supported: HT, LVDS, LVDS6T, RSDS, BLVDS, ULVDS, LVPECL, LVCMOS33, LVCMOS25, LVCMOS18, LVCMOS15, LVTTL, PCI33, PCI66, PCI-X, GTL, GTL+, HSTL I (1.2V, 1.5V, 1.8V), HSTL II (1.5V, 1.8V), HSTL III (1.5V, 1.8V), HSTL IV (1.5V, 1.8V), SSTL2I, SSTL18I, SSTL18II.
  - One system monitor block included in all devices.
  - All products available Pb-free and RoHS-Compliant (FFG).

*Important: Verify all data in this document with the device data sheets found at [www.xilinx.com/virtex5](http://www.xilinx.com/virtex5)*

		Virtex-5 SXT FPGAs Optimized for DSP with Low-Power Serial Connectivity (1.0 Volt)				Virtex-5 FXT FPGAs Optimized for Embedded Processing with High-Speed Serial Connectivity (1.0 Volt)					Virtex-5 TXT FPGAs Optimized for Ultra-High Bandwidth (1.0 Volt)	
Part Number		XC5VSX35T	XC5VSX50T	XC5VSX95T	XC5VSX240T	XC5VFX30T	XC5VFX70T	XC5VFX100T	XC5VFX130T	XC5VFX200T	XC5VTX150T	XC5VTX240T
EasyPath™ FPGA Cost Reduction Solutions <sup>(1)</sup>		–	XCE5VSX50T	XCE5VSX95T	XCE5VSX240T	–	XCE5VFX70T	XCE5VFX100T	XCE5VFX130T	XCE5VFX200T	XCE5VTX150T	XCE5VTX240T
Logic Resources	Slices <sup>(2)</sup>	5,440	8,160	14,720	37,440	5,120	11,200	16,000	20,480	30,720	23,200	37,440
	Logic Cells <sup>(3)</sup>	34,816	52,224	94,208	239,616	32,768	71,680	102,400	131,072	196,608	148,480	239,616
	CLB Flip-Flops	21,760	32,640	58,880	149,760	20,480	44,800	64,000	81,920	122,880	92,800	149,760
Memory Resources	Maximum Distributed RAM (Kbits)	520	780	1,520	4,200	380	820	1,240	1,580	2,280	1,500	2,400
	Block RAM/FIFO w/ECC (36Kbits each)	84	132	244	516	68	148	228	298	456	228	324
	Total Block RAM (Kbits)	3,024	4,752	8,764	18,576	2,448	5,328	8,208	10,728	16,416	8,208	11,664
Clock Resources	Digital Clock Managers (DCM)	4	12	12	12	4	12	12	12	12	12	12
	Phase Locked Loop (PLL)/PMCD	2	6	6	6	2	6	6	6	6	6	6
I/O Resources <sup>(4,5)</sup>	Maximum Single-Ended Pins	360	480	640	960	360	640	680	840	960	680	680
	Maximum Differential I/O Pairs	180	240	320	480	180	320	340	420	480	340	340
Embedded Hard IP Resources <sup>(6)</sup>	DSP48E Slices	192	288	640	1,056	64	128	256	320	364	80	96
	PowerPC® 440 Processor Blocks	–	–	–	–	1	1	2	2	2	–	–
	PCI Express® Endpoint Blocks	1	1	1	1	1	3	3	3	4	1	1
	10/100/1000 Ethernet MAC Blocks	4	4	4	4	4	4	4	6	8	4	4
	RocketIO™ GTP Low-Power Transceivers	8	12	16	24	–	–	–	–	–	–	–
	RocketIO™ GTX High-Speed Transceivers	–	–	–	–	8	16	16	20	24	40	48
Speed Grades	Commercial	-1, -2, -3	-1, -2, -3	-1, -2	-1, -2	-1, -2, -3	-1, -2, -3	-1, -2, -3	-1, -2, -3	-1, -2	-1, -2	-1, -2
	Industrial	-1, -2	-1, -2	-1, -2	-1	-1, -2	-1, -2	-1, -2	-1, -2	-1	-1, -2	-1, -2
Configuration	Configuration Memory (Mbits)	13.4	20.0	35.8	79.7	13.6	27.1	39.4	49.3	70.9	43.4	65.8
Package <sup>(7)</sup>	Area	Available User I/O: SelectIO Interface Pins <sup>(4, 5)</sup> (GTP/GTX Serial Transceivers)										
FFA Packages (FF): flip-chip fine-pitch BGA (1.0 mm ball spacing)												
	FF324	19 x 19 mm										
	FF676	27 x 27 mm										
	FF1153	35 x 35 mm										
	FF1760	42.5 x 42.5 mm										
	FF323	19 x 19 mm										
	FF665	27 x 27 mm	360 (8)	360 (8)		360 (8)	360 (8)					
	FF1136	35 x 35 mm		480 (12)	640 (16)		640 (16)	640 (16)				
	FF1738	42.5 x 42.5 mm			960 (24)		680 (16)	840 (20)	960 (24)			
	FF1156	35 x 35 mm								360 (40)		
	FF1759	42.5 x 42.5 mm								680 (40)	680 (48)	

- Notes:
1. EasyPath™ solutions provide a conversion-free, low-risk path for volume production.
  2. A single Virtex-5 FPGA comprises two slices, with each containing four 6-input LUTs and four Flip-Flops (twice the number found in a Virtex-4 slice), for a total of eight 6-LUTs and eight Flip-Flops per CLB.
  3. Virtex-5 FPGA logic cell ratings reflect the increased logic capacity offered by the new 6-input LUT architecture.
  4. Digitally Controlled Impedance (DCI) is available on I/Os of all devices.
  5. I/O standards supported: HT, LVDS, LVDSEXT, RSDS, BLVDS, ULVDS, LVPECL, LVCMOS33, LVCMOS25, LVCMOS18, LVCMOS15, LVTTL, PCI33, PCI66, PCI-X, GTL, GTL+, HSTL I (1.2V, 1.5V, 1.8V), HSTL II (1.5V, 1.8V), HSTL III (1.5V, 1.8V), HSTL IV (1.5V, 1.8V), SSTL2I, SSTL18I, SSTL18II.
  6. One system monitor block included in all devices.
  7. All products available Pb-free and RoHS-Compliant (FFG).

Important: Verify all data in this document with the device data sheets found at [www.xilinx.com/virtex5](http://www.xilinx.com/virtex5)

		Virtex-4 LX FPGAs Optimized for High-Performance Logic (1.2 Volt)								Virtex-4 SX FPGAs Optimized for DSP (1.2 Volt)			Virtex-4 FX FPGAs Optimized for Embedded Processing and Serial Connectivity (1.2 Volt)						
Part Number		XC4VLX15	XC4VLX25	XC4VLX40	XC4VLX60	XC4VLX80	XC4VLX100	XC4VLX160	XC4VLX200	XC4VSX25	XC4VSX35	XC4VSX55	XC4VFX12	XC4VFX20	XC4VFX40	XC4VFX60	XC4VFX100	XC4VFX140	
EasyPath™ FPGA Cost Reduction Solutions <sup>(1)</sup>		–	–	XCE4VLX40	XCE4VLX60	XCE4VLX80	XCE4VLX100	XCE4VLX160	XCE4VLX200	–	XCE4VSX35	XCE4VSX55	–	–	XCE4VFX40	XCE4VFX60	XCE4VFX100	XCE4VFX140	
Logic Resources	Slices <sup>(2)</sup>	6,144	10,752	18,432	26,624	35,840	49,152	67,584	89,088	10,240	15,360	24,576	5,472	8,544	18,624	25,280	42,176	63,168	
	Logic Cells	13,824	24,192	41,472	59,904	80,640	110,592	152,064	200,448	23,040	34,560	55,296	12,312	19,224	41,904	56,880	94,896	142,128	
	CLB Flip-Flops	12,288	21,504	36,864	53,248	71,680	98,304	135,168	178,176	20,480	30,720	49,152	10,944	17,088	37,248	50,560	84,352	126,336	
Memory Resources	Maximum Distributed RAM (Kbits)	96	168	288	416	560	768	1,056	1,392	160	240	384	86	134	291	395	659	987	
	Block RAM/FIFO w/ECC (18Kbits each)	48	72	96	160	200	240	288	336	128	192	320	36	68	144	232	376	552	
	Total Block RAM (Kbits)	864	1,296	1,728	2,880	3,600	4,320	5,184	6,048	2,304	3,456	5,760	648	1,224	2,592	4,176	6,768	9,936	
Clock Resources	Digital Clock Managers (DCM)	4	8	8	8	12	12	12	12	4	8	8	4	4	8	12	12	20	
	Phase-Matched Clock Dividers (PMCD)	0	4	4	4	8	8	8	8	0	4	4	0	0	4	8	8	8	
I/O Resources <sup>(4)</sup>	Maximum Single-Ended I/Os	320	448	640	640	768	960	960	960	320	448	640	320	320	448	576	768	896	
	Maximum Differential I/O Pairs	160	224	320	320	384	480	480	480	160	224	320	160	160	224	228	384	448	
Embedded Hard IP Resources	DSP48 Slices	32	48	64	64	80	96	96	96	128	192	512	32	32	48	128	160	192	
	PowerPC® Processor Blocks	–	–	–	–	–	–	–	–	–	–	–	1	1	2	2	2	2	
	10/100/1000 Ethernet MAC Blockset	–	–	–	–	–	–	–	–	–	–	–	2	2	4	4	4	4	
	RocketIO™ Serial Transceivers	–	–	–	–	–	–	–	–	–	–	–	0	8	12	16	20	24	
Speed Grades	Commercial	-10,-11,-12	-10,-11,-12	-10,-11,-12	-10,-11,-12	-10,-11,-12	-10,-11,-12	-10,-11,-12	-10,-11	-10,-11,-12	-10,-11,-12	-10,-11,-12	-10,-11,-12	-10,-11,-12	-10,-11,-12	-10,-11,-12	-10,-11,-12	-10,-11	
	Industrial	-10,-11	-10,-11	-10,-11	-10,-11	-10,-11	-10,-11	-10,-11	-10	-10,-11	-10,-11	-10,-11	-10,-11	-10,-11	-10,-11	-10,-11	-10,-11	-10	
Configuration	Configuration Memory (Mbits)	4.8	7.8	12.3	17.7	23.3	30.7	40.3	51.4	9.1	13.7	22.7	4.8	7.2	14.9	21.0	33.0	47.9	
Package <sup>(7)</sup>		Area		Available User I/O: SelectIO Pins <sup>(4,5)</sup> (RocketIO™ Transceivers)															
SFA Packages (SF): flip-chip fine-pitch BGA (0.8 mm ball spacing)																			
SF363		17 x 17mm		240	240								240						
FFA Packages (FF): flip-chip fine-pitch BGA (1.0 mm ball spacing)																			
FF668		27 x 27 mm		320	448	448	448				320	448	640	320					
FF1148		35 x 35 mm				640	640	768	768	768			640						
FF1513		40 x 40 mm						960	960	960									
FF672		27 x 27 mm												320 (8)	352 (12)	352 (12)			
FF1152		35 x 35 mm													448 (12)	576 (16)	576 (16)		
FF1517		40 x 40 mm															768 (20)	768 (24)	

- Notes:
- EasyPath™ solutions provide a conversion-free and low-risk path for volume production.
  - Each slice comprises two 4-input logic function generators (LUTs), two storage elements, wide-function multiplexers, and carry logic.
  - Digitally Controlled Impedance (DCI) is available on I/Os of all devices.
  - I/O standards supported: LDT-25, LVDS-25, LVDS-25, BLVDS-25, ULVDS-25, LVPECL-25, LVCMOS18, LVCMOS15, LVCMOS33, LVTTL, PCI-X, PCI133, PCI66, GTL, GTL+, HSTL I (1.2V, 1.5V, 1.8V), HSTL II (1.5V, 1.8V), HSTL III (1.5V, 1.8V), HSTL IV (1.5V, 1.8V), SSTL2, SSTL18I, SSTL18II.
  - All Virtex-4 LX and Virtex-4 SX devices available in the same package are footprint-compatible.
  - All products available Pb-free and RoHS-Compliant.

Important: Verify all data in this document with the device data sheets found at [www.xilinx.com/virtex4](http://www.xilinx.com/virtex4)

**Spartan-6 LX FPGAs**  
Optimized for Lowest-Cost Logic, DSP, and Memory  
(1.2 Volt, 1.0 Volt)

**Spartan-6 LXT FPGAs**  
Optimized for Lowest-Cost Logic, DSP, and Memory  
with High-Speed Serial Connectivity  
(1.2 Volt)

	Part Number	XC6SLX4	XC6SLX9	XC6SLX16	XC6SLX25	XC6SLX45	XC6SLX75	XC6SLX100	XC6SLX150	XC6SLX25T	XC6SLX45T	XC6SLX75T	XC6SLX100T	XC6SLX150T
Logic Resources	Slices <sup>(1)</sup>	600	1,430	2,278	3,758	6,822	11,662	15,822	23,038	3,758	6,822	11,662	15,822	23,038
	Logic Cells <sup>(2)</sup>	3,840	9,152	14,579	24,051	43,661	74,637	101,261	147,443	24,051	43,661	74,637	101,261	147,443
	CLB Flip-Flops	4,800	11,440	18,224	30,064	54,576	93,296	126,576	184,304	30,064	54,576	93,296	126,576	184,304
Memory Resources	Maximum Distributed RAM (Kbits)	75	90	136	229	401	692	976	1,355	229	401	692	976	1,355
	Block RAM (18Kbits each)	12	32	32	52	116	172	268	268	52	116	172	268	268
	Total Block RAM (Kbits) <sup>(3)</sup>	216	576	576	936	2,088	3,096	4,824	4,824	936	2,088	3,096	4,824	4,824
Clock Resources	Clock Management Tiles (CMT) <sup>(4)</sup>	2	2	2	2	4	6	6	6	2	4	6	6	6
I/O Resources	Maximum Single-Ended Pins	132	200	232	266	358	408	480	576	250	296	348	498	540
	Maximum Differential Pairs	66	100	116	133	179	204	240	288	125	148	174	249	270
Embedded Hard IP Resources	DSP48A1 Slices <sup>(5)</sup>	8	16	32	38	58	132	180	180	38	58	132	180	180
	PCI Express® Endpoint Block	–	–	–	–	–	–	–	–	1	1	1	1	1
	Memory Controller Blocks	0	2	2	2	2	4	4	4	2	2	4	4	4
	GTP Low-Power Transceivers	–	–	–	–	–	–	–	–	2	4	8	8	8
Speed Grades	Commercial	-L1, -2, -3	-L1, -2, -3	-L1, -2, -3	-L1, -2, -3	-L1, -2, -3	-L1, -2, -3	-L1, -2, -3	-L1, -2, -3	-2, -3, -4	-2, -3, -4	-2, -3, -4	-2, -3, -4	-2, -3, -4
	Industrial	-L1, -2, -3	-L1, -2, -3	-L1, -2, -3	-L1, -2, -3	-L1, -2, -3	-L1, -2, -3	-L1, -2, -3	-L1, -2, -3	-2, -3	-2, -3	-2, -3	-2, -3	-2, -3
Configuration	Configuration Memory (Mbits)	2.6	2.6	3.6	6.2	11.4	18.8	25.4	32.2	6.2	11.4	18.8	25.4	32.2
Package	Area	Maximum User I/O: SelectIO™ Interface Pins (GTP Transceivers) <sup>(9)</sup>												
Chip Scale Packages (CPG): Pb-free wire-bond chip scale BGA (0.5 mm ball spacing)														
CPG196 <sup>7</sup>	8 x 8 mm	106	106	106										
TQFP Packages (TQG): Pb-free thin QFP (0.5 mm pin spacing)														
TQG144 <sup>7</sup>	20 x 20 mm	102	102											
Chip Scale Packages (CSG): Pb-free wire-bond chip scale BGA (0.8 mm ball spacing)														
CSG225 <sup>8</sup>	13 x 13 mm	132	160	160										
CSG324	15 x 15 mm		200	232	226	218				190 (2)	190 (4)			
CSG484 <sup>9</sup>	19 x 19 mm					320	328	338	338		296 (4)	292 (4)	296 (4)	296 (4)
FGA Packages (FTG): Pb and Pb-free wire-bond fine-pitch thin BGA (1.0 mm ball spacing)														
FT(G)256	17 x 17 mm		186	186	186									
FGA Packages (FGG): Pb and Pb-free wire-bond fine-pitch BGA (1.0 mm ball spacing)														
FG(G)484 <sup>9</sup>	23 x 23 mm				266	316	280	326	338	250 (2)	296 (4)	268 (4)	296 (4)	296 (4)
FG(G)876	27 x 27 mm					358	408	480	498			348 (8)	376 (8)	396 (8)
FG(G)900	31 x 31 mm								576				498 (8)	540 (8)

- Notes:
- Each Spartan-6 FPGA slice contains four LUTs and eight flip-flops.
  - Spartan-6 FPGA logic cell ratings reflect the increased logic capacity offered by the new 6-input LUT architecture.
  - Block RAM are fundamentally 18Kb in size. Each block can also be used as two independent 9Kb blocks.
  - Each CMT contains two DCMs and one PLL.
  - Each DSP48A1 slice contains an 18x18 multiplier, an adder and an accumulator.
  - The LX device pinouts are not compatible with the LXT device pinouts.
  - CPG196 and TQG144 do not have memory controller support.
  - CSG225 has X8 memory controller support in the LX9 and LX16 devices. There is no memory controller in the LX4 devices.
  - Devices in the FG(G)484 and CSG484 have support for two memory controllers.

Preliminary product information, subject to change. Please contact your Xilinx representative for the latest information.

