



# CPLDs (Complex Programmable Logic Devices)

Atmel offers a broad range of high-density, low-power, and cost-effective solutions enabling designers to create products that are "just what the market ordered." Based on a standard architecture, which uses industry standard development tools, Atmel's CPLDs offer the unique low-power or "L" feature while providing 100% connectivity. These devices are processed with Atmel's proprietary 0.65-micron processes and have a EEPROM memory. The ATF750C CPLDs are based on a 22V10-type architecture and

provide market-leading capacity and flexibility in a 22V10 footprint with twice the registers and additional features for better logic utilization.

The ATF1500 Series is targeted at wider logic density, with higher number of I/O's. This family has devices from 44 – 160 pins, and 32 – 96 I/O's. High connectivity, and flexible architecture make these parts highly suitable for system design. In system programmability in the larger devices allow for reconfiguration even after the device is in the system.

### Standard Development Tools:

Atmel's philosophy is that designers should be able to use known development tools. Third-party design tools such as Synario™, ABEL™, CUPL™, PPLDesigner-XL™, LOGiC™, and PLDSyn™ support Atmel's EPLDs. Also Atmel-specific versions of the popular Synario, ABEL, and CUPL design tools are offered. In addition, workstation support is available on popular platforms with Viewlogic, MINC, Cadence, Mentor, and Synopsys.

