



XILINX IP SELECTION GUIDE

Function	Vendor Name	IP Type	Virtex-II Pro	Virtex-II	Virtex-E	Virtex	Spartan-II E	Spartan-II	Spartan	Implementation Example			Key Features	Application Examples
										Occ	MHz	Device		
Communication & Networking														
1 Gigabit Ethernet Full Duplex MAC	Alcatel Technology Licensing Group	AllianceCORE		V-II						46%	31	XC2V1500-5	Single/multi-mode fiber optics; 802.3x full duplex flow control; 10-bit SERDES for GMI; Auto-negotiation for 1000BASE-X	NICs, routers, switches, hubs
1 Gigabit Ethernet MAC	Xilinx	LogiCORE	V-IIP	V-II	V-E		S-II E			23%	125 (XGMII) or 1.25 Gbps	XC2V1000-4	IEEE 802.3-2000 compliant, support 8-bit GMI interface or integrated PCS/PMA interface, supporting 1000BASE-X application	GbE Network Interface Cards (NICs), Edge switches and terabit routers — packet based line cards, iSCSI line cards, PL3 to Gb Ethernet and other bridges
10 Gigabit Ethernet MAC	Xilinx	LogiCORE	V-IIP	V-II						25%	156.25 DDR for XGMII or 4 channels of 3.125Gbps Rocket I/O transceivers	XC2V3000-5	Designed to IEEE 802.3ae, version D4.1 support both 32-bit XGMII parallel interface or XAU interface, supports 10 GBASE-X, WAN/LAN functionality, Statistics gathering	Layer 2 switches/hubs, test equipment, bridge to POS PHY4, iSCSI line cards
10/100 Ethernet MAC	Alcatel Technology Licensing Group	AllianceCORE		V-II						13%	31	XC2V1500-5	Single/multi-mode fiber optics; 10/100 MII PHY, 10Base-T, 100Base-T/TFX/4; RMON & Etherstats	NICs, routers, switches, hubs, printers
10/100 Ethernet MAC	Paxonet Communications	AllianceCORE				V		S-II	S	45%	50	XCV150-4	IEEE 802.3 compliant RMON, MIBs stats, MII support	Ethernet switched, hub, NICS
10/100 Ethernet MAC	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II				Virtex-II	Interfaces through CoreConnect Bus	Networking, communications, processor apps/10/100 Ethernet MAC
3G FEC Package	Xilinx	LogiCORE		V-II	V-E	V							Viterbi Decoder, Turbo Codec, Convolutional Encoder	3G Wireless Infrastructure
8b/10b Decoder	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II		0.4%	160	XC2V40-5	Industry std 8b/10b en/decode for serial data transmission	Physical layer of Fiber Channel
8b/10b Encoder	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II		0.4%	160	XC2V40-5	Industry std 8b/10b en/decode for serial data transmission	Physical layer of Fiber Channel
ADPCM, 16 channel	Amphion Semiconductor Ltd.	AllianceCORE		V-II		V				89%	16	XCV150-6	Supports G.721 G.723 G.726 G.726a G.727 G.727a, u-law, a-law	DECT, VOIP, cordless telephony
ADPCM, 32 channel	Xilinx	LogiCORE		V-II	V-E	V		S-II		62%	25	XC2V500	G.726, G.727, 32 duplex channels	DECT, VOIP, Wireless local loop, DSLAM, PBX
ADPCM, 64 channel	Xilinx	LogiCORE		V-II	V-E	V		S-II		61%	27	XC2V500	G.726, G.727, 64 duplex channels	DECT, VOIP, Wireless local loop, DSLAM, PBX/10/100 Ethernet MAC
ADPCM, 256 channel	Amphion Semiconductor Ltd.	AllianceCORE		V-II	V-E					66%	30	XCV400E-8	Supports G.721 G.723 G.726 G.726a G.727 G.727a, u-law, a-law	DECT, VOIP, cordless telephony
ADPCM, 512 channel	Amphion Semiconductor Ltd.	AllianceCORE		V-II		V				49%	6	XCV400E-8		
ADPCM, 768 channel	Amphion Semiconductor Ltd.	AllianceCORE		V-II		V				89%	50	XC2V500-5	Supports G.721 G.723 G.726 G.726a G.727 G.727a, u-law, a-law	DECT, VOIP, cordless telephony
ADPCM, 1024 channel	Amphion Semiconductor Ltd.	AllianceCORE		V-II	V-E			S-II	S	89%	50	XC2V500-5	Supports G.721 G.723 G.726 G.726a G.727 G.727a, u-law, a-law	DECT, VOIP, cordless telephony
AES Decryption core family	Amphion Semiconductor Ltd.	AllianceCORE		V-II	V-E	V		S-II		36%	103	XC2V250-5		eCommerce, Banking, Video phones, PDA, satellite communications
AES Encryption Core	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		16%	131	XC2V250-5	Supports ECB, OFB, CBC modes; Supports 128, 192 and 256-bit keys	Transaction and secure communications; surveillance, storage and embedded systems/10/100 Ethernet MAC
AES Encryption core family	Amphion Semiconductor Ltd.	AllianceCORE		V-II	V-E	V		S-II		26%	134	XC2V250-5		eCommerce, Banking, Video phones, PDA, satellite communications
Bit Stream Analyzer and Data Extractor	Telecom Italia Lab S.p.A.	AllianceCORE				V		S-II	S	71%	67	XCV50-6	Data syntax analysis of IP, MPEG, ATM	ATM, IP, MPEG/10/100 Ethernet MAC
Bluetooth Baseband Processor	NewLogic GmbH	AllianceCORE		V-II		V						XC2V1000-4	Compliant to Bluetooth v1.1, BQB qualified software for L2CAP, LMP, HCI, voice support	Bluetooth applications
Bluetooth Hardware Baseband Controller	Wipro, Ltd.	AllianceCORE		V-II		V				69%	25	XC2V1500-4		
Cell Assembler	Paxonet Communications	AllianceCORE				V			S		60	XC4005XL-1	Octet wide operation, HEC computation, cell scrambling	ATM adapter cards, routers, switches
Cell Delineation	Paxonet Communications	AllianceCORE				V			S		40	XC4010XL-9	Octet wide operation, HEC verification, cell scrambling	ATM adapter cards, routers, switches
Convolutional Encoder	Telecom Italia Lab S.p.A.	AllianceCORE				V		S-II	S	2%	144	XCV50-6	code rate, gen. vectors, CMSTR length customizable	Error correction
Convolutional Encoder	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II		10%	26	XC2V40-6	k from 3 to 9, puncturing from 2/3 to 12/13	3G base stations, broadcast, wireless LAN, cable modem, xDSL, satellite com, uwave
CRC10 Generator and Verifier	Paxonet Communications	AllianceCORE				V			S	22%	20	XCS30-4	Separate generator and verifier blocks, compatible with ITU-T I.363 for AAL3/AAL4	ATM, SONET, and Ethernet/10/100 Ethernet MAC
CRC32 Generator and Verifier	Paxonet Communications	AllianceCORE				V			S	44%	29	XCS30-4	Separate generator and verifier blocks, compat with ITU-T I.363 for AAL5	ATM, SONET, and Ethernet
DES3 Encryption	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		15%	167	XC2V1000-5		
DES and 3DES Cryptoprocessor	inSilicon Corporation	AllianceCORE				V		S-II	S	48	XC2S150-6	Compliant with ANSI X9.52, 128-bit key or two independent 64-bit keys	Secure communication, data storage	