*Important: Verify all data in this document with the device data sheets found at [www.xilinx.com](http://www.xilinx.com)*

**Extended Spartan-3A Family**  
Optimized for Lowest Total Cost

Part Number		XC3S50A/AN	XC3S200A/AN	XC3S400A/AN	XC3S700A/AN	XC3S1400A/AN	XC3SD1800A/AN	XC3SD3400A/AN
Logic Resources	System Gates <sup>(1)</sup>	50K	200K	400K	700K	1400K	1800K	3400K
	Slices <sup>(2)</sup>	704	1,792	3,584	5,888	11,264	16,640	23,872
	Logic Cells	1,584	4,032	8,064	13,248	25,344	37,440	53,712
	CLB Flip-Flops	1,408	3,584	7,168	11,776	22,528	32,280	47,744
Memory Resources	Maximum Distributed RAM (Kbits)	11	28	56	92	176	260	373
	Block RAM (18Kbits each)	3	16	20	20	32	84	126
	Total Block RAM (Kbits)	54	288	360	360	576	1,512	2,268
Non-Volatile Capability	Single Chip Option	Yes	Yes	Yes	Yes	Yes	No	No
	User Flash (Kbits) <sup>(3)</sup>	- / 627	- / 3,054	- / 2,380	- / 5,779	- / 12,251	-	-
Clock Resources	Digital Clock Managers (DCMs)	2	4	4	8	8	8	8
I/O Resources	Maximum Single-Ended I/Os	144 / 108	248 / 195	311	372	502	519	469
	Maximum Differential I/O Pairs	64 / 50	112 / 90	142	165	227	227	213
	I/O Standards Supported	LVTTL, LVCMOS33, LVCMOS25, LVCMOS18, LVCMOS15, LVCMOS12, HSTL15 Class I, HSTL15 Class III, HSTL18 Class I, HSTL18 Class II, HSTL18 Class III, PCI 3.3V 32/64bit 33MHz, PCI 3.3V 64bit/66MHz, PCI-X 3.3V, SSTL3 Class I, SSTL3 Class II, SSTL2 Class I, SSTL2 Class II, SSTL18 Class I, SSTL18 Class II, Bus LVDS, LVDS25 & 33, LVPECL25 & 33, Mini-LVDS25 & 33, RSDS25 & 33, TMDS33, PPDS25 & 33						
Embedded Hard IP Resources	Multipliers/DSP48A Blocks	3	16	20	20	32	84 <sup>(4)</sup>	126 <sup>(4)</sup>
	Device DNA Security	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Speed Grades	Commercial	-4, -5	-4, -5	-4, -5	-4, -5	-4, -5	-4, -5	-4, -5
	Industrial	-4	-4	-4	-4	-4	-4, -4L <sup>(5)</sup>	-4, -4L <sup>(5)</sup>
Configuration	Configuration Memory (Mbits)	0.4	1.2	1.9	2.7	4.8	8.2	11.7
Package <sup>(6)</sup>	Size	Maximum User I/Os						
VQFP Packages (VO): very thin QFP (0.5 mm lead spacing)								
VQ100	16 x 16 mm	68 / - <sup>(7)</sup>	68 / - <sup>(7)</sup>					
TQFP Packages (TO): thin QFP (0.5 mm lead spacing)								
TQ144	22 x 22 mm	108 / 108						
FGA Packages (FT): wire-bond fine-pitch thin BGA (1.0 mm ball spacing)								
FT256	17 x 17 mm	144 / - <sup>(7)</sup>	195 / 195	195 / - <sup>(7)</sup>	161 / - <sup>(7)</sup>	161 / - <sup>(7)</sup>		
Chip Scale Packages (CS): wire-bond chip-scale BGA (0.8 mm ball spacing)								
CS484	19 x 19 mm						309 <sup>(6)</sup>	309 <sup>(6)</sup>
FGA Packages (FG): wire-bond fine-pitch BGA (1.0 mm ball spacing)								
FG320	19 x 19 mm		248 / - <sup>(7)</sup>	251 / - <sup>(7)</sup>				
FG400	21 x 21 mm			311 / 311	311 / - <sup>(7)</sup>			
FG484	23 x 23 mm				372 / 372	375 / - <sup>(7)</sup>		
FG676	27 x 27 mm					502 / 502	519	469

- Notes:
- System Gates include 20%-30% of CLBs used as RAMs.
  - Each slice comprises two 4-input logic function generators (LUTs), two storage elements, wide-function multiplexers, and carry logic.
  - Spartan-3AN User Flash is the space left in the on-chip Flash after a portion is used to store configuration bitstream.
  - Integrated in the DSP48A slices (Advanced Multiply Accumulate element).
  - The L low-power option is exclusively available in CS(G)484 package and Industrial temperature range.
  - All products available Pb-free and RoHS-Compliant, check datasheet for Pb package availability.
  - Package not available in non-volatile Spartan-3AN family.

Important: Verify all data in this document with the device data sheets found at [www.xilinx.com](http://www.xilinx.com)

		Spartan-3 FPGAs Optimized for High-Density and High I/O Designs								Spartan-3E FPGAs Logic Optimized				
Part Number		XC3S50	XC3S200	XC3S400	XC3S1000	XC3S1500	XC3S2000	XC3S4000	XC3S5000	XC3S100E	XC3S250E	XC3S500E	XC3S1200E	XC3S1600E
Logic Resources	System Gates <sup>(1)</sup>	50K	200K	400K	1000K	1500K	2000K	4000K	5000K	100K	250K	500K	1200K	1600K
	Slices <sup>(2)</sup>	768	1,920	3,584	7,680	12,312	20,480	27,648	33,280	960	2,448	4,656	8,672	14,752
	Logic Cells	1,728	4,320	8,064	17,280	29,952	46,080	62,208	74,880	2,160	5,508	10,476	19,512	33,192
	CLB Flip-Flops	1,536	3,840	7,168	15,360	26,624	40,960	55,296	66,560	1,920	4,896	9,312	17,344	29,504
Memory Resources	Maximum Distributed RAM (Kbits)	12	30	56	120	208	320	432	520	15	38	73	136	231
	Block RAM (18Kbits each)	4	12	16	24	32	40	96	104	4	12	20	28	36
	Total Block RAM (Kbits)	72	216	288	432	576	720	1,728	1,872	72	216	360	504	648
Clock Resources	Digital Clock Managers (DCMs)	2	4	4	4	4	4	4	4	2	4	4	8	8
I/O Resources	Maximum Single-Ended I/Os	124	173	264	391	487	565	633	633	108	172	232	304	376
	Maximum Differential I/O Pairs	56	76	116	175	221	270	300	300	40	68	92	124	156
	I/O Standards Supported	LVTTL, LVCMOS33, LVCMOS25, LVCMOS18, LVCMOS15, LVCMOS12, GTL, GTL+, HSTL15 Class I, HSTL15 Class III, HSTL18 Class I, HSTL18 Class II, HSTL18 Class III, PCI 3.3V 32/64bit 33MHz, SSTL2 Class I, SSTL2 Class II, SSTL18 Class I, Bus LVDS, LDT (ULVDS), LVDS_ext, LVDS25 & 33, LVPECL25, RSDS25								LVTTL, LVCMOS33, LVCMOS25, LVCMOS18, LVCMOS15, LVCMOS12, HSTL18 Class I, HSTL18 Class III, PCI 3.3V 32/64bit 33MHz, PCI 3.3V 64bit/66MHz, PCI-X 3.3V, SSTL2 Class I, SSTL18 Class I, Bus LVDS, LVDS25, LVPECL25, Mini-LVDS25, RSDS25				
Embedded Hard IP Resources	Dedicated Multipliers	4	12	16	24	32	40	96	104	4	12	20	28	36
Speed Grades	Commercial	-4, -5	-4, -5	-4, -5	-4, -5	-4, -5	-4, -5	-4, -5	-4, -5	-4, -5	-4, -5	-4, -5	-4, -5	-4, -5
	Industrial	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
Configuration	Configuration Memory (Mbits)	0.4	1.0	1.7	3.2	5.2	7.7	11.3	13.3	0.6	1.4	2.3	3.8	6.0
Package <sup>(6)</sup>		Area		Maximum User I/Os										
VQFP Packages (VQ): very thin QFP (0.5 mm lead spacing)														
VQ100	16 x 16 mm	63	63							66	66	66		
Chip Scale Packages (CP): wire-bond chip-scale BGA (0.5 mm ball spacing)														
CP132	8 x 8 mm	89								83	92	92		
TQFP Packages (TQ): thin QFP (0.5 mm lead spacing)														
TQ144	22 x 22 mm	97	97	97						108	108			
PQFP Packages (PQ): wire-bond plastic QFP (0.5 mm lead spacing)														
PQ208	30.6 x 30.6 mm	124	141	141							158	158		
FGA Packages (FT): wire-bond fine-pitch thin BGA (1.0 mm ball spacing)														
FT256	17 x 17 mm		173	173	173						172	190	190	
FGA Packages (FG): wire-bond fine-pitch BGA (1.0 mm ball spacing)														
FG320	19 x 19 mm			221	221	221						232	250	250
FG400	21 x 21 mm												304	304
FG456	23 x 23 mm			264	333	333	333							
FG484	23 x 23 mm													376
FG676	27 x 27 mm				391	487	489	489	489					
FG900	31 x 31 mm						565	633	633					

- Notes:
- System Gates include 20%-30% of CLBs used as RAMs.
  - Each slice comprises two 4-input logic function generators (LUTs), two storage elements, wide-function multiplexers, and carry logic.
  - All products available Pb-free and RoHS-Compliant.
  - Available only in VQG100 package. VQG100 and VQ100 have identical pinouts.

Important: Verify all data in this document with the device data sheets found at [www.xilinx.com](http://www.xilinx.com)

		CoolRunner-II Family						
		Part Number	XC2C32A	XC2C64A	XC2C128	XC2C256	XC2C384	XC2C512
Logic Resources	System Gates	750	1,500	3,000	6,000	9,000	12,000	
	Macrocells	32	64	128	256	384	512	
	Product Terms Per Macrocell	56	56	56	56	56	56	
Clock Resources	Global Clocks	3	3	3	3	3	3	
	Product Term Clocks Per Function Block	16	16	16	16	16	16	
I/O Resources	Maximum I/O	33	64	100	184	240	270	
	Input Voltage Compatible	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	
	Output Voltage Compatible	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	
Speed Grades	Min. pin-to-pin Logic Delay (ns)	3.8	4.6	5.7	5.7	7.1	7.1	
	Commercial Speed Grades (Fastest to Slowest)	-4, -6	-5, -7	-6, -7	-6, -7	-7, -10	-7, -10	
	Industrial Speed Grades (Fastest to Slowest)	-6	-7	-7	-7	-10	-7 <sup>(1)</sup> , -10	
Package <sup>(2)</sup>		Area <sup>(3)</sup>		Maximum User I/Os				
QFN Packages (QFG): quad flat no-lead (0.5 mm lead spacing)								
QF32 <sup>(4)</sup>		5 x 5 mm	21					
QF48 <sup>(4)</sup>		7 x 7 mm		37				
VQFP Packages (VQ): very thin QFP (VQ44: 0.8 mm lead spacing, VQ100: 0.5 mm lead spacing)								
VQ44		12 x 12 mm	33	33				
VQ100		16 x 16 mm		64	80	80		
Chip Scale Packages (CS): wire-bond chip-scale BGA (0.8 mm ball spacing)								
CS48		7 x 7 mm						
CS144		12 x 12 mm						
CS280		16 x 16 mm						
Chip Scale Packages (CP): wire-bond chip-scale BGA (0.5 mm ball spacing)								
CP56		6 x 6 mm	33	45				
CP132		8 x 8 mm			100	106		
TQFP Packages (TO): thin QFP (0.5 mm lead spacing)								
TQ100		16 x 16 mm						
TQ144		22 x 22 mm			100	118	118	
PQFP Packages (PO): wire-bond plastic QFP (0.5 mm lead spacing)								
PQ208		30.6 x 30.6 mm				173	173	173
FGA Packages (FG): wire-bond fine-pitch BGA (1.0 mm ball spacing)								
FT256		17 x 17 mm				184	212	212
FBGA Packages (FG): wire-bond fine-line BGA (1.0 mm ball spacing)								
FG324		23 x 23 mm					240	270

Notes: 1. -7 speed grade only available in FT(G)256 package. 2. All packages available in Pb-Free and RoHS6 compliant versions. 3. Area dimensions for lead-frame product are inclusive of the leads. 4. Only available in RoHS6 compliant and Halogen-free packages.

**Xilinx CPLDs provide the flexibility to add innovation to your application while maintaining the fastest time-to-market.**

- Offer low power, low cost, and small form factor benefits all in one device
- Free reference designs and IP shorten design cycles
- Industry's widest density and package selection

*Important: Verify all data in this document with the device data sheets found at [www.xilinx.com](http://www.xilinx.com)*

		XC9500XL Family				
		Part Number	XC9536XL	XC9572XL	XC95144XL	XC95288XL
Logic Resources	System Gates		800	1,600	3,200	6,400
	Macrocells		36	72	144	288
	Product Terms Per Macrocell		90	90	90	90
Clock Resources	Global Clocks		3	3	3	3
	Product Term Clocks Per Function Block		18	18	18	18
I/O Resources	Maximum I/O		36	72	117	192
	Input Voltage Compatible		2.5/3.3/5	2.5/3.3/5	2.5/3.3/5	2.5/3.3/5
	Output Voltage Compatible		2.5/3.3	2.5/3.3	2.5/3.3	2.5/3.3
Speed Grades	Min. pin-to-pin Logic Delay (ns)		5	5	5	6
	Commercial Speed Grades (Fastest to Slowest)		-5, -7, -10	-5, -7, -10	-5, -7, -10	-6, -7, -10
	Industrial Speed Grades (Fastest to Slowest)		-7, -10	-7, -10	-7, -10	-7, -10
Package <sup>(1)</sup>	Area <sup>(2)</sup>	Maximum User I/Os				
VQFP Packages (VQ): very thin QFP (VQ44: 0.8 mm lead spacing, VQ64: 0.5 mm lead spacing)						
VQ44	12 x 12 mm	34	34			
VQ64	12 x 12 mm	36	52			
PLCC Packages (PC): wire-bond plastic chip carrier (1.27 mm lead spacing)						
PC44	17.5 x 17.5 mm	34	34			
PC84	30.2 x 30.2 mm					
Chip Scale Packages (CS): wire-bond chip-scale BGA (0.8 mm ball spacing)						
CS48	7 x 7 mm	36	38			
CS144	12 x 12 mm			117		
CS280	16 x 16 mm				192	
TQFP Packages (TQ): thin QFP (0.5 mm lead spacing)						
TQ100	16 x 16 mm		72	81		
TQ144	22 x 22 mm			117	117	
PQFP Packages (PQ): wire-bond plastic QFP (0.5 mm lead spacing)						
PQ100	23.3 x 17.2 mm					
PQ160	31.2 x 31.2 mm					
PQ208	30.6 x 30.6 mm				168	
FGA Packages (FG): wire-bond fine-pitch BGA (1.0 mm ball spacing)						
FG256	17 x 17 mm				192	
FBGA Packages (BG): wire-bond fine-line BGA (1.0 mm ball spacing)						
BG256	27 x 27 mm				192	
BG352	35 x 35 mm					

- Notes:
1. All packages available in Pb-Free and RoHS6 compliant versions.
  2. Area dimensions for lead-frame product are inclusive of the leads.

*Important: Verify all data in this document with the device data sheets found at [www.xilinx.com](http://www.xilinx.com)*

# Product Selection and Package Option Matrix

## Xilinx Configuration Memory Cross-Reference

Platform Flash/XL Flash Memory		Platform Flash/XL Flash Memory		Platform Flash/XL Flash Memory		Platform Flash Family Packages and Features							
Virtex-6 FPGAs		Spartan-6 FPGAs		Spartan-3A FPGAs		Part Number	XCF01S	XCF02S	XCF04S	XCF08P	XCF16P	XCF32P	XCF128X
XC6VLX75T	XCF32P	XC6SLX4	XCF04S	XC3S50A	XCF01S	Density	1Mb	2Mb	4Mb	8Mb	16Mb	32Mb	128Mb
XC6VLX130T	XCF128X	XC6SLX9	XCF04S	XC3S200A	XCF02S	JTAG Programmable	Y	Y	Y	Y	Y	Y	Indirect
XC6VLX195T	XCF128X	XC6SLX16	XCF04S	XC3S400A	XCF02S	Serial Configuration	Y	Y	Y	Y	Y	Y	N
XC6VLX240T	XCF128X	XC6SLX25	XCF08P	XC3S700A	XCF04S	SelectMap Configuration				Y	Y	Y	Y
XC6VLX365T	XCF128X	XC6SLX25T	XCF08P	XC3S1400A	XCF08P	Compression				Y	Y	Y	N
XC6VLX760	(2)XCF128X + CPLD	XC6SLX45	XCF16P	<b>Spartan-3A DSP FPGAs</b>		Design Rev				Y	Y	Y	Y
XC6VLX550T	(2)XCF128X + CPLD	XC6SLX45T	XCF16P	XC3SD1800A	XCF08P	VCC (V)	3.3	3.3	3.3	1.8	1.8	1.8	1.8
XC6VVSX315T	XCF128X	XC6SLX75	XCF32P	XC3SD3400A	XCF16P	VCCO (V)	1.8-3.3	1.8-3.3	1.8-3.3	1.8-3.3	1.8-3.3	1.8-3.3	2.5-3.3
XC6VVSX475T	(2)XCF128X + CPLD	XC6SLX75T	XCF32P	<b>Spartan-3E FPGAs</b>		VCCJ (V)	2.5-3.3	2.5-3.3	2.5-3.3	2.5-3.3	2.5-3.3	2.5-3.3	N/A
XC6VHX250T	XCF128X	XC6SLX100	XCF32P	XC3S100E	XCF01S	Clock (MHz)	33	33	33	40	40	40	50
XC6VHX255T	XCF128X	XC6SLX100T	XCF32P	XC3S250E	XCF01S	Standard Package	VO20	VO20	VO20	FS48	FS48	FS48	FT64
XC6VHX380T	XCF128X	XC6SLX150	XCF32*	XC3S500E	XCF02S	Pb-Free Package	VOG20	VOG20	VOG20	FSG48	FSG48	FSG48	FTG64
XC6VHX565T	(2)XCF128X + CPLD	XC6SLX150T	XCF32P*	XC3S1200E	XCF04S					VOG48	VOG48	VOG48	
				XC3S1600E	XCF08P								
<b>Virtex-5 FPGAs</b>		<b>Virtex-4 FPGAs</b>		<b>Spartan-3 FPGAs</b>									
XC5VLX30	XCF08P	XC4VLX15	XCF08P	XC3S50	XCF01S								
XC5VLX50	XCF16P	XC4VLX25	XCF08P	XC3S200	XCF01S								
XC5VLX85	XCF32P	XC4VLX40	XCF16P	XC3S400	XCF02S								
XC5VLX110	XCF32P	XC4VLX60	XCF32P	XC3S400	XCF02S								
XC5VLX155	XCF128X	XC4VLX80	XCF32P	XC3S1000	XCF04S								
XC5VLX220	XCF128X	XC4VLX100	XCF32P	XC3S1500	XCF08P								
XC5VLX330	XCF128X	XC4VLX160	XCF32P + XCF08P	XC3S2000	XCF08P								
XC5VLX20T	XCF08P	XC4VLX200	XCF32P + XCF32P	XC3S4000	XCF016P								
XC5VLX30T	XCF16P	XC4VFX12	XCF08P	XC3S5000	XCF016P								
XC5VLX50T	XCF16P	XC4VFX20	XCF08P										
XC5VLX85T	XCF32P	XC4VFX40	XCF16P										
XC5VLX110T	XCF32P	XC4VFX60	XCF32P										
XC5VLX155T	XCF128X	XC4VFX100	XCF32P										
XC5VLX220T	XCF128X	XC4VFX140	XCF32P + XCF16P										
XC5VLX330T	XCF128X	XC4VSX25	XCF16P										
XC5VVSX35T	XCF16P	XC4VSX35	XCF16P										
XC5VVSX50T	XCF32P	XC4VSX55	XCF32P										
XC5VVSX95T	XCF128X or XCF32P*												
XC5VVSX240T	XCF128X												
XC5VFX30T	XCF16P												
XC5VFX70T	XCF32P												
XC5VFX100T	XCF128X												
XC5VFX130T	XCF128X												
XC5VFX200T	XCF128X												
XC5VTX150T	XCF128X												
XC5VTX240T	XCF128X												

\* Assumes typical compression benchmarks; compression should be confirmed using ISE\* tools

Notes:  
 1. iMPACT supports XCF128X JTAG programming indirectly via the Virtex-5 or Virtex-6 FPGA JTAG port. Please refer to these documents for more information on design considerations for the PLATFORM FLASH XL devices: Datasheet: [http://www.xilinx.com/support/documentation/data\\_sheets/ds617.pdf](http://www.xilinx.com/support/documentation/data_sheets/ds617.pdf)  
 2. For more information regarding design-in considerations of Platform Flash PROMs, please refer to the User Guide UG161

Important: Verify all data in this document with the device data sheets found at [www.xilinx.com](http://www.xilinx.com)

## Configuration Hardware Products

**Platform Cable USB II** – State-of-the-art Xilinx cable with industry leading performance recommended for new designs. For In-System Programming using Xilinx iMPACT programming software connected via a simple 4-wire header to the FPGA, PROM, or CPLD device on target board.

