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Toshiba ApP Lite™ Series:
TZ5000 Application Processor and Reference Design for Media Stick

Highlights

- Offers high-speed wireless transmission (up to 866 Mbps)
- Low-power consumption (less than 1.2 W)
- Small footprint (57 x 24 x 12 mm)
- Supports full HD video content
- Robust security with dedicated secure processor and NAND SiP

Description

The TZ5000 application processor provides one of the best solutions for media streaming devices and supports full HD video content with robust security. The TZ5000 application processor, based on the ARM® Cortex®-A9 processor core, incorporates built-in, high-speed Wi-Fi®, large capacity NAND and a robust, dedicated security processor. The RBTZ5000 media stick starter kit is also available and supports the full features of the TZ5000 on Android™ 4.4.

Features

- CPU: ARM Cortex-A9 MP2 dual core up to 1.2 GHz
- GPU: SGX 540 23 MPoly/s, 1150 Mpix/s, high-efficiency performance matched to full HD contents
- Wireless Network: Integrated DBB – supports dual-band, dual-adaptive-antenna 802.11a/b/g/n/ac at speeds up to 866 Mbps
- NAND Flash: Optional 4 GByte NAND (Packaged with SoC)
- DRAM: DDR3/DDR3L x16/x32 – up to 1866 Mbps
- Media: Video playback H.264/H.263/MPEG-2/MPEG-4 up to 1080p @ 30fps
- OS: Android 4.4 supported, Linux® Kernel v3.10
- Security: Robust security with dedicated secure processor for DRM, secure boot, secure video path
- Power Consumption: Ultra low-power consumption using low-power technology

Processor Product Comparison Chart

	Chromecast™ CPU	TZ5000 Processor
SoC	88DE3005-A1 1-CA9 0.8–1.2 GHz No GPU	TZ5000XBG 2-CA9 0.8–1.2 GHz GPU SGX540
WiFi	11b/g/n (2.4 GHz)	11ac/a/b/g/n 2x2 (2.4 GHz/5 GHz)
NAND	2 GByte MLC	4 GByte MLC
Security	Fair	Good
Power	4W	1.2W
Video Output	1080p	1080p @ 60 fps
Board Size	55 mm x 35 mm	52 mm x 20 mm

Media Stick Applications

A range of applications can be realized using the TZ5000 in a media stick form factor.

- Connect to cloud video streaming services or playback full HD video.
- Connect to cloud game streaming services or stream from home gaming machine.
- Video streaming terminal to a wide display device through the HDMI® interface.
- Cast and display personal media to a wide screen TV from your smart phone and tablet computer (Wi-Fi CERTIFIED Miracast™).
- Stream entertainment channels, movies, TV episodes, sports, news, music, kids' shows, and free channels from any streaming player.
- Android terminal to a wide display device through the HDMI interface.

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System Block Diagram for a Media Stick Implementation
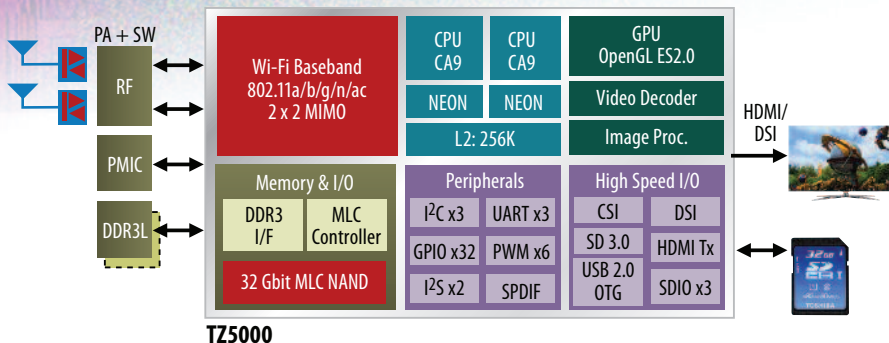
TZ5000

By adding RF and FEM, PMIC, DRAM (DDR3L) and an SD card, a media stick can be designed to work with existing TVs through an HDMI port.

Software:

The following software can be supported if the TZ5000 is used in a media stick application.

- SDK: Android 4.4 for Media Stick, Linux v3.10
- Media API: Open MAX IL user needs to only prepare an Android media application, which kicks Android Stagefright™.
- Graphics: OpenGL ES1.1/2.0

- Wi-Fi: Certified Wi-Fi protocol and libraries for Android systems. No additional work is required.
- Security: TEE based API for communication between ARM and a secure processor. Cryptographic accelerator (RSA, ECC, AES, 3DES, MD-5, SHA-1,SHA-2, OMAC, HMAC and CMAC). True random number generators: Asset protection (secure boot, secure database, key manager, secure timer).

Deliverables:

Samples, datasheet, and application notes are available now.

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