DES and 3DES encryption engine	Memec Core	AllianceCORE				V			S	79%	25	XCS20-4	NIST certified, supports EBC, CBC, CFB, and OFB	Secure communication, data storage
DES Cryptoprocessor	inSilicon Corporation	AllianceCORE				V		S-II	S	94	XC2S100-6	NIST certified, supports ECB, CBC, CFB, and OFB	Secure communication, data storage/1 Gigabit Ethernet MAC	
DES Encryption	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		93%	204	XC2V40-5		
Distributed Sample Descrambler	Telecom Italia Lab S.p.A.	AllianceCORE				V		S-II	S	14%	74	XCV50-6	Compliant with ITU-T I.432. Parameterizable data width, cell & header length	ATM PHY layer
Distributed Sample Scrambler	Telecom Italia Lab S.p.A.	AllianceCORE				V		S-II	S	9%	104	XCV50-6	Compliant with ITU-T I.432 scramble. Parameterizable data width, cell length, header length	ATM PHY layer
DVB Satellite Modulator	Memec Core	AllianceCORE				V					45-70	XCV50-4	Conforms to ETSI EN 300 421 v1.1.2, selectable convolutional code rate	Digital broadcast, microwave transmitter
Flexbus 4 Interface Core, 16-Channel	Xilinx	LogiCORE		V-II						31%	200	XC2V3000 FG676-5	OIF SPI-4 Phase 1 and Flexbus4 compliant. Fully HW interoperable with AMCC OC-192 framers.	Line card: terabit routers & optical switches
Flexbus 4 Interface Core, 1-Channel	Xilinx	LogiCORE		V-II						12%	200	XC2V1000 FG456-5	OIF SPI-4 Phase 1 and Flexbus4 compliant. Fully HW interoperable with AMCC OC-192 framers.	Line card: terabit routers & optical switches
Flexbus 4 Interface Core, 4-Channel	Xilinx	LogiCORE		V-II						27%	200	XC2V1000 FG456-5	OIF SPI-4 Phase 1 and Flexbus4 compliant. Fully HW interoperable with AMCC OC-192 framers.	Line card: terabit routers & optical switches
HDLC Controller Core, 1-Channel	Xilinx	LogiCORE		V-II	V-E	V		S-II		15%	115	XC2V250	16/32-bit frame seq, 8/16-bit addr insert/delete, flag/zerop insert/detect	X.25, POS, cable modems, frame relay switches, video conferencing over ISDN
HDLC Controller, 1-Channel	Memec Core	AllianceCORE				V		S-II		95%	77	XC2S15-5	16/32-bit frame seq, 8/16-bit addr insert/delete, flag/zerop insert/detection	X.25, Frame Relay, B/D-Channel
HDLC Controller Core, 32-Channel	Xilinx	LogiCORE		V-II	V-E	V		S-II		34%	81	XC2V250	32 full duplex, CRC-16/32, 8/16-bit address insertion/deletion	X.25, POS, cable modems, frame relay switches, video conferencing over ISDN
HDLC-PPP for Packet over SONET	Paxonet Communications	AllianceCORE				V		S-II		75%	80	XC2S150-6	RFC1619 (IP&P) POS, 16/32 bit FCS generation and verification, stats	Bridges, switches, WAN links
Interleaver/De-interleaver	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II		30%	208	XC2V40-6	Block & convolutional, width up to 256 bits, 256 branches	Broadcast, wireless LAN, cable modem, xDSL, satellite com, uwave nets, digital TV, CDMA2000
Interleaver/Deinterleaver	Telecom Italia Lab S.p.A.	AllianceCORE				V		S-II	S	21%	73	XCV50-6	Block & convolutional support, param features. 3GPP, UMTS, GSM, DVB compliant	Channel coding in telecom/wireless, broadcast
Inverse Multiplexer for ATM Network Processor	ModelWare, Inc.	AllianceCORE		V-II	V-E					100%	31	XC2V1000-4	Supports up to 32 links/32 groups; UTOPIA L2 PHY & ATM I/Fs, supports IDCR	Access systems, multi-service switches, DSLAMs, Basestation controllers
	IP Semiconductors AS	AllianceCORE		V-II	V-E						80	XC2V1500-5	Total Solution requires this core + SPEEDAnalyzer ASIC, 2.5 Gbps full duplex wire speed; network processor (NIP), low power an low device count than competing network processors.	Networking, edge and access, Switches and routers
Noisy Transmission Channel Model	Telecom Italia Lab S.p.A.	AllianceCORE				V		S-II	S	23%	100	XCV50-6	Programmable noise generation profile	Noise emulation in transmission channel
PCM Codec, G.711	Xilinx	LogiCORE			V-E	V		S-II		12%	44	XCV50	μ-Law, ITU G.711, EBI for A-Law	Digital telephony, DECT, T1 & E1 Links
PCM Compressor, G.711	Xilinx	LogiCORE			V-E	V		S-II		7%	44	XCV50	μ-Law, ITU G.711, EBI for A-Law	Digital telephony, DECT, T1 & E1 Links
PCM Expander, G.711	Xilinx	LogiCORE			V-E	V		S-II		6%	57	XCV50	Digital telephony, DECT, T1 & E1	Digital telephony, DECT, T1 & E1 Links
POS-PHY L3 Link Layer Interface, 16-Ch	Xilinx	LogiCORE		V-II						40%	104	XC2V1000 FG456-4	OIF SPI-3 compliant. Fully HW interoperable with PMC-Sierra OC-48 framers.	Line cards, iSCSI cards, gigabit routers and switches
POS-PHY L3 Link Layer Interface, 1-Ch	Xilinx	LogiCORE	V-IIP	V-II	VE	V	S-II E	S-II		6%	200	XC2V1000 FG456-4	OIF SPI-3 compliant. Fully HW interoperable with PMC-Sierra OC-48 framers.	Line cards, iSCSI cards, gigabit routers and switches
POS-PHY L3 Link Layer Interface, 2-Ch	Xilinx	LogiCORE	V-IIP	V-II	VE	V	S-II E	S-II		55%	200	XCV50E-8	OIF SPI-3 compliant. Fully HW interoperable with PMC-Sierra OC-48 framers.	Line cards, iSCSI cards, gigabit routers and switches
POS-PHY L3 Link Layer Interface, 4-Ch	Xilinx	LogiCORE	V-IIP	V-II	VE	V	S-II E	S-II		15%	200	XC2V1000 FG456-4	OIF SPI-3 compliant. Fully HW interoperable with PMC-Sierra OC-48 framers.	Line cards, iSCSI cards, gigabit routers and switches

Function	Vendor Name	IP Type	Virtex-II Pro	Virtex-II	Virtex-E	Virtex	Spartan-II E	Spartan-II	Spartan	Implementation Example			Key Features	Application Examples
										Occ	MHz	Device		
Communication & Networking (continued)														
POS-PHY L3 Physical Layer Interface	Xilinx	LogiCORE			VE					52%	104	XCV50E-8	OIF SPI-3 compliant.	Line cards, iSCSI cards, gigabit routers and switches
POS-PHY L4 Multi-Channel Interface	Xilinx	LogiCORE		V-II						29%	350 DDR	XC2V3000 FG676-5	OIF SPI-4 Phase 2 compliant. Fully HW interoperable with PMC-Sierra and Mindspeed OC-192 framer.	Line cards, switches, routers and optical switches
POS-PHY L4 to Flexbus 4 Bridge	Xilinx	LogiCORE		V-II						35%	200 on FB4, 350 DDR on PL4, 175 internal	XC2V3000 FG676-5	OIF SPI-4 Phase 1 & 2 compliant. Fully HW interoperable with AMCC, PMC-Sierra and Mindspeed OC-192 framer.	