Xilinx Download Cable Chart	
Part Number	Platform Cable USB II
	HW-USB-II-G
Connection to PC	USB 1.1 (Basic Speed) or USB 2.0 (Hi-Speed)
I/O Voltage Support	1.5V, 1.8V, 2.5V, 3.3V and 5V
Multiple Cable Management	Yes (Users can easily name and control individual cables through Xilinx iMPACT software)
Input Power Requirements	Bus Powered (+5VDC)
Configuration Modes	JTAG (IEEE 1149.1), Slave Serial, IEEE 1532, Direct SPI with automatic PROG_B control, Indirect programming of SPI and parallel flash memory devices (see Notes)
Stand-Alone Programming Support	Download cable only
OS Support	<ul style="list-style-type: none"> <li>Windows XP Professional (32 and 64-bit)</li> <li>Windows Vista (32 and 64-bit)</li> <li>Windows 2000 Professional</li> <li>Red Hat Enterprise Linux WS 3.0, 4.0, 5.0 (32 and 64-bit)</li> <li>SUSE Linux Enterprise Linux 10.0 (32 and 64-bit)</li> </ul>
Xilinx Device Support	All Xilinx FPGAs, CPLDs, Platform Flash PROMs, XC18V00 PROMs, System ACE
Third-Party Flash Memory Support	<ul style="list-style-type: none"> <li>Direct programming of specific SPI Flash memory devices *</li> <li>Indirect programming of specific SPI and parallel Flash memory devices * (see Notes)</li> </ul>
Device and Board Interface	Ribbon cable or flying wires (shipped with both)
RoHS Compliant	YES
Miscellaneous	<ul style="list-style-type: none"> <li>Improved target interface protection</li> <li>FPGA-based for feature growth</li> <li>Target system MUX control (PGND) for dynamic JTAG bus sharing</li> </ul>
Maximum Target Clock Speed	24 Mbps

\* See XAPP951 for a list of SPI devices that Xilinx supports via direct programming  
 \* See XAPP974 for a list of SPI devices that Xilinx supports via indirect programming

## Key Configuration Solutions Application Notes\*\*

### Design Guides for Configuration

Platform Flash XL User Guide - UG438  
 Platform Flash PROM User Guide - UG161  
 Bulletproof Configuration Best Practices Guide for Spartan-3A FPGAs - XAPP986

### Configuration Appnotes for In-System Programming and Remote Update

Xilinx In-System Programming Using an Embedded Microcontroller, a microprocessor solution -XAPP058  
 Embedded In-System Programming, JTAG ACE Player Solution - XAPP424  
 Multiple-Boot with Platform Flash PROMs and Spartan-3E FPGAs - XAPP483  
 A CPLD-Based Configuration and Revision Manager for Xilinx Platform Flash PROMs and FPGAs - XAPP693  
 Updating a Platform Flash PROM Design Revision In-System Using SVF - XAPP972  
 Low-Profile In-System Programming Using XCF32P Platform Flash PROMs - XAPP975

### Configuration Appnotes for Data Storage

Reading User Data from Configuration PROMs - XAPP694  
 Data storage with Platform Flash XCF02S/XCF04S PROMs - XAPP544

### Configuration Appnote for Code Storage

MicroBlaze Platform Flash/PROM Boot Loader and User Data Storage - XAPP482

### Configuration Appnote for PCI/PCI-X

Dynamic Bus Mode Reconfiguration of PCI-X and PCI Designs - XAPP938

### Configuration Appnotes for 3rd Party Flash Memory

A best-practices example using BPI Flash for Virtex-5 FPGAs configuration - XAPP973  
 A best-practices example using SPI flash for Spartan-3A FPGAs configuration - XAPP974

\*\*To download these Appnotes visit the 'Documentation' section at [www.xilinx.com/products/design\\_resources/config\\_sol/](http://www.xilinx.com/products/design_resources/config_sol/)

### SystemACE™

For multiple FPGA configuration and for designs utilizing system level features, use SystemACE™.

SystemACE CF	
Memory Density	Up to 8 Gbit
Number of Components	2
Minimum Board Specifications	25 cm
Compression	NO
FPGA Configuration Mode	JTAG
Multiple Designs	Unlimited
Software Storage	YES
Removable	YES
IRL Hooks	YES
Maximum Configuration Speed	30 Mbit/sec
Non-Volatile Media	CompactFlash

Pb-free solutions are available. For more information about Pb-free solutions visit [www.xilinx.com/pbfree](http://www.xilinx.com/pbfree).

*Important: Verify all data in this document with the device data sheets found at [www.xilinx.com](http://www.xilinx.com)*

ISE Design Suite Device Support	ISE WebPACK	ISE Design Suite Logic Edition Embedded Edition DSP Edition System Edition
Virtex™ Series	Virtex-4 LX: XC4VLX15, XC4VLX25 SX: XC4VFX12 FX: XC4VFX12  Virtex-5 LX: XC5VLX30, XC5VLX50 LXT: XC5VLX20T - XC5VLX50T FXT: XC5VFX30T  Virtex-6 XCLX75T	Virtex-4 LX: All SX: All FX: All  Virtex-5 LX: All LXT: All SXT: All FXT: All  Virtex-6 All
Spartan™ Series	Spartan-3 XC3S50 - XC3S1500 Spartan-3A All Spartan-3AN All Spartan-3A DSP XC3SD1800A Spartan-3E All Spartan-6 XC6SLX4 - XC6SLX45T XA (Xilinx Automotive) Spartan-3 All	Spartan-3: All Spartan-3A: All Spartan-3AN: All Spartan-3 DSP: All Spartan-3E: All Spartan-6: All XA (Xilinx Automotive) Spartan-3: All
CoolRunner™ XPLA3 CoolRunner-II™ CoolRunner-IIA™	All	
XC9500™ Series	All (Except 9500XV Family)	

ISE Design Suite Comparison Table	ISE WebPACK (Device Limited)	Logic Edition	Embedded Edition	DSP Edition	System Edition
ISE Foundation with ISE Simulator (ISim)	■	■	■	■	■
PlanAhead Design and Analysis Tool	■	■	■	■	■
ChipScope Pro		■	■	■	■
ChipScope Pro Serial I/O Toolkit		■	■	■	■
Embedded Development Kit (EDK)			■		■
Software Development Kit (SDK)			■		■
System Generator for DSP				■	■

Targeted Standalone Products	Usage
Software Development Kit (SDK)	ISE Foundation with ISE Simulator (ISim)
ChipScope Pro and ChipScope Pro Serial I/O Toolkit	Lab Environments
Embedded Development Kit (EDK)	Spartan FPGA Design and ISE WebPACK users
System Generator for DSP	

ISE Design Suite Operating System Support	Windows® XP Professional 32-bit (US and Japan)	Windows® XP Professional 64-bit (US and Japan)	Windows® Vista Business 32-bit (US and Japan)	Windows® Vista Business 64-bit (US and Japan)	Red Hat Enterprise Linux 4 WS 32-bit	Red Hat Enterprise Linux 4 WS 64-bit	Red Hat Enterprise Linux Desktop 5 32-bit	Red Hat Enterprise Linux Desktop 5 64-bit	SUSE Linux Enterprise 10• 32-bit	SUSE Linux Enterprise 10• 64-bit
	Design Entry and Implementation Tools (ISE Foundation)	■	■	■	■	■	■	■	■	■
ISE Simulator (ISim)	■		■		■	■	■	■	■	■
ISE WebPACK	■		■		■	■	■	■	■	■
ChipScope Pro and ChipScope Pro Serial I/O Toolkit	■	■	■	■	■	■	■	■	■	■
Platform Studio and Embedded Development Kit (EDK)	■		■		■	■	■	■	■	■
Software Development Kit (SDK)	■		■		■	■	■	■	■	■
System Generator for DSP	■				■	■				
Model SIM Xilinx Edition-III (MXE-III)	■		■							

		Defense-Grade FPGAs														
		Virtex-5Q FPGAs														
		Part Number	XQ5VLX30T	XQ5VLX85	XQ5VLX110	XQ5VLX110T	XQ5VLX155T	XQ5VLX220T	XQ5VLX330T	XQ5VSX50T	XQ5VSX95T	XQ5VSX240T	XQ5VFX70T	XQ5VFX100T	XQ5VFX130T	XQ5VLX200T
Logic Resources	Slices <sup>(2)</sup>	4,800	12,960	17,280	17,280	24,320	34,560	51,840	8,160	14,720	37,440	11,200	16,000	20,480	30,720	
	Logic Cells <sup>(3)</sup>	30,720	82,944	110,592	110,592	155,648	221,184	331,776	52,224	94,208	239,616	71,680	102,400	131,072	196,608	
	CLB Flip-Flops	19,200	51,840	69,120	69,120	97,280	138,240	207,360	32,640	58,880	149,670	44,880	64,000	81,920	122,880	
Memory Resources	Maximum Distributed RAM (Kbits)	320	840	1,120	1,120	1,640	2,280	3,420	780	1,520	4,200	820	1,240	1,580	2,280	
	Block RAM/FIFO w/ECC (36Kbits each)	36	96	128	148	212	212	324	132	244	516	148	228	298	456	
	Total Block RAM (Kbits)	1,296	3,456	4,608	5,328	7,632	7,632	11,664	4,752	8,784	18,576	5,328	8,208	10,728	16,416	
Clock Resources	Digital Clock Manager (DCM)	4	12	12	12	12	12	12	12	12	12	12	12	12	12	
I/O Resources	Phase Locked Loop/PMCD	2	6	6	6	6	6	6	6	6	6	6	6	6	6	
	Maximum Single-Ended Pins	360	560	800	680	680	680	960	480	640	960	640	680	840	960	
	Maximum Differential I/O Pairs	180	280	400	340	340	340	480	240	320	480	320	340	420	480	
Embedded Hard IP Resources	DSP48E Slices	32	48	64	64	128	128	192	288	640	1,056	128	256	320	384	
	PowerPC <sup>4</sup> 440 Processor Blocks	-	-	-	-	-	-	-	-	-	-	1	2	2	2	
	PCI Express <sup>5</sup> Interface Blocks	1	-	-	1	1	1	1	1	1	1	3	3	3	4	
	10/100/100 Ethernet MAC Blockset	4	-	-	4	4	4	4	4	4	4	4	4	6	8	
	RocketIO <sup>6</sup> ™ GTP Low-Power Transceivers	8	-	-	16	16	16	24	12	16	24	-	-	-	-	
RocketIO <sup>6</sup> ™ GTX High-Speed Transceivers	-	-	-	-	-	-	-	-	-	-	16	16	20	24		
Configuration	Configuration Memory (Mbits)	9.4	21.9	29.1	31.2	43.1	55.2	82.7	20	35.8	79.7	27.1	39.4	49.3	70.9	
Miscellaneous	Speed Grades	-1, -2	-1, -2	-1, -2	-1, -2	-1, -2	-1	-1	-1, -2	-1	-1	-1, -2	-1, -2	-1, -2	-1	
	Manufacturing Grades	I	I	I	I	I	I	I	I	I	I	I	I	I	I	
	Package <sup>(7)</sup>	Area														
	EF676	27 x 27 mm		440	440											
	EF1153	35 x 35 mm			800											
	FF323	19 x 19 mm	172 (4)													
	EF665	27 x 27 mm							360 (8)			360 (8)				
	EF1136	35 x 35 mm				640 (16)	640 (16)			640 (16)		640 (16)	640 (16)			
	EF1738	42.5 x 42.5 mm						680 (16)	960 (24)				680 (16)	840 (20)		
	FF1738	42.5 x 42.5 mm									960 (24)					960 (24)

Notes: 1. A single Virtex-5Q CLB comprises two slices, with each containing four 6-input LUTs and four Flip-Flops (twice the number found in a Virtex-4 slice), for a total of eight 6-LUTs and eight Flip-Flops per CLB; 2. Virtex-5 logic cell ratings reflect the increased logic capacity offered by the new 6-input LUT architecture; 3. Digitally Controlled Impedance (DCI) is available on I/Os of all devices; 4. I/O standards supported: HT, LVDS, LVDSEXT, RSDS, BLVDS, ULVDS, LVPECL, LVCMOS33, LVCMOS25, LVCMOS18, LVCMOS15, LVTTTL, PCI33, PCI66, PCI-X, GTL, GTL+, HSTL I (1.2V, 1.5V, 1.8V), HSTL II (1.5V, 1.8V), HSTL III (1.5V, 1.8V), HSTL IV (1.5V, 1.8V), SSTL2 I, SSTL2 II, SSTL18 I, SSTL18 II; 5. One system monitor block included in all devices; 6. Available I/O for each device-package combination: number of SelectIO pins (number of RocketIO transceivers).

## Manufacturing Grades

<http://www.xilinx.com/products/milaero/rpt003.pdf>

Grade	Description	Temperature
V	QPro Xilinx V-Grade Flow* Military Ceramic	Tc = -55C to +125C
H	QPro Flip-Chip Radiation Tolerant Ceramic	Tj = -55C to +125C
B	SMD Radiation Tolerant and Non-RT SMD Military Ceramic	Tc = -55C to +125C
N	Military Plastic	Tj = -55C to +125C
M	Military Ceramic or Plastic	Tj = -55C to +125C (Plastic), Tc = -55C to +125C (Ceramic)
I	Industrial Plastic	Tj = -40C to +100C

		Defense-Grade FPGAs												
		Virtex-4Q FPGAs								Virtex-II Pro XQ FPGAs		Virtex-II XQ FPGAs		
Part Number		XQ4VLX25	XQ4VLX40	XQ4VLX60	XQ4VLX100	XQ4VLX160	XQ4VXS55	XQ4VFX60	XQ4VFX100	XQ2VP40	XQ2VP70	XQ2V1000	XQ2V3000	XQ2V6000
Core Voltage		1.2V	1.2V	1.2V	1.2V	1.2V	1.2V	1.2V	1.2V	1.5V	1.5V	1.5V	1.5V	1.5V
Logic Resources	Slices <sup>(1)</sup>	10,752	18,432	26,624	49,152	67,584	24,576	25,280	42,176	19,392	33,088	5,120	14,336	33,792
	Logic Cells	24,192	41,472	59,904	110,592	152,064	55,296	56,880	94,896	44,632	74,448	11,520	32,256	76,032
	CLB Flip-Flops	21,504	36,864	53,248	98,304	135,168	49,152	50,560	84,352	38,784	66,176	10,240	28,672	67,584
Memory Resources	Maximum Distributed RAM (Kbits)	168	288	416	768	1,056	384	395	659	606	1,034	160	448	1,056
	Block RAM/FIFO w/ECC (36Kbits each)	72	96	160	240	288	320	232	376	192	328	40	96	144
	Total Block RAM (Kbits)	1,296	1,728	2,880	4,320	5,184	5,760	4,176	6,768	3,456	5,904	720	1,728	2,592
Clock Resources	Digital Clock Manager (DCM)	8	8	8	12	12	8	12	12	8	8	8	12	12
I/O Resources	Maximum Single-Ended I/Os	448	640	640	960	960	640	576	768	804	996	432	720	1,104
	Maximum Differential I/O Pairs	224	320	320	480	480	320	228	384	396	492	216	360	552
	Digitally Controlled Impedance	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Embedded Hard IP Resources	DSP Slices	48	64	64	96	96	512	128	160	-	-	-	-	-
	18 x 18 Multipliers	-	-	-	-	-	-	-	-	192	328	40	96	144
	RocketIO™ Transceivers	-	-	-	-	-	-	16	20	8 or 12	20	-	-	-
	PowerPC® Processor Blocks	-	-	-	-	-	2	2	2	2	-	-	-	-
Miscellaneous	Speed Grades	-10	-10	-10	-10	-10	-10	-10	-10	-5	-5	-4	-4	-4
	Configuration Memory (Mbits)	4.8	12.3	17.7	30.7	40.3	22.7	21.0	33.0	15.5	25.6	4.1	10.5	21.9
	Manufacturing Grades	M	I, M	M	I	I	M	I, M	I	N	N	N	M, N, B	M
	Packages	SF363, FF668	FF668	FF668, FF1148, EF668	FF1148	FF1148	FF1148	EF672, FFG1152*	FF1152	FF1152, FG676	FF1704	FG456, BG575	CG717, BG728	CF1144

Notes: 1. Each slice comprises two 4-input logic function generators (LUTs), two storage elements, wide-function multiplexers, and carry logic.

### Manufacturing Grades

<http://www.xilinx.com/products/milaero/rpt003.pdf>

Grade	Description	Temperature
V	QPro Xilinx V-Grade Flow* Military Ceramic	Tc = -55C to +125C
H	QPro Flip-Chip Radiation Tolerant Ceramic	Tj = -55C to +125C
B	SMD Radiation Tolerant and Non-RT SMD Military Ceramic	Tc = -55C to +125C
N	Military Plastic	Tj = -55C to +125C
M	Military Ceramic or Plastic	Tj = -55C to +125C (Plastic), Tc = -55C to +125C (Ceramic)
I	Industrial Plastic	Tj = -40C to +100C

\*per ADQ0007

		Space-Grade QPro® FPGAs							
		Virtex-4QV FPGAs				Virtex-II XQR FPGAs	Virtex XQR FPGAs		
		Part Number	XQR4VLX200	XQR4VSX55	XQR4VFX60	XQR4VFX140	XQR2V3000	XQVR300	XQVR600
Logic Resources	Core Voltage	1.2V	1.2V	1.2V	1.2V	1.5V	2.5V	2.5V	
	Slices <sup>(1)</sup>	89,088	24,576	25,280	63,168	14,336	3,072	6,912	
	Logic Cells	200,448	55,296	56,880	142,128	32,256	6,912	15,552	
	CLB Flip-Flops	178,176	49,152	50,560	126,336	28,672	6,144	13,824	
Memory Resources	Maximum Distributed RAM (Kbits)	1,392	384	395	987	448	1,711	3,523	
	Block RAM/FIFO w/ECC (18Kbits each)	336	320	232	552	96	–	–	
	Total Block RAM (Kbits)	6,048	5,760	4,176	9,936	1,728	64	96	
Clock Resources	Digital Clock Manager (DCM)	12	8	12	20	12	4	4	
I/O Resources	Maximum Single-Ended I/Os	960	640	576	896	720	316	316	
	Maximum Differential I/O Pairs	480	320	224	448	360	–	–	
	Digitally Controlled Impedance	YES	YES	YES	YES	YES	–	–	
Embedded Hard IP Resources	DSP Slices	96	512	128	192	–	–	–	
	18 x 18 Multipliers	–	–	–	–	96	–	–	
	10/100/100 Ethernet MAC Blockset	–	–	4	4	–	–	–	
	PowerPC® Processor Blocks	–	–	2	2	–	–	–	
Miscellaneous	Speed Grades	-10	-10	-10	-10	-4	-4	-4	
	Configuration Memory (Mbits)	51.4	22.7	21.0	47.9	10.5	1.7	3.5	
	Manufacturing Grades	V	V	V	V	M, V	M, V, B	M, V, B	
	Total Ionizing Dose (krad)	300	300	300	300	200	100	100	
	SEL Immunity (MeV-cm <sup>2</sup> /mg)	>125	>125	>125	>125	>160	>125	>125	
Package <sup>(2)</sup>	Area	Available User I/Os							
CGA Packages (CG): ceramic column grid array (1.27 mm ball spacing)									
CG717 <sup>(3)</sup>	35 x 35 mm					516			
CFA Packages (CF): flip-chip ceramic column grid array (1.0 mm ball spacing)									
CF1144 <sup>(4)</sup>	35 x 35 mm			576					
CF1140 <sup>(5)</sup>	35 x 35 mm		640						
CF1509 <sup>(6)</sup>	40 x 40 mm	960			768				
CQFP Packages (CB): ceramic brazed quad flat pack (0.025 inch lead spacing)									
CB228	1.55 x 1.55 in						162	162	

Notes: 1. Each slice comprises two 4-input logic function generators (LUTs), two storage elements, wide-function multiplexers, and carry logic. 2. For information on DSCC SMD availability contact Xilinx. 3. The BG728 and CG717 packages are footprint / pin compatible. 4. The CF1144 and FF1152 packages are footprint / pin compatible. 5. The CF1140 and FF1148 packages are footprint / pin compatible. 6. For the XQR4VLX200, the CF1509 and FF1513 packages are footprint / pin compatible. For the XQR4VFX140, the CF1509 and the FF1517 are footprint / pin compatible.

