



Converting Xilinx® CoolRunner™ Designs to Atmel ATF15xx Family Low-power CPLDs and 22(L)V10C(Q)(Z) Low-power SPLDs

Introduction

In October 2000, Xilinx announced that the production of a family of PLDs, which were acquired from Philips Semiconductor Corporation, would be discontinued and orders would not be accepted after April 2001, with last-time shipments in November, 2001. The affected Xilinx products for which Atmel equivalents are available include:

- XCR3xxx/5xxx (3.3V and 5V XPLA Original)
- XCR5xxxA/3xxxC/5xxxC (3.3V and 5V XPLA Enhanced)
- XCR22LV10/22V10 (3.3V and 5V 22V10)

Atmel ATF15xxASL is a pin-compatible replacement for the XCR5xxx (5V XPLA Original), XCR3xxx/C (3.3V XPLA Enhanced) and XCR5xxxC (5V XPLA Enhanced). PCB boards do not require a re-spin for design migration to the Atmel equivalents. Users can re-compile their ABEL, PHDL (Philips' version of ABEL), VHDL or Synario Schematic design files into ATF15xxASL using Atmel software design tools.

Atmel's ATF22LV10C/CQ/CQZ (3.3V version of the standard 22V10) and the ATF22V10C/CQ/CQZ (5V version of the standard 22V10) are drop-in replacements for the XCR22LV10 and XCR22V10, respectively. Since the 22V10s are JEDEC-compatible, no redesign is required. Users can use the appropriate Atmel device type from the Third Party Programmer menu (for example, Data-I/O Unisite, BP-1200) to program the Atmel ATF22V10C with the same JEDEC file (programming file).

ATF15xx and 22V10 CoolRunner Conversion

Application Note





Table of CoolRunner Devices and Atmel Equivalents

If speed is the dominant concern, use the “Speed Match” column of high-speed Atmel equivalents. However, devices in this column are all standard power devices, meaning that the I_{CC} consumption will be higher when compared to their CoolRunner counterparts.

If current consumption is the dominant concern, use the “Power Match” column of low-power Atmel equivalents. However, there is a speed penalty. Table 2 is a snapshot of the Atmel equivalent devices’ power characteristics. Please refer to an Atmel datasheet for detailed offering of speed grades. The same applies to the CoolRunner devices. application

Table 1. Alternative Atmel Devices for Each Xilinx CoolRunner Device

Xilinx P/N	Atmel Cross (Speed Match) Use if Speed is an Important Factor	Atmel Cross (Power Match) Use if I_{CC} is an Important Design Constraint
XCR22LV10-10PC28C	ATF22LV10C-10JC	ATF22LV10CQZ-30JC
XCR22LV10-10SC24C	ATF22LV10C-10SC	ATF22LV10CQZ-30SC
XCR22LV10-10VO24C	ATF22LV10C-10XC	ATF22LV10CQZ-30XC
XCR22LV10-15PC28C	ATF22LV10C-15JC	ATF22LV10CQZ-30JC
XCR22LV10-15PC28I	ATF22LV10C-15JI	ATF22LV10CQZ-30JI
XCR22LV10-15SC24C	ATF22LV10C15SC	ATF22LV10CQZ-30SC
XCR22LV10-15SC24I	ATF22LV10C-15SI	ATF22LV10CQZ-30SI
XCR22LV10-15VO24C	ATF22LV10C-15XC	ATF22LV10CQZ-30XC
XCR22LV10-15VO24I	ATF22LV10C-15XI	ATF22LV10CQZ-30XI
XCR22V10-10PC28C	ATF22V10C-10JC	ATF22V10CQZ-20JC
XCR22V10-10PC28I	ATF22V10C-10JI	ATF22V10CQZ-20JI
XCR22V10-10SO24C	ATF22V10C-10SC	ATF22V10CQZ-20SC
XCR22V10-10SO24I	ATF22V10C-10SI	ATF22V10CQZ-20SI
XCR22V10-10VO24C	ATF22V10C-10XC	ATF22V10CQZ-20XC
XCR22V10-10VO24I	ATF22V10C-10XI	ATF22V10CQZ-20XI
XCR22V10-7PC28C	ATF22V10C-7JC	ATF22V10CQZ-20JC
XCR22V10-7SO24C	ATF22V10C-7SC	ATF22V10CQZ-20SC
XCR22V10-7VO24C	ATF22V10C-7XC	ATF22V10CQZ-20XC
XCR5032-10PC44C	ATF1502AS-10JC44	ATF1502ASL-25JC44
XCR5032-10PC44I	ATF1502AS-10JI44	ATF1502ASL-25JI44
XCR5032-10VQ44C	ATF1502AS-10AC44	ATF1502ASL-25AC44
XCR5032-10VQ44I	ATF1502AS-10AI44	ATF1502ASL-25AI44
XCR5032-6PC44	ATF1502AS-7JC44	ATF1502ASL-25JC44
XCR5032-6VQ44C	ATF1502AS-7AC44	ATF1502ASL-25AC44
XCR5032-7PC44C	ATF1502AS-7JC44	ATF1502ASL-25JC44
XCR5032-7PC44I	ATF1502AS-10JI44	ATF1502ASL-25JI44
XCR5032-7VQ44C	ATF1502AS-7AC44	ATF1502ASL-25AC44
XCR5032-7VQ44I	ATF1502AS-10AI44	ATF1502ASL-25AI44