POS-PHY Level 3 Link Layer Interface Core, 48-Ch	Xilinx	LogiCORE		V-II						33%	104	XC2V6000 FF152-4	OIF SPI-3 compliant. Fully HW interoperable with PMC-Sierra OC-48 framer.	Line cards, iSCSI cards, gigabit routers and switches
Reed-Solomon Decoder	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II	S	40%	98	XC2V250-6	Std or custom coding, 3-12 bit symbol width, up to 4095 symbols, error & erasure decoding	Broadcast, wireless LAN, cable modem, xDSL, satellite com, uwave nets, digital TV
Reed-Solomon Decoder	Telecom Italia Lab S.p.A.	AllianceCORE		V-II		V				97%	61	XC2V500-5	Parameterizable, RTL available	Error correction, wireless, DSL
Reed Solomon Decoder	Amphion Semiconductor Ltd.	AllianceCORE				V				50%	50	XCV100-4		Error correction
Reed Solomon Decoder	Memec Core	AllianceCORE				V		S-II	S	83%	73	XCV50-6	Customizable, >580 Mbps	Error correction
Reed-Solomon Encoder	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II	S	42%	180	XC2V40-6	Std or cust coding, 3-12 bit width, up to 4095 symbols with 256 check symb.	Broadcast, wireless LAN, cable modem, xDSL, satellite com, uwave nets, digital TV
Reed Solomon Encoder	Amphion Semiconductor Ltd.	AllianceCORE				V				11%	82	XCV50-4		Error correction
Reed Solomon Encoder	Memec Core	AllianceCORE				V		S-II	S	12%	113	XCV50-6	Customizable, > 900 Mbps	Error Correction
SDLC Controller	CAST, Inc.	AllianceCORE		V-II		V				11%	158	XC2V1000-5	Like Intel 8XC152 Global Serial Channel, Serial Comm., HDLC apps, telecom	Embedded systems, professional audio, video
SHA-1 Encryption processor	CAST, Inc.	AllianceCORE		V-II	V-E	V	S-II E	S-II		24%	79	XC2V500-6	SHA-1 algorithm compliant	Secure comms, video surveillance, data storage, financial transactions
T1 Deframer	Xilinx	LogiCORE			V-E	V		S-II		15%	54	XC2S150		ISDN PRA links, mux equip, satellite com, digital PABX, high-speed computer links
T1 Framer	Virtual IP Group	AllianceCORE											D4, ESF, SLC-96 formats. For XC4000.	DSI trunk, PBX I/F
T1/E1 Framer	Xilinx	LogiCORE			V-E	V		S-II		7%	72	XC2S150		ISDN PRA links, mux equip, satellite com, digital PABX, high-speed computer links
Turbo Convolutional Decoder - 3GPP Compliant	Xilinx	LogiCORE		V-II	V-E	V				80%	40	XC2V500	3GPP specs, 2 Mbps, BER=10-6 for 1.5dB SNR	3G Wireless Infrastructure
Turbo Decoder, 3GPP	SysOnChip, Inc.	AllianceCORE		V-II		V				66%	66	XC2V500-5	3GPP/UMTS compliant, IMT-2000, 2Mbps data rate	Error correction, wireless
Turbo Decoder, DVB-RCS	iCoding Technology, Inc.	AllianceCORE		V-II	V-E	V				44%	71	XC2V2000-5	DVB-RCS compliant, 9Mbps, data rate, switchable code rates and frame sizes	Error correction, wireless, DVB, Satellite data link
Turbo Decoder	Telecom Italia Lab S.p.A.	AllianceCORE		V-II		V				70%	65	XC2V2000-5	3GPP/UMTS compliant, >2Mbps data rate	Error correction, wireless
Turbo Convolutional Encoder - 3GPP Compliant	Xilinx	LogiCORE		V-II	V-E	V				65%	60	XC2V250	Compliant w/ 3GPP, puncturing	3G Wireless Infrastructure
Turbo Encoder, DVB-RCS	iCoding Technology, Inc.	AllianceCORE		V-II	V-E	V				2%	69	XC2V2000-5	DVB-RCS compliant, 9Mbps, data rate, switchable code rates and frame sizes	Error correction, wireless, DVB, Satellite data link
Turbo Encoder	Telecom Italia Lab S.p.A.	AllianceCORE		V-II		V		S-II		48%	120	XC2V80-5	3GPP/UMTS compliant, upto 4 interleaver laws	Error correction, wireless
UTOPIA level 2 slave interface	Paxonet Communications	AllianceCORE											Cell handshake in SPHY mode, 8/16 bit operation, internal FIFO, detects runt cells	ATM PHY layer
UTOPIA Level-2 PHY Side RX Interface	Telecom Italia Lab S.p.A.	AllianceCORE				V		S-II	S	8%	53	XCV50-6	Protocol conversion from Pb (RACE BLNT) to UTOPIA L2, 8/16 bit operation	ATM PHY layer
UTOPIA Level-2 PHY Side TX Interface	Telecom Italia Lab S.p.A.	AllianceCORE				V		S-II	S	10%	61	XCV50-6	Protocol conversion from UTOPIA L2 Pb (RACE BLNT), 8/16 bit operation	ATM PHY layer
UTOPIA Level-3 ATM Receiver	inSilicon Corporation	AllianceCORE				V		S-II	S					
UTOPIA Level-3 ATM Transmitter	inSilicon Corporation	AllianceCORE				V		S-II	S					
UTOPIA Level-3 PHY Receiver	inSilicon Corporation	AllianceCORE				V		S-II	S					
UTOPIA Level-3 PHY Transmitter	inSilicon Corporation	AllianceCORE				V		S-II	S					
UTOPIA Master	Paxonet Communications	AllianceCORE				V		S-II	S				SPHY, MPHY, HEC processing, round robin polling, ind. transmitter receiver	ATM PHY layer
UTOPIA Slave	Paxonet Communications	AllianceCORE				V		S-II	S	26%	79	XCV50-4	Cell handshake in SPHY mode, 8/16 bit operation, 32 bit FIFO interface, detects runt cells	ATM PHY layer
Viterbi Decoder, IEEE 802-compatible	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II		35%	157	XC2V500-5	Parameterizable source code with constraint length(k)=7, G0=171, G1=133, or G0=133, G1=17, includes BestState Logic, ability to change code rate and traceback depth on the fly, supports Trellis Coded Modulation, IEEE802.11a/16a compatible, reaches OC3 (155Mbps) and higher	L/MMDS, broadcast equip, wireless LAN, cable modem, xDSL, sat com, uwave nets
Viterbi Decoder, General Purpose	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II		38%	128	XC2V500-5	Puncturing, serial & parallel architecture, dynamic rate change, parameterized constraint length, soft/hard decision with programmable number of soft bits, dual rate decoder, erasure pins for external puncturing, compatible with standards such as DVB ETS, 3GPP2, IEEE802.16, Hiperlan, Intelsat IESS-308/309	3G base stations, broadcast, wireless LAN, cable modem, xDSL, satellite com, uwave, CDMA2000
Viterbi Decoder	Telecom Italia Lab S.p.A.	AllianceCORE		V-II	V-E			S-II		74%	91	XC2V500-5	Radix-2/radix4 architectures, BER, depuncturing, Code rate, constraint length parameterizable	Data transmission, wireless
Digital Signal Processing														
1024-Point Complex FFT/IFFT	Xilinx	LogiCORE			V-E	V								
1024-Point Complex FFT/IFFT for Virtex-II	Xilinx	LogiCORE		V-II						62%	41us, 100MHz	XC2V500	16 bit complex data, 2's comp, forward and inverse transform	
16-Point Complex FFT/IFFT	Xilinx	LogiCORE		V-II	V-E	V								
16-Point Complex FFT/IFFT for Virtex-II	Xilinx	LogiCORE		V-II						37%	123ns 130MHz	XC2V500	16 bit complex data, 2's comp, forward and inverse transform	
256-Point Complex FFT/IFFT	Xilinx	LogiCORE		V-II	V-E	V								
32-Point Complex FFT/IFFT	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II		29%	110	XC2V500-6	Complex FFT, forward and inverse transform. Supports bit precisions from 2-32 bits. Embedded memory	
