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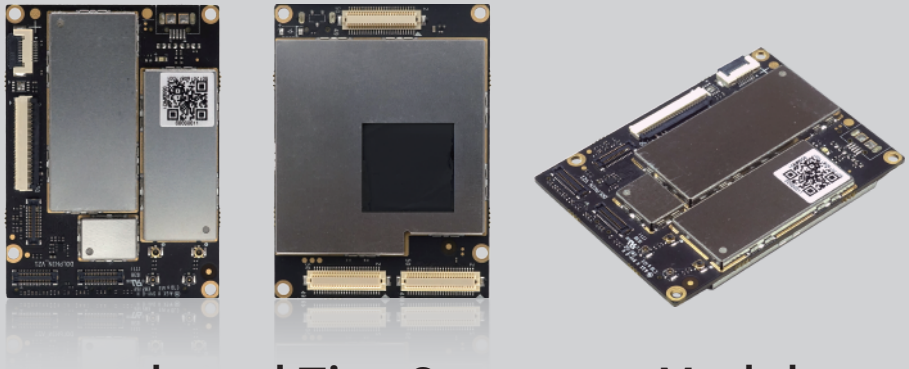


ThunderSoft TurboX®

Snapdragon™ 820 Processor-based Tiny System on Module

The TurboX 820 SoM, powered by the next-gen ARM®v8 64-bit quad-core Qualcomm® Snapdragon™ 820 applications processor (APQ8096), is suitable for several advanced embedded applications. The TurboX 820 SOM provides pin, electrical, connector, and form-factor compatibility across a wide product line of Micro SOMs that share a common carrier board design. The TurboX 820 SOM also comes with an optional EMI shielding for better RF noise protection, while also doubling up as a medium for heat spreading and dissipation to improve performance.

Major Target Markets

Medical Image

Smart City

Robot

VR/AR

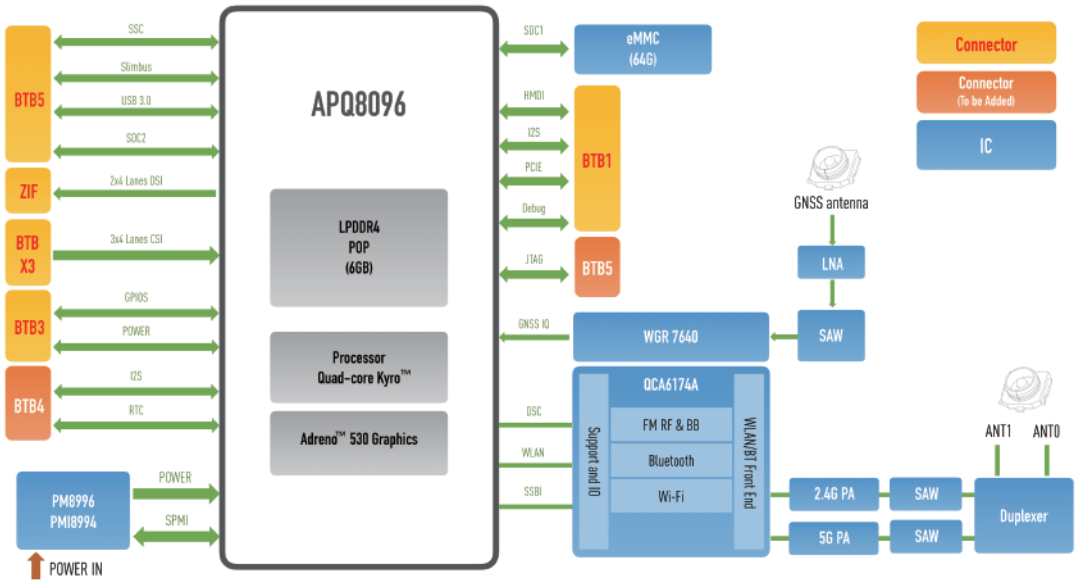
Compute Power and Performance

- Snapdragon 820 processor (APQ8096 SoC)
  - Qualcomm Quad-core ARM®v8 64-bit CPUs organized as two dual clusters viz., Gold@2.2GHz and Silver@1.6GHz each
  - Adreno™ 530 GPU with 64 bit addressing and support for OpenGL ES 3.2, OpenCL 2.0, and Vulcan
  - Hexagon™ 680 DSP with dual-Hexagon vector processor (HVX-512) @825MHz for ultra low-power audio and computer vision processing
  - Dual 14-bit Spectra™ ISP with support for up to 1.2GPix/sec throughput with zero shutter lag
- Onboard LPDDR4 RAM, EMMC 5.1 memory, WiFi/BT and power management
- GPS (Optional)
- Complete 4K60 encode/decode system - 4k60 H.265/VP9 decode with uncompressed 4K display

Storage, Multimedia, and Connectivity

- 4GB LPDDR4@ 1866MHz
- 64GB eMMC 5.1
- UFS 2.0 gear 3 (optional)
- 1x µSD card SD3.0 interface with support up to HS400
- H.264 playback and capture @4K60
- H.265 playback @4K60 and capture @4K30
- Hi-Fi Audio with codec support for MP3, AAC + eAAC, WMA 9/Pro, Dolby AC-3, eAC-3, DTS
- Dual 4-lane DSI DPHY 1.2 and HDMI 2.0 interfaces for touch screen displays
- Supports the capture of up to 28 megapixels with zero shutter lag on MIPI-CSI
- BT 4.2 LE and dual band WLAN 2x2 MU-MIMO

Hardware Structure



Power, Mechanical and Environment

- Power: +3.3V/6A Input
- Operating Temp: -10°C to 55°C
- Storage Temp: -20°C to 80°C
- Relative Humidity: 5 to 95% non-condensing
- Dimensions: 40mm x 55mm

Flexible and Configurable I/O Interfaces

Display

- 2x MIPI-DSI 4-lane, 60fps, Up to 3840*2400@60fps
- 1x HDMI out 2.0 up to 4096×2160, 60fps

Camera

- 3x MIPI-CSI 4-lane, Dual ISP, up to 28MP

Other Interfaces

- USB2.0 x 1; USB3.0 x 1; PCIe 2.1 x 1;
- I2C x 4;UART x 4;SPI x 2; I2S x 1;GPIOs x 4+; SDIO 3.0 x 1;TF card x 1;

Carrier Board For TurboX 820

Audio

- 1x 3.5mm ANC headset
- 5x analog MIC
- 3x digital MIC in
- 2x Speaker out
- Audio codec on board

Operating Environment

- DC-IN +12V

Other Interfaces

- 1 x UART debug
- 2 x USB 2.0 host Type A
- 1 x USB 3.0 client, micro-B
- 3 x Digital IO 4-pin port configurable as I2C, SPI, UART or GPIO
- 2 x Digital IO 2-pin port configurable as UART or GPIO
- 1 x ADC
- 1 x PWM