

FC512

FPGA Configurator

ISI - Interconnect Systems, Inc.

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Objective

Address Configuration Challenges for Large FPGAs

Challenge: FPGAs and their config files are getting larger **and** fast FPGA configuration is often required:

- PCIe spec requires configuration within 100ms
- Fast System On Time is required for many embedded applications
- Implement Fast Mode Change through Dynamic / Partial reconfiguration

Traditional Solution: Multi-chip circuit, typically CPLD + 2 to 8 Flash Memory + VR + Passives

- Requires Engineering resources for design and debug
- Consumes significant PCB space
- Increases component count & assembly costs

**ISI
Solution:**

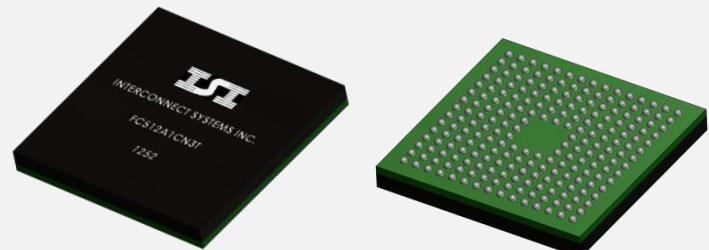
FC512

- ✓ Complete Configuration Solution in a Single BGA Package
- ✓ 32-bit Config Bus Provides Fastest Possible Configuration Time
- ✓ Validated, Integrated Device Simplifies User's System Design

Features

- 512Mbit Flash + Controller
- Supports up to 32-bit wide Fast Passive Parallel (FPP) configuration bus
- Complies with 100ms PCIe spec for large FPGAs including Altera Stratix V 5SGXA7, 5SGXB6, 5SGTC7 and 5SGSD8 using 32b FPP
- JTAG interface for programming internal Flash
- 13x13mm BGA Package available with both lead-free (RoHS 6/6) and eutectic Sn/Pb (RoHS 5/6) solder balls
- Future feature: Unused flash memory can be used for non-volatile user data space

FC512 Package



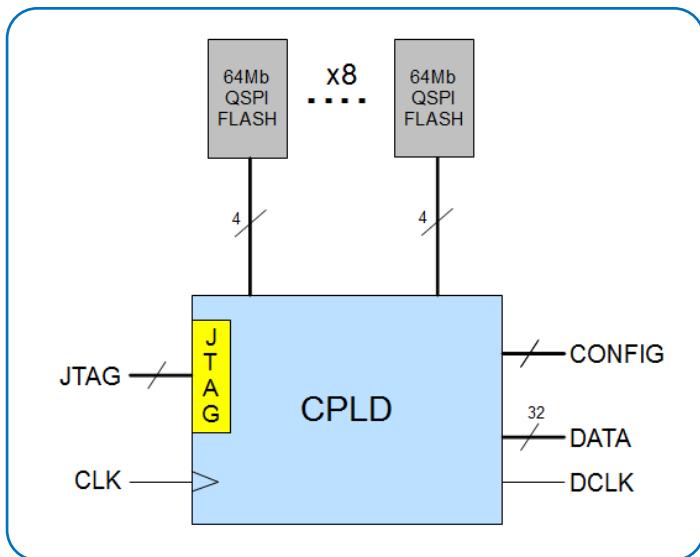
- 13x13mm body size
- 216 balls
- 0.8mm pitch