ATF15xx CoolRunner Conversion

Table 1. Alternative Atmel Devices for Each Xilinx CoolRunner Device (Continued)

Xilinx P/N	Atmel Cross (Speed Match) Use if Speed is an Important Factor	Atmel Cross (Power Match) Use if I_{CC} is an Important Design Constraint
XCR5032C-10PC44C	ATF1502AS-10JC44	ATF1502ASL-25JC44
XCR5032C-10PC44I	ATF1502AS-10JI44	ATF1502ASL-25JI44
XCR5032C-10VQ44C	ATF1502AS-10AC44	ATF1502ASL-25AC44
XCR5032C-10VQ44I	ATF1502AS-10AI44	ATF1502ASL-25AI44
XCR5032C-6PC44	ATF1502AS-7JC44	ATF1502ASL-25JC44
XCR5032C-6VQ44C	ATF1502AS-7AC44	ATF1502ASL-25AC44
XCR5032C-7PC44C	ATF1502AS-7JC44	ATF1502ASL-25JC44
XCR5032C-7PC44I	ATF1502AS-10JI44	ATF1502ASL-25JI44
XCR5032C-7VQ44C	ATF1502AS-7AC44	ATF1502ASL-25AC44
XCR5032C-7VQ44I	ATF1502AS-10AI44	ATF1502ASL-25AI44
XCR5064-10PC44C	ATF1504AS-10JC44	ATF1504ASL-20JC44
XCR5064-10PC44I	ATF1504AS-10JI44	ATF1504ASL-25JI44
XCR5064-10PC68C	ATF1504AS-10JC68	ATF1504ASL-20JC68
XCR5064-10PC68I	ATF1504AS-10JI68	ATF1504ASL-25JI68
XCR5064-10PC84C	ATF1504AS-10JC84	ATF1504ASL-20JC84
XCR5064-10PC84I	ATF1504AS-10JI84	ATF1504ASL-25JI84
XCR5064-10PQ100C	ATF1504AS-10QC100	ATF1504ASL-20QC100
XCR5064-10PQ100I	ATF1504AS-10QI100	ATF1504ASL-25QI100
XCR5064-12PC44I	ATF1504AS-10JI44	ATF1504ASL-20JC44
XCR5064-12PC68I	ATF1504AS-10JI68	ATF1504ASL-25JI68
XCR5064-12PC84I	ATF1504AS-10JI84	ATF1504ASL-25JI84
XCR5064-12PQ100I	ATF1504AS-10QI100	ATF1504ASL-25QI100
XCR5064-12VQ44I	ATF1504AS-10AI44	ATF1504ASL-25AI44
XCR5064-7PC44C	ATF1504AS-7JC44	ATF1504ASL-20JC44
XCR5064-7PC68C	ATF1504AS-7JC68	ATF1504ASL-20JC68
XCR5064-7PC84C	ATF1504AS-7JC84	ATF1504ASL-20JC84
XCR5064-7PQ100C	ATF1504AS-7QC100	ATF1504ASL-20QC100
XCR5064-7VQ44C	ATF1504AS-7AC44	ATF1504ASL-20AC44
XCR5064C-10PC44C	ATF1504AS-10JC44	ATF1504ASL-20JC44
XCR5064C-10PC44I	ATF1504AS-10JI44	ATF1504ASL-25JI44
XCR5064C-10VQ100C	ATF1504AS-10AC100	ATF1504ASL-20AC100
XCR5064C-10VQ100I	ATF1504AS-10AI100	ATF1504ASL-25AI100
XCR5064C-10VQ44C	ATF1504AS-10AC44	ATF1504ASL-20AC44
XCR5064C-10VQ44I	ATF1504AS-10AI44	ATF1504ASL-25AI44



