



Programmable Gate Arrays

FPGA (Field Programmable Gate Arrays)

A Technical Overview:

Every Xilinx FPGA performs the function of a custom LSI circuit, like a gate array, but the Xilinx device is user-programmable and even reprogrammable in the system. Xilinx sells standard off-the-shelf devices in many different sizes, speeds, operating temperature ranges and packages. The user selects the appropriate Xilinx device and then converts the design idea or schematic into a configuration

data file, using the Xilinx development system software, and loads this file into the Xilinx FPGA. **XC3000A** • Five device types (1300 - 7500 gates) • 4-input look-up tables • Flip-flop toggle rate over 110MHz • No on-chip RAM, data storage limited to flip-flops • Use for medium speed, medium complexity applications **XC3100A** • Functionally and bitstream identical with XC3000A series • Five device types (1300 - 7500 gates) • 4-input look-up tables • No on-chip RAM, data storage limited to flip-flops • Use for high performance

design, system clock up to 100MHz **XC4000/XC4000A** • Benefits of custom CMOS VLSI • Gate ranges from 2,000 - 20,000 • Unlimited reprogrammability **XC4000E** • Ten device types (2,000 - 25,000 gates) • Dedicated carry network • Function generator can be used as RAM • Use for general purpose logic and data-path logic **XC4000L** • Low voltage version of XC4000E devices (3.0 - 3.6V) **XC4000XL** • Low voltage version of the XC4000EX devices (3.0 - 3.6V)

Package	Gates	#CLB	I/O Pins	Flip Flops	Operating Voltage (V)	Digi-Key Part No.	1	Price Each 25	100	Xilinx Part No.
XC3000A/XC3100A Series										
68-PLCC	2.0K	64	64	256	4.75 - 5.25	122-1009-ND	11.51	9.73	9.04	XC3020A-7PC68C
84-PLCC	3.0K	100	80	360	4.75 - 5.25	122-1018-ND	12.85	10.89	10.10	XC3030A-7PC84C
100-PQFP	3.0K	100	80	360	4.75 - 5.25	122-1019-ND	14.19	12.02	11.15	XC3030A-7PQ100C
84-PLCC	4.2K	144	96	480	4.75 - 5.25	122-1025-ND	16.73	14.16	13.15	XC3042A-7PC84C
84-PLCC	9.0K	320	144	928	4.75 - 5.25	122-1046-ND	38.66	34.60	32.13	XC3190A-3PC84C
XC4000/XC4000A Series										
84-PLCC	3.0K	100	61	360	4.75 - 5.25	122-1066-ND	40.36	37.24	34.55	XC4005E-6PC84C
208-PQFP	8.0K	324	144	936	4.75 - 5.25	122-1070-ND	132.13	121.97	113.26	XC4008-5PQ208C
XC4000E Series										
84-PLCC	5.0K	196	61	616	4.75 - 5.25	122-1180-ND	25.16	23.20	21.57	XC4005E-4PC84C
160-PQFP	5.0K	196	112	616	4.75 - 5.25	122-1090-ND	48.42	44.65	41.46	XC4005E-3PQ160C
208-PQFP	6.0K	256	128	768	4.75 - 5.25	122-1094-ND	60.00	55.33	51.41	XC4006E-3PQ208C
208-PQFP	6.0K	256	128	768	4.75 - 5.25	122-1095-ND	46.17	42.58	39.54	XC4006E-4PQ208C
160-PQFP	10.0K	400	160	1120	4.75 - 5.25	122-1103-ND	95.11	87.85	81.32	XC4010E-3PQ160C