Actual Size

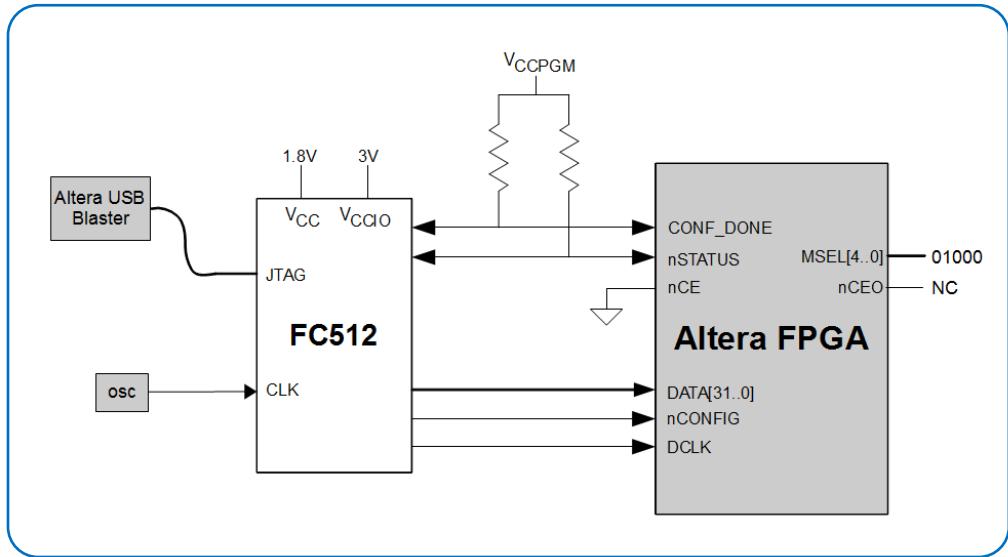
Design

FC512 Block Diagram



The Altera MAX-series CPLD and NOR QSPI Flash are integrated in a 13x13mm BGA package

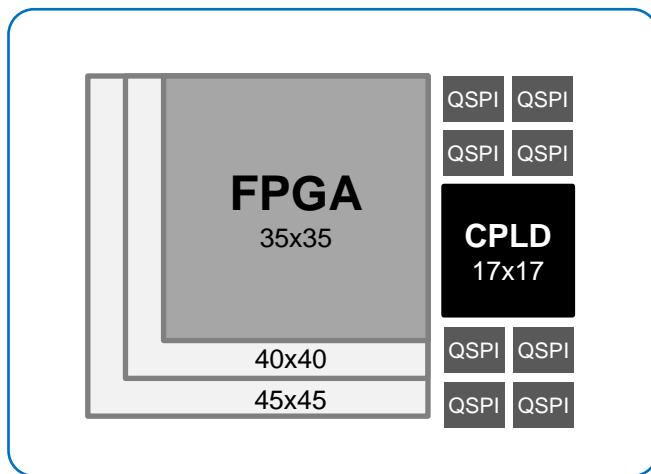
Typical Implementation



The FC512's embedded CPLD contains the Altera PFL megafunction for user programming of the Flash through the JTAG interface and configuration of the Altera FPGA