Table 1. Alternative Atmel Devices for Each Xilinx CoolRunner Device (Continued)

Xilinx P/N	Atmel Cross (Speed Match) Use if Speed is an Important Factor	Atmel Cross (Power Match) Use if I_{CC} is an Important Design Constraint
XCR5064C-12PC44I	ATF1504AS-10JC44	ATF1504ASL-20JC44
XCR5064C-12VQ100I	ATF1504AS-10AI100	ATF1504ASL-25AI100
XCR5064C-12VQ44I	ATF1504AS-10AI44	ATF1504ASL-25AI44
XCR5064C-7PC44C	ATF1504AS-7JC44	ATF1504ASL-20JC44
XCR5064C-7PQ100C	ATF1504AS-7QC100	ATF1504ASL-20QC100
XCR5064C-7VQ44C	ATF1504AS-7AC44	ATF1504ASL-20AC44
XCR5128-10PC84C	ATF1508AS-10JC84	ATF1508ASL-20JC84
XCR5128-10PC84I	ATF1508AS-10JI84	ATF1508ASL-25JI84
XCR5128-10PQ100C	ATF1508AS-10QC100	ATF1508ASL-20QC100
XCR5128-10PQ100I	ATF1508AS-10QI100	ATF1508ASL-25QI100
XCR5128-10PQ160C	ATF1508AS-10QC160	ATF1508ASL-20QC160
XCR5128-10PQ160I	ATF1508AS-10QI160	ATF1508ASL-25QI100
XCR5128-10VQ100C	ATF1508AS-10AC100	ATF1508ASL-20AC100
XCR5128-10VQ100I	ATF1508AS-10AI100	ATF1508ASL-25AI100
XCR5128-12PC84C	ATF1508AS-10JC84	ATF1508ASL-20JC84
XCR5128-12PQ100C	ATF1508AS-10QC100	ATF1508ASL-20QC100
XCR5128-12PQ160C	ATF1508AS-10QC160	ATF1508ASL-20QC160
XCR5128-12VQ100C	ATF1508AS-10AC100	ATF1508ASL-20AC100
XCR5128-15PC84I	ATF1508AS-15JC84	ATF1508ASL-20JC84
XCR5128-15PQ100I	ATF1508AS-15QC100	ATF1508ASL-20QC100
XCR5128-15PQ160I	ATF1508AS-15QI100	ATF1508ASL-25QI100
XCR5128-15VQ100I	ATF1508AS-15AI100	ATF1508ASL-25AI100
XCR5128-7PC84C	ATF1504AS-7JC84	ATF1508ASL-20JC84
XCR5128-7PQ100C	ATF1508AS-7QC100	ATF1508ASL-20QC100
XCR5128-7PQ160C	ATF1508AS-7QC160	ATF1508ASL-20QC160
XCR5128-7VQ100C	ATF1508AS-7AC100	ATF1508ASL-20AC100
XCR5128C-10VQ100C	ATF1508AS-10AC100	ATF1508ASL-20AC100
XCR5128-10VQ100I	ATF1508AS-10AI100	ATF1508ASL-25AI100
XCR5128C-15VQ100C	ATF1508AS-15AC100	ATF1508ASL-20AC100
XCR5128C-15VQ100I	ATF1508AS-15AC100	ATF1508ASL-25AI100
XCR5128C-7VQ100C	ATF1508AS-7AC100	ATF1508ASL-20AC100
XCR3032-10PC44C	ATF1502ASV-15JC44	ATF1502ASV-15JC44
XCR3032-10PC44I	ATF1502ASV-15JI44	ATF1502ASV-15JI44

