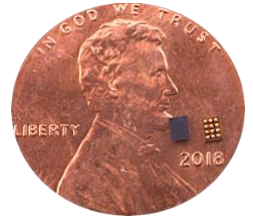


NDP100 Neural Decision Processor

Always-On Speech & Audio Recognition Processor

PRODUCT OVERVIEW

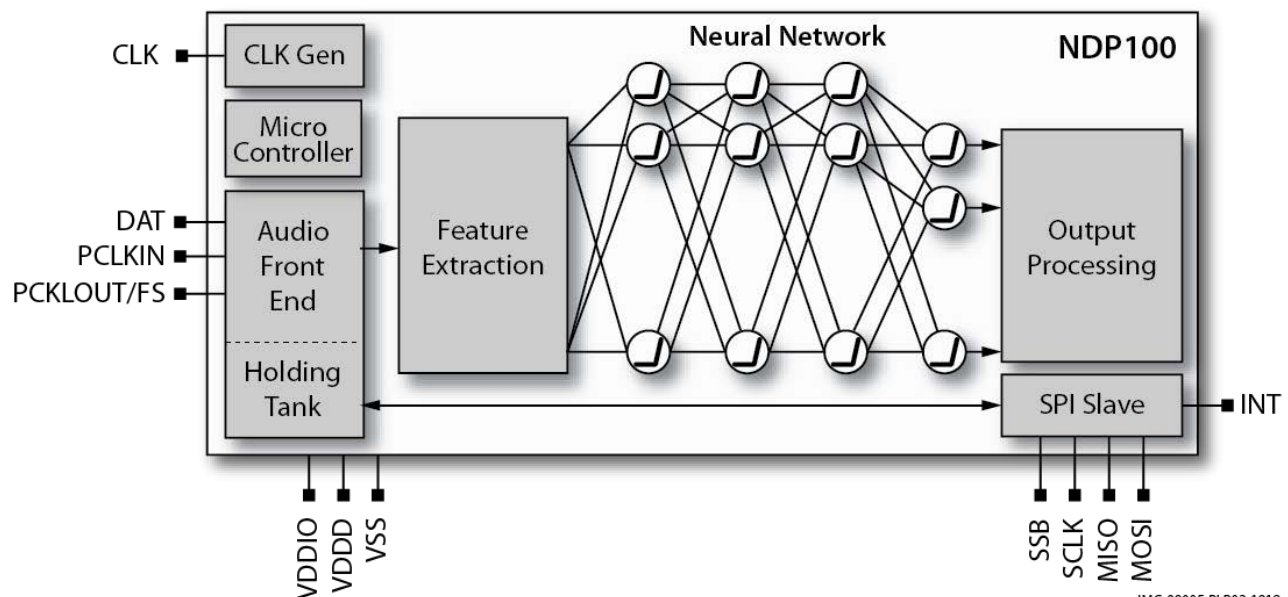
The Syntiant NDP architecture is built from the ground up to run deep learning algorithms. The NDP100 achieves breakthrough performance by highly coupled computation and memory, exploiting the vast inherent parallelism of deep learning and computing at only required numerical precision. The devices combine these elements to achieve approximately 100x efficiency improvement over stored program architectures such as CPUs and DSPs.



NDP100's programmable deep learning network supports dozens of application-defined audio sequences for a variety of use cases including:

- keyword speech interface
- wake word detection
- speaker identification
- sensor applications
- audio event and environment classification

BLOCK DIAGRAM



IMG-00005-BLR02-1918

SYNTIANT®

KEY FEATURES AND BENEFITS

- 12 ball WLBGA package for extremely space constrained environments
- Dual PDM microphone input or PCM-over-SPI input
- Stereo/mono I2S interface multiplexed with PDM
- Direct access to neural network over SPI for sensor applications
- Frequency, time-domain & batch input models
- 16-bit input holding tank with faster than real-time SPI extraction
- General purpose ARM Cortex-M0 processor with 112KB SRAM
- Integrated clock multiplier and dividers support low frequency clock source or external clocking
- Optimized interrupt and SPI slave interface
- Onboard firmware security and authentication
- English Speech Service for keyword training
- Software Development Kit (SDK) integrates in any software environment
- Training Development Kit (TDK) to enable the user of standard frameworks such as TensorFlow for customer-programmed applications
- Support for 64 output classifications
- Active power consumption of <140 µW while recognizing words

APPLICATIONS

The NDP100 enables speech interfaces in the smallest systems, replacing traditional tactile interface elements (buttons, switches and dials) and supporting entirely new form factors and usage models designed to wake up to speech rather than touch. NDP100 application include:

- Mobile phones
- Ear buds and hearing aids
- Bluetooth headsets
- Smart watches
- IoT endpoints
- Remote controls
- Smart speakers

CORPORATE HEADQUARTERS

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