Package	Gates	#CLB	I/O Pins	Flip Flops	Operating Voltage (V)	Digi-Key Part No.	1	Price Each 25	100	Xilinx Part No.
208-PQFP	10.0K	400	160	1120	4.75 - 5.25	122-1105-ND	153.19	140.85	131.41	XC4010E-2PQ208C
208-PQFP	10.0K	400	160	1120	4.75 - 5.25	122-1106-ND	113.26	104.55	97.29	XC4010E-3PQ208C
208-PQFP	13.0K	576	160	1536	4.75 - 5.25	122-1111-ND	210.54	194.57	180.05	XC4013E-2PQ208C
208-PQFP	13.0K	576	160	1536	4.75 - 5.25	122-1112-ND	156.09	143.75	133.59	XC4013E-3PQ208C
208-HQFP	20.0K	784	224	2016	4.75 - 5.25	122-1114-ND	225.79	207.64	193.12	XC4020E-2HQ208C
240-HQFP	20.0K	784	193	2016	4.75 - 5.25	122-1116-ND	386.95	361.54	331.78	XC4020E-2HQ240C
XC4000L Series										
84-PLCC	5.0K	196	61	616	3.0 - 3.6	122-1120-ND	21.42	19.90	18.48	XC4005L-5PC84C
100-PQFP	5.0K	196	81	616	3.0 - 3.6	122-1121-ND	33.21	30.61	28.43	XC4005L-5PQ100C
208-PQFP	5.0K	196	112	616	3.0 - 3.6	122-1122-ND	37.39	34.61	32.02	XC4005L-5PQ208C
84-PLCC	10.0K	400	61	1120	3.0 - 3.6	122-1123-ND	56.68	52.28	47.52	XC4010L-5PC84C
208-PQFP	13.0K	576	160	1536	3.0 - 3.6	122-1125-ND	122.69	113.99	106.00	XC4013L-5PQ208C
XC4000XL Series										
240-HQFP	36.0K	1296	193	3168	3.0 - 3.6	122-1129-ND	273.70	245.40	212.00	XC4036XL-1HQ240C
240-HQFP	36.0K	1296	193	3168	3.0 - 3.6	122-1130-ND	202.55	181.50	156.82	XC4036XL-2HQ240C

Serial Configuration PROMs

Package	Memory Size	Volt-age	Digi-Key Part No.	1	Price Each 25	100	Xilinx Part No.
XC17/18 OTP Series							
8-Dip	36K	5	122-1509-ND	3.01	2.55	2.22	XC1736EPD68C
8-SOIC	36K	5	122-1510-ND	3.63	3.05	2.65	XC1736ES068C
8-SOIC	36K	5	122-1192-ND	3.63	3.05	2.65	XC1736EV08C
8-Dip	330K	3.3	122-1467-ND	6.35	5.38	4.65	XC17540XLPD68C
8-Dip	330K	5	122-1275-ND	10.35	8.75	7.56	XC17540VPD8C
8-SOIC	65K	3	122-1194-ND	4.76	4.03	3.49	XC1765ELV08C
8-Dip	65K	5	122-1188-ND	3.48	2.95	2.55	XC1765EPD8C
8-Dip	65K	5	122-1577-5-ND	3.48	2.95	2.55	XC1765EPD8C
8-Dip	128K	3	122-1198-ND	4.65	4.18	3.89	XC17128ELPD8C
8-Dip	256K	5	122-1199-ND	9.98	8.93	8.28	XC17256EPD8C
8-SOIC	256K	3	122-1202-ND	7.44	6.90	6.43	XC17256ELV08C
8-Dip	256K	5	122-1576-5-ND	9.98	8.93	8.28	XC17256EPD8C
20-SOIC	1.0M	3.3	122-1463-ND	14.52	12.31	10.64	XC18V01SG20C
20-SOIC	1.0M	3.3	122-1464-ND	14.52	12.31	10.64	XC18V01SG20C