Table 1. Alternative Atmel Devices for Each Xilinx CoolRunner Device (Continued)

Xilinx P/N	Atmel Cross (Speed Match) Use if Speed is an Important Factor	Atmel Cross (Power Match) Use if I_{CC} is an Important Design Constraint
XCR3032-10VQ44C	ATF1502ASV-15AC44	ATF1502ASV-15AC44
XCR3032-10VQ44I	ATF1502ASV-15AI44	ATF1502ASV-15AI44
XCR3032-12PC44C	ATF1502ASV-15JC44	ATF1502ASV-15JC44
XCR3032-12PC44I	ATF1502ASV-15JI44	ATF1502ASV-15JI44
XCR3032-12VQ44C	ATF1502ASV-15AC44	ATF1502ASV-15AC44
XCR3032-12VQ44I	ATF1502ASV-15AI44	ATF1502ASV-15AI44
XCR3032-8PC44C	ATF1502ASV-15JC44	ATF1502ASV-15JC44
XCR3032-8VQ44C	ATF1502ASV-15AC44	ATF1502ASV-15AC44
XCR3032A-10PC44C	ATF1502ASV-15JC44	ATF1502ASV-15JC44
XCR3032A-10PC44I	ATF1502ASV-15JI44	ATF1502ASV-15JI44
XCR3032A-10VQ44C	ATF1502ASV-15AC44	ATF1502ASV-15AC44
XCR3032A-10VQ44I	ATF1502ASV-15AI44	ATF1502ASV-15AI44
XCR3032A-6PC44C	ATF1502ASV-15JC44	ATF1502ASV-15JC44
XCR3032A-6VQ44C	ATF1502ASV-15AC44	ATF1502ASV-15AC44
XCR3032A-7PC44C	ATF1502ASV-15JC44	ATF1502ASV-15JC44
XCR3032A-7PC44I	ATF1502ASV-15AI44	ATF1502ASV-15AI44
XCR3032A-7VQ44C	ATF1502ASV-15AC44	ATF1502ASV-15AC44
XCR3032A-7VQ44I	ATF1502ASV-15AI44	ATF1502ASV-15AI44
XCR3032C-10PC44C	ATF1502ASV-15JC44	ATF1502ASV-15JC44
XCR3032A-10PC44I	ATF1502ASV-15JI44	ATF1502ASV-15JI44
XCR3032C-10VQ44C	ATF1502ASV-15AC44	ATF1502ASV-15AC44
XCR3032C-10VQ44I	ATF1502ASV-15AI44	ATF1502ASV-15AI44
XCR3032C-12PC44C	ATF1502ASV-15JC44	ATF1502ASV-15JC44
XCR3032C-12PC44I	ATF1502ASV-15JI44	ATF1502ASV-15JI44
XCR3032C-12VQ44C	ATF1502ASV-15AC44	ATF1502ASV-15AC44
XCR3032C-12VQ44I	ATF1502ASV-15AI44	ATF1502ASV-15AI44
XCR3032C-8PC44C	ATF1502ASV-15AC44	ATF1502ASV-15AC44
XCR3032C-8VQ44C	ATF1502ASV-15AC44	ATF1502ASV-15AC44
XCR3064-10PC44C	ATF1504ASV-15JC44	ATF1504ASVL-20JC44
XCR3064-10PC68C	ATF1504ASV-15JC68	ATF1504ASVL-20JC68
XCR3064-10PC84C	ATF1504ASV-15JC84	ATF1504ASVL-20JC84
XCR3064-10PQ100C	ATF1504ASV-15QC100	ATF1504ASVL-20QC100
XCR3064-10VQ44C	ATF1504ASV-15AC44	ATF1504ASVL-20AC44
XCR3064-12PC44C	ATF1504ASV-15JC44	ATF1504ASVL-20JC44



