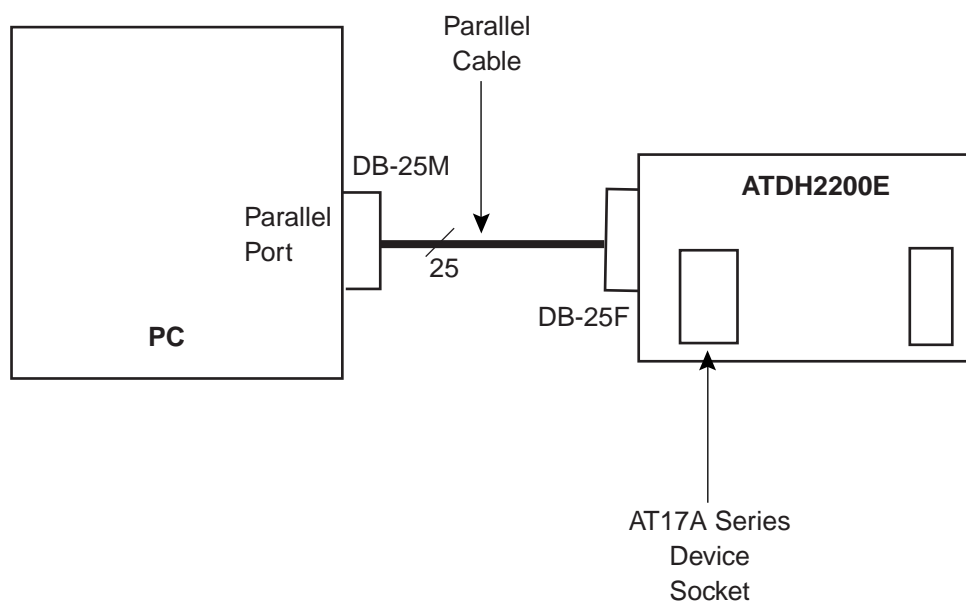# Drop-In/Stand-alone Programming Circuits for AT17A Series Configurators with Altera® FPGAs

Atmel AT17A [1] series configurators use a simple serial-access procedure to configure one or more Field Programmable Gate Arrays (FPGAs) or programmable logic devices.

This application note provides the drop-in/stand-alone programming circuits for AT17A series devices Altera FPGAs. For Drop-In/Stand-alone Programming, the configurator is programmed before dropping into the circuit that will configure the FPGA, see Figure 1.

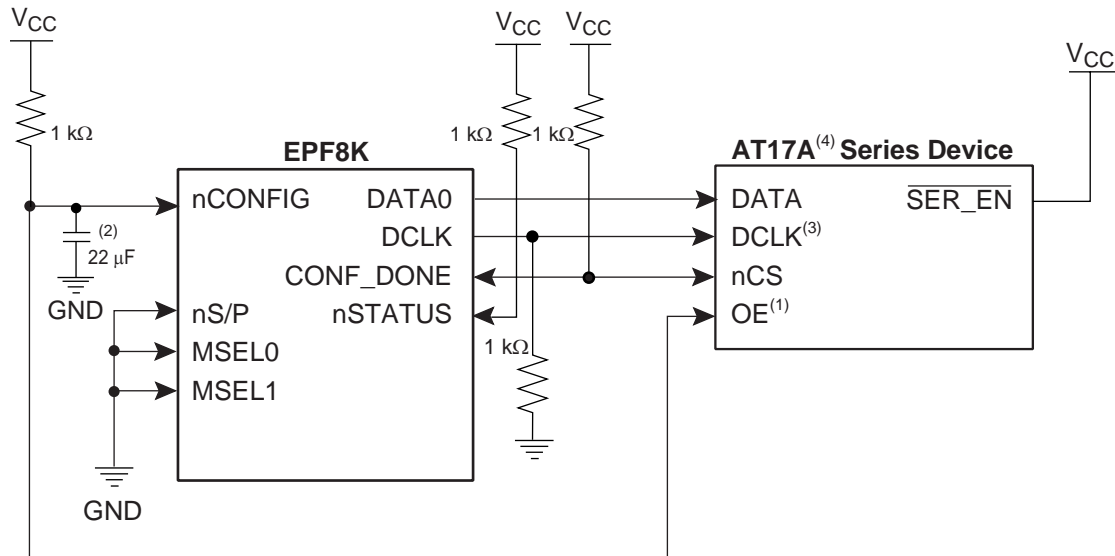**Figure 1.** ATDH2200E Stand-alone Device Programming

