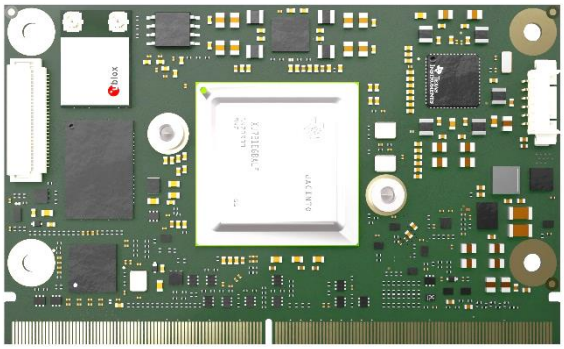
TI TDA4VM SMARC – Accelerated Computing

conga-STDA4



- SMARC Module based on TI TDA4VM application processor and DRA829J Arm® networking processor
- Heterogenous architecture with dual Arm® Cortex®-A72, DSP and accelerators for deep learning and multimedia
- Arm® Cortex®-R5F MCUs to offload real-time communication
- Highest reliability for harsh environment applications
- Industrial temperature range -40°C .. +85°C

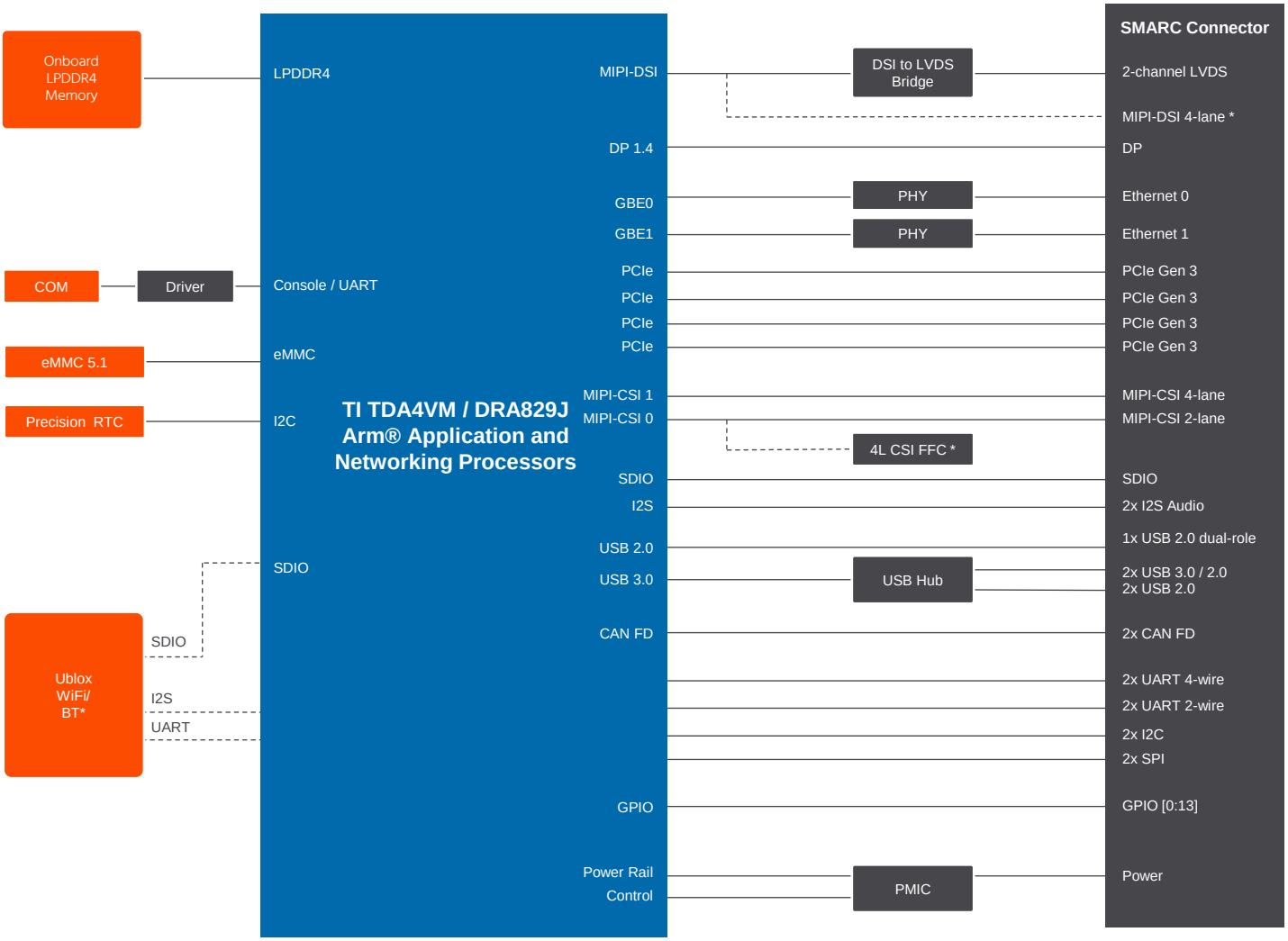
SMARC module

Form factor	SMARC Module Specification 2.1
CPU SoC	**TI TDA4VM and DRA829J Arm® Application and Networking Processors**

	Arm Cortex-A72	ARM Cortex-R5F	DSP Cores	MMA	GPU
TDA4VM	2x @ 2.0 GHz	6x @ 1.0 GHz	1x C7x up to 80 GFLOPs	Deep Learning	3D PowerVR
DRA829J	2x @ 2.0 GHz	6x @ 1.0 GHz	2x C66 up to 40 GFLOPs	Up to 8 TOPS	Rogue 8XE GE8430