64-, 256-, 1024-Point Complex FFT/IFFT	Xilinx	LogiCORE	V-IIP	V-II						32%	140	XC2V1500-6	64-, 256-, 1024-point programmable point size, forward and inverse transform, 16-bit complex data, 18-bit phase factors, 2's complement, built-in memories, programmable data scaling, 140 MHz, 1024-point transform — 7.31 us, 256-point transform — 1.83 us, 64-point transform - 0.46 us	Error correction
64-Point Complex FFT/IFFT	Xilinx	LogiCORE			V-E	V								
64-Point Complex FFT/IFFT for Virtex-II	Xilinx	LogiCORE		V-II						38%	1.9us, 100MHz	XC2V500	16 bit complex data, 2's comp, forward and inverse transform	
Bit Correlator	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					4096 taps, serial/parallel input, 4096 bits width	
Cascaded Integrator Comb (CIC) Filter	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					32 bits data width, rate change from 8 to 16384	
Comb Filter	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Cascaded Integrator Comb Filter	
CORDIC	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					Polar to rectangular, rectangular to polar, sin & cos, sinh & cosh, atan & atanh, square root	Digital receivers
Digital Down Converter (DDC)	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II		47%	116	XC2V500-5	Configurable datapath comprising mixer, DDS, optional CIC filter, optional polyphase decimators, 25 to 108db	Wireless & wireline communication systems such as software defined radios, digital receivers, cable modems, BPSK, QPSK, QAM demodulators, spread spectrum communication systems, CDMA2000 & 3G basestations
Direct Digital Synthesizer (DDS)	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II		12%	245	XC2V80-6	8-65K samples, 32-bits output precision, phase dithering/offset	
Distributed Arithmetic (DA) FIR Filter	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					32-bit input/coeff width, 1024 taps, 1-8 chan, polyphase, online coeff reload	
Dual-Channel Numerically Controlled Oscillator	Xilinx	LogiCORE			V-E	V	S-II E	S-II	S				Not recommended for new designs. Suggested replacement: Direct Digital Synthesizer	
LFSR, Linear Feedback Shift Register	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					168 input widths, SRL16/register implementation	
MAC FIR	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II		16%		XC2V250	Single rate, Polyphase Decimator, Polyphase Interpolator	3G base stations, wireless communications, image filtering
Numerically Controlled Oscillator	Xilinx	LogiCORE			V-E	V	S-II E	S-II	S				Not recommended for new designs. Suggested replacement: Direct Digital Synthesizer	

Function	Vendor Name	IP Type	Virtex-II Pro	Virtex-II	Virtex-E	Virtex	Spartan-II E	Spartan-II	Spartan	Implementation Example			Key Features	Application Examples
										Occ	MHz	Device		
Digital Signal Processing (continued)														
Parallel Distributed Arithmetic FIR Filter	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Distributed Arithmetic FIR Filter	
Serial Distributed Arithmetic FIR Filter	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Distributed Arithmetic FIR Filter	
Time-Skew Buffer, Nonsymmetric 16-Deep	Xilinx	LogiCORE							S				Not recommended for new designs.	
Time-Skew Buffer, Nonsymmetric 32-Deep	Xilinx	LogiCORE							S				Not recommended for new designs.	
Time-Skew Buffer, Symmetric 16-Deep	Xilinx	LogiCORE							S				Not recommended for new designs.	
TMS32025 DSP Processor core	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		66%	63	XC2V500-5		
Math Functions														
1s and 2s Complement	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Bus Gate or Twos Complementer	
Accumulator	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256s bit wide	
Adder Subtractor	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256s bit wide	
Constant Coefficient Multiplier	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Multiplier	
Constant Coefficient Multiplier - Pipelined	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Multiplier	
Dynamic Constant Coefficient Multiplier	Xilinx	LogiCORE			V-E	V							Not recommended for new designs. Suggested replacement: Multiplier	
Floating Point Adder	Digital Core Design	AllianceCORE		V-II		V		S-II			66	XC2V250-5	Full IEEE-754 compliance, 4 pipelines, Single precision real format support	DSP, Math, Arithmetic apps
Floating Point Divider	Digital Core Design	AllianceCORE		V-II		V		S-II			53	XC2V250-5	Full IEEE-754 compliance, 15 pipelines, Single precision real format support	DSP, Math, Arithmetic apps
Floating Point Multiplier	Digital Core Design	AllianceCORE		V-II	V-E	V		S-II			74	XC2V250-5	Full IEEE-754 compliance, 7 pipelines, 32x32 mult, Single precision real format support	DSP, Math, Arithmetic apps.
Floating Point Square Comparator	Digital Core Design	AllianceCORE		V-II		V		S-II			91	XC2V80-5	Full IEEE-754 compliance, 4 pipelines, Single precision real format support	DSP, Math, Arithmetic apps.
Floating Point Square Root Operator	Digital Core Design	AllianceCORE		V-II	V-E	V		S-II			66	XC2V250-5	Full IEEE-754 compliance, 4 pipelines, Single precision real format support	DSP, Math, Arithmetic apps
Floating Point to Integer Converter	Digital Core Design	AllianceCORE		V-II		V		S-II			66	XC2V250-5	Full IEEE-754 compliance, 4 pipelines, Single precision real format support	DSP, Math, Arithmetic apps
Integer to Floating Point Converter	Digital Core Design	AllianceCORE		V-II		V		S-II			73	XC2V250-5	Full IEEE-754 compliance, double word input, 2 pipelines, Single precision real output	DSP, Math, Arithmetic apps
Integrator	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Cascaded Integrator Comb Filter	
Multiply Accumulator (MAC)	Xilinx	LogiCORE	V-IIP	V-II		V	S-II E	S-II					Input width up to 32 bits, 65-bit accumulator, truncation rounding	
Multiply Generator	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					64-bit input data width, constant, reloadable or variable inputs, parallel/sequential implementation	
Parallel Multipliers - Area Optimized	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Multiplier	
Pipelined Divider	Xilinx	LogiCORE		V-II	V-E	V	S-II E	S-II					32-bit input data width, multiple clock per output	
Registered Adder	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Adder Subtractor	
Registered Loadable Adder	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Adder Subtractor	
Registered Loadable Subtractor	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Adder Subtractor	
Registered Scaled Adder	Xilinx	LogiCORE							S				Not recommended for new designs.	
