# DAVe
## Embedded Systems

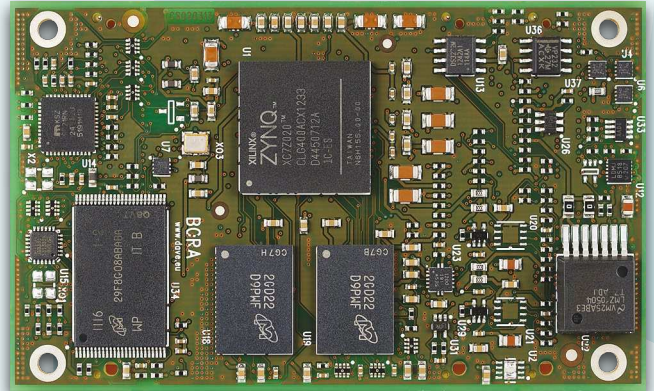# BORA
## XILINX ZYNQ XC7Z010/XC7Z020 CPU MODULE

- Unmatched performance thanks to dual ARM Cortex-A9 @ 800MHz
- All memories you need: on-board NOR and NAND Flash
- Enabling smarter system thanks to Artix-7 FPGA integrated on chip
- FPGA banks wide range PSU input from 1.2V to 3.3V
- Highest security and reliability: internal voltage monitoring and power good enable
- Reduced carrier complexity: dual CAN, USB, Ethernet GB and native 3.3V I/O
- Easy to fit thanks to its small form factor
- Accurate timing application thanks to on-board 5ppm RTC

Actual Size

# XILINX.

BORA is the new top-class Dual Cortex-A9 + FPGA CPU module by DAVE Embedded Systems, based on the recent Xilinx Zynq XC7Z010/XC7Z020 application processor. Thanks to BORA, customers are going to save time and resources by using a compact solution that includes both a CPU and an FPGA, avoiding complexities on the carrier PCB.

The use of this processor enables extensive system-level differentiation of new applications in many industry fields, where high-performance and extremely compact form factor (85mm x 50mm) are key factors. Smarter system designs are made possible, following the trends in functions and interfaces of the new, state-of-the-art embedded products.
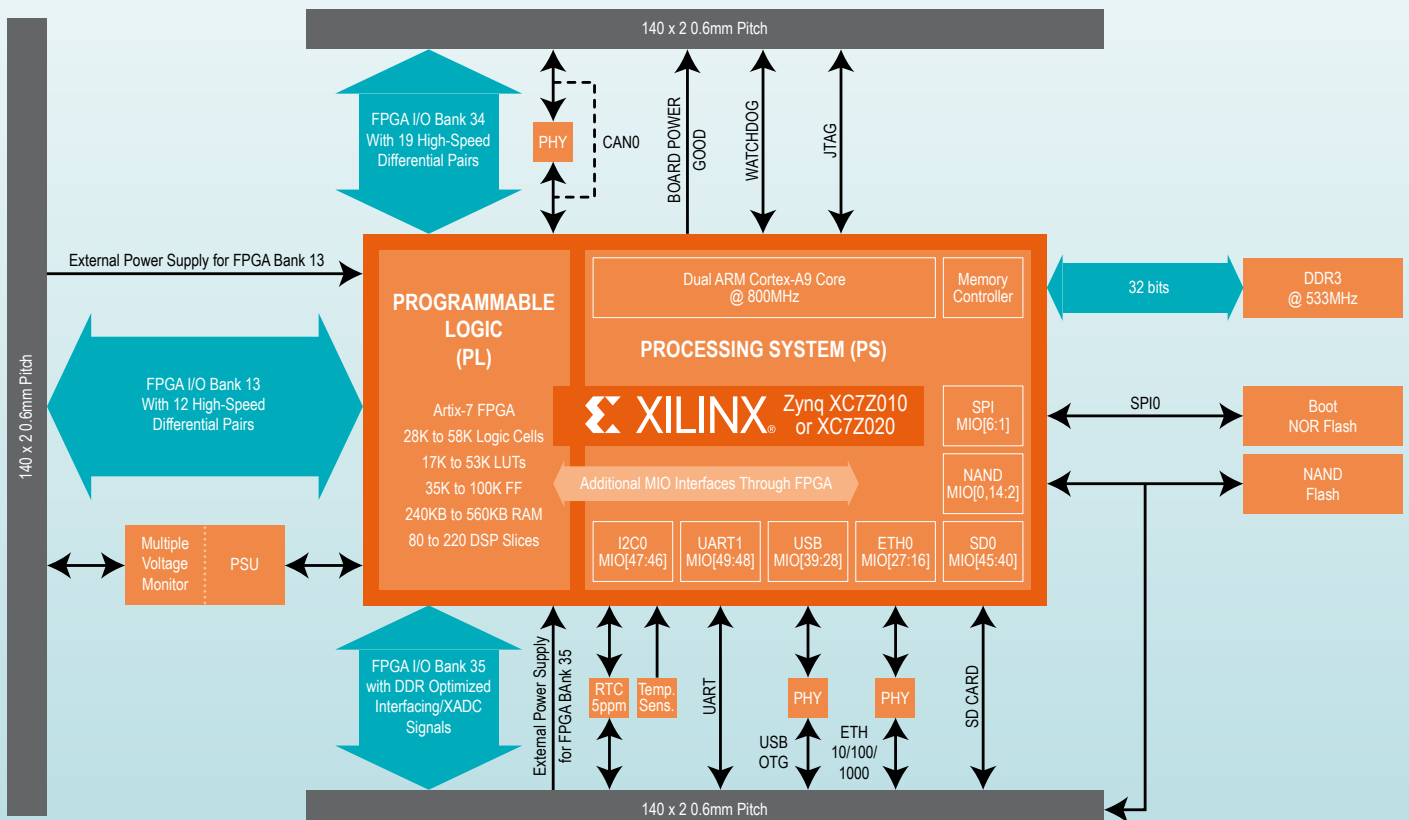
BORA offers great computational power, thanks to the rich set of peripherals, the Dual Cortex-A9 and the Artix-7 FPGA together with a large set of high-speed I/Os (up to 5GHz).