AT17A Series FPGA Configuration Memory
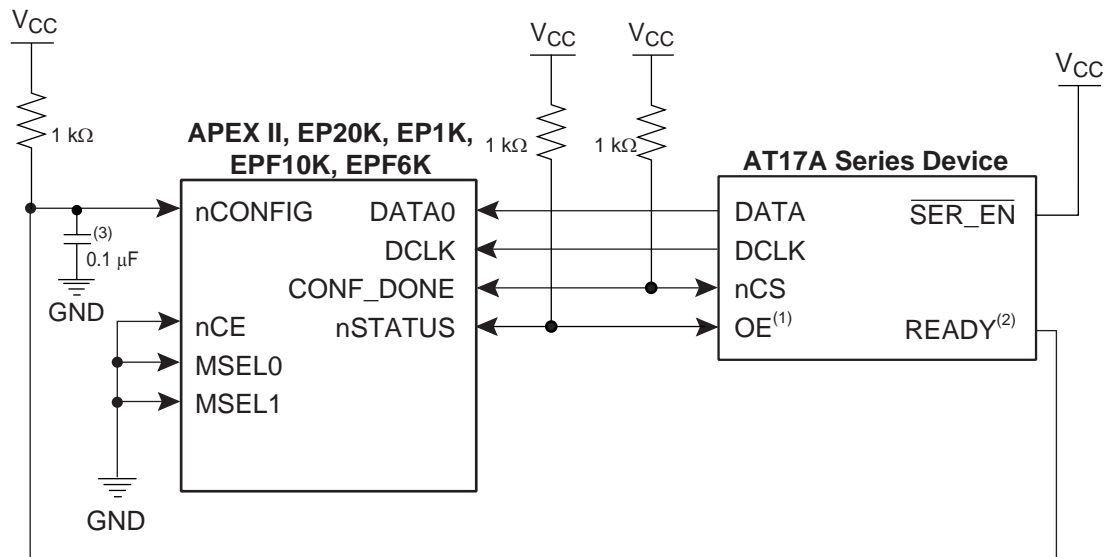
Application Note

Figure 2, Figure 3 and Figure 4 show the configurator connection for different families of Altera FPGAs.

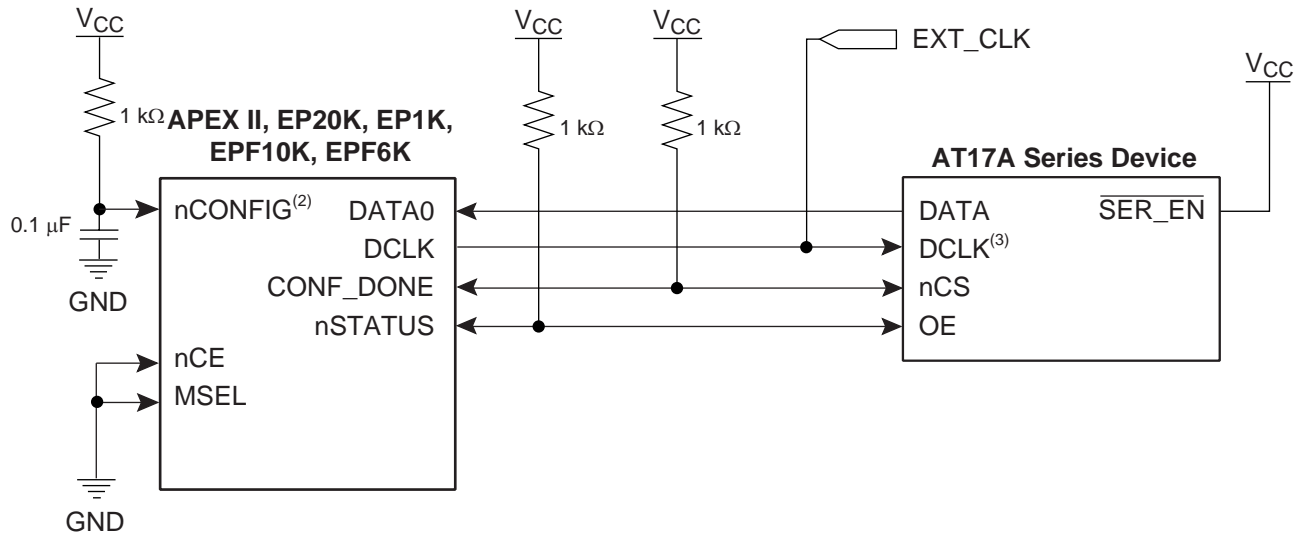**Figure 2.** Drop-In Replacement of AT17A Series Devices for Altera EPF8K FPGA Applications

Notes: 1. Reset polarity level of the configurator must be set to active Low ($\overline{\text{RESET}}$/OE) by a programmer.
2. RC filter recommended for input to nCONFIG to delay configuration until V_{CC} is stable. (nCONFIG can instead be connected to an active Low system reset signal).
3. For AT17LV512A/010A/002A devices, the internal oscillator of the DCLK pin must be disabled to avoid clock contention.
4. AT17 Series devices could also be used.