• RoHS Compliant

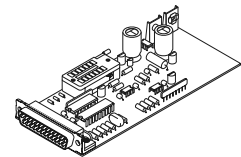
Package	Memory Size	V _{CCINT}	Digi-Key Part No.	1	Price Each 25	100	Xilinx Part No.
XCF Flash Prom Series — RoHS Compliant							
20-TSSOP	1.0M	3.3	122-1286-5-ND	2.29	2.26	2.18	XC9F01SV0G20C
20-TSSOP	2.0M	3.3	122-1287-5-ND	3.09	3.02	2.95	XC9F02SV0G20C
20-TSSOP	4.0M	3.3	122-1288-5-ND	5.05	4.94	4.80	XC9F04SV0G20C
48-FBGA	8.0M	1.8	122-1453-ND	8.78	8.57	8.32	XC9F08PVG48C
48-TSOP	8.0M	1.8	122-1454-5-ND	8.78	8.57	8.32	XC9F08PVG48C
48-FBGA	16.0M	1.8	122-1455-ND	11.72	11.44	11.11	XC9F16PVG48C
48-TSOP	16.0M	1.8	122-1456-5-ND	11.72	11.44	11.11	XC9F16PVG48C
48-FBGA	32.0M	1.8	122-1457-ND	19.06	18.63	18.08	XC9F32PVG48C
48-TSOP	32.0M	1.8	122-1458-ND	19.06	18.63	18.08	XC9F32PVG48C
64-FBGA	128M	1.8	122-1578-ND	34.85	—	—	XC9F128XTG64C

ROMAN-JONES, INC. Xilinx Serial PROM Programmer

The Xilinx Serial PROM Programmer provides a low-cost alternative for programming any Xilinx XC17xx Family Serial PROM devices. The programmer product consists of an external programmer and associated interface software. The programmer and software have been tested and certified by Xilinx.

- Features:**
- Parallel port interface which can be directly connected (if cable is desired - recommend M7PSC-2506J-ND)
 - Coexists with printers using an A/B switchbox
 - No special interface cards required
 - Operates on 9 volt battery (not included, recommend P145-ND)
 - Supports All Xilinx Serial PROMs
 - Simple user interface. Easy-to-use software
 - Supported under DOS 2.2 or greater, Windows 95/98 and Windows NT 4.0
 - Supports both Intel Hex and Binary files generated by Xilinx compilers
 - **Software not included. Requires downloading from www.roman-jones.com**
 - **Free updates also available via FTP download**

Description	Digi-Key Part No.	Price Each
Programmer		
SPROM Programmer with 8-Dip ZIF Socket	SPROM-TZS-ND	101.60
Adapters		
8-Pin Dip to 8-Pin SOIC/VOIC	SA1-ND	32.63
8-Pin Dip to 44-Pin VQFP	SA2-ND	69.66
8-Pin Dip to 20-Pin PLCC	SA3-ND	36.26
8-Pin Dip to 20-Pin SOIC	SA4-ND	39.89
8-Pin Dip to 44-Pin PLCC	SA5-ND	47.15

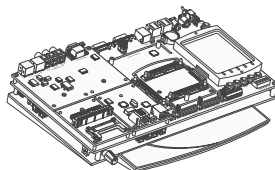


Altium Innovation Station

Nano Boards

Features:

- A range of swappable target-FPGA and processor daughter boards, supporting devices from all major chip vendors
- Three swappable peripheral board connectors (three multi-function peripheral boards fitted to standard)
- Automatic detection of peripheral and daughter board configuration for plug and play platform creation
- NanoTalk provides real time communication with Altium Designer
- High speed USB 2.0 NanoBoard-to-PC interface for fast device programming and LiveDesign development
- Dual User Board JTAG headers for direct LiveDesign development on production board
- Master/Slave connectors for chaining multiple NanoBoards for multiple-FPGA system development
- Intelligent NanoBoard controller operated through a LCD touch screen
- Programmable clock, 6 - 200MHz, available to target FPGA
- SPI Real-Time Clock with 3V battery back-up
- Sophisticated I2S-based stereo audio system, with on-board amplifiers and mixer, and stereo speakers mounted in the Desktop NanoBoard stand
- Comprehensive video support, including S-video and composite video in/out, and VGA out
- Standard memory interfaces, including IDE, Compact flash, SD memory card
- Variety of standard communication interfaces, including USB, Ethernet, RS-232 serial, CAN, PS/2 mini-DIN
- Four channel, 8-bit ADC and 10-bit DAC, I2C-compatible
- Variety of general purpose switches and LEDs