## Manufacturing Grades

<http://www.xilinx.com/products/milaero/rpt003.pdf>

Grade	Description	Temperature
V	QPro Xilinx V-Grade Flow* Military Ceramic	Tc = -55C to +125C
H	QPro Flip-Chip Radiation Tolerant Ceramic	Tj = -55C to +125C
B	SMD Radiation Tolerant and Non-RT SMD Military Ceramic	Tc = -55C to +125C
N	Military Plastic	Tj = -55C to +125C
M	Military Ceramic or Plastic	Tj = -55C to +125C (Plastic), Tc = -55C to +125C (Ceramic)
I	Industrial Plastic	Tj = -40C to +100C

	Defense-Grade Configuration PROMs				Space-Grade QPro Radiation Tolerant Configuration PROMs	
Part Number	XQ1701L	XQ17V16	XQ18VQ4	XQF32P	XQR1701L	XQR17V16
Core Voltage <sup>(1)</sup>	3.3V	3.3V	3.3V	3.3V	3.3V	3.3V
Storage Bits	1M	16M	4M	32M	1M	16M
Manufacturing Grades	M, N	M, N	N	M	M, V	M, V
Total Ionizing Dose (krad)	-	-	-	-	50	50
Packages	CC44, VQ44	CC44, VQ44	VQ44	VQ48	CC44	CC44
Package <sup>(2)</sup>	Area					
CC44	0.69 x 0.69 in					
VQ44	12 x 12 mm					
VQ48	20 x 20 mm					

- Notes:
1. Xilinx configuration PROMs have adjustable I/O voltages for compatibility with all Xilinx FPGAs.
  2. The CC44 and PC44 packages are footprint/pin compatible. For information on DSCC qualification contact Xilinx.

### Manufacturing Grades

<http://www.xilinx.com/products/milaero/rpt003.pdf>

Grade	Description	Temperature
V	QPro Xilinx V-Grade Flow* Military Ceramic	Tc = -55C to +125C
H	QPro Flip-Chip Radiation Tolerant Ceramic	Tj = -55C to +125C
B	SMD Radiation Tolerant and Non-RT SMD Military Ceramic	Tc = -55C to +125C
N	Military Plastic	Tj = -55C to +125C
M	Military Ceramic or Plastic	Tj = -55C to +125C (Plastic), Tc = -55C to +125C (Ceramic)
I	Industrial Plastic	Tj = -40C to +100C

\*per ADQ0007

		Spartan-IIe FPGA					Spartan-3 FPGA					Spartan-3E FPGA				
Part Number		XA2S50E	XA2S100E	XA2S150E	XA2S200E	XA2S300E	XA3S50	XA3S200	XA3S400	XA3S1000	XA3S1500	XA3S100E	XA3S250E	XA3S500E	XA3S1200E	XA3S1600E
Logic Resources	System Gates <sup>(1)</sup>	50K	100K	150K	200K	300K	50K	200K	400K	1000K	1500K	100K	250K	500K	1200K	1600K
	Slices <sup>(2)</sup>	768	1,200	1,728	2,352	3,072	768	1,920	3,584	7,680	13,312	960	2,448	4,656	8,672	14,752
	Logic Cells	1,728	2,700	3,888	5,292	6,912	1,728	4,320	8,064	17,280	29,952	2,160	5,508	10,476	19,512	33,192
	CLB Flip-Flops	1,532	2,400	3,456	4,704	6,144	1,536	3,840	7,168	15,360	26,624	1,920	4,896	9,312	17,344	29,504
Memory Resources	Maximum Distributed RAM (Kbits)	24	37	54	73	96	12	30	56	120	208	15	38	73	136	231
	Block RAM Blocks	8	10	12	14	16	4	12	16	24	32	4	12	20	28	36
	Total Block RAM (Kbits)	32	40	48	56	64	72	216	288	432	576	72	216	360	504	648
Clock Resources	Digital Clock Managers (DCMs) – S3/DLLs – SIIE	4	4	4	4	4	2	4	4	4	4	2	4	4	8	8
I/O Resources	Maximum Single-Ended I/Os	102	102	182	182	182	124	173	264	333	487	108	172	190	304	376
	Maximum Differential I/O Pairs	28	28	83	83	83	56	76	116	149	221	40	68	77	124	156
	I/O Standards Supported	LVTTTL, LVCMOS25, LVCMOS18, HSTL Class I, HSTL Class III, HSTL Class IV, PCI 3.3V 32 - 33MHz, PCI-X 3.3V, SSTL3 Class I, SSTL3 Class II, SSTL2 Class I, SSTL2 Class II, AGP-2x, CTT, LVDS, Bus LVDS, LVPECL25 & 33					LVTTTL, LVCMOS33, LVCMOS25, LVCMOS18, LVCMOS15, LVCMOS12, GTL, GTL+, HSTL15 Class I, HSTL15 Class III, HSTL18 Class I, HSTL18 Class II, HSTL18 Class III, PCI 3.3V 32/64bit 33MHz, SSTL2 Class I, SSTL2 Class II, SSTL18 Class I, Bus LVDS, LDT (ULVDS), LVDS_ext, LVDS25 & 33, LVPECL25, RSDS25					LVTTTL, LVCMOS33, LVCMOS25, LVCMOS18, LVCMOS15, LVCMOS12, HSTL18 Class I, HSTL18 Class III, PCI 3.3V 32/64bit 33MHz, PCI-X 3.3V, SSTL2 Class I, SSTL18 Class I, Bus LVDS, LVDS25, LVPECL25, Mini-LVDS25, RSDS25				
Embedded Hard IP Resources	DSP48A Slices	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Dedicated Multipliers	-	-	-	-	-	4	12	16	24	32	4	12	20	28	36
	Device DNA Security	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miscellaneous	Temperature Grades <sup>(4)</sup>	I, Q	I, Q	I, Q	I, Q	I, Q	I, Q	I, Q	I, Q	I, Q	I	I, Q	I, Q	I, Q	I, Q	I, Q
	Speed Grade	-6	-6	-6	-6	-6	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
	RoHS (Pb-free)	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
	XA Released	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Configuration	Configuration Memory (Mbits)	0.6	0.9	1.1	1.4	1.9	0.4	1.0	1.7	3.2	5.2	0.6	1.4	2.3	3.8	6.0
Package	Area	Maximum User I/Os														
VQFP Packages (VQ): very thin QFP (0.5 mm lead spacing)																
VQ100	16 x 16 mm						63	63				66	66			
Chip Scale Packages (CP): wire-bond chip-scale BGA (0.5 mm ball spacing)																
CP132	8 x 8 mm											83	92	92		
TQFP Packages (TQ): thin QFP (0.5 mm lead spacing)																
TQ144 <sup>(3)</sup>	22 x 22 mm	102	102						97			108	108			
PQFP Packages (PQ): wire-bond plastic QFP (0.5 mm lead spacing)																
PQ208	30.6 x 30.6 mm						124	141	141				158	158		
FGA Packages (FT): wire-bond fine-pitch thin BGA (1.0 mm ball spacing)																
FT256 <sup>(3)</sup>	17 x 17 mm			182	182	182		173	173	173			172	190	190	
FGA Packages (FG): wire-bond fine-pitch BGA (1.0 mm ball spacing)																
FG320	19 x 19 mm														304	304
FG400	21 x 21 mm								264	333	333					
FG456	23 x 23 mm															376

- Notes:
- System Gates include 20%-30% of CLBs used as RAMs.
  - Each slice comprises two 4-input logic function generators (LUTs), two storage elements, wide-function multiplexers, and carry logic.
  - Integrated in the DSP48A slices (Advanced Multiply Accumulate element).
  - Temperature Range Automotive I (T<sub>J</sub> = -40°C to +100°C); Automotive Q (T<sub>J</sub> = -40°C to +125°C).
  - Spartan-IIe is not offered in "G" (Pb-free) packages.

		Spartan-3A FPGA				Spartan-3A DSP FPGA		
		Part Number	XA3S200A	XA3S400A	XA3S700A	XA3S1400A	XA3SD1800A	XA3SD3400A
Logic Resources	System Gates <sup>(1)</sup>	200K	400K	700K	1400K	1800K	3400K	
	Slices <sup>(2)</sup>	1,792	3,584	5,888	11,264	16,640	23,872	
	Logic Cells	4,032	8,064	12,248	25,344	37,440	53,712	
	CLB Flip-Flops	3,584	7,168	11,776	22,528	33,280	47,744	
Memory Resources	Maximum Distributed RAM (Kbits)	28	56	92	176	260	373	
	Block RAM Blocks	16	20	20	32	84	126	
	Total Block RAM (Kbits)	288	360	360	576	1,512	2,268	
Clock Resources	Digital Clock Managers (DCMs) – S3/DLLs – S1IE	4	4	8	8	8	8	
I/O Resources	Maximum Single-Ended I/Os	195	311	372	375	519	469	
	Maximum Differential I/O Pairs	90	142	165	165	227	213	
	I/O Standards Supported	LVTTL, LVCMOS33, LVCMOS25, LVCMOS18, LVCMOS15, LVCMOS12, HSTL15 Class I, HSTL15 Class III, HSTL18 Class I, HSTL18 Class II, HSTL18 Class III, PCI 3.3V 32/64bit 33MHz, PCI-X 3.3V, SSTL3 Class I, SSTL3 Class II, SSTL2 Class I, SSTL2 Class II, SSTL18 Class I, SSTL18 Class II, Bus LVDS, LVDS25 & 33, LVPECL25 & 33, Mini-LVDS25 & 33, RSDS25 & 33, TMD525 & 33, PPD525 & 33						
Embedded Hard IP Resources	DSP48A Slices	–	–	–	–	84	126	
	Dedicated Multipliers	16	20	20	32	84 <sup>(3)</sup>	126 <sup>(3)</sup>	
	Device DNA Security	YES	YES	YES	YES	YES	YES	
Miscellaneous	Temperature Grades <sup>(4)</sup>	I, Q	I, Q	I, Q	I, Q	I, Q	I, Q	
	Speed Grade	-4	-4	-4	-4	-4	-4	
	RoHS (Pb-free)	YES	YES	YES	YES	YES	YES	
	XA Released	YES	YES	YES	YES	YES	YES	
Configuration	Configuration Memory (Mbits)	1.2	1.9	2.7	4.8	8.2	11.7	
Package		Area	Maximum User I/Os					
FGA Packages (FT): wire-bond fine-pitch thin BGA (1.0 mm ball spacing)								
FT256	17 x 17 mm	195	195					
Chip Scale Packages (CS): wire-bond chip-scale BGA (0.8 mm ball spacing)								
CSG484	19 X 19 mm					309	309	
FGA Packages (FG): wire-bond fine-pitch BGA (1.0 mm ball spacing)								
FGG400	21 x 21 mm		311	311				
FGG484	23 x 23 mm			372	375			
FGG676	27 x 27 mm					519	469	

Notes:

1. System Gates include 20%-30% of CLBs used as RAMs.
2. Each slice comprises two 4-input logic function generators (LUTs), two storage elements, wide-function multiplexers, and carry logic.
3. Integrated in the DSP48A slices (Advanced Multiply Accumulate element).
4. Temperature Range Automotive I (Tj = -40°C to +100°C); Automotive Q (Tj = -40°C to +125°C).

		XA9500XL Family			CoolRunner-II Family					
		Part Number	XA2S50E	XA2S100E	XA2S150E	XA2S200E	XA2S300E	XA3S50	XA3S200	XA3S400
Logic Resources	System Gates	800	1,600	3,200	750	1,500	3,000	6,000	9,000	
	Macrocells	36	72	144	32	64	128	256	384	
	Product Terms Per Macrocell	90	90	90	56	56	56	56	56	
Clock Resources	Global Clocks	3	3	3	3	3	3	3	3	
	Product Term Clocks Per Function Block	18	18	18	16	16	16	16	16	
I/O Resources	Maximum I/O	34	72	117	33	64	100	118	118	
	Input Voltage Compatible (V)	2.5/3.3/5	2.5/3.3/5	2.5/3.3/5	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3
	Output Voltage Compatible (V)	2.5/3.3	2.5/3.3	2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3	1.5/1.8/2.5/3.3
Speed Grades	Minimum Pin-to-Pin Logic Delay	15.5	15.5	15.5	5.5	6.7	7.0	7.0	9.2	
	Automotive I Speed Grades	-15	-15	-15	-6	-7	-7	-7	-10	
	Automotive Q Speed Grades	-15	-15	-15	-7	-8	-8	-8	-11	
Miscellaneous	Temperature Grades <sup>(1)</sup>	I, Q	I, Q	I, Q	I, Q	I, Q	I, Q	I, Q	I, Q	
	RoHS (Pb-free)	YES	YES	YES	YES	YES	YES	YES	YES	
	XA Released	YES	YES	YES	YES	YES	YES	YES	YES	
Package	Area <sup>(2)</sup>	Maximum User I/Os								
VQFP Packages (VQ): very thin QFP (VQG44: 0.8 mm lead spacing, VQG64 and VQG100: 0.5 mm lead spacing)										
VQG44	12 x 12 mm	34	34		33	33				
VQG64	12 x 12 mm		52							
VQG100	16 x 16 mm					64	80	80		
TQFP Packages (TO): thin QFP (0.5 mm lead spacing)										
TQG100	16 x 16 mm		72							
TQG144	22 x 22 mm							120	118	
Chip Scale Packages (CP): wire-bond chip-scale BGA (0.5 mm ball spacing)										
CPG132	8 x 8 mm						100			
Chip Scale Packages (CS): wire-bond chip-scale BGA (0.8 mm ball spacing)										
CSG144	12 x 12 mm			117						

Notes: 1. Temp Grade XA CPLD Automotive I (Ta = -40°C to +85°C); Automotive Q (Ta = -40°C to +105°C with Tj maximum = +125°C).  
 2. Area dimensions for lead-frame products are inclusive of the leads.



### Virtex-5 FPGA ML501

Purpose: General purpose FPGA development board  
 Board Part Number: HW-V5-ML501-UNI-G  
 Device Supported: XC5VLX50FFG676  
 Price: \$995

#### Description

The ML501 is a feature-rich and low-cost evaluation/development platform which provides easy access to resources available on the on-board Virtex™-5 LX50 FPGA device. Supported by industry standard interfaces and connectors, the ML501 is a versatile development platform for multiple applications.

#### Features

- DDR2 SO-DIMM (256 MB)
- ZBT SRAM ( 1 MB)
- Linear, Platform & SPI Flash
- System ACE CF (CompactFlash)
- JTAG Programming Interface
- External Clocking (2 Differential Pairs)
- USB (x2) – Host and Peripheral
- PS/2 (x2) – Keyboard, Mouse
- RJ-45 – 10/100 Networking
- RS-232 (Male) – Serial port
- Audio In (x2) – Line, Microphone
- Audio Out (x2) – Line, Amp, SPDIF, and Piezo Speaker
- Video (DVI/VGA) Output
- Single-Ended and Differential I/O Expansion (XGI)
- DIP Switch, LED, and Pushbuttons



### Virtex-5 FPGA ML505

Purpose: General purpose FPGA and RocketIO™ GTP Development Platform.  
 Board Part Number: HW-V5-ML505-UNI-G  
 Device Supported: XC5VLX50TFF1136  
 Price: \$1,195

#### Description

The ML505 is a feature-rich general purpose evaluation and development platform. The ML505 offers users the ability to create high speed serial designs utilizing the Virtex™-5 RocketIO™ GTP transceivers. A variety of on-board memories and industry standard connectivity interfaces add to the ML505's ability to serve as a versatile development platform for embedded applications.

#### Features

- DDR2 SO-DIMM (256 MB)
- ZBT SRAM ( 1 MB)
- Linear, Platform & SPI Flash
- System ACE CF (CompactFlash)
- JTAG Programming Interface
- External Clocking (2 Differential Pairs)
- USB (x2) – Host and Peripheral
- PS/2 (x2) – Keyboard, Mouse
- RJ-45 – 10/100/1000 Networking
- RS-232 (Male) – Serial port
- Audio In (x2) – Line, Microphone
- Audio Out (x2) – Line, Amp, SPDIF, Piezo Speaker
- Rotary Encoder
- Video Input
- Video (DVI/VGA) Output
- Single-Ended and Differential I/O Expansion
- DIP Switch , LEDs and Pushbuttons
- GMII and SGMII Support for Ethernet PHY
- PCI Express Plug-In Card Form Factor (x1 endpoint)
- GTP: SFP (1000-base-x)
- GTP: 4 SMAs connected to one MGT
- GTP: SATA (x2)
- GTP Clock Synthesis Chips
- Header for 2nd Serial Port
- 2nd Platform Flash PROM (32Mb) for large device
- Mictor Trace, BDM Debug , & Soft Touch Ports



### Virtex-5 FPGA ML506

Purpose: General purpose FPGA, DSP and RocketIO™ GTP Transceiver Development Platform  
 Board Part Number: HW-V5-ML506-UNI-G  
 Device Supported: XC5VSX50TFF1136  
 Price: \$1,195

#### Description

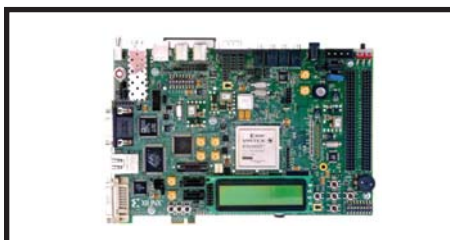
The ML506 is a feature-rich DSP general purpose evaluation and development platform. The ML506 offers users the ability to create DSP based and high speed serial designs utilizing the Virtex™-5 DSP48E slices and RocketIO™ GTP transceivers. A variety of on-board memories and industry standard connectivity interfaces add to the ML506's ability to serve as a versatile development platform for embedded applications.