DRAM	Up to 8 GB onboard LPDDR4x memory | 3733 MT/s | inline ECC Up to 8 MB of on-chip L3 RAM with ECC and coherency | 512KB on-chip SRAM in MAIN domain, protected by ECC
Ethernet	2x Gbit Ethernet with IEEE 1588 support
I/O Interfaces	1x dual-role USB 2.0 | 2x USB 2.0 | 2x USB 3.0 | 1x SDIO 3.0 | 2x PCIe 3.0 x1 + 1x PCIe 3.0 x2 or up to 4x PCIe 3.0 x1 | 2x GP I^2C | 2x SPI | 4x UART (2x with Handshake) | 2x CAN FD | 14x GPIO | optional full industrial onboard Ublox WiFi/BT module
Mass Storage	eMMC 5.1 up to 128 GB configurable as pseudo-SLC
Sound	2x I^2S
Graphics	Integrated in SoC | Graphics Accelerator 3D GPU PowerVR Rogue 8XE GE8430 | up to 1x Ultra-HD or 4x Full-HD 60fps display resolution | Up to 2 independent display outputs | VPU up to 4k60p H.264 encode / Full-HD H.265 decode | OpenGL ES 3.1 | Open VX | OpenCL
Video Interfaces	1x dual channel 24-bit LVDS | 1x Display Port 1.4 supports up to 3 Full HD 1080p displays via MST | optional 1x MIPI-DSI 4-lane shared with LVDS | 2x MIPI-CSI 4-lanes | 2x integrated Image Signal Processor (ISP) for MIPI-CSI camera
Features	Watchdog Timer | Console Port | High Precision Real Time Clock
AI & Deep Learning	Deep-learning Matrix Multiply Accelerator Accelerators (MMA) with up to 8 TOPS | C7x floating point, vector DSP with up to 80GFLOPs | Vision Processing Accelerators (VPAC) with Image Signal Processor (ISP) and multiple vision assist accelerators | Depth and Motion Processing Accelerators (DMPAC)
Security	Customer programmable root key, up to RSA-4K or ECC-512 | Crypto hardware accelerators, PKA with ECC, AES, SHA, RNG, DES and 3DES | High Assurance Boot support (optional) | SHE, Encryption Engine AES-128, AES-256, TRNG, SHA-1, SHA-2, SHA-256, MD-5 | RSA-1024, 2048, 3072, 4096 and secure key storage
Boot Loader	U-Boot boot loader
Operating Systems	Linux | QNX | RTOS | VxWorks
Power Consumption	Typ. application 5-10W @ 5V
Temperature Range	Operating Temperature Range: -40 to +85°C industrial grade Storage Temperature Range: -40 to +85°C
Humidity	Operating: 10 - 90% r. H. non cond. Storage: 5 - 95% r. H. non cond.
Size	82 x 50 mm (3,23" x 1,97")

conga-STDA4 | Block Diagram



* Assembly Option

conga-STDA4 | Order Information

Article	PN	Description
conga-STDA4/i-TDA4VM-4G eMMC32	051510	SMARC Module based on high-performance industrial TI TDA4VM Arm® Application processor. Features 2x ARM Cortex-A72 @ 2.0GHz + 6x ARM Cortex-R5F + 8 TOPS MMA (deep-learning matrix multiply accelerator), 4GB onboard LPDDR4x memory and 32GB onboard eMMC. Industrial grade temperature range from -40°C to 85°C.
conga-STDA4/i-TDA4VM-2G eMMC32	051511	SMARC Module based on high-performance industrial TI TDA4VM Arm® Application processor. Features 2x ARM Cortex-A72 @ 2.0GHz + 6x ARM Cortex-R5F + 8 TOPS MMA (deep-learning matrix multiply accelerator), 2GB onboard LPDDR4x memory and 32GB onboard eMMC. Industrial grade temperature range from -40°C to 85°C.
conga-STDA4/i-DRA829J-4G eMMC32	051512	SMARC Module based on high-performance industrial TI DRA829J Arm® Networking processor. Features 2x ARM Cortex-A72 @ 2.0GHz + 6x ARM Cortex-R5F, 4GB onboard LPDDR4x memory and 32GB onboard eMMC. Industrial grade temperature range from -40°C to 85°C.
conga-STDA4/i-DRA829J-2G eMMC32	051513	SMARC Module based on high-performance industrial TI DRA829J Arm® Networking processor. Features 2x ARM Cortex-A72 @ 2.0GHz + 6x ARM Cortex-R5F, 2GB onboard LPDDR4x memory and 32GB onboard eMMC. Industrial grade temperature range from -40°C to 85°C
conga-STDA4/CSP-B	051550	Passive cooling solution for SMARC Module conga-STDA4 based on TI TDA4VM and DRA829J Arm® processors. All standoffs are with 2.7 mm bore hole.
conga-STDA4/HSP-B	051551	Standard heatspreader for SMARC Module conga-STDA4 based on TI TDA4VM and DRA829J Arm® processors. All standoffs are with 2.7 mm bore hole.
SMARC/CSA Adapter	050060	Active cooling solution adapter for SMARC modules used in combination with module heat spreader.
conga-SEVAL	007010	Evaluation carrier board for SMARC modules.
conga-SMC1/SMARC-ARM	020750	3.5" carrier board for congatec SMARC modules based on ARM architecture.

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