MiniModule™ FPGA

Flexible PC/104 expansion modules provide you with easy, affordable custom logic, I/O

FEATURES

- Gate counts from 20,000 to 1,000,000.
- Wide variety of performance / size options within the product line
- Convenient configuration / download options including PC/104 (ISA Bus), USB, or JTAG
- Ample I/O pin counts from 132 to 150
- Versatile enough for many applications
- Design software from Altera (free for some FPGA models)
- QuickStart Kits include board, cables, examples, and documentation
- Industry-standard PC/104 form factor

The MiniModule™ FPGA PC/104 expansion modules feature a Field Programmable Gate Array (FPGA) from Altera to bring custom logic and I/O to your embedded system.

Based on Altera's FLEX 10K, FLEX 10KE, and APEX 20KE families of FPGAs, the MiniModule FPGA products provide over 130 configurable I/O pins plus a generous amount of programmable logic to extend the capabilities of PC/104-compatible CPUs and single board computers (SBCs) to meet the needs of a variety of applications.

Typical uses of FPGAs include additional serial ports, general-purpose I/O (GPIO), embedded controllers, digital signal processing, waveform generation and digital modulation, decoders, communications, encryption/security, test and measurement, field configuration or upgrade, and much more.

The MiniModule FPGA fully complies with the industry-standard PC/104 Specification, making it a natural choice for system OEMs who need a drop-in expansion for their new or existing PC/104 or EBX CPUs and SBCs. Whether you design your own logic or license a design from one of a number of hardware IP suppliers in Altera's Megafunction Partner Program, choose MiniModule FPGA for your next design.

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SPECIFICATIONS

General
- **FPGA Support** – Altera's FLEX 10K, FLEX 10KE, and APEX 20KE families
- **Typical Gate Capacity** – 20,000 to 1,000,000 logic gates
- **FPGA Memory** – 12,288 to 327,680 bits
- **General Purpose User I/O** – 132-150 pins, 5V, 3.3V, or 2.5V I/O

Special Features
- **Configuration/Download Options** – Convenient PC/104 (ISA Bus), USB, or JTAG
- **Additional FPGA Features** – ClockLock, ClockBoost, ClockShift, SignalTap, LVDS available
- **Logic Compatibility** – CMOS and TTL I/O
- **Operating Frequency** – Onboard 40 MHz

Mechanical
- **Size** – 90x96mm (3.6x3.8'') PC/104
- **Connectors** – PC/104, I/O: 0.100'' centered
- **Power** – (typical): 1.0A @ +5V
- **Environmental** – 0° to 70° C standard temperature

Warranty
- One-year warranty

ORDERING INFORMATION

MODEL	DESCRIPTION
MM2-FPGA-K-15	QuickStart Kit, Altera FLEX 10K
MM2-FPGA-K-20	QuickStart Kit, Altera FLEX 10KE
MM2-FPGA-K-25	QuickStart Kit, Altera APEX 20KE
MM2-FPGA-Q-01	20K-gate, Altera FLEX 10K20RC240-3 FPGA
MM2-FPGA-Q-02	50K-gate, Altera FLEX 10K50VRC240-3 FPGA
MM2-FPGA-Q-03	70K-gate, Altera FLEX 10K70RC240-4 FPGA
MM2-FPGA-Q-04	70K-gate, Altera FLEX 10K70RC240-3 FPGA
MM2-FPGA-Q-05	100K-gate, Altera FLEX 10K100ARC240-3 FPGA
MM2-FPGA-Q-06	50K-gate, Altera FLEX 10K50EQC240-3 FPGA
MM2-FPGA-Q-07	100K-gate, Altera FLEX 10K100EQC240-3 FPGA
MM2-FPGA-Q-08	100K-gate, Altera FLEX 10K100EQC240-1 FPGA
MM2-FPGA-Q-09	130K-gate, Altera FLEX 10K130EQC240-3 FPGA
MM2-FPGA-Q-10	200K-gate, Altera FLEX 10K200SRC240-3 FPGA
MM2-FPGA-Q-11	200K-gate, Altera APEX 20K200EFC672-3 FPGA
MM2-FPGA-Q-12	400K-gate, Altera APEX 20K400EFC672-3 FPGA
MM2-FPGA-Q-13	400K-gate, Altera APEX 20K400EFC672-2X FPGA
MM2-FPGA-Q-14	600K-gate, Altera APEX 20K600EFC672-3 FPGA
MM2-FPGA-Q-15	1000K-gate, Altera APEX 20K1000EFC672-3 FPGA

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