Voltage	ISP	Tpd (ns)	Registers	Macro-cells	Usable Gates	Power Option	Package Type	Digi-Key Part No.	1	Price Each 25	100	Atmel Part No.
<b>ATF750 Series</b>												
5.0	No	7.5	20	10	500	Standard	28-PLCC 24-DIP 24-SOIC	ATF750C-7JC-ND ATF750C-7PC-ND ATF750C-7SC-ND	8.06 8.88 8.06	5.81 6.39 5.81	5.44 5.98 5.44	ATF750C-7JC ATF750C-7PC ATF750C-7SC
5.0	No	10	20	10	500	Standard	28-PLCC 24-DIP 24-SOIC	ATF750C-10JU-ND ATF750C-10PU-ND ATF750C-10SC-ND	6.45 6.45 6.45	4.65 4.65 4.62	4.35 4.35 4.32	ATF750C-10JU ATF750C-10PU ATF750C-10SC
5.0	No	15	20	10	750	Standard	28-PLCC 24-DIP 24-SOIC	ATF750C-15JC-ND ATF750C-15PC-ND ATF750C-15SC-ND	4.52 4.97 4.52	3.26 3.58 3.26	3.05 4.35 3.05	ATF750C-15JC ATF750C-15PC ATF750C-15SC
5.0	No	15	20	10	750	Low	28-PLCC 24-DIP 24-SOIC	ATF750CL-15JC-ND ATF750CL-15PC-ND ATF750CL-15SC-ND	4.52 4.97 4.52	3.26 3.58 3.26	3.05 3.35 3.05	ATF750CL-15JC ATF750CL-15PC ATF750CL-15SC
3 – 3.6	No	15	20	10	500	Standard	28-PLCC 24-DIP 24-SOIC 24-TSSOP	ATF750LVC-15JC-ND ATF750LVC-15PC-ND ATF750LVC-15SC-ND ATF750LVC-15XU-ND	4.52 4.97 4.97 4.52	3.26 3.58 3.58 3.26	3.05 3.35 3.35 3.05	ATF750LVC-15JC ATF750LVC-15PC ATF750LVC-15SC ATF750LVC-15XU
<b>ATF1500 Series</b>												
5.0	No	10	32	32	1500	Standard	44-TQFP 44-PLCC	ATF1500A-10AU-ND ATF1500A-10JU-ND	4.06 4.06	2.91 2.91	2.72 2.72	ATF1500A-10AU ATF1500A-10JU
5.0	No	20	32	32	1000	Low	44-TQFP 44-PLCC	ATF1500AL-20AU-ND ATF1500AL-20JU-ND	4.24 4.24	3.03 3.03	2.84 2.84	ATF1500AL-20AU ATF1500AL-20JU
5.0	Yes	10	32	32	750	Standard	44-PLCC 44-TQFP	ATF1502AS-10JU44-ND ATF1502AS-10AU44-ND	3.50 3.50	2.36 2.36	2.03 2.03	ATF1502AS-10JU44 ATF1502AS-10AU44
5.0	Yes	25	32	32	750	Low	44-TQFP 44-PLCC	ATF1502ASL-25AU44-ND ATF1502ASL-25JU44-ND	3.50 3.50	2.68 2.68	2.36 2.36	ATF1502ASL-25AU44 ATF1502ASL-25JU44
3 – 3.6	Yes	15	—	—	—	Standard	44-TQFP 44-PLCC	ATF1502ASV-15JU44-ND ATF1502ASV-15AU44-ND	2.82 2.82	1.90 1.90	1.64 1.64	ATF1502ASV-15JU44 ATF1502ASV-15AU44
3 – 3.6	Yes	20	32	32	750	Standard	44-TQFP 44-PLCC	ATF1502ASV-20AC44-ND ATF1502BE-7AU44-ND	2.11 2.26	1.42 1.47	1.23 1.40	ATF1502ASV-20AC44 ATF1502BE-7AU44
1.8	Yes	7	32	32	750	Ultra Low	44-TQFP	ATF1502BE-7AU44-ND	2.26	1.47	1.40	ATF1502BE-7AU44
5.0	Yes	10	64	64	1500	Standard	44-PLCC 44-TQFP 84-PLCC 100-TQFP	ATF1504AS-10JC44-ND ATF1504AS-10AU44-ND ATF1504AS-10JC84-ND ATF1504AS-10AU100-ND	4.82 5.83 6.13 6.82	3.23 3.93 4.13 5.23	2.80 3.39 3.56 4.59	ATF1504AS-10JC44 ATF1504AS-10AU44 ATF1504AS-10JC84 ATF1504AS-10AU100
5.0	Yes	20	64	64	1500	Low	44-TQFP 100-TQFP	ATF1504ASL-20AC44-ND ATF1504ASL-20AC100-ND	4.62 5.70	3.11 3.84	2.68 3.31	ATF1504ASL-20AC44 ATF1504ASL-20AC100
5.0	Yes	25	64	64	1500	Low	44-TQFP 44-PLCC 100-TQFP	ATF1504ASL-25AU44-ND ATF1504ASL-25JU44-ND ATF1504ASL-25AU100-ND	6.75 6.92 7.76	4.55 4.67 5.23	3.92 4.03 4.51	ATF1504ASL-25AU44 ATF1504ASL-25JU44 ATF1504ASL-25AU100
3 – 3.6	Yes	15	64	64	1500	Standard	44-TQFP 44-PLCC 100-TQFP	ATF1504ASV-15AU44-ND ATF1504ASV-15JC44-ND ATF1504ASV-15JU44-ND ATF1504ASV-15AU100-ND	4.62 3.59 4.52 6.24	3.01 2.34 2.94 4.06	2.69 2.09 2.63 3.63	ATF1504ASV-15AU44 ATF1504ASV-15JC44 ATF1504ASV-15JU44 ATF1504ASV-15AU100
3 – 3.6	Yes	20	64	64	1500	Low	44-TQFP 44-PLCC	ATF1504ASV-20AU44-ND ATF1504ASV-20JU44-ND	4.95 4.84	3.22 3.15	2.88 2.81	ATF1504ASV-20AU44 ATF1504ASV-20JU44
3 – 3.6	Yes	20	64	64	1500	Low	100-TQFP	ATF1504ASV-20AU100-ND	6.67	4.34	3.88	ATF1504ASV-20AU100
5.0	Yes	7.5	128	128	3000	Standard	100-TQFP	ATF1508AS-7AC100-ND	16.94	11.42	9.45	ATF1508AS-7AC100
5.0	Yes	10	128	128	3000	Standard	84-PLCC 100-TQFP 100-PQFP	ATF1508AS-10JU84-ND ATF1508AS-10AU100-ND ATF1508AS-10QU100-ND	14.68 18.19 25.43	9.90 12.27 17.15	8.19 10.16 14.19	ATF1508AS-10JU84 ATF1508AS-10AU100 ATF1508AS-10QU100
5.0	Yes	20	128	128	3000	Low	84-PLCC 100-TQFP	ATF1508ASL-20JC84-ND ATF1508ASL-20AC100-ND	9.57 11.95	6.45 8.07	5.34 6.68	ATF1508ASL-20JC84 ATF1508ASL-20AC100
5.0	Yes	25	28	128	3000	Low	84-PLCC 100-TQFP	ATF1508ASL-25JU84-ND ATF1508ASL-25AU100-ND	12.64 15.67	8.52 10.56	7.05 8.74	ATF1508ASL-25JU84 ATF1508ASL-25AU100
3 – 3.6	Yes	15	128	128	3000	Standard	84-PLCC 100-TQFP	ATF1508ASV-15JU84-ND ATF1508ASV-15AU100-ND	4.84 5.38	3.26 3.63	2.81 3.13	ATF1508ASV-15JU84 ATF1508ASV-15AU100
3 – 3.6	Yes	20	128	128	3000	Low	100-TQFP 84-PLCC	ATF1508ASV-20AU100-ND ATF1508ASV-20JU84-ND	5.59 5.05	3.77 3.41	3.25 2.94	ATF1508ASV-20AU100 ATF1508ASV-20JU84
<b>ATF2500 Series</b>												
5.0	No	15 20 20	48	24	1500	Standard Standard Standard Low	44-PLCC 44-PLCC 40-DIP 40-PLCC	ATF2500C-15JU-ND ATF2500C-20JC-ND ATF2500C-20PU-ND ATF2500CL-20JI-ND	8.47 5.72 7.55 6.19	6.50 4.39 5.80 4.76	5.71 5.86 5.09 4.18	ATF2500C-15JU ATF2500C-20JC ATF2500C-20PU ATF2500CL-20JI