BORA enables designers to create rugged products suitable for harsh mechanical and thermal environments, allowing the development of the most advanced and robust products.

Thanks to the tight integration between the ARM-based processing system and the on-chip programmable logic, designers are free to add virtually any peripheral or create custom accelerators that extend system performance and better match specific application requirements.

BORA is designed and manufactured according to DAVE Embedded Systems' Ultra Line specifications, in order to guarantee premium quality and technical value for customers who require top performances and flexibility.

BORA is suitable for high-end applications such as medical instrumentation, advanced communication systems, critical real-time operations and safety applications.

| CPU | Xilinx Dual ARM Cortex-A9 ZYNQ XC7Z010/ZC7Z020 @ 800MHz |
|---|---|
| **Supervisor** | On-board power supply supervision and power sequencer |
| | Watchdog and RTC |

## Memory

| | |
|---|---|
| *Cache* | 32Kbyte instruction, 32Kbyte data, 512Kbyte L2 for each core |
| *SDRAM* | Up to 1GB DDR3 @ 533MHz |
| *NOR* | Bootable SPI NOR 8, 16, 32 MB |
| *NAND* | All sizes, on request |

## Interfaces

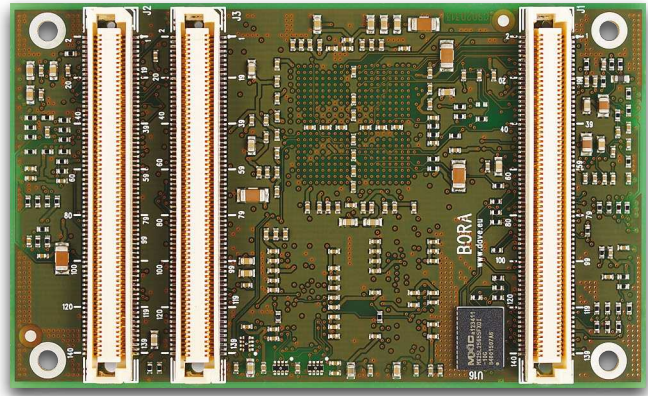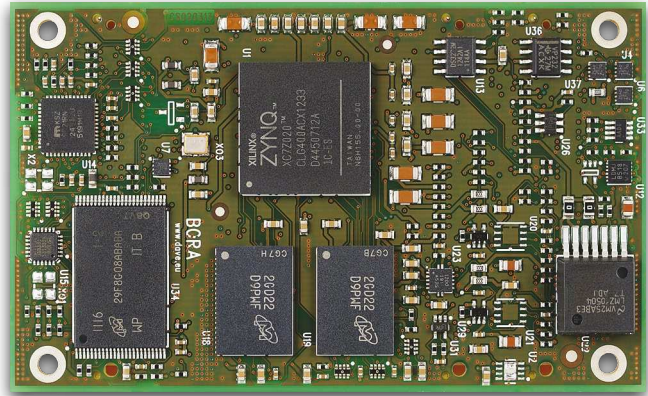| | |
|---|---|
| *LAN* | Fast Ethernet 10/100Mbps |
| | Additional RMII interface |
| *UART* | Up to 2 x UART ports |
| *USB* | Up to 2 x 2.0 OTG ports |
| *CAN* | Up to 2 x CAN |
| *Debug* | JTAG IEEE 1149.1 Test Access Port |
| | CoreSight™ and Program Trace Macrocell (PTM) |
| *Other* | PC Card: 2 x SD/SDIO 2.0/MMC 3.31 compliant controllers |
| | Up to 6 x I²C channels |
| | Up to 6 x SPI channels |
| | GPIOs available |