Registered Serial Adder	Xilinx	LogiCORE							S				Not recommended for new designs.	
Registered Subtractor	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Adder Subtractor	
Scaled-by-One-Half Accumulator	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Accumulator	
Sine Cosine Look Up Table	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II	S	12%	270	XC2V40-6	3-10 bit in, 4-32 bit out, distributed/block ROM	
Square Root	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: CORDIC	
Twos Complementer	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					Input width up to 256 bits	
Variable Parallel Virtex Multiplier	Xilinx	LogiCORE			V-E	V	S-II E	S-II					Not recommended for new designs. Suggested replacement: Multiplier	
Memories & Storage Elements														
ATM Utopia Level 2	Xilinx	LogiCORE	V-IIP											
Block Memory, Dual-Port	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits, 2-13K words	
Block Memory, Single-Port	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits, 2-128K words	
Content Addressable Memory (CAM)	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-512 bits, 2-10K words, SRL16	
CAM, for Internet Protocol	Telecom Italia Lab S.p.A.	AllianceCORE				V		S-II	S	19%	49	XCV50-6		IP routers
Distributed Memory	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-1024 bit, 16-65536 word, RAM/ROM/SRL16, opt output regs and pipelining	
FIFO, Asynchronous	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits, 15-65535 words, DRAM or BRAM, independent I/O clock domains	
FIFO, Synchronous	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Synchronous FIFO supporting Spartan-II/Spartan-II E	
FIFO, Synchronous	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits, 16-256 words, distributed/block RAM	
Pipelined Delay Element	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Distributed Memory using SRL16 based memory type	
Registered ROM	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Distributed Memory	
Registered Single Port RAM	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Distributed Memory	
Microprocessors, Controllers & Peripherals														
10/100 Ethernet MAC	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					Interfaces through CoreConnect Bus	Networking, communications, processor apps
16450 UART	Virtual IP Group	AllianceCORE							S		60	XC2550-6	Independently controlled transmit, receive and data interrupts. 16X clock.	Serial data applications, modems
16550 UART w/FIFOs	Virtual IP Group	AllianceCORE							S		16	XCS20-4	Prog. Data width, parity, stop bits, 16X internal clock, FIFO mode, false start bit detection	Serial data applications, modems
16550 UART w/FIFOs & synch interface	CAST, Inc.	AllianceCORE		V-II	V-E	V	S-II E	S-II		57%	87	XC2V80-5	Supports 16450 and 16550a synchronous s/w, programmable serial interface	Serial and modem applications
16-bit proprietary RISC Processor	Loarant Corporation	AllianceCORE		V-II	V-E	V		S-II			91 MHz	XC2V500-5	44 opcodes, 64-K word data, program, Harvard arch.	Control functions, State machines, Coprocessor
16-Word-Deep Registered Look Up Table	Xilinx	LogiCORE							S					
2901 Microprocessor Slice	CAST, Inc.	AllianceCORE				V		S-II		19%	36	XC2550-6	Eight function ALU, 4 status flags- Carry, Overflow, Zero and Negative	Simple microcontroller applications
2910A Microprogram Controller	CAST, Inc.	AllianceCORE				V		S-II	S	12%	63	XCV50-6	Based on AMD 2910a	High-speed bit slice design
32-bit Java Processor	Digital Communications Technologies, Ltd.	AllianceCORE		V-II		V		S-II		33%	40	XC2V1000-5	32bit data, 24 bit address, 3 Stage pipeline, Java/C dev. tools	Internet appliance, industrial control, HAVI multimedia, set top boxes
68000 compatible microprocessor	CAST, Inc.	AllianceCORE		V-II		V				89%	32	XC2V500-5	MC68000 Compatible	Embedded systems, professional audio, video
80186 compatible processor	elnfochips Pvt. Ltd.	AllianceCORE		V-II		V				77%	49	XC2V1000-5	i80186 compatible plus enhanced mode	Industrial, wireless, communications, embedded
8051 compatible microcontroller	CAST, Inc.	AllianceCORE				V		S-II		52%	68	XCV200E-8	80C31 instruction set, 8 bit ALU, 8 bit control, 32 bit I/O ports, two 16 bit timer/counters, SFR I/F	Embedded systems, telecom

Function	Vendor Name	IP Type	Virtex-II Pro	Virtex-II	Virtex-E	Virtex	Spartan-II E	Spartan-II	Spartan	Implementation Example			Key Features	Application Examples	
										Occ	MHz	Device			
Microprocessors, Controllers & Peripherals (continued)															
8051 compatible microcontroller	Digital Core Design	AllianceCORE		V-II		V		S-II			73	XC2V250-5	80C31 instruction set, RISC architecture 6.7X faster than standard 8051	Embedded systems, telecom, video	
8051 compatible microcontroller	Digital Core Design	AllianceCORE		V-II		V		S-II			90	XC2V250-5	80C31 instruction set, high speed multiplier, RISC architecture 6.7X faster than standard 8051	Embedded systems, telecom, video	
8051 compatible microcontroller	Digital Core Design	AllianceCORE				V		S-II	S	33%	29.8	XCV300-6	12X faster (average) and code compatible wrt legacy 8051, verification bus monitor, SFR interface	Telecom, industrial, high speed control	
8051 compatible microcontroller	Dolphin Integration	AllianceCORE		V-II	V-E			S-II		39%	38	XC2V1000-5	8X faster (average) and code compatible wrt legacy 8051, verification bus monitor, SFR interface, DSP focused	DSP, Telecom, industrial, high speed control	
80515 High-speed 8-bit RISC Microcontroller	CAST, Inc.	AllianceCORE				V					90%	42	XCV200E-8	RISC implementation, 8 bit ALU, 8 bit control, 32 bit I/O, 16 bit timer/counters, SFR I/F, ext. memory I/F	High speed embedded systems, audio, video
8052 compatible microcontroller	Digital Core Design	AllianceCORE		V-II		V		S-II			71	XC2V250-5	80C31 instruction set, high speed multiplication and division, RISC architecture 6.7X faster than standard 8051	Embedded systems, telecom, video	
80530 8-bit compact microcontroller	CAST, Inc.	AllianceCORE				V		S-II		88%	51	XC2S150-6	32 bit I/O, 3 counters, interrupt controller, SFR interface, dual data pointer	Low cost embedded systems, telecom	
80530 8-bit Microcontroller	CAST, Inc.	AllianceCORE				V		S-II		81%	66	XCV200E-8	32 bit I/O, 3 counters, 27-bit watchdog timer, 3-priority interrupt controller, SFR interface	Embedded systems, telecom	
80C51 compatible RISC microcontroller	CAST, Inc.	AllianceCORE			V-E	V		S-II		75%	34	XC2S150-6	12X faster, SRF I/F	Embedded systems	
8237 Programmable DMA Controller	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		40%	34	XC2S100-6	4 independent DMA channels (expandable), software DM	Microprocessor based systems	
8250 UART	Memec Core	AllianceCORE							S	58%	10	XCS10-4	DC to 625K baud	Serial communications	
8254 programmable interval timer/counter core	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		74%	68	XC2V80-5	Status feedback, counter latch, Square wave mode, 6 counter modes, binary/BCD count, LSB/MSB R/W	Event counter, baud rate generator	
8254 Programmable Timer	Virtual IP Group	AllianceCORE				V		S-II	S						
8254 programmable timer/counter	elinfochips Pvt. Ltd.	AllianceCORE		V-II				S-II		11%	51	XC2V1000-4	Status red, Six prog. counter modes, Intel8254 like	Processor I/O interface	
8255 programmable I/O controller	elinfochips Pvt. Ltd.	AllianceCORE		V-II				S-II		2%	175	XC2V1000-5	Three 8-bit parallel ports, 24 programmable I/O lines, 8-bit bidi data bus	Processor I/O interface	
8255 Programmable Peripheral Interface	Memec Core	AllianceCORE							S	64%	8	XCS05-4	Bit set/reset support	Embedded systems	
8255 Programmable Peripheral Interface	Virtual IP Group	AllianceCORE				V		S-II	S		227	XCV50E-8	Three 8-bit peripheral ports, 24 programmable I/O lines, 8-bit bidi data bus	Processor I/O interface	
8255A peripheral interface	CAST, Inc.	AllianceCORE				V		S-II		10%	227	XCV50E-8	Three 8-bit peripheral ports, 24 programmable I/O lines, 8-bit bidi data bus	Processor I/O interface	
