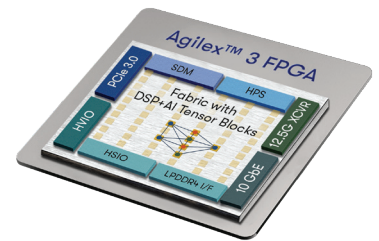**altera**™
An Intel Company

Agilex™ 3 FPGAs and SoCs

Industry's smallest SoC devices with fabric infused with AI Tensor Blocks for higher compute density.

The Agilex 3 device family brings upgraded performance, integration, and security to power and cost-optimized FPGAs.

Unleash the power of cost-efficiency without compromising performance with Altera's Agilex™ 3 FPGAs and SoCs, designed to elevate your project's capabilities through the industry-leading HyperFlex® FPGA architecture, advanced transceiver technology, higher integration, and robust security features. Experience the reliability of Intel's supply chain and the simplicity of the Quartus® Prime Software, ensuring your project's success with a resilient, user-friendly, and secure platform.

Agilex 3 devices also feature enhanced DSP with AI Tensor Blocks, which delivers high-efficiency artificial intelligence (AI) and digital signal processing (DSP) functionality, enabling you to optimize your workloads' performance and power efficiency. With multiple logic densities ranging from 25K to 135K logic elements (LEs), Agilex 3 devices provide scalable solutions tailored to your specific requirements. The variable pitch BGA (VPBGA) packages ensure high I/O density, optimizing space and performance using the same design rules as 0.8 mm ball pitch packaging. Flexible I/O support allows for versatile connectivity options, including high-voltage and high-speed interfaces such as MIPI and 1.25 Gbps low-voltage differential signaling (LVDS). The 12.5 Gbps transceiver, equipped with PCI Express® (PCIe®) 3.0 and 10G Ethernet hard IP blocks, ensures robust data transfer capabilities. Cost-effective memory support with LPDDR4 enhances system efficiency, while the hard processor system (HPS) with dual Arm Cortex®-A55 cores delivers powerful processing capabilities. Agilex 3 devices redefine the landscape of cost-optimized solutions by expanding beyond Altera's renowned MAX® and Cyclone® device series, delivering upgraded performance and capabilities. Harnessing the industry-leading Hyperflex FPGA Architecture built on Intel's advanced Intel® 7 technology, Agilex 3 delivers a diverse, resilient, and secure end-to-end supply chain that is predictable, agile and offers longevity for an unmatched supply experience.

Up to

1.9X
higher fabric performance [1, 3, 4]

38%
lower total power
vs. competing FPGAs [1, 3, 4]

12.5 Gbps
transceivers

Focus Markets

Industrial

- AI in smart factory
- Smart factory automation
- Sensors/motors/connectivity, functional safety, and security
- I/O modules and IoT devices
- Tiny PLC and edge AI

Surveillance, Retail, and Consumer

- Intelligent video processing
- Smart city/retail, V2X
- Trucks, bus systems, trains and railways, EV charging
- Vision processing

Video and Medical

- Connectivity and processing
- Video over IP
- Consumer electronics
- Diagnostic imaging and video
- Patient monitoring

Test and Measurement

- Relay and board management in automated test equipment
- Legacy I/O interfacing in RF instruments

Military

- Host management port
- Avionics (i.e., control, monitoring, and management for actuators, displays, and sensors)

Data Center

- Platform root of trust
- Board management control

Agilex 3 FPGA Features List	
Logic density	25K – 135K LEs
Package size	As small as 12x12 mm
Power comparison	38% lower vs. Cyclone V FPGA [1]
Fabric performance	1.9X vs. Cyclone V FPGA [1]
Maximum transceiver rate	4 x 12.5 Gbps
Maximum PCIe and GbE rate	PCIe 3.0 x4, 10 GbE
Maximum external memory interface data rate	LPDDR4 @ 2,133 Mbps
Peak TOPS INT8	2.54
Maximum DSP 18x19 multipliers	368
Fabric speed	345 MHz
HPS	Dual Arm Cortex-A55 processor @ 800 MHz
MIPI	D-PHY v2.1 at up to 14 @ 2.5 Gbps per lane

Agilex 3 FPGA Key Innovations	
Advanced Intel® technologies and processes	Utilizes advanced Intel 7 process technology, contributing to high performance, power efficiency, and supply chain resiliency.
2nd generation Hyperflex FPGA architecture	Enables significant design optimization to deliver up to 1.9X higher performance or up to 38% lower total power compared with Cyclone V FPGAs.[4]
Transceiver data rates	Supports up to 4 x 12.5 Gbps data rates for data-intensive applications and hardened media access control, physical coding sublayer (PCS), and forward error correction (FEC) up to 4 x 10 Gbps Ethernet (GbE) for networking applications.
Hardened PCIe support	Up to PCIe 3.0 x4 interface
Advanced memory interface support	Supports industry-standard LPDDR4
Hardened processors	Dual Arm Cortex-A55 processor (up to 800 MHz)
AI Tensor Block	Up to 2.8 Peak INT* (TOPS) and supported in the Altera® FPGA AI Suite for edge AI applications.
MIPI support	MIPI D-PHY v2.5 at up to 2.5 Gbps per lane

For More Information

- Agilex FPGAs and SoC FPGAs portfolio page: intel.com/agilex
- Agilex 3 FPGAs and SoC FPGAs product page: intel.com/agilex3
- Quartus® Prime Software page: intel.com/quartus
- Contact an Altera sales representative for inquiries.

altera
TM
An Intel Company

PB-1006-1.1