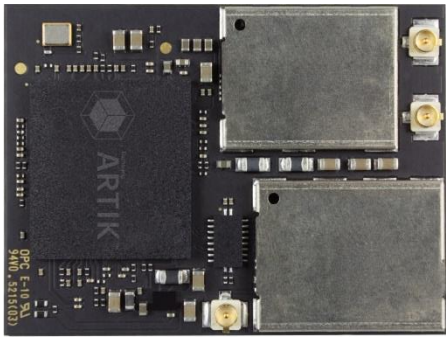**Samsung**

ARTIK™

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PRODUCT BRIEF

ARTIK 1020 Module Front View

Samsung's ARTIK™ 1020 Module is the world's highest performance Internet-of-Things (IoT) module. It is based on an octa-core architecture, containing quad ARM® Cortex®-A15 and ARM® quad Cortex®-A7 cores, DRAM and flash memory, camera and display interfaces, a full complement of digital I/O and analog inputs, and world class connectivity with IEEE802.11a/b/g/n/ac, Bluetooth® 4.1 + LE and a ZigBee radio inside a package that is just 29x39x1.3mm. The scalable processing power of the ARTIK 1020 Module makes it ideally suited for video and image processing tasks like autonomous vehicle navigation, intensive 3D graphics or large immersive displays.
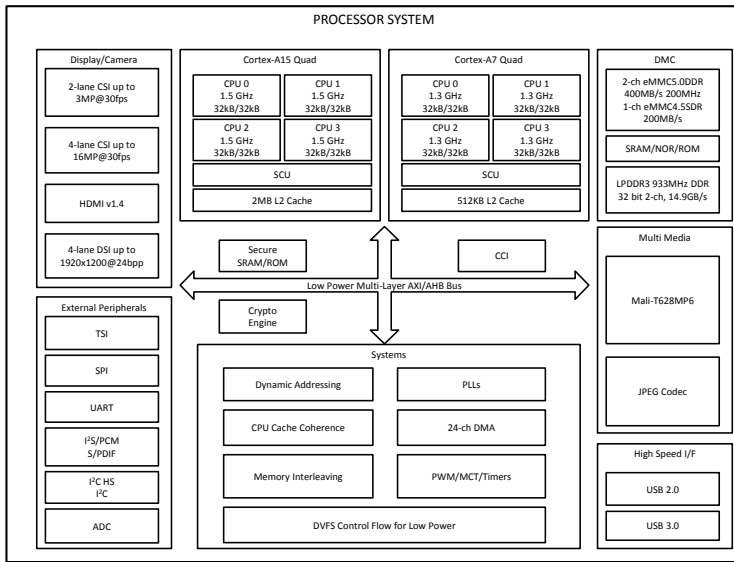
Alternatively, the small size of the ARTIK 1020 Module enables servicing application domains with a high local computation requirement, like model-based robotic control, virtual reality or image processing. The hardware based Secure Element works with the ARM® TrustZone® and Trustonic's Trusted Execution Environment (TEE) to provide "bank level" security end-to-end.
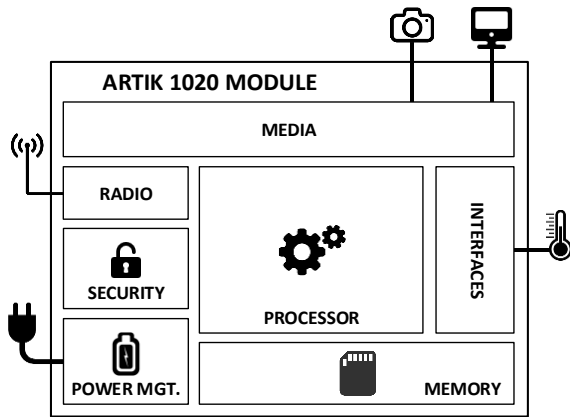