8256 Multifunction Microprocessor Support Controller	Memec Core	AllianceCORE							S	89%	10	XCS20-4	Baud rate generator for 13 common baud rates, parallel I/O ports, prog. timer/counters	Communication, embedded systems	
8259 Programmable Interrupt Controller	Virtual IP Group	AllianceCORE							S			XC2S50-6	8 vectored priority interrupts, all 8259A modes programmable- e.g., special mask, buffer	Real-time interrupt based uP designs	
8259A programmable interrupt controller	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		90%	142	XC2V40-5	8 vectored priority interrupts, all 8259A modes programmable- e.g., special mask, buffer	Real-time interrupt based uP designs	
8279 Programmable Keyboard Display Interface	Memec Core	AllianceCORE							S	46%	8	XCS20-4	8 char keyboard FIFO, 2-key lockout, n-key rollover, 4-16 char display	Embedded systems interface	
ARC 32-bit Configurable RISC Processor	ARC International plc	AllianceCORE			V-E			S-II		89%	37	XC2S150-6	4 stage pipeline, 16 single cycle instructions/10, 3 interrupt exception levels, 24 bit stack pointer	32 bit processing, DSP	
Configurable Java Processor Core	Derivation Systems, Inc.	AllianceCORE		V-II		V				38%	20	XC2V1000-5	32b data/address optional DES	Internet appliance, industrial control	
DDR SDRAM Controller	Memec Core	AllianceCORE		V-II	V-E			S-II		7%	133	XC2V1000-5	DDR SDRAM burst length support for 2,4,8 per access, supports data 16,32, 64, 72.	Digital video, embedded computing, networking	
Generic compact UART	Memec Core	AllianceCORE		V-II	V-E	V	S-II E	S-II	S	15%	73	XC2S50E-6	UART and baud rate generator	Serial data communication	
IIC	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II				Virtex-II	Interfaces through OPB to MicroBlaze/PPC405	Networking, communications, processor apps	
Memory Tests BRAM	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II							
Memory Tests DDR	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II							
Memory Tests SRAM	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II							
Memory Tests ZBT	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II							
MicroBlaze Soft RISC Processor	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II			125	XC2V80-5	Soft RISC Processor, 82 D-MIPS, 125 MHz, 900 LUTs in Virtex-II	Networking, communications	
OPB Arbiter	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II			125	XC2V80-5	Bundled in the Development Kit, CoreConnect Bus (OPB)	Processor applications	
OPB BRAM	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					Bundled in the Development Kit, CoreConnect Bus (OPB)	Processor applications	
OPB Bus Structure	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					CoreConnect Bus (OPB)	Processor applications	
OPB Flash	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					Bundled in the Development Kit, CoreConnect Bus (OPB)	Processor applications	
OPB GPIO	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II			125	XC2V80-5	Bundled in the Development Kit, CoreConnect Bus (OPB)	Processor applications	
OPB Interrupt Controller	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II			125	XC2V80-5	Bundled in the Development Kit, CoreConnect Bus (OPB)	Processor applications	
OPB IPIF Address Decode	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					CoreConnect Bus (OPB), Interface to custom IP	PowerPC embedded system design	
OPB IPIF DMA	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					CoreConnect Bus (OPB), Interface to custom IP	PowerPC embedded system design	
OPB IPIF Interrupt Controller	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					CoreConnect Bus (OPB), Interface to custom IP	PowerPC embedded system design	
OPB IPIF Master/Slave Attachment	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					CoreConnect Bus (OPB), Interface to custom IP	PowerPC embedded system design	
OPB IPIF Read/Write Packet FIFO	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					CoreConnect Bus (OPB), Interface to custom IP	PowerPC embedded system design	
OPB IPIF Scatter/Gather	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					CoreConnect Bus (OPB), Interface to custom IP	PowerPC embedded system design	
OPB Memory Interface (Flash, SRAM)	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II			125	XC2V80-5	Bundled in the Development Kit, CoreConnect Bus (OPB)	Processor applications	
OPB SRAM	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					Bundled in the Development Kit, CoreConnect Bus (OPB)	Processor applications	
OPB Timebase/WDT	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II			125	XC2V80-5	Bundled in the Development Kit, CoreConnect Bus (OPB)	Processor applications	
OPB Timer/Counter	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II			125	XC2V80-5	Bundled in the Development Kit, CoreConnect Bus (OPB)	Processor applications	
OPB UART (16450, 16550)	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II			125	XC2V80-5	Interfaces through OPB to MicroBlaze/PPC405	Processor applications	
OPB UART Lite	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II			125	XC2V80-5	Bundled in the Development Kit, CoreConnect Bus (OPB)	Processor applications	
OPB ZBT	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					CoreConnect Bus (OPB)	Processor applications	
PIC125x fast RISC microcontroller	Digital Core Design	AllianceCORE		V-II		V		S-II			126	XC2V80-5	PIC 12c4x like, 2X faster, 12-bit wide instruction set, 33 instructions	Embedded systems, telecom, audio and video	
PIC1655x fast RISC microcontroller	Digital Core Design	AllianceCORE		V-II		V		S-II			140	XC2V80-5	S/W compatible with PIC16C55X, 14-bit instruction set, 35 instructions	Embedded systems, telecom, audio and video	
PIC165X compatible microcontroller	CAST, Inc.	AllianceCORE		V-II		V		S-II	61%	128	XC2V80-5	Microchip 16C5X PIC like	Embedded systems, telecom		
PIC165x fast RISC microcontroller	Digital Core Design	AllianceCORE		V-II	V-E	V		S-II			126	XC2V80-5	PIC 12c4x like, 2X faster, 12-bit wide instruction set, 33 instructions	Embedded systems, telecom, audio and video	
PLB Arbiter	Xilinx	LogiCORE	V-II P										CoreConnect Bus (PLB)	PowerPC embedded system design	
PLB BRAM	Xilinx	LogiCORE	V-II P										CoreConnect Bus (PLB)	PowerPC embedded system design	
PLB Flash	Xilinx	LogiCORE	V-II P										CoreConnect Bus (PLB)	PowerPC embedded system design	

Function	Vendor Name	IP Type	Virtex-II Pro	Virtex-II	Virtex-E	Virtex	Spartan-II E	Spartan-II	Spartan	Implementation Example			Key Features	Application Examples
										Occ	MHz	Device		
Microprocessors, Controllers & Peripherals (continued)														
PLB SRAM	Xilinx	LogiCORE	V-II P										CoreConnect Bus (PLB)	PowerPC embedded system design
PLB ZBT	Xilinx	LogiCORE	V-II P										CoreConnect Bus (PLB)	PowerPC embedded system design
PLB<->OPB Bridge	Xilinx	LogiCORE	V-II P										CoreConnect Bus (PLB)	PowerPC embedded system design
PowerPC Bus Master	Eureka Technology	AllianceCORE				V				3%	80	XCV400-6		
PowerPC Bus Slave	Eureka Technology	AllianceCORE			V-E					10%	80	XCV400E-8		
PPC405 Boot Code	Xilinx	LogiCORE	V-II P										CoreConnect Bus (PLB)	PowerPC embedded system design
SDRAM Controller, 200 MHz	Rapid Prototypes, Inc.	AllianceCORE				V		S-II						
SDRAM Controller	Eureka Technology	AllianceCORE				V				37%	91	XCV50-6		
SDRAM Controller	NMI Electronics, Ltd.	AllianceCORE				V		S-II			137	XCV50-6	SDRAM refresh, customizable	Embedded systems using SDRAMs
SPI	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					Virtex-II	Networking, communications, processor apps
System Reset for PPC405	Xilinx	LogiCORE	V-II P										Used to reset PowerPC based system	
V8-uRISC 8-bit RISC Microprocessor	ARC International plc	AllianceCORE									16	XC4000E	Proprietary 8-bit processor, 8 bit ALU, 16 bit stack pointer, 33 opcodes, 4 addr. Modes, 2 user opcodes	Embedded systems, 8-bit processing apps.