#### Features

- DDR2 SO-DIMM (256 MB)
- ZBT SRAM ( 1 MB)
- Linear, Platform & SPI Flash
- System ACE CF (CompactFlash)
- JTAG Programming Interface
- External Clocking (2 Differential Pairs)
- USB (x2) – Host and Peripheral
- PS/2 (x2) – Keyboard, Mouse
- RJ-45 – 10/100/1000 Networking
- RS-232 (Male) – Serial port
- Audio In (x2) – Line, Microphone
- Audio Out (x2) – Line, Amp, SPDIF, and Piezo Speaker
- Rotary Encoder
- Video Input
- Video (DVI/VGA) Output
- Single-Ended and Differential I/O Expansion
- GPIO DIP Switch (8), LEDs (8), and Pushbuttons (5)
- GMII and SGMII Support for Ethernet PHY
- PCI Express Plug-In Card Form Factor (x1 endpoint)
- GTP: SFP (1000-base-x)
- GTP: 4 SMAs connected to one MGT
- GTP: SATA (x2)
- GTP Clock Synthesis Chips
- Header for 2nd Serial Port
- 2nd Platform Flash PROM (32Mb) for large device
- Mictor Trace, BDM Debug , & Soft Touch Ports

#### Development Board Advanced Search

Easily locate the board you need using the Development Board Advanced Search Tool found at [www.xilinx.com/board\\_search](http://www.xilinx.com/board_search)



## Virtex-5 FPGA ML507

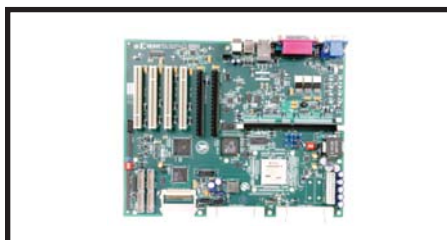
Purpose: General purpose FPGA, PPC 440 Processor & RocketIO GTX development.  
 Board Part Number: HW-V5-ML507-UNI-G  
 Device Supported: XC5VFX70TFF1136  
 Price: \$1,195

### Description

The ML507 is a feature-rich PPC 440 Processor, RocketIO GTX, general purpose FPGA evaluation and development platform. The ML507 offers users the ability to create PPC 440 based and high speed serial designs utilizing the Virtex™-5 PPC 440 Processor and RocketIO™ GTX transceivers. A variety of on-board memories and industry standard connectivity interfaces add to the ML507's ability to serve as a versatile development platform for embedded applications.

### Features

- DDR2 SO-DIMM (256 MB)
- ZBT SRAM ( 1 MB)
- Linear, Platform & SPI Flash
- System ACE CF (CompactFlash)
- JTAG Programming Interface
- External Clocking (2 Differential Pairs)
- USB (x2) – Host and Peripheral
- PS/2 (x2) – Keyboard, Mouse
- RJ-45 – 10/100/1000 Networking
- RS-232 (Male) – Serial port
- Audio In (x2) – Line, Microphone
- Audio Out (x2) – Line, Amp, SPDIF, Piezo Speaker
- Rotary Encoder
- Video Input
- Video (DVI/VGA) Output
- Single-Ended and Differential I/O Expansion
- DIP Switch , LEDs and Pushbuttons
- GMII and SGMII Support for Ethernet PHY
- PCI Express Plug-In Card Form Factor (x1 endpoint)
- GTP: SFP (1000-base-x)
- GTP: 4 SMAs connected to one MGT
- GTP: SATA (x2)
- GTP Clock Synthesis Chips
- Header for 2nd Serial Port
- 2nd Platform Flash PROM (32Mb) for large device
- Mictor Trace, BDM Debug , & Soft Touch Ports



## Virtex-5 FPGA ML510

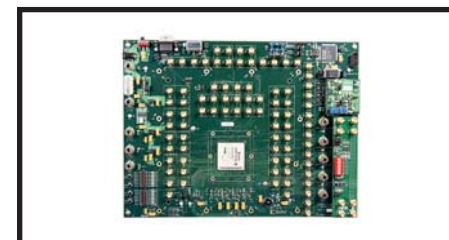
Purpose: Advanced Hardware/Software Embedded Processing Development.  
 Board Part Number: HW-V5-ML510-G  
 Device Supported: XC5VFX130T-FFG1738  
 Price: \$3,100

### Description

The ML510 is an embedded development platform based on the Xilinx Virtex™-5 XC5VFX130T FPGA. Software and Hardware development teams can take advantage of the FPGA's dual PowerPC™ 440 processors, a generous amount of FPGA fabric, and I/O capabilities that extend from the low bit rate UARTs to the high speed RocketIO™ Multi-Gigabit Transceivers (MGTs). When paired with the Xilinx Embedded Development Kit (EDK), and its catalog of IP peripherals, the ML510 can be used to rapidly prototype and verify system designs. Software applications using either standalone code or targeting an operating system, such as VxWorks, can also be created.

### Features

- 32-bit component DDR memory and 64-bit DDR2 DIMM
- 512 MB CompactFlash (CF) card and System ACE CF controller for configuration
- Two onboard 10/100/1000 Ethernet PHYs with RJ-45 connectors
- Two PCI Express interface
- Two UARTs with RS-232 connectors
- VGA graphics interface
- LEDs, LCD\*, and switches
- 32/33 PCI subsystem (Two 3.3V slots and two 5V slots)
  - PS/2 mouse and keyboard connectors
  - 3.5mm headphone and microphone connectors
  - Two USB peripheral ports and one parallel port
  - General purpose I/O (GPIO)
  - Flash memory interface
- Two serial ATA connectors
- Xilinx Personality Module (XPM) interface for access to:
- JTAG and trace debug ports
- Encryption battery
- IIC/SMBus interface
- SPI EEPROM\*
- High-speed I/O through RocketIO transceivers



## Virtex-5 FPGA ML521

Board Part Number: HW-V5-ML521-UNI-G  
 Device Supported: XC5VSX50TFF665  
 Resale Price: \$4,495  
 Purpose: RocketIO GTP Transceiver Characterization

### Description

The ML521 platforms is ideal for characterization and evaluation of Virtex™-5 LX50T RocketIO™ GTP Transceivers. Each RocketIO GTP Transceiver is accessible via 4 SMA connectors.

### Features

- 16 pairs of SMA connectors for the RocketIO transceivers
- 4 differential SMA connectors for RocketIO transceiver clock inputs
- Power indicator LEDs
- General purpose DIP switches, LEDs, and pushbutton switches
- 32 MB - 128 MB of DDR2 Memory
- Onboard power supplies for all necessary voltages
- Power supply jacks for optional use of external power supplies
- JTAG configuration port for use with Parallel Cable III and Parallel Cable IV cables
- System ACE™ controller with 8-bit MPU port support
- RS-232 serial port
- Power supply module supporting all transceiver power requirements
- Two 2.5V / 3.3V global clock oscillator sockets
- Two single-ended global clock inputs with SMA connectors
- Two pairs of differential global clock inputs with SMA connectors
- SuperClock module supporting multiple frequencies
- Xilinx Generic Interface (XGI)



## Virtex-5 FPGA ML525

Purpose: RocketIO GTP Transceiver Characterization Platform.

Devices Supported: XC5VLX110TFF1136 (ML523), XC5VLX50TFF665 (ML521), XC5VLX330TFF1738 (ML525)

Board Part Number: HW-V5-ML523-UNI-G

Price: \$4,995

Board Part Number: HW-V5-ML521-UNI-G

Price: \$9,995

### Description

The ML52x platforms are ideal for characterization and evaluation of Virtex™-5 LXT RocketIO™ GTP Transceivers. Each RocketIO GTP Transceiver is accessible via 4 SMA connectors. ML52x platforms are available with XC5VLX50T-FF665 (ML521), XC5VLX110T-FF1136 (ML523), and XC5VLX330T-FF1738 (ML525) FPGA device.

### Features

- 32 to 96 pairs of SMA connectors for the RocketIO transceivers
- 4 to 12 differential SMA connectors for RocketIO transceiver clock inputs
- Power indicator LEDs
- General purpose DIP switches, LEDs, and pushbutton switches
- 32 MB - 128 MB of DDR2 Memory
- Onboard power supplies for all necessary voltages
- Power supply jacks for optional use of external power supplies
- JTAG configuration port for use with Parallel Cable III and
- Parallel Cable IV cables
- System ACE™ controller with 8-bit MPU port support
- RS-232 serial port
- Power supply module supporting all transceiver power requirements
- Two 2.5V / 3.3V global clock oscillator sockets
- Two single-ended global clock inputs with SMA connectors
- Two pairs of differential global clock inputs with SMA connectors
- SuperClock module supporting multiple frequencies
- Xilinx Generic Interface (XGI)



## Virtex-5 FPGA ML52x

Purpose: RocketIO GTP Transceiver Characterization Platform.

Devices Supported: XC5VLX330TFF1738 (ML525), XC5VLX110TFF1136 (ML523), XC5VLX50TFF665 (ML521)

Board Part Number: HW-V5-ML525-UNI-G

Price: \$9,995

Board Part Number: HW-V5-ML523-UNI-G

Price: \$4,995

Board Part Number: HW-V5-ML521-UNI-G

Price: \$4,495

### Description

The ML52x platforms are ideal for characterization and evaluation of Virtex™-5 LXT RocketIO™ GTP Transceivers. Each RocketIO GTP Transceiver is accessible via 4 SMA connectors. ML52x platforms are available with XC5VLX50T-FF665 (ML521), XC5VLX110T-FF1136 (ML523), and XC5VLX330T-FF1738 (ML525) FPGA device.

### Features

- 32 to 96 pairs of SMA connectors for the RocketIO transceivers
- 4 to 12 differential SMA connectors for RocketIO transceiver clock inputs
- Power indicator LEDs
- General purpose DIP switches, LEDs, and pushbutton switches
- 32 MB - 128 MB of DDR2 Memory
- Onboard power supplies for all necessary voltages
- Power supply jacks for optional use of external power supplies
- JTAG configuration port for use with Parallel Cable III and
- Parallel Cable IV cables
- System ACE™ controller with 8-bit MPU port support
- RS-232 serial port
- Power supply module supporting all transceiver power requirements
- Two 2.5V / 3.3V global clock oscillator sockets
- Two single-ended global clock inputs with SMA connectors
- Two pairs of differential global clock inputs with SMA connectors
- SuperClock module supporting multiple frequencies
- Xilinx Generic Interface (XGI)



## Virtex-5 FPGA ML52x-FXT

Purpose: RocketIO GTX Transceiver Characterization Platform.

Devices Supported: XC5VFX100TFF1136 (ML523-FXT), XC5VFX200TFF1738 (ML525-FXT)

Board Part Number: HW-V5-ML523-FXT-UNI-G

Price: \$4,995

Board Part Number: HW-V5-ML525-FXT-UNI-G

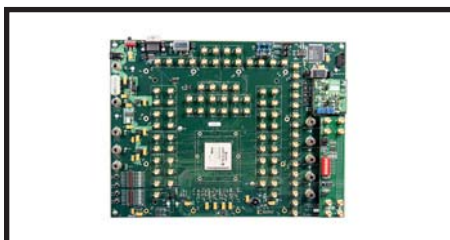
Price: \$8,495

### Description

The AFX-LXT/SXT platforms provide access to different FPGA signals for performing functional tests, general evaluation, and Simple GTP Loopback. Each board's mounted ZIF socket hosts different Virtex-5 LXT/SXT devices with the same pin count (FF665, FF1136, or FF1738).

### Features

- ZIF Socket for different Virtex-5 LXT/SXT devices in FF665, FF1136, or FF1738 package.
- Independent power supply jacks for VCCINT, VCCO, and VCCAUX
- Selectable VCCO-enable pins for each SelectIO™ bank
- Clock sources, LEDs & Switches
- 32 clock inputs
- 4 differential clock pairs
- 4 LVTTTL-type oscillator sockets
- Breadboard area
- Pin Breakout area
- Card interface
- SMA clock inputs for MGT REF clocks
- GTPs looped back on the board
- Multiple configuration options (PROM, SPI Flash, Linear Flash Cable Download)
- Upstream and downstream System ACE™ and configuration interface connectors



## Virtex-5 FPGA AFX-LX

Purpose: Non-RocketIO Low Speed Functional Test  
Board Part Numbers:

HW-AFX-FF324-500-G \$1,495  
 HW-AFX-FF676-500-G \$1,395  
 HW-AFX-FF1153-500-G \$1,995  
 HW-AFX-FF1760-500-G \$2,200

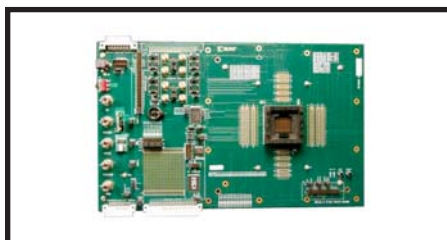
Device Supported: Virtex-5 LX series

### Description

The AFX -LX platforms provide access to different FPGA signals for performing functional tests and general evaluation. Each board's mounted ZIF socket hosts different Virtex-5 LX devices with the same pin count ( FF324, FF676, FF1153, or FF1760).

### Features

- ZIF Socket For different Virtex-5 devices in FF324, FF676, FF1153, or FF1760 package.
- Independent power supply jacks for VCCINT, VCCO, and VCCAUX
- Selectable VCCO-enable pins for each SelectIO™ bank
- Clock sources, LEDs & Switches
- 32 clock inputs
- 4 differential clock pairs
- 4 LVTTTL-type oscillator sockets
- Breadboard area
- Pin Breakout area
- Card interface
- SMA clock inputs for MGT REF clocks
- MGTs looped back on the board
- Multiple configuration options (PROM, SPI Flash, Linear Flash, & Cable Download)
- Upstream and downstream System ACE™ and configuration interface connectors



## Virtex-5 FPGA AFX-LXT/SXT

Purpose: Low Speed Functional Test & GTP loopback  
Part Numbers:

HW-AFX-FF665-500-G \$1,595  
 HW-AFX-FF1136-500-G \$2,100  
 HW-AFX-FF1738-500-G \$2,300

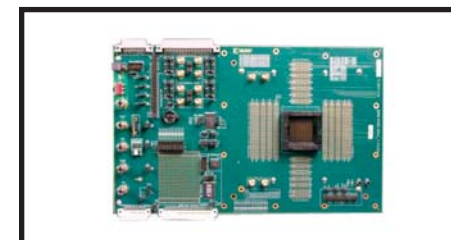
Device Supported: Virtex-5 LXT or SXT series

### Description

The AFX-LXT/SXT platforms provide access to different FPGA signals for performing functional tests, general evaluation, and Simple GTP Loopback. Each board's mounted ZIF socket hosts different Virtex-5 LXT/SXT devices with the same pin count (FF665, FF1136, or FF1738).

### Features

- ZIF Socket for different Virtex-5 LXT/SXT devices in FF665, FF1136, or FF1738 package.
- Independent power supply jacks for VCCINT, VCCO, and VCCAUX
- Selectable VCCO-enable pins for each SelectIO™ bank
- Clock sources, LEDs & Switches
- 32 clock inputs
- 4 differential clock pairs
- 4 LVTTTL-type oscillator sockets
- Breadboard area
- Pin Breakout area
- Card interface
- SMA clock inputs for MGT REF clocks
- GTPs looped back on the board
- Multiple configuration options (PROM, SPI Flash, Linear Flash & Cable Download)
- Upstream and downstream System ACE™ and configuration interface connectors



## Virtex-5 FPGA AFX-FXT

Purpose: Low Speed Functional Test & GTX loopback  
Part Numbers:

HW-AFX-FF665FXT-500-G- \$2,000  
 HW-AFX-FF1136FXT-500-G- \$2,900

Device Supported: Virtex-5 FXT series

### Description

The AFX -FXT platforms provide access to different FPGA signals for performing functional tests and general evaluation. Each board's mounted ZIF socket hosts different Virtex-5 FXT devices with the same pin count (FF665 and FF1136).

### Features

- ZIF Socket For different Virtex-5 devices in FF665 or FF1136 package.
- Independent power supply jacks for VCCINT, VCCO, and VCCAUX
- Selectable VCCO-enable pins for each SelectIO™ bank
- Clock sources, LEDs & Switches
- 32 clock inputs
- 4 differential clock pairs
- 4 LVTTTL-type oscillator sockets
- Breadboard area
- Pin Breakout area
- Card interface
- SMA clock inputs for MGT REF clocks
- MGTs looped back on the board
- Multiple configuration options (PROM, SPI Flash, Linear Flash, & Cable Download)
- Upstream and downstream System ACE™ and configuration interface connectors



### Virtex-5 FPGA ML550

Purpose: Networking Interface Evaluation Platform  
Board Part Number: HW-V5-ML550-UNI-G  
Device Supported: XC5VLX50TFF1136  
Price: \$2,200

#### Description

The ML550 is ideal for evaluation of source-synchronous and networking interfaces

#### Features

- 64M x 8 DDR SDRAM memory
- 200 MHz, 250 MHz, 133 MHz, and 33 MHz on-board oscillators
- SMA (x2) differential clock input connectors
- USB "B" port
- 64 x 128 pixel LCD
- System ACE™ CompactFlash (CF) Configuration Controller
- Six Samtec LVDS connectors (53 differential input and 53 differential output channels)
- Power Monitor Header



### Virtex-5 FPGA ML561

Purpose: Memory Interface Evaluation Platform  
Board Part Number: HW-V5-ML561-UNI-G  
Device Supported: XC5VLX50TFF1136  
Price: \$5,995

#### Description

The ML561 is designed for evaluation of different memory interfaces including DDR, DDR-II, QDR-II, and RLD RAM.

#### Features

- x144 Wide and x72 Deep using (5) DDR2 DIMM Sockets
- (2) x16 DDR-II discrete parts
- (2) x16 DDR discrete parts
- (2) x36 QDR-II discrete parts
- (2) x18 RLD RAM 2 discrete parts
- SystemACE, JTAG, & Serial configuration options
- Debug ports: RS-232, USB, LEDs, DIPs



## Virtex-4 FPGA ML401

Purpose: General purpose FPGA development board  
 Board Part Number: HW-V4-ML401-UNI-G  
 Device Supported: XC4VLX25-FF668  
 Price: \$495

### Description

The ML401 is a feature-rich and low-cost general purpose evaluation/development platform which provides easy access to resources available on the on-board Virtex™-4 LX25 FPGA device. Supported by industry standard interfaces and connectors, the ML401 is a versatile development platform for multiple applications.

### Features

- 64-MB DDR SDRAM
- ZBT synchronous SRAM
- 10/100/1000 tri-speed Ethernet PHY transceiver
- USB interface chip with host and peripheral ports
- RS-232 serial port
- Expansion header with 32 single-ended I/O and 16 LVDS differential pairs
- Stereo AC97 audio codec with line-in/out, headphone, and microphone jack
- One 4-Kb IIC EEPROM
- VGA output
- PS/2 mouse and keyboard connectors
- Xilinx Platform Flash configuration storage device
- System ACE™ CompactFlash configuration controller
- Intel StrataFlash linear flash chips (8 MB)
- JTAG configuration port
- 16-character x 2-line LCD display
- Onboard power supplies for all necessary voltages
- General purpose DIP switches, LEDs, and push buttons



## Virtex-4 FPGA ML402

Purpose: General purpose FPGA/DSP development board  
 Board Part Number: HW-V4-ML402-UNI-G  
 Device Supported: XC4VSX35-FF668  
 Price: \$595

### Description

The ML402 is a feature-rich and low-cost DSP and general purpose FPGA evaluation/development platform which provides easy access to resources available on the on-board Virtex™-4 SX35 FPGA device. Supported by industry standard interfaces and connectors, the ML402 is a versatile development platform for multiple applications.