PCB Area Study

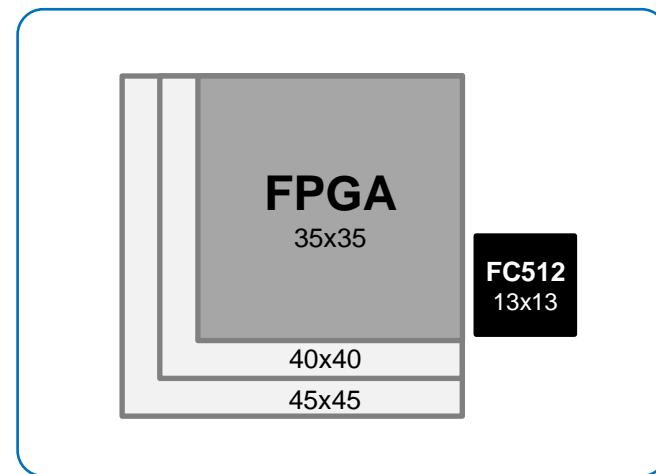
Discrete 32-Bit Implementation



Configuration Area ~ 765 mm²

Calculated assuming 6x8mm QSPI package
& 1mm spacing between components

FC512 Implementation

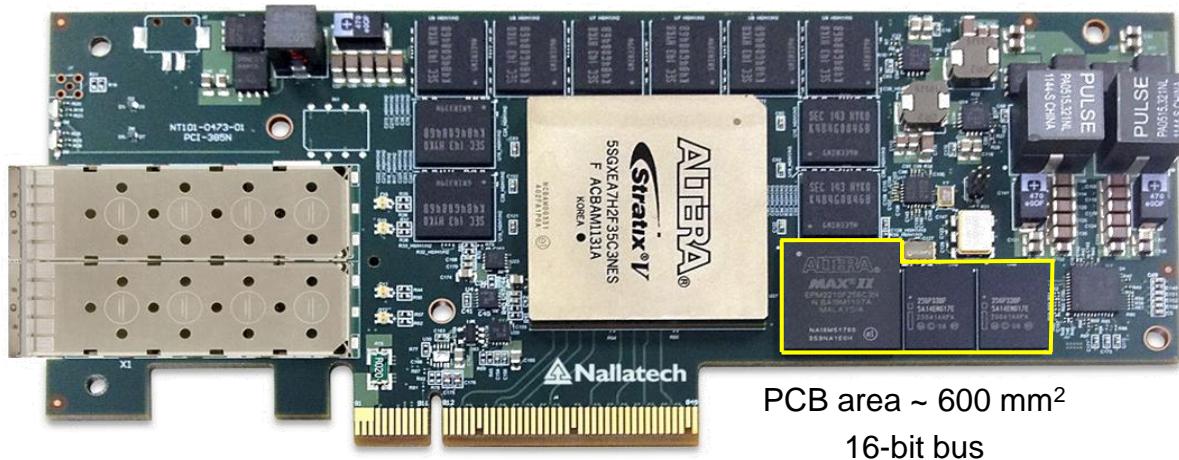


Configuration Area = 169 mm²

> 75% area reduction!

