



## Parallelize your tasks and get more job done with less energy

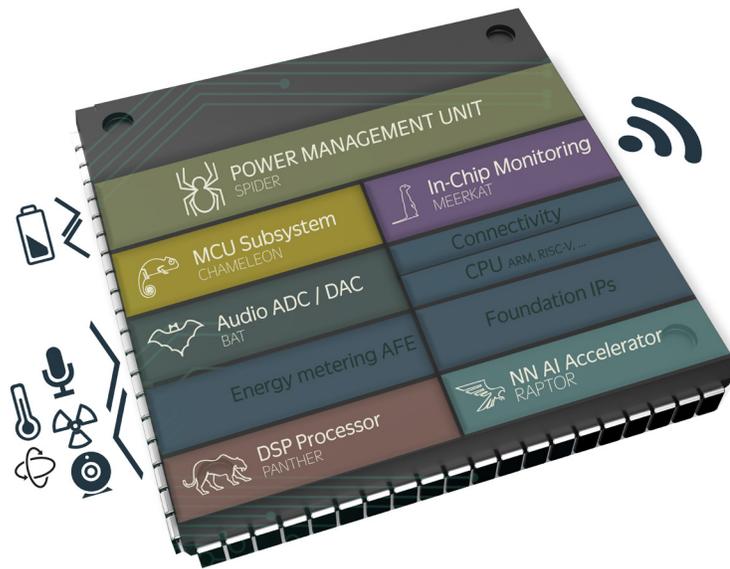
### APPLICATIONS

- Vision: image classification, person detection, gesture recognition
- Audio: keyword spotting, audio scene classification
- Industry: preventive maintenance
- Smart home/city: metering, counting, detection

PANTHER is scalable multi-core Digital Signal Processor IP Platform capable to efficiently run typical signal processing tasks as well as Artificial Intelligence and Machine Learning algorithms.

PANTHER relies on popular RISC-V instruction set and leverages a rich software ecosystem. PANTHER combines ultimate throughput efficiency with optimal silicon area to fit ideally with each SoC requirement.

Software execution on its parallel architecture is streamlined through the delivery of dedicated libraries together with a complete software development kit.



### KEY FIGURES

- Up to 64MAC/Cycle (Configuration 16c – 8b Integer)
- 2TOPs/W running mobilenet V1 @200 Frames/s
- KWS @ 3x less power than state-of-the art competition
- Small footprint: 0.63mm<sup>2</sup> for 4 cores @ 500 GOPS.
- >80% parallelism achieved

### TECHNOLOGY FOR BETTER FUTURE

The solution to deal with data deluge, while preventing the increase of power consumed by data centers, is known as Edge AI. This solution consists in transferring most of the processing intelligence from the cloud to the sensor. It translates into an unprecedented need to increase performances of «smart devices» by a factor of 1,000 at constant energy consumption.

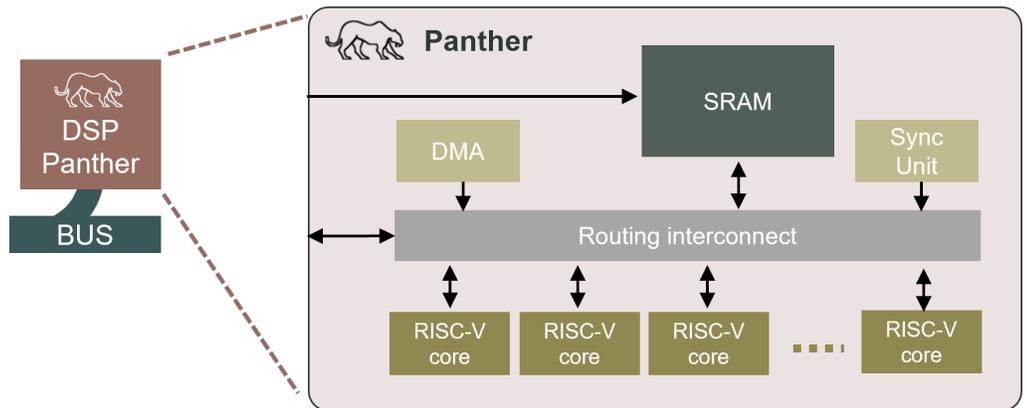
With its SPEED IP platform, Dolphin Design is positioned as THE provider of solutions for Edge AI System-on-Chip designers. We enable our customers to do much more with less energy resulting in major benefits on environment.





## KEY BENEFITS

- Hardware scalability
- Highly parallelized for best power efficiency
- Power optimization based on runtime workload
- DSP software versatility and specialized accelerator energy efficiency at once
- SDK for seamless programming
- AI Toolchain for NN model deployment
- Established RISC V architecture ecosystem



	MAC/cycle (8-bit)	Floating MAC/cycle (8-bit)	Weight and activations	Area (mm <sup>2</sup> ) (in 40nm)	Market
Panther 4 cores	16	4	2, 4, 8-bit	0.63	
Panther 8 cores	32	8		0.90	
Panther 16 cores	64	16		1.64	

## KEY FEATURES

- Configurable RISC V multicore platform from 4 to 16 cores
- Embedded DMA for background data transfer
- Inter-core synchronization unit
- Individual core power management
- SIMD and floating point instruction support
- Proprietary AI/ML instruction extension
- Efficient programming framework with tools and libraries

PANTHER is a highly parallelizable multicore architecture for Digital Signal Processing.

### PARALLEL TASKS HANDLING

Its parallel architecture makes it very efficient to handle multi-threaded algorithms such as the ones used in modern DSP and AI/ML applications.

### PARALLEL EFFICIENCY

Thanks to the Sync Unit and its highly parallel multicore architecture, PANTHER helps solving the software flexibility and energy efficiency quandary.

### MACHINE LEARNING

Additionally to typical floating point and scalar operations, PANTHER has been enhanced with dedicated AI instructions to handle efficiently ML tasks and algorithms.

### COMPLETE SDK

PANTHER comes with a complete toolchain running the most popular AI environments as well as a SDK with Dolphin Design's specific HAL drivers and documentation package.