### Features

- 64-MB DDR SDRAM
- ZBT synchronous SRAM
- 10/100/1000 tri-speed Ethernet PHY transceiver
- USB interface chip with host and peripheral ports
- RS-232 serial port
- Expansion header with 32 single-ended I/O and 16 LVDS differential pairs
- Stereo AC97 audio codec with line-in/out, headphone, and microphone jack
- One 4-Kb IIC EEPROM
- VGA output
- PS/2 mouse and keyboard connectors
- Xilinx Platform Flash configuration storage device
- System ACE™ CompactFlash configuration controller
- Intel StrataFlash linear flash chips (8 MB)
- JTAG configuration port
- 16-character x 2-line LCD display
- Onboard power supplies for all necessary voltages
- General purpose DIP switches, LEDs, and push buttons



## Virtex-4 FPGA ML403

Purpose: General purpose FPGA/PPC Processor development board  
 Board Part Number: HW-V4-ML403-UNI-G  
 Device Supported: XC4VFX12-FF668  
 Price: \$495

### Description

The ML403 is a feature-rich and low-cost general purpose FPGA and PowerPC processor evaluation/development platform which provides easy access to resources available on the on-board Virtex™-4 FX12 FPGA device. Supported by industry standard interfaces and connectors, the ML403 is a versatile development platform for multiple applications.

### Features

- 64-MB DDR SDRAM
- ZBT synchronous SRAM
- 10/100/1000 tri-speed Ethernet PHY transceiver
- USB interface chip with host and peripheral ports
- RS-232 serial port
- Expansion header with 32 single-ended I/O and 16 LVDS differential pairs
- Stereo AC97 audio codec with line-in/out, headphone, and microphone jack
- One 4-Kb IIC EEPROM
- VGA output
- PS/2 mouse and keyboard connectors
- Xilinx Platform Flash configuration storage device
- System ACE™ CompactFlash configuration controller
- Intel StrataFlash linear flash chips (8 MB)
- JTAG configuration port
- 16-character x 2-line LCD display
- Onboard power supplies for all necessary voltages
- General purpose LEDs, and push buttons



## Virtex-4 FPGA ML405

Purpose: General purpose FPGA/RocketIO MGT development board  
 Board Part Number: HW-V4-ML405-UNI-G  
 Device Supported: XC4VFX20-FF672  
 Price: \$795

### Description

The ML405 is a feature-rich and low-cost general purpose FPGA and RocketIO MGT evaluation/development platform which provides easy access to resources available on the on-board Virtex™-4 FX20 FPGA device. Supported by industry standard interfaces and connectors, the ML405 is a versatile development platform for multiple applications.

### Features

- 128-MB SDRAM DDR SDRAM
- ZBT synchronous SRAM
- MGT: Serial ATA host connectors (x2)
- MGT: SFP connector (x1)
- MGT: SMA connectors connected to one RocketIO™ MGT
- 10/100/1000 tri-speed Ethernet PHY transceiver
- USB interface chip with host and peripheral ports
- RS-232 serial port
- Expansion header with 32 single-ended I/O and 16 LVDS differential pairs
- Stereo AC97 audio codec with line-in/out, headphone, and microphone jack
- One 4-Kb IIC EEPROM
- VGA output
- PS/2 mouse and keyboard connectors
- Xilinx Platform Flash configuration storage device
- System ACE™ CompactFlash configuration controller
- Intel StrataFlash linear flash chips (8 MB)
- JTAG configuration port
- 16-character x 2-line LCD display
- Onboard power supplies for all necessary voltages
- General purpose LEDs, and push buttons



## Virtex-4 FPGA ML410

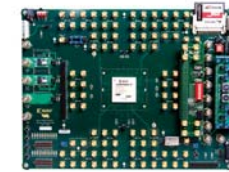
Purpose: Embedded system development platform  
 Board Part Number: HW-V4-ML410-UNI-G  
 Device Supported: XC4VFX60-11FFG1152  
 Price: \$2,995

### Description

The ML410 is an embedded development platform based on the Xilinx Virtex™-4 XC4VFX60 FPGA. Software and Hardware development teams can take advantage of the FPGA's dual PowerPC™ 405 processors, a generous amount of FPGA fabric, and I/O capabilities that extend from the low bit rate UARTs to the high speed RocketIO™ Multi-Gigabit Transceivers (MGTs). When paired with the Xilinx Embedded Development Kit (EDK), and its catalog of IP peripherals, the ML410 can be used to rapidly prototype and verify system designs. Software applications using either standalone code or targeting an operating system, such as VxWorks, can also be created.

### Features

- ATX form factor motherboard
- 64 MB DDR memory and 256 MB DDR2 DIMM
- 512 MB CompactFlash (CF) card and System ACE CF controller for configuration
- 10/100/1000 Ethernet PHYs (MII/RGMII and SGMII) with RJ-45 connectors (x2)
- PCI Express downstream connectors (x2)
- 32-bit/33 MHz PCI connectors (x4)
- ALi South Bridge SuperIO controller
- USB ports - peripheral (x2) and parallel port (x1)
- Serial ATA connectors (x2)
- UARTs with RS-232 connectors (x2)
- Xilinx Personality Module (XPM) interface (x2)
- JTAG and trace debug ports
- IIC/SMBus interface
- SPI EEPROM
- General purpose I/O (GPIO)
- VGA graphics interface
- LEDs, LCD, and switches
- Encryption battery
- PS/2 mouse and keyboard connectors
- 3.5mm headphone and microphone connectors



## Virtex-4 FPGA ML423

Purpose: RocketIO MGT characterization  
 Board Part Number: HW-V4-ML423-UNI-G  
 Device Supported: XC4VFX100-11FF1152  
 Price: \$4,495

### Description

The ML423 platform is ideal for characterization and evaluation of Virtex 4 FX RocketIO MGT Transceivers. yEach RocketIO MGT Transceiver is accessible via 4 SMA connectors.

### Features

- MGT power supply module
- 2.5V/3.3V global clock oscillator sockets (x2)
- Single-ended global clock inputs with SMA connectors (x2)
- Differential global clock inputs with SMA connectors (x2)
- Xilinx Generic Interface (XGI)
- SuperClock module with XGI
- SMA connectors for the RocketIO transceivers
- General purpose DIP switches, LEDs, and pushbuttons
- Differential local clock input with SMAs
- Differential MGT clock inputs with SMAs (x4)
- Onboard power supplies for all necessary voltages
- JTAG configuration port
- System ACE configuration controller
- RS-232 serial port



## Virtex-4 FPGA AFX-LX/SX/FX

Purpose: Low Speed Functional Test & MGT loopback

Board Part Numbers:

HW-AFX-SF363-400: \$1,095

HW-AFX-FF668-400: \$1,200

HW-AFX-FF1148-400: \$2,100

HW-AFX-FF1513-400: \$2,295

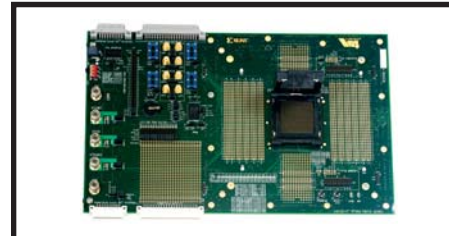
Device Supported: Virtex-4 LX, SX, or FX

## Description

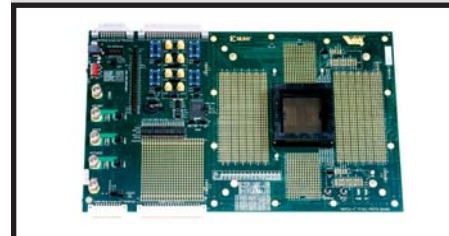
The AFX-LX/SX/FX platforms provide access to different FPGA signals for performing functional tests, general evaluation, and MGT loop back. Each board's mounted ZIF socket hosts different Virtex-4 LX/SX/FX devices with the same pin count (FF363, FF668, FF1148, or FF1513).

## Features

- Independent power supply jacks for VCCINT, VCCO, and VCCAUX
- Selectable VCCO enable pins for each SelectIO™ bank
- Configuration port
- Differential clock pairs (x4)
- LVTTTL-type oscillator sockets (x4)
- 20 breakout clock pins
- Platform Flash ISPROM (32 Mb) for configuration
- JTAG port for reprogramming
- Upstream and downstream System ACE™ connectors and configuration interface connectors
- Onboard battery holder
- One low-voltage, 14-pin, DIP crystal oscillators



## Virtex-4 FPGA AFX-SX



## Virtex-4 FPGA AFX-FX



### Virtex-5 LXT FPGA Gigabit Ethernet Development Kit

Purpose: Virtex-5 LXT FPGA Gigabit Ethernet Development Kit  
 Part Number: HW-V5GBE-DK-UNI-G  
 Device Supported: Virtex-5 LXT XC5VLX50T-1FF1136C  
 Kit Resale Price: \$1,395

#### Description

The Virtex™-5 LXT FPGA Gigabit Ethernet Development kit supports 10/100 Mbps and 1 Gbps speeds. This complete development kit enables you to rapidly create and evaluate designs for Ethernet applications.

#### Features

- Quick Start Guide & Platform USB programming cable
- ISE Evaluation Software & access to IP LogiCOREs
- Resource CD (Reference Designs, Labs, Demonstrations)
- Connectors: GbE – SFP & RJ45 connectors, 10/100 Mbps; RJ45 connector

For further details, please visit [www.xilinx.com/gbedevkit](http://www.xilinx.com/gbedevkit)



### Virtex-5 LXT Development Kit for PCI Express, PCI-X and PCI

Purpose: Application Development Platform for PCI Express and PCI  
 Kit Part Number: HW-V5-ML555-G  
 Device Supported: Virtex™-5 LXT XC5VLX50T-1FF1136CES  
 Kit Resale Price: \$2,200

#### Description

The Virtex-5 LXT FPGA Development kit for PCI-Express® supports PCIe®, PCI-X™, and PCI™. This complete development kit passed PCI-SIG compliance for PCI Express v1.1 and enables you to rapidly create, and evaluate designs using PCI Express, PCI-X and PCI interfaces.

#### Features

- Quick Start Guide & Platform USB programming cable
- ISE Evaluation Software & access to IP LogiCOREs
- Resource CD (Reference Designs, Labs, Demonstrations)
- Connectors: PCIe – 8-land add-in card connector, PCI/PCI-X; standard edge connector

For further details, please visit [www.xilinx.com/v5pciekit](http://www.xilinx.com/v5pciekit)



### Virtex-4 FX12 PowerPC & MicroBlaze Processor Edition Embedded Development HW/SW Kit

Purpose: Advanced Embedded Processing Development Kit  
 Kit Part Number: DO-ML403-EDK-ISE  
 Device Supported: DO-ML403-EDK-ISE-PC4-US  
 Kit Resale Price: \$895

#### Description

The FX12 Edition Development Kit for Embedded Processing applications includes the ML403 development board; Platform Studio embedded tool suite and ISE FPGA Design Software, supporting both the PowerPC™ hard and MicroBlaze™ soft processors. The FX12 Development Kit is only available with USB JTAG cable and has a regional power supply available for the US, Continental Europe or the UK.

#### Features

- Powerful Virtex-4 ML403 Development Board
- Full Seat of Platform Studio Embedded Tool Suite
- ISE WebPACK FPGA Design Software
- Reference Designs, JTAG probe, FLASH device, cables and power supply

For further details, please visit [www.xilinx.com/products/devkits/DO-ML403-EDK-ISE-USB-UNI-G.htm](http://www.xilinx.com/products/devkits/DO-ML403-EDK-ISE-USB-UNI-G.htm)



### Virtex-5 Embedded Kit

Purpose: Advanced Embedded Processing Development Kit  
 Kit Part Number: DK-V5-EMBD-ML507-G  
 Device Supported: Virtex-5 FXT70 FPGA  
 Kit Resale Price: \$2,595

#### Description

The Embedded Development HW/SW Kit - Virtex-5 FX70T PowerPC & MicroBlaze Processor Edition integrated kit supplies an ML507 development board, Platform Studio embedded tool suite and ISE® design software, supporting both the PowerPC® 440 hard and MicroBlaze™ soft processors.

#### Features

- Powerful Virtex-5 ML507 Development Board
- Full Seat of Platform Studio Embedded Tool Suite
- Full Seat of ISE Foundation FPGA Design Software
- Reference Designs, USB JTAG probe, FLASH device, cables and power supply

For further details, please visit [www.xilinx.com/v5embedded](http://www.xilinx.com/v5embedded)



## Spartan-3A Starter Kit

Purpose: Low-cost Spartan-3A platform evaluation kit  
 Kit Part Number: HW-SPAR3A-SK-UNI-G  
 Device Supported: Spartan-3A XC3S700A-FG484  
 Kit Resale Price: \$189

### Description

The Spartan-3A Starter Kit provides the user a complete development system and an out-of-the-box functionality to quickly test out the Spartan-3A device features. The Spartan-3A features a Device DNA for IP-secure mechanisms and 26 differential and single ended I/O standards such as LVDS, RSDS, TMDS and flexible power management.

### Features

- Evaluation board with Spartan-3A FPGA XC3S700A-FG484, on-board 10/100 Ethernet PHY, SPI based ADC & DAC circuitry, 64Mbytes DDR2, two 16MBit SPI serial flash and more
- Interfaces include a 2x16 LCD display, and various I/O ports including a PS/2 port, a VGA display port, and two serial ports
- Kit includes evaluation board, power supply with universal adaptors, programming cable, quick-start guide, design tools evaluation software, collateral and more.

For further details, please visit [www.xilinx.com/s3astarter](http://www.xilinx.com/s3astarter)



## Spartan-3AN Starter Kit

Purpose: Low-cost Spartan-3AN evaluation kit  
 Kit Part Number: HW-SPAR3AN-SK-UNI-G  
 Device Supported: Spartan-3AN XC3S700AN-4FGG484C  
 Kit Resale Price: \$199

### Description

The Spartan-3AN Starter Kit provides the user a complete development system and an out-of-the-box functionality to quickly test out the Spartan-3AN device features. Reference designs include a Device DNA reader, fractal display generator and on-chip flash programmer, and much more.

### Features

- Evaluation board with Spartan-3AN FPGA XC3S700AN-FG484, on-board 10/100 Ethernet PHY, SPI based ADC & DAC circuitry, 64Mbytes DDR2, two 16MBit SPI serial flash and more
- Interfaces include a 2x16 LCD display, and various I/O ports including a PS/2 port, a VGA display port, and two serial ports
- Kit includes evaluation board, power supply with universal adaptors, programming cable, quick-start guide, design tools evaluation software, collateral and more.

For further details, please visit [www.xilinx.com/s3anstarter](http://www.xilinx.com/s3anstarter)



## Spartan-3A DSP 1800A Edition XtremeDSP Starter Platform

Purpose: Low-cost, entry-level environment for developing signal processing designs  
 Kit Part Number: HW-SD1800A-DSP-SB-UNI-G  
 Device Supported: Spartan-3A DSP XC3SD1800A-4FGG676C  
 Kit Resale Price: \$295

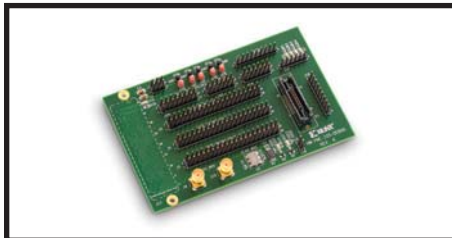
### Description

Powered by the Spartan-3A DSP 1800A device and supported by industry standard peripherals, connectors, and interfaces, this evaluation platform delivers instant access to Spartan-3A DSP family capabilities. Designed for use with the Xilinx System Generator for DSP and ISE™ design tools, the Spartan-3A DSP 1800A starter platform provides a great low-cost entry-level environment for developing signal processing designs.

### Features

- Xilinx Devices: XC3SD1800A-4FGG676C Spartan-3A DSP FPGA
- Memory: 128MB (32M x 32) DDR2 SDRAM; 16Mx8 Parallel /BPI Configuration Flash; 64Mb SPI Configuration / Storage Flash (with 4 extra SPI selects)
- EXP expansion connector

For further details, please visit [www.xilinx.com/s3adspstarter](http://www.xilinx.com/s3adspstarter)



## FMC Debug Mezzanine Card

Purpose: FMC Debug Mezzanine Board  
 Kit Part Number: HW-FMC-DBG-G  
 Device Supported: SP601, SP605, ML605 (FMC)  
 Kit Resale Price: \$159

### Description

The FMC Debug mezzanine card is designed to provide access to many of the pins on the FMC connector found on Xilinx FMC-supported boards including the SP601, SP605 and ML605.

The FMC Debug mezzanine card provides a number of multi-position headers and connectors which break out FPGA interface signals to and from the board interface. A serial IIC bus re-programmable LVDS clock source and a pair of SMA connectors provide differential clock sources to the FMC-supported board FGPA. A 2 Kb serial IIC EEPROM provides non-volatile storage.

### Features

- VITA 57.1 FMC HPC connector
- Single-ended signals from the carrier board, clocks, JTAG, power
- 40 Single Ended I/O (20 Pairs) on the LPC Pins
- 80 Single Ended I/O (40 Pairs) on the HPC Pins
- Micror connector 38 pin female Micror connector
- Shared I/O with LPC Pins
- Micror JTAG pins broken out
- 16 and 12 additional LPC Single Ended I/O
- 8 LPC I/O on 6 pin x 2 row male header (2x6 Pmod Header)
- 4 LPC I/O on 6 pin x 1 row male header (1x6 Pmod Header)
- Four User LEDs Shared with I/O
- 12 additional HPC Single Ended I/O
- FMC JTAG 9-pin header
- 9 pin x 1 row male header with FMC JTAG connections
- Clocking
- SMA connectors
- Silicon Labs Si570 IIC serial bus re programmable LVDS clock source EEPROM
- 2 Kb EEPROM, IIC compatible electrically erasable programmable memory (EEPROM) with 2 Kb (256 bytes) of non-volatile storage
- Power Good LEDs
- Power good LEDs for +12V, carrier to mezzanine (PG\_C2M) and Vadjust/3.3V



## Spartan-3E Starter Kit

Purpose: Low-cost Spartan-3E platform development kit  
 Kit Part Number: HW-SPAR3E-SK-UNI-G  
 Device Supported: Spartan-3A XC3S700A-FG484  
 Kit Resale Price: \$149

### Description

The Spartan™-3E FPGA Starter Kit is a complete development board solution giving designers instant access to the capabilities of the Spartan-3E family. Complete kit includes board, powersupply, evaluation software, resource CD (application notes, white papers, data sheets, etc.), and USB cable.