ARTIK 1020 Module Block Diagram

Processor	
CPU	Quad core ARM® Cortex® A15@1.5GHz, Quad core Cortex® A7@1.3GHz
GPU	Mali™-T628 MP6 core
Media	
Camera I/F	1x 2-Lane MIPI CSI up to 3MP@30fps 1x 4-lane MIPI CSI up to 16MP@30fps (Supports YUV and MJPEG)
Display	4-lane MIPI DSI up to FHD 1920x1200@24bpp simultaneous HDMI 1920x1080@60fps
Audio	1x channel PCM and 2-channel I2S audio interface, supporting 5.1 channel audio
Memory	
DRAM	2GB LPDDR3
FLASH	16GB eMMC
Security	
Secure Element	Secure point to point authentication and data transfer
Trusted Execution Environment	Trustonic TEE (NDA required)
Radio	
WLAN	IEEE802.11a/b/g/n/ac
Bluetooth	4.1 + LE
IEEE802.15.4	ZigBee
Power Management	
PMIC	Provides all power on the ARTIK 1020 Module using on-board bucks and LDO's
Interfaces	
Analog and Digital I/O	GPIO, Analog Input, UART, I2C, I2S, SPI, USB 2.0, USB 3.0, SDIO, JTAG

ARTIK 1020 Module Processor Sub System

Processors	Quad core Cortex® A15@1.5GHz 32KB I$ and 32KB D$ per core Shared 2MB L2 Cache. Quad core Cortex® A7@1.3GHz 32KB I$ and 32KB D$ per core Shared 512MB L2 Cache
Display/Camera	Camera I/F up to 16MP@30fps 2-ch/4-lane MIPI CSI@1.5Gbps D-PHY (Supports YUV and MJPEG) HDMI v1.4 1x 4-lane DSI FHD@60fps
DMC	2-channel eMMC5.0 DDR@400MB/s Support for SRAM/NOR/ROM LPDDR3 interface @ 933MHz DDR 32b 2-channel 14.9GB/s
External Peripherals	1xSPI, 1xUART (4-pin), 1xUART (2-pin), 2xI2S/PCM, 4xHS I2C, 4xI2C, 6-channel ADC, 95xGPIO
Multi Media	Mali™-T600 graphics accelerator, JPEG Codec
High Speed Interfaces	1xUSB2.0 Host, 1xUSB2.0 Device 1xUSB3.0, 1-channel SD/SDIO eMMC5.0
Security	Secure Hash
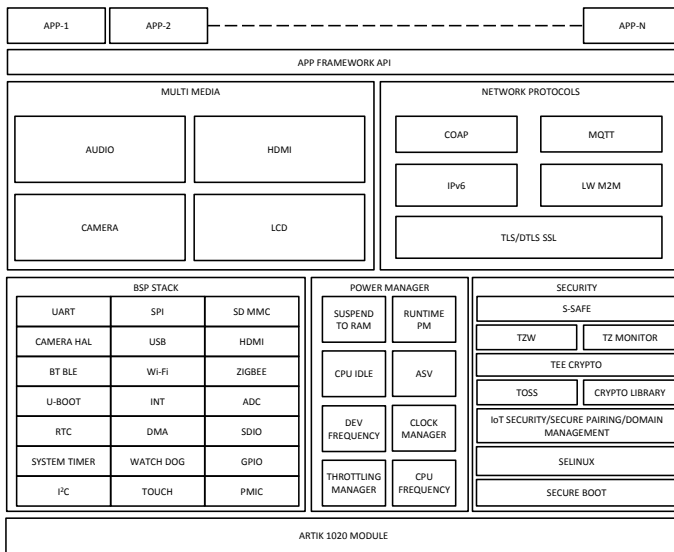
ARTIK 1020 Module Software Stack

ARTIK 1020 Module Security Features

Samsung considers world class security as one of the most important requirements when adding IoT nodes into the cloud. As such Samsung built its IoT ARTIK product family with a security architecture in mind. To assure a secure environment for all IoT nodes, the ARTIK family has dedicated security hardware and software components in place.

Every ARTIK 1020 Module has the ability to authenticate its boot image using a secure hash, and to execute a secure boot once the boot image has been authenticated. Secure communication and key management is facilitated by the Secure Element as part of any ARTIK 1020 Module.

Finally, secure execution can be performed in Trustonic's Trusted Execution Environment (TEE) using ARM® TrustZone®. The ARTIK 1020 Module software stack as described facilitates total security starting from authenticated adoption of an ARTIK 1020 Module IoT node into the cloud to secure communication and remote software updates. Samsung's commitment to security gives developers the ability to create secure user experiences using the ARTIK 1020 Module.

Ordering Information

For volume ordering of the evaluation kits, please contact a sales representative in your area or email sales@artik.io.

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