◆ RoHS Compliant † Industrial Temperature

## ATF15xx-DK3 CPLD Development Kit

The Atmel CPLD Development/Programmer Kit is a complete development system and an In-System programmer for the ATF15xx family of industry standard pin compatible Complex Programmable Logic Devices with Logic Doubling features. This kit provides designers a very quick and easy way to develop prototypes and evaluate new designs with an ATF15xx ISP CPLD. The ATF15xx family of ISP CPLDs includes the ATF15xxAS, ATF15xxASL, ATF15xxASV, ATF15xxASVL, and ATF15xxBE CPLDs. With the availability of the different Socket Adapter Boards to support all the package types offered in the ATF15xx family of ISP CPLDs, this CPLD Development/Programmer Board can be used as an ISP programmer to program the ATF15xx ISP CPLDs in all the available package types through the industry standard JTAG interface (IEEE 1149.1).

**CPLD Demo Board/Programmer Board:** • 84-lead PLCC Adapter • ISP (JAT) Port • Wire-wrap Terminal Holes-all Pins • 2 MHz Crystal Oscillator • Eight 8-segment LED Displays • 5V and 3.3V Vcc operation • Easy access to CPLD I/O pins • Global Clear, Output Enable and Power Switches **Logic Doubling™ CPLDs:** • ATF1508ASV-20JC84 3.3V Low-power 128 Macrocell CPLD with ISP **CPLD Programmable Cable:** • 5V and 3.3V ISP cable for PC parallel port with Vcc Auto Detection **Software CD:** • Free Atmel-WinCUPL design software and User's Manual • 30-day Trial Version of Atmel-ProChip Designer™ software • Logic Doubling Support and Documentation • Logic Doubling Reference • Atmel Databook CD **Atmel-ProChip Designer:** Design Entry • VHDL, Schematic, and CUPL • Synthesis • Functional Simulation • Atmel Proprietary Device Filters with Logic Doubling • Timing Simulation

ATF15XX-DK3-ND	CPLD Development Kit for ATF15XX	\$99.00
ATF15XXDK3-SAA100-ND	100-PLCC/TQFP Adapter Socket for ATF15XXB	\$135.00
ATF15XXDK3-SAJ44-ND	84/44 PLCC Adapter Socket for ATF15XXBE	\$35.00
ATF15XXDK3-SAJ84-ND	84/84 PLCC Adapter Socket for ATF15XXBE	\$50.00
ATDS1500PC-ND	4.0 Prochip Design Software	\$99.00
ATDS15XXKSW1-ND	5.0 Prochip Software License	\$99.00

## FPGA Configurator Programming Kit (Enhanced) ATDH2200E

Atmel offers a low cost development kit for the designer who wishes to begin working with the AT17 Series of ISP FPGA configuration memories. The kit allows designers to read, write and in-system program any of Atmel's AT17 series family members directly from a PC. All standard file input formats produced by the various FPGA vendors are supported. The AT17 series devices can be programmed directly on the programming board or the board can be used to facilitate in-system programming of the AT17 series devices in the target application (cable provided). The ATDH2200E supports all Atmel AT17 series configuration memories.

### FEATURES:

**Hardware:** • Supports Programming of all AT17C/LV Series Devices • Connection to Allow In-System Prog. (ISP) • 5.0V or 3.0V Supply **Software:** • CPS - Configurator Programming System • GUI-based Interface • Supports Win95/Win98/WinNT • Online Help • Supports Programming Reset Polarity • Verification Routines to Validate Programming • Accepts HEX, MCS, POF, RBF and BST File Formats **System Contents:** • ATDH2200 Programming Board • ATDH2222 20-pin PLCC Adapter • CPS Software • ATDH2200E Datasheet • ATDH2200E Programming Kit User Guide • Standard (PC Printer Port) Parallel Cable • 10-pin Ribbon Cable for ISP • 9V DC, 200 mA, 2.1 mm Center Positive Power Supply • Sample AT17C/LV Devices

ATDH2200E-ND	FPGA Configurator Program Kit	\$149.00
ATDH2221-ND	20-SOIC Adapter	\$148.96
ATDH2222-ND	20-PLCC Adapter	\$148.96
ATDH2224-ND	44-TQFP Adapter	\$149.00
ATDH2225-ND	AT17 ISP Cable	\$95.00
ATDH2227-ND	44-PLCC Adapter	\$149.00
ATDH2227A-ND	44-PLCC Adapter	\$149.00
ATDH2228-ND	8-LAP Adapter	\$149.00

More Product Available Online: [www.digikey.com](http://www.digikey.com)

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