Figure 3. Drop-In Replacement of AT17A Series Devices for Altera FPGA Applications, Internal Oscillator Arrangement

Notes: 1. Reset polarity level of the configurator must be set to active Low ($\overline{\text{RESET}}$/OE) by a programmer if an AT17LVXXXA series configurator is used.
2. Use of the READY pin is optional.
3. RC filter recommended for input to nCONFIG to delay configuration until Vcc is stable. (nCONFIG can instead be connected to an active Low system reset signal).
4. For Altera's EDF6K FPGA, MSEL is used instead of MSEL0 and MSEL1.

Figure 4. Drop-In Replacement of AT17A Series Devices for Altera FPGA Applications

Notes: 1. Reset polarity level of the configurator must be set to active Low ($\overline{RESET}$/OE) by a programmer if an AT17LVXXXA series configurator is used.
2. RC filter recommended for input to nCONFIG to delay configuration until V_{CC} is stable. (nCONFIG can instead be connected to an active Low system reset signal).
3. For AT17LV512A/010A/002A devices, the internal oscillator of the DCLK pin must be disabled to avoid clock contention.
4. AT17 series devices could also be used.

![ATMEL logo]

Atmel Corporation

2325 Orchard Parkway
San Jose, CA 95131, USA
Tel: 1(408) 441-0311
Fax: 1(408) 487-2600

Regional Headquarters

Europe
Atmel Sarl
Route des Arsenaux 41
Case Postale 80
CH-1705 Fribourg
Switzerland
Tel: (41) 26-426-5555
Fax: (41) 26-426-5500

Asia
Room 1219
Chinachem Golden Plaza
77 Mody Road Tsimshatsui
East Kowloon
Hong Kong
Tel: (852) 2721-9778
Fax: (852) 2722-1369

Japan
9F, Tonetsu Shinkawa Bldg.
1-24-8 Shinkawa
Chuo-ku, Tokyo 104-0033
Japan
Tel: (81) 3-3523-3551
Fax: (81) 3-3523-7581

Atmel Operations

Memory
2325 Orchard Parkway
San Jose, CA 95131, USA
Tel: 1(408) 441-0311
Fax: 1(408) 436-4314

Microcontrollers
2325 Orchard Parkway
San Jose, CA 95131, USA
Tel: 1(408) 441-0311
Fax: 1(408) 436-4314

La Chantrerie
BP 70602
44306 Nantes Cedex 3, France
Tel: (33) 2-40-18-18-18
Fax: (33) 2-40-18-19-60

ASIC/ASSP/Smart Cards
Zone Industrielle
13106 Rousset Cedex, France
Tel: (33) 4-42-53-60-00
Fax: (33) 4-42-53-60-01

1150 East Cheyenne Mtn. Blvd.
Colorado Springs, CO 80906, USA
Tel: 1(719) 576-3300
Fax: 1(719) 540-1759

Scottish Enterprise Technology Park
Maxwell Building
East Kilbride G75 0QR, Scotland
Tel: (44) 1355-803-000
Fax: (44) 1355-242-743

RF/Automotive
Theresienstrasse 2
Postfach 3535
74025 Heilbronn, Germany
Tel: (49) 71-31-67-0
Fax: (49) 71-31-67-2340

1150 East Cheyenne Mtn. Blvd.
Colorado Springs, CO 80906, USA
Tel: 1(719) 576-3300
Fax: 1(719) 540-1759

Biometrics/Imaging/Hi-Rel MPU/
High Speed Converters/RF Datacom
Avenue de Rochepleine
BP 123
38521 Saint-Egreve Cedex, France
Tel: (33) 4-76-58-30-00
Fax: (33) 4-76-58-34-80

Literature Requests
www.atmel.com/literature

Disclaimer: Atmel Corporation makes no warranty for the use of its products, other than those expressly contained in the Company's standard warranty which is detailed in Atmel's Terms and Conditions located on the Company's web site. The Company assumes no responsibility for any errors which may appear in this document, reserves the right to change devices or specifications detailed herein at any time without notice, and does not make any commitment to update the information contained herein. No licenses to patents or other intellectual property of Atmel are granted by the Company in connection with the sale of Atmel products, expressly or by implication. Atmel's products are not authorized for use as critical components in life support devices or systems.

Printed on recycled paper.