NANO-CYCLONE-ND (14-103-04-1-AIS-ALTERA) (Includes: 807-1002-ND Daughter Board)	3121.81
NANO-ECP-ND (14-103-04-1-AIS-LATTICE) (Includes: 807-1003-ND Daughter Board)	3121.81
NANO-SPARTAN-ND (14-103-04-1-AIS-XILINX) (Includes: 807-1001-ND Daughter Board)	3121.81

Daughter Boards

Features for all Daughter Boards: On-board memories available for use by FPGA designs: • 256K x 32-bit common-bus SRAM (1MByte) • 16M x 32-bit common-bus SDRAM (64MByte) • 16M x 16-bit common-bus Flash memory (32MByte) • Dual 256K x 16-bit independent SRAM (512KByte each) • 1-Wire® memory device used to store board ID and related information

Xilinx® Spartan™-3: The XC3S1500-4FGG676C device on the daughter board is a member of the 1.2V Spartan-3 family of FPGAs. The Spartan-3 provides a low-cost, high-density solution for applications such as those targeted to the consumer electronics industry. The entire Spartan-3 family includes eight devices offering densities ranging from 50,000 to 5,000,000 gates. The XC3S1500-4FGG676C offers 1.5 million gates. 807-1001-ND (12-401-DB30)	359.37
Altera® Cyclone™ II: The EP2C35F672C8 device on the daughter board is a member of the 1.2V Cyclone II family of FPGAs. The Cyclone II provides a low-cost, high-density solution for applications such as those targeted to the consumer electronics industry. The entire Cyclone II family includes seven devices offering densities ranging from 4,608 to 68,416 Logic Elements. The EP2C35F672C8 offers 33,216 Logic Elements. 807-1002-ND (12-401-DB31)	359.37
Lattice® ECP™: The LFECP33E-3FN672C device on the daughter board is a member of the 1.2V ECP family of FPGAs. The ECP provides a low-cost, high-density solution for applications such as those targeted to the consumer electronics industry. The entire ECP family includes five devices offering densities ranging from 6,100 to 32,800 LUT's. The LFECP33E-3FN672C offers 32,800 LUTs. 807-1003-ND (12-401-DB32)	359.37
Xilinx® Virtex®-4: The XC4VLX25-10FF668C device on the daughter board is a member of the Virtex-4 family of FPGAs. The Virtex-4 family is comprised of 17 devices in total, over three platform families, LX, SX and FX. The LX series, of which the daughter board device is a member, provide a high performance solution for logic applications. The Virtex-4 family provides devices offering densities ranging from 12,312 to 200,448 Logic Cells. The XC4VLX25-10FF668C offers 24,192 Logic Cells. 807-1004-ND (12-401-DB36)	722.37
Xilinx® Virtex®-4SX: The XC4VXS35-10FF668C device on the daughter board is a member of the Virtex-4 family of FPGAs. The Virtex-4 family is comprised of 17 devices in total, over three platform families, LX, SX and FX. The SX series, of which the daughter board device is a member, provide a high performance solution for logic applications. The Virtex-4 family provides devices offering densities ranging from 12,312 to 200,448 Logic Cells. The XC4VXS35-10FF668C offers 34,560 Logic Cells. 807-1005-ND (12-401-DB46)	867.57

Free shipping on orders over £50! All prices are in British pound sterling and include duties.

556 (UK091)

uk.digikey.com — FREEPHONE: 0-800-587-0991 • 0-800-904-7786 — FREEFAX: 0-800-587-0992 • 0-800-904-7783