## FPGA

| | |
|---|---|
| *Model* | Artix-7 |
| *Logic Cells* | 28K to 56K |
| *LUTs* | 17K to 53K |
| *Flip Flops* | 35K to 100K |
| *RAM* | 240KB to 560KB |
| *DSP Slices* | 80 to 220 |
| *Differential Pairs* | Up to 34 differential pairs for high freq. interfaces |

## Mechanical

| | |
|---|---|
| *Connectors* | 3 x 140 pins 0.6mm pitch |
| *Physical* | 85mm x 50mm |
| *Temperature* | Commercial (0°C / +70°C) |
| | Industrial (-40°C / +85°C) |

## PSU

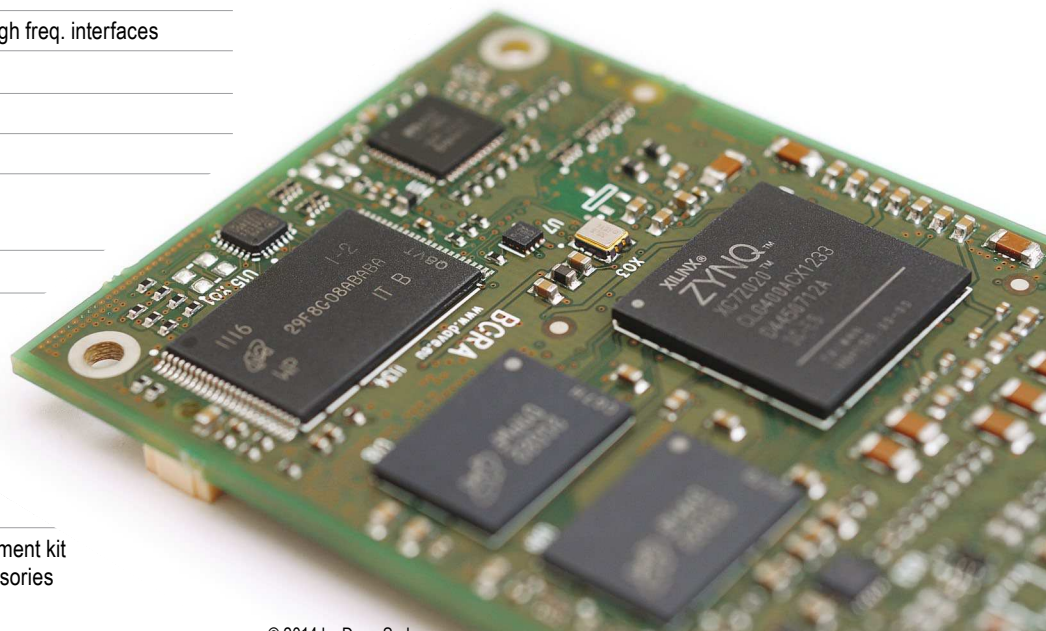| | |
|---|---|
| *Input* | 3.3V, on-board voltage regulation |

## Software

| | |
|---|---|
| *Bootloader* | U-Boot |
| *Multitasking* | Linux 3.xx |

## Evaluation Kit

The BORA Evaluation Kit is available in a development kit that includes a SOM, a carrier board and all accessories required for immediate start-up.
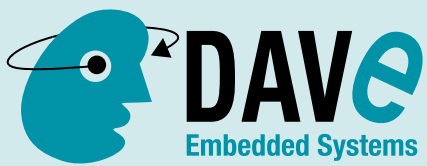




## Product Code Configurator

| Family | Processor | NOR Flash | DDR RAM | NAND Flash | | Temp. Range |
|---|---|---|---|---|---|---|
| DBR | A = XC7Z010-1 | 0 = 0MB | 1 = 1GB | 0 = 0MB | 0 | C = Commercial (0/+70°C) |
| | B = XC7Z010-2 | 3 = 8MB | 9 = 512MB | 1 = 1024MB | | |
| | C = XC7Z010-3 | 5 = 32MB | | 2 = 2048MB | | I = Industrial (-40/+85°C) |
| | D = XC7Z020-1 | 6 = 64MB | | 7 = 128MB | | |
| | E = XC7Z020-2 | | | 8 = 256MB | | |
| | F = XC7Z020-3 | | | 9 = 512MB | | |

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