VxWorks Board Support Package (BSP)	Xilinx	LogiCORE	V-II P										Interfaces HW and WindRiver RTOS	Embedded system design
VxWorks Support	Xilinx	LogiCORE	V-II P										Interfaces HW and WindRiver RTOS	Embedded system design
Z80 compatible programmable timer/counter core	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		9%	167	XC2V500-5		Programmable frequency divider, Pulse counter, pulse generator, interrupt controller
Z80 peripheral I/O controller core	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		49%	76	XC2550-6		Programmable, dual-port device, keyboards, printers, paper table readers
Z80CPU Microprocessor	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		56%	72 MHz	XC2V500-5	Zilog Z80 compatible, 8-bit processor	Embedded systems, Communications
Standard Bus Interfaces														
Arbiter	Telecom Italia Lab S.p.A.	AllianceCORE				V		S-II	S	24%	33	XCV50-6	Two priority classes - strong/weak, access counters	General purpose bus arbitration
IIC	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					Virtex-II	Networking, communications, processor apps
I2C Bus Controller	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		21%	103	XC2S100-6	Philips I2C 1.1; supports master tx/rx and slave tx/rx modes	Embedded microcontroller and communications
I2C Bus Controller Master	Digital Core Design	AllianceCORE		V-II	V-E			S-II	S		143	XC2V40-5	I2C-like, multi master, fast/std. modes	Embedded systems
I2C Bus Controller Slave	Digital Core Design	AllianceCORE		V-II	V-E			S-II	S		157	XC2V40-5	I2C-like, Slave	Embedded
I2C Bus Controller Slave Base	Digital Core Design	AllianceCORE		V-II	V-E			S-II	S		187	XC2V40-5	I2C-like, Slave	Embedded Systems
I2C Two-Wire Serial Interface Master-Only	Memec Core	AllianceCORE		V-II	V-E	V	S-II E	S-II		16%	83	XC2S50E-6	I2C-like, multi master fast/std. modes	Embedded microprocessor systems, I2C peripherals
I2C Two-Wire Serial Interface Master-Slave	Memec Core	AllianceCORE		V-II	V-E	V	S-II E	S-II		28%	108	XC2V80-4	I2C-like, multi master fast/std. modes	Embedded microprocessor systems, I2C peripherals
PCI 64-bit/66-MHz master/target interface	Eureka Technology	AllianceCORE		V-II	V-E					22%	66	XC2V1000-5		
PCI host bridge	Eureka Technology	AllianceCORE		V-II	V-E					22%	33	XC2V1000-5		
PCI32 Interface Design Kit (DO-DI-PCI32-DKT)	Xilinx	LogiCORE		V-II	V-E	V	S-II E	S-II		6%	66	XC2V1000 FG456-5	Includes PCI32 board, driver development kit, and customer education 3-day training class for US & Canada locations	PC boards, CPCI, Embedded, hiperf video, gb ethernet
PCI32 Interface, IP Only (DO-DI-PCI32-IP)	Xilinx	LogiCORE		V-II	V-E	V	S-II E	S-II		6%	66	XC2V1000 FG456-5	v2.3 compliant, assured PCI timing, 3.3/5-V, 0-waitstate, CPCI hot swap friendly	PC add-in boards, CPCI, Embedded
PCI32 Single-Use License for Spartan (DO-DI-PCI32-SP)	Xilinx	LogiCORE					S-II E	S-II		12%	66	XC2S200 PQ208-6	v2.3 compliant, assured PCI timing, 3.3/5-V, 0-waitstate, CPCI hot swap friendly	PC add-in boards, CPCI, Embedded
PCI64 & PCI32, IP Only (DO-DI-PCI-AL)	Xilinx	LogiCORE		V-II	V-E	V	S-II E	S-II		6 - 7%	66	XC2V1000 FG456-5	v2.3 compliant, assured PCI timing, 3.3/5-V, 0-waitstate, CPCI hot swap friendly	PC boards, CPCI, Embedded, hiperf video, gb ethernet
PCI64 Interface Design Kit (DO-DI-PCI64-DKT)	Xilinx	LogiCORE		V-II	V-E	V	S-II E	S-II		7%	66	XC2V1000 FG456-5	v2.3 compliant, assured PCI timing, 3.3/5-V, 0-waitstate, CPCI hot swap friendly, customer education 3-day training class for US & Canada locations	PC boards, CPCI, Embedded, hiperf video, gb ethernet
PCI64 Interface, IP Only (DO-DI-PCI64-IP)	Xilinx	LogiCORE		V-II	V-E	V	S-II E	S-II		7%	66	XC2V1000 FG456-5	v2.3 compliant, assured PCI timing, 3.3/5-V, 0-waitstate, CPCI hot swap friendly	PC boards, CPCI, Embedded, hiperf video, gb ethernet
PCI-X 64/100 Interface for Virtex-II (DO-DI-PCIX64-VE). Includes PCI 64 bit interface at 33 MHz	Xilinx	LogiCORE		V-II						30%	100	XC2V1000 FG456-5	PCI-X 1.0a comp, 64/32-bit, 66 MHz PCI-X initiator and target IF; PCI 2.3 comp, 64/32-bit, 33 MHz PCI initiator and target IF; 3.3 V PCI-X at 33-66 MHz, 3.3 V PCI at 0-33 MHz	Server, Embedded, gb ethernet, U320 SCSI, Fibre Ch, RAID cntl, graphics
PCI-X 64/66 Interface for Virtex-E (DO-DI-PCIX64-VE). Includes PCI 64 bit interface at 33 MHz	Xilinx	LogiCORE		V-II						30%	100	XC2V1000 FG456-5	PCI-X 1.0a comp, 64/32-bit, 66 MHz PCI-X initiator and target IF; PCI 2.3 comp, 64/32-bit, 33 MHz PCI initiator and target IF; 3.3 V PCI-X at 33-66 MHz, 3.3 V PCI at 0-33 MHz	Comm systems, SAN, clustered servers, Ultra 3 SCSI/Fibre Ch RAID, multi-port Gb
RapidIO 8-bit port LP-LVDS Phy Layer Xilinx (DO-DI-RI08-PHY)	LogiCORE		V-II							24%	250	XC2V1000 FG456-5	RapidIO Interconnect v1.1 compliant, verified with Motorola's RapidIO bus functional model v1.4	Routers, switches, backplane, control plane, data path, embedded sys, high speed interface to memory and encryption engines, high end video
Serial Protocol Interface (SPI) Slave motive radio	CAST, Inc.	AllianceCORE		V-II	V-E	V	S-II E			14%	80	XC2S50E-6		Embedded microprocessor boards, and SOCs, audio/video, home and
USB 1.1 Device Controller	Memec Core	AllianceCORE		V-II	V-E			S-II			12	XC2V1000-5	Compliant with USB1.1 spec., Supports VCI bus, Performs CRC, Supports 1.5 Mbps & 12 Mbps	Scanners, Printers, Handhelds, Mass Storage
USB 1.1 Function Controller	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		92%	48	XC2S200-6	USB 1.1; up to 31 endpoints; suspend and resume power mgmt; remote wake-up	Embedded systems, communications
Video & Image Processing														
