## SYNTIANT

# Always-On Speech & Audio Recognition Processors NDP100 Product Brief

### NDP100 Neural Decision Processors™

#### **Product Overview**

The Syntiant™ Neural Decision Processors™ are self-contained audio classification solutions based on ultra-low-power technology. The NDP100 is designed for keyword spotting (for example, Alexa, Cortana, Ok Google) in battery powered systems. NDP100 supports dozens of application-defined audio sequences for use cases including:

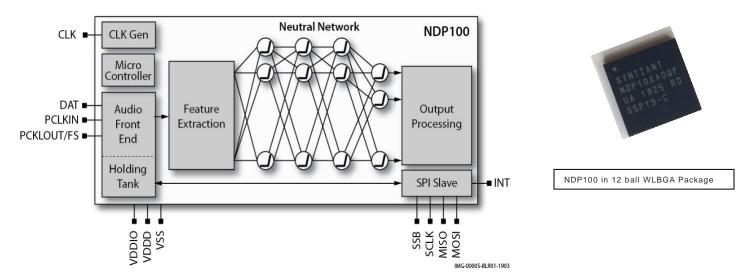
- Keyword Speech interface
- Wake word detection
- Speaker identification
- Audio event and environment classification
- Other 'low-speed' tasks

### **Key Features & Benefits**

- The NDP100 is in a WLBGA package for extremely space constrained environments
- Dual PDM microphone input or PCM-over-SPI input
- Stereo/mono I2S interface multiplexed with PDM
- Frequency, time-domain & batch input models
- 16-bit input holding tank with nominally two seconds of audio and with faster than real-time SPI extraction
- Encoded 'winner', 1-bit & 8-bit outputs
- General purpose ARM M0 processor with 112KB SRAM
- Integrated clock multiplier and dividers supports low frequency clock source or external clocking

- Optimized interrupt and SPI slave interface
- Onboard firmware security and authentication support
- Syntiant English Speech Service for keyword training
- Ultra-low power consumption while always-on <200  $\mu W$
- NDP device control Software Development Kit (SDK) integrates in any software environment
- Optional Training Development Kit (TDK) to enable the user of standard frameworks such as TensorFlow for customer-programmed applications

# NDP100 Block Diagram & Packaging



# **NDP100 Applications**

The NDP100 enables speech interface in the smallest systems to supplement tactile interface (buttons, switches, dials & touch screens) and enable entirely new very small form factors and usage models, designed to wake-up to speech rather than touch. The following are NDP100 applications:

- Mobile phones
- Ear buds
- Bluetooth headsets
- Smart watches
- Toys
- Hearing aids

#### Corporate Headquarters

7555 Irvine Center Drive, Suite 200, Irvine, CA 92618

©2019 Syntiant Corp. All rights reserved. SYNTIANT is a trademark of Syntiant Corp. All other trademarks are the property of their respective owners.

**Disclaimer:** The information given in this document is believed to be accurate and reliable. However, Syntiant Corp does not give any representations or warranties as to the completeness or accuracy of such information and shall have no liability for the use of the information contained herein. Syntiant Corp reserves the right to make changes to this document and the information contained herein at any time and without notice.