Table 1. Alternative Atmel Devices for Each Xilinx CoolRunner Device (Continued)

Xilinx P/N	Atmel Cross (Speed Match) Use if Speed is an Important Factor	Atmel Cross (Power Match) Use if I_{CC} is an Important Design Constraint
XCR3062-12PC44I	ATF1504ASV-15JI44	ATF1504ASVL-20JI44
XCR3064-12PC68C	ATF1504ASV-15JC68	ATF1504ASVL-20JC68
XCR3064-12PC68I	ATF1504ASV-15JI68	ATF1504ASVL-20JI68
XCR3064-12PC84C	ATF1504ASV-15JC84	ATF1504ASVL-20JC84
XCR3064-12PC84I	ATF1504ASV-15JI84	ATF1504ASVL-20JI84
XCR3064-12PQ100C	ATF1504ASV-15QC100	ATF1504ASVL-20QC100
XCR3064-12PQ100I	ATF1504ASV-15QI100	ATF1504ASVL-20QI100
XCR3064-12VQ44C	ATF1504ASV-15AC44	ATF1504ASVL-20AC44
XCR3064-12VQ44I	ATF1504ASV-15AI44	ATF1504ASVL-20AI44
XCR3064-15PC44I	ATF1504ASV-15JI44	ATF1504ASVL-20JI44
XCR3064-15PC68I	ATF1504ASV-15JI68	ATF1504ASVL-20JI68
XCR3064-15PC84I	ATF1504ASV-15JI84	ATF1504ASVL-20JI84
XCR3064-15PQ100I	ATF1504ASV-15QI100	ATF1504ASVL-20QI100
XCR3064-15VQ44I	ATF1504ASV-15AI44	ATF1504ASVL-20AI44
XCR3064A-10PC44C	ATF1504ASV-15JC44	ATF1504ASVL-20JC44
XCR3064A-10PC44I	ATF1504ASV-15JI44	ATF1504ASVL-20JI44
XCR3064A-10VQ100C ⁽¹⁾	ATF1504ASV-15AC100	ATF1504ASVL-20AI100
XCR3064A-10VQ100I ⁽¹⁾	ATF1504ASV-15AI44	ATF1504ASVL-20AI44
XCR3064A-10VQ44C	ATF1504ASV-15AC44	ATF1504ASVL-20AC44
XCR3064A-10VQ44I	ATF1504ASV-15AI44	ATF1504ASVL-20AI44
XCR3064A-12VQ44I	ATF1504ASV-15AI44	ATF1504ASVL-20AI44
XCR3064A-12VQ44I	ATF1504ASV-15AI44	ATF1504ASVL-20AI44
XCR3064A-7PC44C	ATF1504ASV-15JC44	ATF1504ASVL-20JC44
XCR3064A-7VQ44C	ATF1504ASV-15AC44	ATF1504ASVL-20AC44
XCR3064A-7VQ100C ⁽¹⁾	ATF1504ASV-15AC100	ATF1504ASVL-20AI100
XCR3128-10PC84C	ATF1508ASV-15JC84	ATF1508ASVL-20JC84
XCR3128-10PQ100C	ATF1508ASV-15QC100	ATF1508ASVL-20QC100
XCR3128-10PQ160C	ATF1508ASV-15QC160	ATF1508ASVL-20QC160
XCR3128-10VQ100	ATF1508ASV-15AC100	ATF1508ASVL-20AC100
XCR3128-12PC84C	ATF1508ASV-15JC84	ATF1508ASVL-20JC84
XCR3128-12PC84I	ATF1508ASV-15JI84	ATF1508ASVL-20JI84
XCR3128-12PQ100C	ATF1508ASV-15QC100	ATF1508ASVL-20QC100
XCR3128-12PQ100I	ATF1508ASV-15QI100	ATF1508ASVL-20QI100
XCR3128-12PQ160C	ATF1508ASV-15QC160	ATF1508ASVL-20QC160