2D discrete/inverse cosine transform	Barco-Silex	AllianceCORE		V-II	V-E	V		S-II		77%	133	XC2V250-5		Picture and video, archiving, digital television compression and transmission, teleconference
2D Forward Discrete Cosine Transform	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		42%	83	XC2V500-5		
2D Inverse Discrete Cosine Transform	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		45%	95	XC2V500-5		
Block-based 2D Discrete Wavelet Transform	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		62%	52	XC2V250-5		
Combined 2D Forward/Inverse Discrete Cosine Transform	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		65%	95	XC2V500-5		
Combined 2D Forward/Inverse Discrete Wavelet Transform	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		55%	95	XC2V500-5		
Compact Video Controller	Xylon d.o.o.	AllianceCORE		V-II		V		S-II			88	XC2V250-4	Single & double panel, LCD/CRT support, 4 gray, 256 colors	Video phone, Set-top box, PDA display
DCT/IDCT Forward/Inverse Discrete Cosine Transform, 1-D	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II					8-32 pt FDCT, IDCT with 8-24 bits for coeff & input	JPEG, MPEG, H.261, H.263
DCT/IDCT Forward/Inverse Discrete Cosine Transform, 2-D	Xilinx	LogiCORE	V-II P	V-II	V-E	V	S-II E	S-II		32%	140	XC2V1000-5	8x8 parameterized FDCT, IDCT & IEEE 1180-1990 compliant IDCT	JPEG, MPEG, H.261, H.263
Discrete Cosine Transform	elinfochips Pvt. Ltd.	AllianceCORE		V-II	V-E	V	S-II E	S-II		35%	83	XC2V1000-5	8-bit input/12-bit output precision; 76 clock cycle latency	Video coding and security, medical imaging, scanners, copiers, digital still cameras
Fast JPEG color image decoder	Barco-Silex	AllianceCORE		V-II		V				78%	56	XC2V1000-4	Conforms to ISO/IEC Baseline 10918-1, color, multi-scan, Gray-Scale	Video editing, digital camera, scanners
Fast JPEG gray scale image decoder	Barco-Silex	AllianceCORE		V-II	V-E	V				68%	73	XC2V1000-4	Conforms to ISO/IEC Baseline 10918-1, Gray-Scale	Video editing, digital camera, scanners
FIDCT Forward/Inverse Discrete Cosine Transform	Telecom Italia Lab S.p.A.	AllianceCORE				V		S-II		77%	78	XCV200-6	DCT for 8X8, 16X16, IDCT IEEE 1180-1990 compliant	JPEG, MPEG, H.26X
Huffman Decoder	CAST, Inc.	AllianceCORE		V-II	V-E	V	S-II E	S-II		22%	25	XC2V1000-5		

Function	Vendor Name	IP Type	Virtex-II Pro	Virtex-II	Virtex-E	Virtex	Spartan-II E	Spartan-II	Spartan	Implementation Example			Key Features	Application Examples
										Occ	MHz	Device		
Video & Image Processing (continued)														
JPEG encoder/decoder	inSilicon Corporation	AllianceCORE				V		S-II	S		20	XCV400E-8	Conforms to ISO/IEC Baseline 10918-1, 4 quantization tables, 4 Huffman tables. Scalable	Video editing, digital camera, scanners
Line-based programmable forward DWT	CAST, Inc.	AllianceCORE		V-II	V-E	V		S-II		145%	51	XC2V250-5		
Longitudinal Time Code Generator	Deltatec S.A.	AllianceCORE				V				36%	80	XC2S15-5	SMPTPE/EBU compliant, PAL/NTSC, lock-on external video reference	Audio/Video recording and editing equipment
Motion JPEG Codec core V1.0	Amphion Semiconductor Ltd.	AllianceCORE		V-II	V-E	V					40	Virtex-II		
Motion JPEG Decoder core V1.0	Amphion Semiconductor Ltd.	AllianceCORE		V-II	V-E	V					42	Virtex-II		
Motion JPEG Encoder core V2.0	Amphion Semiconductor Ltd.	AllianceCORE		V-II	V-E	V					70	Virtex-II		
RGB2YCrCb Color Space Converter	CAST, Inc.	AllianceCORE		V-II	V-E	V	S-II E	S-II		29%	96	XC2S50E-7	8-bit I/O, 10-bit coeff, 13-bit internal precision; 5-cycle latency; fully synchronous.	Digital RGB to TV output conversion, image filtering, machine vision, still and video image processing.
RGB2YCrCb Color Space Converter	Perigee, LLC	AllianceCORE				V		S-II	S		202	XCV100E-8	One clock cycle throughput	HDTV, real time TV output modulation
YCrCb2RGB Color Space Converter	Perigee, LLC	AllianceCORE				V		S-II	S			XCV100E-8	One clock cycle throughput	HDTV, real time video
Basic Elements														
Binary Counter	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					2-256 bits output width	
Binary Decoder	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					2-256 bits output width	
Bit Bus Gate	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits wide	
Bit Gate	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits wide	
Bit Multiplexer	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits wide	
BUFE-based Multiplexer Slice	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits wide	
BUFT-based Multiplexer Slice	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits wide	
Bus Gate	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits wide	
Bus Multiplexer	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					IO widths up to 256 bits	
Comparator	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits wide	
FD-based Parallel Register	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits wide	
FD-based Shift Register	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-64 bits wide	
Four-Input MUX	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Bit Multiplexer or Bus Multiplexer	
LD-based Parallel Latch	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits wide	
Parallel-to-Serial Converter	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: FD-based Shift Register	
RAM-based Shift Register	Xilinx	LogiCORE	V-IIP	V-II	V-E	V	S-II E	S-II					1-256 bits wide, 1024 words deep	
Register	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: FD-based Parallel Register	
Three-Input MUX	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Bit Multiplexer or Bus Multiplexer	
Two-Input MUX	Xilinx	LogiCORE							S				Not recommended for new designs. Suggested replacement: Bit Multiplexer or Bus Multiplexer	

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