Example: Nallatech 385 PCIe Card

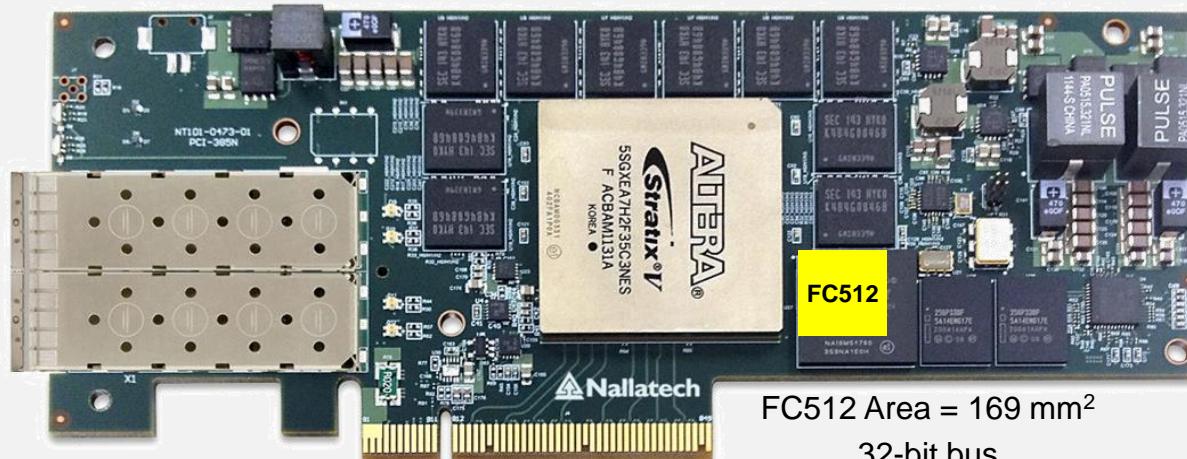
Discrete Components



FC512

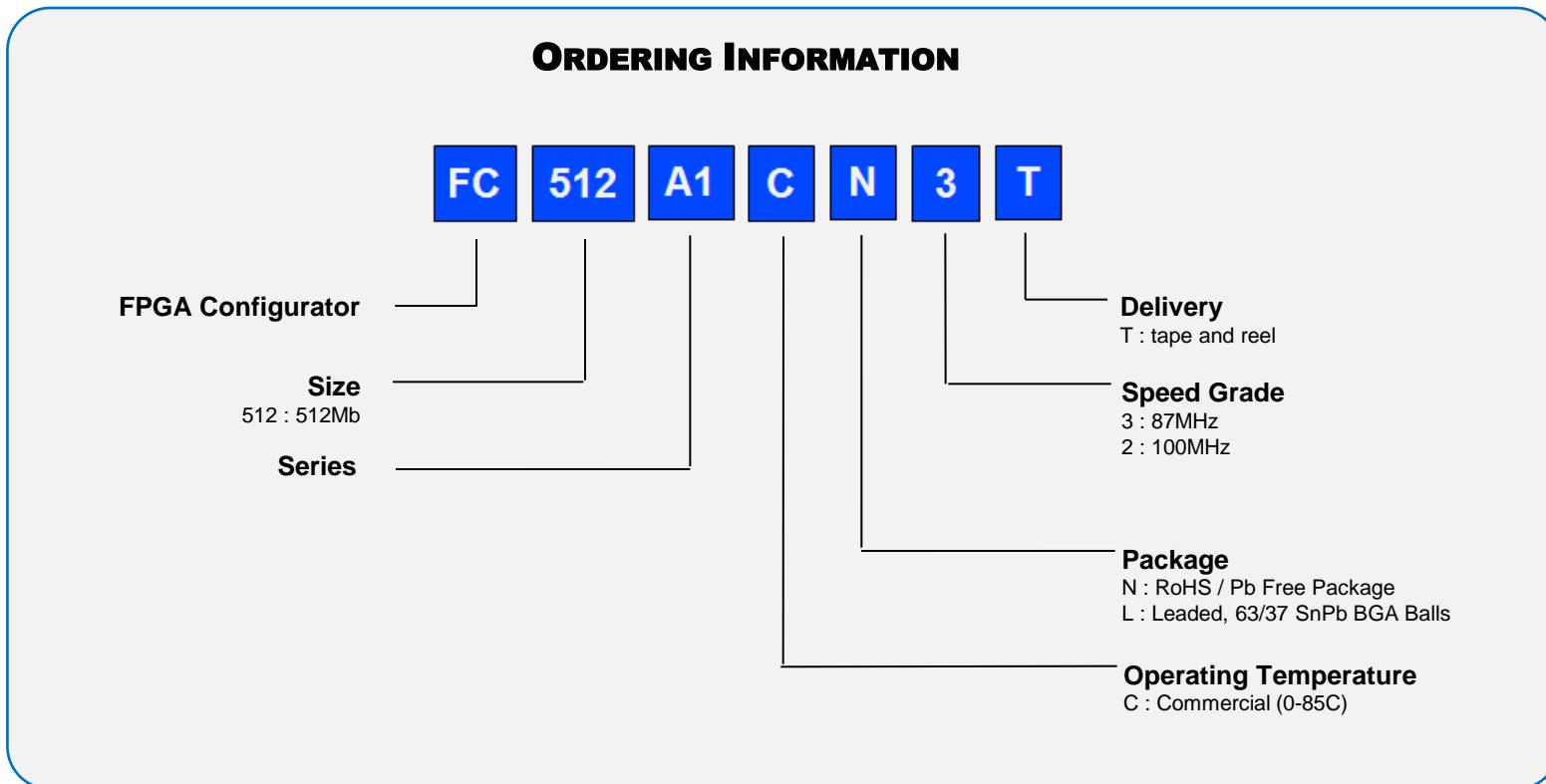
**Twice
the speed**

**1/3
the size**



Ordering Information

Part Numbering Diagram



Contact ISI for information on planned operating temp options

Additional Information

Thank you for your interest!

Product Datasheet is available at www.isipkg.com/fc512

Please contact ISI to discuss your application:

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