Table 1. Alternative Atmel Devices for Each Xilinx CoolRunner Device (Continued)

Xilinx P/N	Atmel Cross (Speed Match) Use if Speed is an Important Factor	Atmel Cross (Power Match) Use if I_{CC} is an Important Design Constraint
XCR3128-12PQ160I	ATF1508ASV-15QI160	ATF1508ASVL-20QI160
XCR3128-12VQ100C	ATF1508ASV-15AC100	ATF1508ASVL-20AC100
XCR3128-12VQ100C	ATF1508ASV-15AI100	ATF1508ASVL-20AC100
XCR3128-15PC84C	ATF1508ASV-15JC84	ATF1508ASVL-20JI84
XCR3128-15PC84I	ATF1508ASV-15JI84	ATF1508ASVL-20JI84
XCR3128-15PQ100C	ATF1508ASV-15QC100	ATF1508ASVL-20QC100
XCR3128-15PQ100I	ATF1508ASV-15QI100	ATF1508ASVL-20QI100
XCR3128-15PQ160C	ATF1508ASV-15QC160	ATF1508ASVL-20QC160
XCR3128-15PQ160I	ATF1508ASV-15QI160	ATF1508ASVL-20QI160
XCR3128-15VQ100C	ATF1508ASV-15AC100	ATF1508ASVL-20AC100
XCR3128-15VQ100I	ATF1508ASV-15AI100	ATF1508ASVL-20AI100
XCR3128A-10VQ100C	ATF1508ASV-15AC100	ATF1508ASVL-20AC100
XCR3128A-10VQ100I	ATF1508ASV-15AI100	ATF1508ASVL-20AI100
XCR3128A-12VQ100C	ATF1508ASV-15AI100	ATF1508ASVL-20AI100
XCR3128A-15VQ100I	ATF1508ASV-15AI100	ATF1508ASVL-20AI100
XCR3128A-7VQ100C	ATF1508ASV-15AI100	ATF1508ASVL-20AI100

Note: 1. The Atmel ATF1504AS 100-pin TQFP package is not entirely pin-compatible with the Xilinx CoolRunner 64 macrocell device. The CoolRunner device pins 1 and 2 are connected to I/O pins and pins 99 and 100 are no-connects (NC), whereas in the Atmel device, pins 99 and 100 are I/Os and pins 1 and 2 are NC pins. Atmel suggests either Jumpers or Board traces connecting pins 99 and 100 to pins 1 and 2, respectively.

Low-power Benefits of Atmel ATF15xx Family of CPLDs

The ATF15xx family includes the ATF1502AS, ATF1504AS and the ATF1508AS. The devices feature an In-system Programming (ISP) capability and are offered in low-voltage/low-power variations and varying speed grades. The “L” mode (also called standby or sleep mode) refers to the low-power mode whereas “PD” refers to the use of specific pins to power-down the device. Standard power devices are typically offered in faster speed grades and burn more power.

The current (I_{CC}) consumption of a PLD in varying modes of operation is shown in Table 2. Please refer to the individual device datasheets for more information on power consumption. The Atmel devices use approximately the same I_{CC} when operating in the “L” mode when compared to their CoolRunner counterparts.