### Features

- Evaluation board with Spartan-3E FPGA XC3S500E-4FG320C, CoolRunner™-II XC2C64A-5VQ44C, 128 Mbit Parallel Flash, 16 Mbit SPI Flash, 64 MByte DDR SDRAM
- Interfaces include Ethernet 10/100 Phy, two RS-232 serial ports, PS/2 style mouse/keyboard, 2x16 character LCD
- Kit includes evaluation board, power supply with universal adaptors, programming cable, quick-start guide, design tools evaluation software, collateral and more

For further details, please visit [www.xilinx.com/s3estarterkit](http://www.xilinx.com/s3estarterkit)



## XtremeDSP Video Kit

Purpose: Video application development on Spartan-3A FPGAs  
 Kit Part Number: DO-SEADSP-VIDEO-SK-UNI-G  
 Device Supported: XC3SD3400A-4FG676C  
 Kit Resale Price: \$1,595

### Description

The XtremeDSP™ Video Starter Kit – Spartan®-3A DSP Edition is the ideal development platform to evaluate Xilinx FPGA(s) in a wide range of Video and Imaging applications. The Video Starter Kit provides an embedded design framework that can be customized with user defined video accelerators implemented on the FPGA fabric. This unique combination of flexibility and processing power allows Xilinx FPGAs to address the most demanding security, industrial, medical, broadcast and automotive video applications.

### Features

- Includes full seats of System Generator and EDK
- Example video reference designs
- Complete documentation, Platform USB cable, power supply, and video cables
- Carrier Board: Spartan-3A DSP 3400A Development Platform
- Daughter Card: FMC-Video
- DVI Input
- Single Channel In and Out Composite
- S-Video In and Out
- Two Independent Camera Interfaces
- CMOS Image Sensor Camera

For further details, please visit [www.xilinx.com/vsk\\_s3](http://www.xilinx.com/vsk_s3)



## Spartan-6 FPGA SP601 Evaluation Kit

Purpose: General purpose FPGA evaluation board  
 Kit Part Number: EK-S6-SP601-G,  
 EK-S6-SP601-G-J (Japan)  
 Device Supported: XC6SLX16-CS324  
 Kit Resale Price: \$295

### Description

The Spartan®-6 FPGA SP601 Evaluation Kit is an ideal entry-level development environment for evaluating the Spartan-6 family. This kit delivers all the basic components of the Xilinx Base Targeted Design Platform in one package. It provides a flexible environment for system design and provides customers reference design and examples on how to leverage features such as the integrated memory interface core. It includes an industry standard FMC (FPGA Mezzanine Card) connector for future scaling and customization to specific applications and markets.

### Features

- FPGA: XC6SLX16 CS324-2CES Spartan-6
- Onboard configuration circuitry
- Quad SPI Flash 64MB
- 16MB Parallel (BPI) Flash
- DDR2 Component Memory 128MB
- IIC 8Kb IIC EEPROM
- 10/100/1000 Tri-Speed Ethernet PHY
- Serial (UART) to USB Bridge
- FMC-LPC connector (68 single-ended or 34 differential user defined signals)
- 8 User I/O (Digilent 2x6 Header)
- 200MHz Oscillator (Differential)
- Socket (Single-Ended) Populated with 27MHz Osc
- SMA Connectors (Differential)



## Spartan-6 FPGA SP605 Evaluation Kit

Purpose: General purpose FPGA evaluation board  
 Kit Part Number: EK-S6-SP601-G,  
 EK-S6-SP601-G-J (Japan)  
 Devices Supported: XC6SLX45T-FGG484 -3  
 Kit Resale Price: \$495

### Description

The Spartan®-6 FPGA SP605 Evaluation Kit delivers all the basic components of the Xilinx Base Targeted Design Platform in one package. It provides a flexible environment for system design and provides customers reference design and examples on how to leverage features such as high-speed serial transceivers, PCI Express®, DVI, and/or DDR3. It includes an industry-standard FMC (FPGA Mezzanine Card) connector for future scaling and customization to specific applications and markets.

### Features

- FPGA: XC6SLX45T FGG484-3CES Spartan-6
- Onboard JTAG configuration circuitry
- 128MB Platform Flash XL
- Quad SPI Flash 64MB
- System ACE 2G Compact FLASH (CF) Card
- DDR3 Component Memory 1Gb
- 16MB Parallel (BPI) Flash
- 10/100/1000 Tri-Speed Ethernet
- SFP transceiver connector
- GTX port (TX, RX) with four SMA connectors
- USB To UART Bridge
- PCI Express x1 Edge Connector
- FMC-LPC connector (1 GTP Transceiver, 68 single-ended or 34 differential user defined signals)
- User GPIO with two SMA connectors
- 200 MHz Oscillator (Differential)
- Oscillator socket (Single-Ended)
- SMA Connectors for external clock (Differential)
- GTX Reference Clock port with 2 SMA connectors
- Video - DVI / VGA
- 16x2 LCD character display



### Spartan-3A DSP S3D1800A MicroBlaze Processor Edition Embedded Development HW/SW Kit

Purpose: Flexible Embedded Processing Development Kit  
 Kit part number: DO-SD1800A-EDK-DK-UNI-G  
 Devices Supported: XC3SD1800A-4FGG676C FPGA  
 Kit Resale Price: \$595

#### Description

A comprehensive development kit of hardware, design tools, IP and pre-verified reference designs can rapidly accelerate your embedded development. The Spartan-3A DSP 1800A Edition of the MicroBlaze Development Kit includes the Spartan-3A DSP 1800A development board, Platform Studio embedded tool suite and ISE design software, supporting MicroBlaze soft processing design. This kit is RoHS compliant.

#### Features

- Xilinx Devices: XC3SD1800A-4FGG676C
- Full Seat of Platform Studio embedded tool suite
- ISE WebPACK FPGA design software
- Reference Designs, USB programming download cable, UART and Ethernet cables and power supply

For further details, please visit [www.xilinx.com/s3adspmb](http://www.xilinx.com/s3adspmb)



### Spartan-3A DSP 3400A Edition XtremeDSP Development Platform

Purpose: Spartan-3A DSP application development solution  
 Kit Part Number: HW-SD3400A-DSP-DB-UNI-G  
 Device Supported: XC3SD3400A-4FGG676C Spartan-3A DSP FPGA  
 Kit Resale Price: \$995

#### Description

Powered by the Spartan™-3A DSP 3400A device and supported by industrystandard peripherals, connectors and interfaces, the Spartan-3A DSP Platform provides a rich feature set that spans a wide range of applications. Designed for use with the Xilinx System Generator for DSP development platform, the Spartan-3A DSP Development Platform provides a great entry-level environment for developing signal processing designs.

#### Features

- Xilinx Devices: XC3SD3400A-4FGG676C Spartan-3A DSP FPGA
- On-board 256 MB DDR2 SDRAM; 256 Mbits Flash; 9 Mbits ZBT SRAM; 32 Mbits Platform Flash; 16 Mbits SPI EEPROM; 256 MB Compact Flash
- Two FMC (FPGA Mezzanine Card) LPC expansion connector

For further details, please visit [www.xilinx.com/s3adsp\\_db](http://www.xilinx.com/s3adsp_db)



### Spartan-3 PCI Express Starter Kit

Purpose: Spartan-3 PCIe application development solution  
 Kit Part Number: HW-S3PCIE-DK  
 Regional Version: HW-S3PCIE-DK-J  
 Device Supported: Spartan-3 XC3S1000-4FG676C  
 Kit Resale Price: \$349

#### Description

The Spartan™-3 PCI Express Starter Kit is a complete development board solution giving designers instant access to the capabilities of the Spartan-3 family and the Xilinx PCI Express Core. Complete kit includes board and evaluation software.

#### Features

- Equipped with Spartan-3 FPGA XC3S1000-4FG676C, and Platform Flash XCF08P-VO20C
- Development board with PCI Express X1 Card Edge, NXP PCI Express PHY device PX1011A, 32MB x 32 DDR SDRAM, a 50 MHz crystal clock oscillator, an RS-232 Serial Port, Video DAC, and more
- Kit includes development board, power supply, programming cable, design tools evaluation software, collateral and more

For further details, please visit [www.xilinx.com/s3pciester](http://www.xilinx.com/s3pciester)



## CoolRunner-II Starter Kit Featuring the DataGATE Low-Power Advantage

Purpose: General purpose CPLD Evaluation board  
 Kit Part Number: SK-CR11-L-G  
 Device Supported: XC2C256-TQ144  
 Kit Resale Price: \$39

### Description

The CoolRunner™-II CPLD starter kit provides an out-of-the-box solution with all the tools necessary to evaluate and implement your designs using a high performance, low-power CPLD. DataGATE switch allows designers to easily evaluate this unique power option that permits input signal blocking, stops input switching and significantly reduces power that extends battery life. Full API support so custom applications can directly program and access CPLD.

### Features

- Complete "Out-of-the-Box" evaluation platform
- CoolRunner-II Utility Window
- Easy set-up and monitoring
- DataGATE evaluation "switch"
- Free reference designs



## CoolRunner-II Starter Kit Peripheral Module Bundle

Purpose: Expansion cards for CoolRunner-II Starter Kit  
 Kit Part Number: HW-CR11-PM-ACC-G  
 Device Supported: CoolRunner-II Starter Kit  
 Kit Resale Price: \$99

### Description

The CoolRunner-II Peripheral Module Bundle adds eight individual modules to your CoolRunner-II Starter Kit. Add A/D, D/A, serial flash, DC motor amplifier, or a speaker/headphone amplifier module to your CoolRunner-II Starter Kit (sold separately), and expand functionality at low-cost.

### Features

- 8-bit, 1MSa/s A/D converter, 2 channels (PMod-AD1)
- 12-bit, 1MSa/s D/A converter, 2 channels (PMod-DA2)
- H-bridge amplifier for DC motor drive, 12V, 2A (PMod-HB3)
- Connector module for driving 4 servo motors (PMod-CON3)
- 1-watt speaker/headphone amplifier (PMod-AMP1)
- 16Mbit serial Flash (PMod-SF)
- 4 open collector outputs (PMod-OC1)
- RS-232 serial port (PMod-RS232)

For further details, please visit [www.xilinx.com/cr2starter](http://www.xilinx.com/cr2starter)

## Virtex-6 Development Boards & Kits

Part Number	Product Name	Short Description	Vendor
AES-FMC-IMAGEOV-G	Dual Image Sensor FMC Module	The Dual Image Sensor FMC module provides a direct interface for high-definition image sensor cameras to Spartan-6 or Virtex-6 FMC enabled baseboards.	Avnet
AES-FMC-ISMNET-G	ISM Networking FMC Module	The industrial networking FMC module adds key interfaces to support a wide range of industrial, scientific and measurement requirements.	Avnet

## Virtex-5 Development Boards & Kits

Part Number	Product Name	Short Description	Vendor
ADM-XRC-5T1	Virtex-5 LX/SX PCM/PCM-X Card	Virtex-5 LX110T/SX95T based PMC/PMC-X card with 512MByte SDRAM and 2MB SRAM. Wide range of I/O modules and adapters.	Alpha Data
ADM-XRC-5	Virtex-5 LX PCM/PCM-X Card	Virtex-5 LX110 based PMC/PMC-X card with 1GByte SDRAM. Wide range of I/O modules and adapters.	Alpha Data
AES-XLX-V5LX-EVL50-G	Virtex-5 LX50 Kit	Virtex-5 starter kit to explore and prototype programmable logic designs with the new Virtex-5 LX family of FPGAs. Includes EXP expansion slot.	Avnet
AES-XLX-V5LX-EVL110-G	Virtex-5 LX110 Kit	Virtex-5 starter kit to explore and prototype programmable logic designs with the new Virtex-5 LX family of FPGAs. Includes EXP expansion slot.	Avnet
AES-XLX-V5LXT-PCIE50-G	Virtex-5 LX50T Kit	Complete prototype, test, and design environment for PCI Express designers implementing FPGA-based PCI Express designs on the Virtex-5 LXT family; features 8 high speed lanes and EXP expansion slot.	Avnet
AES-XLX-V5LXT-PCIE110-G	Virtex-5 LX110T Kit	Complete prototype, test, and design environment for PCI Express designers implementing FPGA-based PCI Express designs on the Virtex-5 LXT family; features 8 high speed lanes and EXP expansion slot. Supports the CX4 connector and DDR2 in the SODIMM package.	Avnet
AES-XLX-V5SXT-PCIE50-G	Virtex-5 SX50T Kit	Complete prototype, test, and design environment for DSP and PCI Express designers implementing FPGA-based PCI Express and DSP designs on the Virtex-5 SXT family; features 8 high speed lanes and EXP expansion slot.	Avnet
HTG-V5-PCIE	Virtex-5 PCI Express Board	Virtex-5 PCI Express development board supporting LX330T, LX110T, LX50T and SX95T devices.	HiTech Global
V5-DDR2-IMG	Virtex-5 DDR2 Development Board	Virtex-5 DDR2 and image processing board supporting LX330, LX220 and LX110 devices.	HiTech Global
HTG-V5-SDI	Virtex-5 HD-SDI Board	Virtex-5 SMPTE 425M-compliant multi-channel SDI development board.	HiTech Global
V5IP-7000	Virtex-5 LX330 ASIC Prototyping Platform	Virtex-5 ASIC prototyping platform with multiple LX330 devices for ASIC/SOC logic emulation, prototyping and IP development/verification system.	HiTech Global
HTG-V5-SDI	Virtex-5 LX500T HD-SDI Prototyping Board	Virtex-5 development board with SMPTE 425M compliant Multiple Channels of SDI.	HiTech Global
AVDP-LXxxx	Advanced Video Development Platform	Virtex-5 LXT, SXT PCI-Express Video Development System.	Image Processing Techniques
NH-5VLXT-EVL	Virtex-5 LXT Evaluation Kit	New Virtex-5 Evaluation Kit was designed for customers starting their first high speed serial IO design. Two MGTs are looped back together on the board, two more are brought out to SMA connectors and one more connects to an SPF cage. The kit resale is \$899.	Nu Horizons
PCI-X SYS V5	Virtex-5 PCI/PCIX Development Board	Stackable Virtex-5 LX110/LX330 based board for ASIC prototyping, parallel processing, and applications with high data throughput.	PLD Applications
XpressLXT	Virtex-5 PCI Express Board	Virtex-5 board with PCI Express x8 Endpoint and Root Port with DDR2, Gigabit Ethernet, eSATA and SFP.	PLD Applications
DN9000K10PCI	Virtex-5 Based ASIC Prototyping Engine	Virtex-5 logic emulation/prototyping platform for ASIC and IP development.	The Dini Group
TB-5V-LXxxx-DDR2	Inrevium Virtex-5 DDR SDRAM Evaluation Board	This board can be purchased with either an LX110, LX220, or LX300 populated on the board. It is designed for rapid evaluation of DDR-II memory, DVI and CameraLink interfaces. This Inrevium board product is produced by Tokyo Electron Device.	Tokyo Electron Device/ Nu Horizons
TB-5V-xXxxT-PCIEXP	Inrevium Virtex-5 PCI Express Evaluation Board	This board can be purchased with either an LX50T, LX110T, or SX35T populated on the board. It is an ideal platform for 8-lane PCI-Express. Additionally, it has SFP and SMA connector ports. This Inrevium board product is produced by Tokyo Electron Device.	Tokyo Electron Device/ Nu Horizons
AD3000	3 GSPS ADC with Virtex-5 FPGA XMC/PMC	Virtex-5 FPGA closely coupled to a high-speed analog input front end providing both processing and acquisition in a single XMC/PMC card.	VMETRO
Phoenix VPF2	Dual Virtex-5 FPGAs and Freescale MPC8641D Digital Signal Processor	Dual Virtex-5 FPGA devices with a Freescale MPC8641D Digital Signal Processor.	VMETRO
PMC-FPGA05	Virtex-5 LX110 FPGA PMC module with plug-in I/O Adapter Modules	Virtex-5 based PMC module with high speed digital or analog I/O and PCI-X interface, optimized for computationally intensive applications.	VMETRO
AD1500	Dual Channel 1.5 GSPS ADC with Virtex-5 FPGA XMC/PMC	Virtex-5 device closely coupled to a high-speed analog input front end providing both processing and up to 3GSPS acquisition in a single XMC/PMC card.	VMETRO

## Virtex-4 Development Boards & Kits

Part Number	Product Name	Short Description	Vendor
ADPe-XRC-4	Virtex-4 FX PCI Express Card	Virtex-4 FX100/FX140 based 8 lane PCI Express card with 1GByte SDRAM and 8MB SRAM. Wide range of I/O modules.	Alpha Data
ADM-XRC-4FX	Virtex-4 PMC/PMC-X Card	Virtex-4 FX100/FX140 based PMC/PMC-X card with 1GByte SDRAM. Wide range of I/O modules and adapters.	Alpha Data
ADM-XRC-4LS	Virtex-4 LX and SX PMC Board	Virtex-4 PMC board with LX160, 24MB ZBT SRAM, software development kit and wide range of I/O modules.	Alpha Data
DS-KIT-4VLX25LC-G	Virtex-4 LX25 Design Kit	Complete Virtex-4 LX25 evaluation kit optimized for general logic integration; features the LX25 SF363 device and P160 expansion slot.	Avnet
ADS-XLX-V4LX-EVL25-G	Virtex-4 LX25 Evaluation Kit	Complete Virtex-4 LX25 evaluation kit optimized for general logic integration; features the LX25 FF668 device and AvBus expansion slot.	Avnet
ADS-XLX-V4LX-EVL60-G	Virtex-4 LX60 Evaluation Kit	Complete Virtex-4 LX60 evaluation kit optimized for general logic integration, features the LX60 device and AvBus expansion slot.	Avnet

