

Product Brief

ApP Lite™ Series: Media Stick Reference Design

Highlights

RBTZ5000-6MA Media Stick

- Improves development efficiency with easy-to-use development kit.
- Includes certified Wi-Fi®/HDMI®/USB design guidelines, reference schematics and parts list.
- Supports all features of the Toshiba TZ5000 ApP Lite processor on Android™ 4.4 with a small form factor.

TZ5000 Application Processor

- Offers high-speed wireless transmission (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

Specifications:

RBTZ5000-6MA Media Stick

- PCB Size: 57 x 24 mm
- SoC platform: Toshiba TZ5000
- Processor: ARM® Cortex®-A9 dual-core to 1.0 GHz
- CPU: SGX® 540 23 MPoly/s, 1150 Mpix/s
- Supported contents: H.264/H.263/MPEG-2/ MPEG-4 up to 1080p, 30 fps
- Storage: 4 GByte NAND (integrated with SoC)
- Memory: 1 GByte DDR3L-1600
- WiFi®: Dual-band, dual-adaptive-antenna Wi-Fi 802.11a/b/g/n/ac to 866 Mbps (Wi-Fi DBB is integrated in the SoC)
- Bluetooth®: Bluetooth 4.0 HID, HFP 1.6, SPP
- Ports: Type A HDMI 1.4b output with HDCP 720p and 1080p up to 60 fps USB 2.0 Type A
- Security: Secure booth, secure video path, DRMS with dedicated secure processor
- Operating System: Android 4.4, Linux® Kernel v3.10

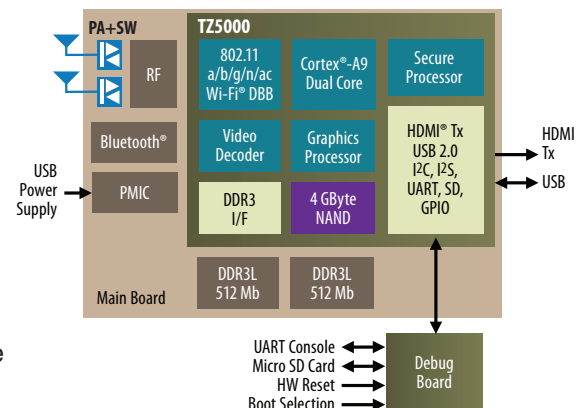
RBTZ5000-6MA Media Stick Applications

- 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.

RBTZ5000 Media Stick Key Performance Indicators/Comparison

- Processor
 - Toshiba: Dual-core central processing unit (CPU) with more than 2 times the performance compared to the Chromecast™ single-core CPU. Supports a graphics processing unit (GPU) that enables a rich graphical user interface (GUI).
 - Chromecast: Single-core CPU, no GPU
- Power consumption
 - Toshiba: Less than 1.2W (typical)
 - Hardware-based, low-power technology achieves ultra-low power consumption without software tuning.
 - Chromecast: Approximately 4W
- Networking
 - Toshiba: 802.11 dual-band (ac/a/b/g/n compatible), 2 x 2 MIMO
 - Chromecast: Toshiba achieves more than 10 times the speed while ensuring stability.
- NAND memory
 - Toshiba: 4 GByte MLC
 - Chromecast: 2 GByte
- DRAM
 - Toshiba: DDR3L-1600 x 32-bit and high efficiency (up to 96%).
 - Chromecast: Toshiba has 2 times the memory bandwidth.
- Size
 - Toshiba: Small 52 mm x 24 x 12 mm footprint
 - Chromecast: Toshiba has produced a processor that is 25% smaller than Chromecast by integrating NAND and Wi-Fi in its SoC.

TZ5000 Hardware Block Diagram



Product Brief

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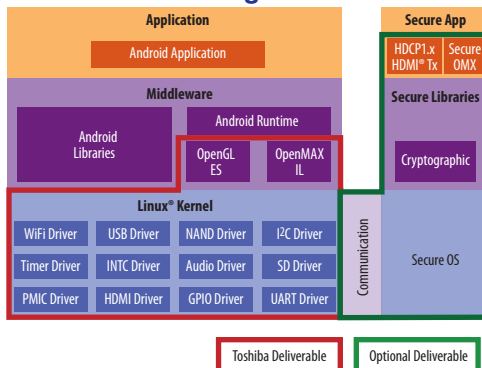
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www.Toshiba.com/taec

Hardware:

- Media streaming stick reference board
- Reference schematics
- Guideline for layout and Gerber data
- Parts list
- Review services of schematics and layout
 - User can start hardware development by modifying our reference design.

Software Block Diagram



Software:

- All required device drivers for media middleware.
- Media API: OpenMAX™ IL is connected and tested with Android Stagefright™.
 - User needs to prepare only Android media application, which kicks Stagefright.
- Graphics: OpenGL ES1.1/2.0

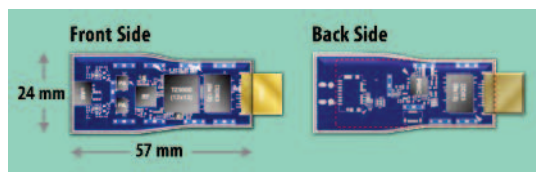
- Ordinary GUI for Android works on our graphics library.
- Wi-Fi: Certified Wi-Fi protocol and libraries for Android systems.
 - No additional work is required by the user.
- Security: Trusted Execution Environment (TEE) based API for communication between ARM and secure processor.
 - Easy-to-use crypt engines and secure keys via standardized API TEE.

Deliverables

Chip samples, datasheet, application note and media stick-type starter kit including:

- Main board, debug board
- Android 4.4 based SDK including OpenMAX IL, OpenGL® ES and Wi-Fi firmware.
- Application manual
- Build instruction
- Reference schematics, parts list, Gerber data and BSP.

RBTZ5000-6MA Board Image



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