Table 2. Current (I_{CC}) Consumption in “L” and PD Modes

Device	Description	“L” Mode	PD Mode
ATF150xASL ⁽¹⁾	5V Low-power device	10 μ A (typ)	1 mA
ATF150xASVL ⁽¹⁾	3.3V Low-power device	5 μ A (typ)	750 μ A
ATF150xAS ⁽¹⁾	5V Standard power device	Not Applicable	1 mA
ATF150xASV ⁽¹⁾	3.3V Standard power device	Not Applicable	750 μ A

Note: 1. The letter “x” can represent either 2, 4 or 8. For example, the ATF1502 is offered as an ATF1502ASL, ATF1502ASVL, ATF1502AS and ATF1502ASV.

Design Conversion Process

Table 3. Design Conversion Process

Type of Design File		Xilinx Design Tools	Atmel Solution
Source	File Extension		
ABEL	.ABL	Webfitter, Synario	Use Atmel-Synario to recompile Source ABEL file. Download the latest fitters from the Atmel website (SNPCH411.exe file). Refit the Design using the existing Pin assignments. Use Fitter property "Pin Preassignment = keep." Note: The user can also translate their ABEL Design to CUPL or VHDL and use Atmel-WinCUPL™ or Atmel ProChip™ Designer Tool.
PHDL	.PHD	XPLA (Philips Tool)	PHDL is similar to ABEL. Change the .PHD file extension to .ABL and use the solution already suggested for ABEL files. Please see the section on Conversion issues for more details on caveats of converting .PHD to .ABL.
VHDL	.VHD	Webfitter, Other EDA Vendors	Solution A: Use ProChip Designer Tool Environment to resynthesize your Source design file. Use the EDIF (EDIF version 2.00) file with the Atmel Device Fitter to fit your Design. Solution B: Use Atmel-Synario tool with VHDL Synthesis option to recompile your Source VHDL file and proceed with the Synario tool flow.
Schematic	.SCH	Webfitter, Synario	Solution A: Use Atmel-Synario to recompile source schematic file. Ensure that you have the latest fitters from the Atmel website (download SNPCH411.exe file). Refit the Design using the existing Pin assignments. Use Fitter property "Pin Preassignment = keep." Solution B: Use ProChip Designer to launch Design Explorer and then redraw the schematic.
		ProChip Designer, Protel	Use Atmel ProChip Designer to launch Design Explorer. Import the Source schematic and proceed with the compile option. The resulting PLD file is first translated to CUPL source and a .PLA and .EDIF file are created. Use the Device Fitter from the ProChip Design Flow to use the .EDF file for fitting. Note: Alternatively, the Protel tool can also use the .PLA file with the appropriate Device type to generate the Fitter report file and .JED programming file.
CUPL	.PLD	Protel, Logical Devices	Solution A: Recompile the source file using Atmel-WinCUPL. Use the Atmel Property {Preassign = keep} in the source .PLD file. Solution B: Use Atmel ProChip Designer to launch Design Explorer. Import the Source .PLD file and proceed with the compile option. The PLD file is compiled and a .PLA and .EDIF file are created. Use the Device Fitter from the ProChip Design Flow to use the .EDF file for fitting. Note: Alternatively, the Protel Design Explorer tool can also use the .PLA file with the appropriate Device type to generate the Fitter report file and .JED programming file.



Other Conversion Issues

Working with .PHDL (formerly Philips Hardware Description Language) files: The .X1 extension (applicable to XOR function in CoolRunner) is not supported in ABEL. Instead, the user should rely on the appropriate property in the source ABEL file to enable the Fitter to use the XOR gate in the ATF15xx Macrocell for a particular output pin.

Usage in ABEL:

PROPERTY ATMEL 'fitter option';

The fitter option for XOR Synthesis is:

-str xor_synthesis [on | OFF | = signal1, signal2,...]

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