The VideoSmart™ VS640 is a high-performance multimedia system on chip (SoC) for a new generation of set-top box (STB) and consumer IoT devices such as far-field voice-enabled smart displays. To enable edge computing AI applications, the SoC integrates a high-performance neural processing unit (NPU) that supports trillions of operations per second. It also includes a quad-core CPU subsystem and the latest-generation GPU. It is supported by the SyNAP™ toolkit, which enables customers to build optimized ML/AI applications for video, vision, and audio AI. Synaptics far-field voice and keyword detection algorithms provide edge-based voice processing.

**FEATURES**

- Quad-core Arm® Cortex®-A55 processor with cryptographic extensions
- DRAM controller; eMMC 5.1 controller
- Dedicated hardware for localized neural network (NN)/machine learning applications (up to 1.6+ TOPS)
- Support for TensorFlow® Lite, Android™ NN API, and OpenVX™

**APPLICATIONS**

- Smart displays
- OTT and hybrid smart set-top box (STB) platforms
- Streaming dongles

**BENEFITS**

- Low system cost
- Secure, best-in-class AI performance
- Low power enabling small form factors
- Support for all major conditional access systems (CASs)

**ASPECTS**

- Ultra HD Set-Top Box SoC
- Sustainable, low-power design
- Secure, high-performance processing
- Minimal form factor
**SYSTEM BLOCK DIAGRAM**

**TRADEMARKS**

Synaptics and the Synaptics logo are trademarks or registered trademarks of Synaptics Incorporated or its affiliates in the United States and/or other countries.

All other marks are the property of their respective owners.

**NOTICE**

Use of the materials may require a license of intellectual property from a third party or from Synaptics. This document conveys no express or implied licenses to any intellectual property rights belonging to Synaptics or any other party. Synaptics may, from time to time and at its sole option, update the information contained in this document without notice.

INFORMATION CONTAINED IN THIS DOCUMENT IS PROVIDED “AS-IS,” WITH NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES OF NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHTS. IN NO EVENT SHALL SYNAPTICS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE USE OF THE INFORMATION CONTAINED IN THIS DOCUMENT, HOWEVER CAUSED AND BASED ON ANY THEORY OF LIABILITY, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, AND EVEN IF SYNAPTICS WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. IF A TRIBUNAL OF COMPETENT JURISDICTION DOES NOT PERMIT THE DISCLAIMER OF DIRECT DAMAGES OR ANY OTHER DAMAGES, SYNAPTICS’ TOTAL CUMULATIVE LIABILITY TO ANY PARTY SHALL NOT EXCEED ONE HUNDRED U.S. DOLLARS.