Virtex-4 Development Boards & Kits			
Part Number	Product Name	Short Description	Vendor
DS-KIT-4VLX60MB-G	Virtex-4 MB LX60 Design Kit	Virtex-4 LX60 based design environment offering high performance advanced features for prototyping logic designs. Includes P240 expansion slot.	Avnet
ADS-XLX-V4SX-EVL35-12-G	Virtex-4 SX35 Evaluation Kit	Full featured Virtex-4 SX35 evaluation kit featuring the high speed (-12) device which is optimized for high performance FPGA-based DSP applications. Includes AvBus expansion slot.	Avnet
DS-KIT-4VXS35MB-G	Virtex-4 MB SX35 Design Kit	Complete Virtex-4 SX35 design environment optimized for ultra high-performance signal processing to facilitate high levels of DSP integration. Includes P240 expansion slot.	Avnet
ADS-XLX-V4FX-EVL12-G	Virtex-4 FX12 Evaluation Kit	Low-cost Virtex-4 FX12 evaluation kit perfect for prototyping FX12 FPGA device, which features an embedded IBM PowerPC™ processor. Includes AvBus expansion slot.	Avnet
DS-KIT-4VFX12LC	Virtex-4 Low-Cost FX12 Design Kit	Complete Virtex-4 design environment optimized for FPGA-based embedded processing designs using the embedded IBM PowerPC™ processor. Includes P160 expansion slot.	Avnet
AES-XLX-V4FX-PCIE160-G	Virtex-4 FX60 PCI Express Design Kit	Complete Virtex-4 FX prototype, test, and design environment for PCI Express designers implementing FPGA-based PCI Express designs; features 8 high speed lanes and EXP expansion slot.	Avnet
AES-XLX-V4FX-PCIE100-G	Virtex-4 FX100 PCI Express Design Kit	Complete Virtex-4 FX prototype, test, and design environment for PCI Express designers implementing FPGA-based PCI Express designs; features 8 high speed lanes and EXP expansion slot.	Avnet
ADS-XLX-V4LX-DEV160-G	Virtex-4 LX160 Development Kit	Full featured Virtex-4 LX development kit that delivers the most robust feature set to support advanced programmable logic designs targeted at the largest devices. Includes AvBus expansion slot.	Avnet
ADS-XLX-V4LX-DEV200-G	Virtex-4 LX200 Development Kit	Full featured Virtex-4 LX development kit that delivers the most robust feature set to support advanced programmable logic designs targeted at the largest devices. Includes AvBus expansion slot.	Avnet
DS-KIT-FX12MM1-G	Virtex-4 FX-12 Mini-Module	Designed as a complete system on a module, the Mini packages all the necessary functions needed for an embedded processor system onto a tiny footprint slightly bigger than a stick of chewing gum.	Avnet
V4IP-5000	Virtex-4 IP Verification Platform	Virtex-4 IP evaluation platform with two LX60 FPGAs and an ARM plug-in module.	HiTech Global
HTG-V4-PCIE	Virtex-4 PCI Express Evaluation Board	Virtex-4 FX60 based PCI Express, SATA, USB 2.0, SFP and DDR2 evaluation board.	HiTech Global
V4-CPCI	Virtex-4 Compact PCI Board Compact	PCI (CPCI) board supporting LX200, LX160 and LX100.	HiTech Global
HTG-MPSOC	Virtex-4 Development Board	Virtex-4 evaluation board with four LX200 FPGAs and multiple ARM plug-in modules.	HiTech Global
V4IP-5000	Virtex-4 IP Verification	Virtex-4 based IP Evaluation Platform with two LX160 FPGAs and ARM plug-in module.	HiTech Global
TB-4V-PPC	Virtex-4 PCI Based Embedded Processor Development Platform	Virtex-4 FX60 PCI based Embedded System Development with support for FPGA and PowerPC™ 405 Processor HW/SW debugging.	HiTech Global
V4IP-2000	Virtex-4 Evaluation Platform	Virtex-4 IP Evaluation Platform with two LX100 FPGA devices and ARM plug-in module.	HiTech Global
PCIESYS60	Virtex-4 PCI Express Development Platform	Virtex-4 FX60/100 PCI Express development platform with support for HSSDC2, SFP, DDR 2, and high speed expansion modules.	HiTech Global
V4IP-1000	Virtex-4 IP Evaluation Platform	Virtex-4 IP Evaluation Platform with two LX60 FPGA devices and ARM plug-in module.	HiTech Global
RTG005	USB-Connected FPGA & PowerPC Image Processing System	Virtex-4 FX system with 128 Mbytes DDR SDRAM, CameraLink connection and VHDL imaging library.	Hunt Engineering
HERON-FPGA12	Virtex-4 FPGA Module	Virtex-4 FX Module, 128 Mbytes DDR SDRAM, Flash memory, 60 bits digital I/O, plus IP for frequently used functions.	Hunt Engineering
HERON-FPGA14	Virtex-4 FPGA Module	Virtex-4 LX60/SX35 FPGA device with 128Mbytes DDR SDRAM, 180 bits digital I/O plus IP.	Hunt Engineering
MX4VFK-LX25	Virtex-4 LX Development Board	General purpose Virtex-4 LX evaluation board.	Mechatronics
XpressFX	Virtex-4 FX PCI Express x1,x4,x8 Development Board	Virtex-4 FX60/100 PCI Express x1, x4, x8 development platform with support for SFP, DDR 2, and high speed expansion modules.	PLD Applications
XpressLX	Virtex-4 LX PCI Express x1,x4,x8 Prototyping Platform	Virtex-4 LX100/160 PCI Express x1, x4, x8 prototyping platform with two x4 external PHY GL9714, with support for DDR2 and high speed expansion modules.	PLD Applications
HAPS-31	Virtex-4 Development Board	Virtex-4 based ASIC prototyping platform.	Synplicity
HAPS-34	Virtex-4 Based ASIC Prototyping Platform	Virtex-4 ASIC prototyping system with 4 Virtex-4 devices. Several boards can be combined to handle very large designs. Various kinds of interconnect and I/O-subsystems can be attached.	Synplicity
DN8000K10PCI	Virtex-4 Board Virtex-4 Emulation Board	A complete logic emulation system configured with 3 Virtex-4 devices that can be hosted in a 32-bit or 64-bit PCI slot or used stand-alone to emulate up to 3.7 million gates of logic, enabling ASIC or IP designers a vehicle to prototype logic and memory designs.	The Dini Group
DN8000K10	Virtex-4 ASIC Prototyping Board	A complete logic emulation system configured with 16 Virtex-4 FPGA devices that can be used stand alone or hosted via a USB interface to emulate up to 24 million gates of logic, enabling ASIC or IP designers a vehicle to prototype logic and memory designs.	The Dini Group
DN8000K10PCIE-8	Virtex-4 ASIC Prototyping Board	A complete logic emulation system configured with 3 Virtex-4 FPGAs that can host a 8-lane PCI Express slot or used stand-alone to emulate up to 3.7 million gates of logic, enabling designers a vehicle to prototype logic and memory designs.	The Dini Group
TB-V4-LXxx-DDR2	Virtex-4 DDR2 Memory Kit	Virtex-4 DDR2 evaluation platform powered by LX25 or LX60 device.	Tokyo Electron Device
Phoenix M6000	Virtex-4 Development Board	Virtex-4 based 6U VME/VXS Single Board Computer and I/O controller.	VMETRO

## Spartan-6 Generation Development Boards & Kits

Part Number	Product Name	Short Description	Vendor
AES-S6DEV-LX150T-G	Spartan-6 LX150T Develop. Kit	Spartan-6 LX150T Development Kit provides a complete development platform for designing and verifying applications based on the Xilinx Spartan-6 LXT FPGA family.	Avnet
AES-S6EV-LX16-G	Spartan-6 LX16 Evaluation Kit	Spartan-6 FPGA adds significant enhancements in the low-power FPGA arena, with industry-leading features : suspend and hibernate, combined with up to 60% less operating power compared to Spartan-3A.	Avnet
AES-FMC-IMAGEOV-G	Dual Image Sensor FMC Module	Dual Image Sensor FMC module provides a direct interface for high-definition image sensor cameras to Spartan-6 or Virtex-6 FMC enabled baseboards.	Avnet
AES-FMC-ISMNET-G	ISM Networking FMC Module	The industrial networking FMC module adds key interfaces to support a wide range of industrial, scientific and measurement requirements.	Avnet

## Spartan-3 Generation Development Boards & Kits

Part Number	Product Name	Short Description	Vendor
ADS-XLX-SP3-EVL1500-G	Spartan-3 3S1500 Evaluation Kit	Full featured Spartan-3 evaluation kit featuring the XC3S1500 FPGA device; add the Xilinx MicroBlaze soft processor to explore FPGA-based embedded processing designs. Includes AvBus expansion slot.	Avnet
ADS-XLX-SP3-DEV2000-G	Spartan-3 3S2000 Development Kit	Complete Spartan-3 development environment to design and test high density designs including audio/video, communications, basic I/O, and storage applications. Includes AvBus expansion slot.	Avnet
ADS-XLX-SP3-EVL400	Spartan-3 3S400 Evaluation Kit	Low-cost Spartan-3 kit for exploring PCI designs and applications. Includes AvBus expansion slot.	Avnet
DS-KIT-3SLC400-G	Spartan-3 Low Cost 3S400 Design Kit	Low-cost Spartan-3 kit for exploring designs and applications. Includes P160 expansion slot.	Avnet
DS-KIT-3SMB1500-G	Spartan-3 MB 3S1500 Design Kit	Complete, low-cost Spartan-3 solution for developing designs and applications; features the larger XC3S1500 device and the P160 expansion slot.	Avnet
210-035	AIO1	Low-cost Spartan-3 development platform used to gain experience on analog and digital I/O functionality.	Digilent
210-044	Digilent Spartan-3 Starter Board	Platform for designs targeting the Spartan-3 FPGA featuring a 200K gate Spartan-3 FPGA device.	Digilent
SEB3-400	Spartan-3 Evaluation Board	Spartan-3 XC3S400-based board with SRAM, 2 serial ports, LEDs, switches and solderless breadboard.	Dulse Electronics
BD2-400	Broaddown2-400	Spartan-3 board for fast prototyping of analog circuits, PCI, DDR2, LVDS, SSTL2, SSTL18, MicroBlaze and PicoBlaze (KPSM).	Enterpoint
MC-400	Spartan-3 MINI-CAN Development Board	Low-cost Spartan-3 development board for FPGA-based CAN Bus development.	Enterpoint
Raggedstone1	Spartan-3 FPGA Development Board	Low-cost, high performance board for PCI, MicroBlaze and memory development.	Enterpoint
PTKB-S3-PCIE	Spartan-3 Four-Lane PCI Express Platform	Four-Lane PCI Express development platform powered by Spartan-3 FPGA device and external PHY.	HiTech Global
TB-3S-1600E-IMG	Spartan-3E Image Processing Platform	Spartan 3E board connecting to industry standard peripherals and interfaces.	HiTech Global
S3-PCIE	Spartan-3 PCI Express Platform	Spartan-3 PCI Express platform with 4-lane external PHY.	HiTech Global
MXS3FK-5M	Spartan-3 5M Development Board	Spartan-3 development board with on board SDRAM and Serial, USB, Ethernet Interface.	Mechatronics
MXS3FK-DSP	Spartan-3 DSP Protoboard	Spartan-3 based trainer that facilitates implementation of DSP Systems in FPGA devices.	Mechatronics
MXS3PCI	Spartan-3 PCI Board	A 32 bit 33 MHz PCI based board rich in memory, with four onboard 256 X 16 SRAM, and Video ADC- DAC.	Mechatronics
MXS3FK-PQ208-001-IM	Spartan-3 Trainer with Interface Modules	Spartan-3 board with standard interfaces and provision to interface additional ADC-DAC, traffic light controller and RTC module.	Mechatronics
OptiCop 5 cPCI Board	Spartan-3 cPCI Board	Spartan-3 board offering network access, monitoring, inspection, surveillance and re-formatting functions.	NetQuest
NH-SPAR3A-EVL	Spartan 3A Evaluation Kit	New low-cost Spartan 3A evaluation kit populated with a 3S200A FPGA.	Nu Horizons
HW-AFX-SP3-1500-DB	Spartan-3 Development Board	Low-cost Spartan-3 development platform featuring the XC3S1500 or XC3S2000 device with MicroBlaze support.	Nu Horizons
HW-AFX-SP3-400-DB	Spartan-3 XC3S400 Evaluation Board	Low-cost Spartan-3 board for evaluating the XC3S400 device.	Nu Horizons
XEM3001	XEM3001 Xilinx Experimentation Module	Spartan-3-based FPGA board with USB support including drivers, firmware and an easy-to-use API for C++, Java, Python and a C-style Windows DLL.	Opal Kelly
GR-XC3S-1500	Leon Spartan-3 Development Board	Compact, low-cost Spartan-3 development board targeted for the development of small LEON (VHDL Open Source) microprocessor based systems, computer peripherals and as a general purpose FPGA development environment.	Pender Electronic Design
XpressLite SP3	Spartan-3 PCI Express x1 Design Kit	Spartan-3 1000/2000 PCI Express x1 design kit with Philips PX1012A PHY and high speed Micror connectors.	PLD Applications
HW-PCIEXPRESS-PXSURFBOARD1	Spartan-3 Evaluation Platform and PX Surfboard	Spartan-3 platform with Philips Kahoo II x1 PHY, Video A-D, 1MB SRAM & I2C for prototyping your own PCI Express core and logic.	Tentmaker Systems
SZ010-U00	SUZAKU Spartan-3 / MicroBlaze Development Board	Spartan-3 development board powered by MicroBlaze and mClinux.	Tokyo Electron Device
TB-3S-1500-IMG	Spartan-3 Evaluation Board	Spartan-3 board ideal for evaluating FPD interfaces that use RSDS or LVDS and for evaluating image processing.	Tokyo Electron Device
TD-BD-TS101	Spartan-3 Evaluation Board with AD/D Converters	Spartan-3 board for circuit design learning tool.	Tokyo Electron Device
TB-3S-1400A-IMG	Inrevium Spartan-3A Display Solutions Board	This kit targets display applications utilizing the XC3A1400A FPGA. This kit includes two DVI expansion modules and a DVI reference design.	Tokyo Electron Device/ Nu Horizons
TE-XC3S	Spartan-3 Micromodule	Small-sized micromodule, featuring a Spartan-3 FPGA device, which can be used as a USB-stick or as a ready-to-use plug-in module for carrier boards for battery-powered, handheld or USB-powered applications.	Trenz Electronic

## **Advanced IP and Reference Design Search**

Quickly and easily search IP Cores and Reference Designs from Xilinx and its 3rd party alliance members at [www.xilinx.com/ipcenter](http://www.xilinx.com/ipcenter).

## **Xilinx Alliance Program**

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<b>Instructor Led Training Courses</b>	
*Recommended Courseware	
<i>Elective Courseware</i>	
<b>FPGA Curriculum</b>	<b>Learning Level</b>
*ISE Design Tool Flow <i>Designing with Verilog</i> <i>Designing with VHDL</i> <i>FPGA Design for ASIC Users</i> <i>Designing with the Virtex-6 and Spartan-6 Families</i>	1
*Essentials of FPGA Design <i>Design Techniques for Lower Cost</i> <i>Debugging Techniques Using the ChipScope Pro Tools</i>	2
*Designing for Performance <i>Designing with the PlanAhead Analysis and Design Tool</i> <i>Designing with the Virtex-4 Family</i> <i>Designing with the Virtex-5 Family</i> <i>TMRTTool</i>	3
*Advanced FPGA Implementation <i>Advanced VHDL</i>	4
<b>Embedded Hardware Curriculum</b>	<b>Learning Level</b>
*Embedded Systems Development	3
*Advanced Embedded Systems Development	4
<b>Embedded Software Curriculum</b>	<b>Learning Level</b>
*Embedded Systems Software Development	3
*Embedded Open-Source Linux Development	4
<b>Connectivity Curriculum</b>	<b>Learning Level</b>
*Designing a LogiCORE PCI Express System <i>Designing a LogiCORE PCI System</i> <i>Designing a LogiCORE PCI-X System</i> *Designing with Multi-Gigabit Serial I/O *Designing with Ethernet MAC Controllers *Signal Integrity and Board Design for Xilinx FPGAs	3
<b>DSP Curriculum</b>	<b>Learning Level</b>
*DSP Design Using the AccelDSP Synthesis Tool *DSP Design Using System Generator	3

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Xilinx Design Services is dedicated to helping you achieve your project goals for schedule, performance and quality. Our design engineers are experts in the latest FPGA technologies and specialize in extracting the most out of FPGAs whether that is implementing the latest communication protocol or designing a single-chip embedded processor solution for your application. Our services include:

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- Embedded processor system design and embedded software application design
- FPGA module development (specification, creation, and verification)
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PS-TEC-SRV-ONS	Titanium Dedicated Engineering – On Site Fee NA & EU

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DS-XPA-200K	DS-XPA2-200K	DS-XPA3-200K	Custom XPA for \$50,001 - \$200,000
DS-XPA-200K-INT	DS-XPA2-200K-INT	DS-XPA3-200K-INT	Custom XPA for \$50,001 - \$200,000 (International)
DS-XPA-500K	DS-XPA2-500K	DS-XPA3-500K	Custom XPA for \$200,001 - \$500,000
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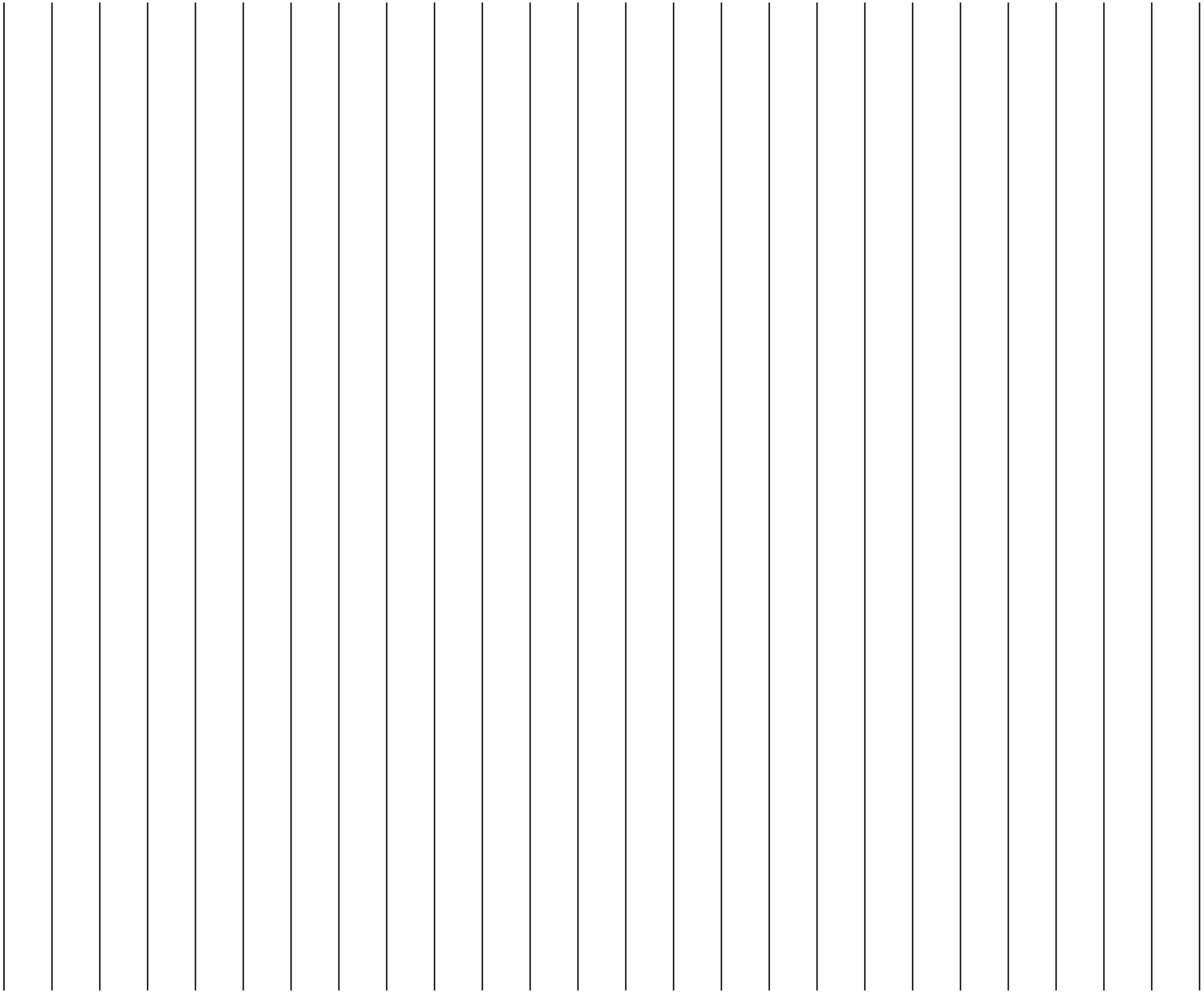
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