

# TI TDA4VM SMARC – Accelerated Computing

## conga-STDA4

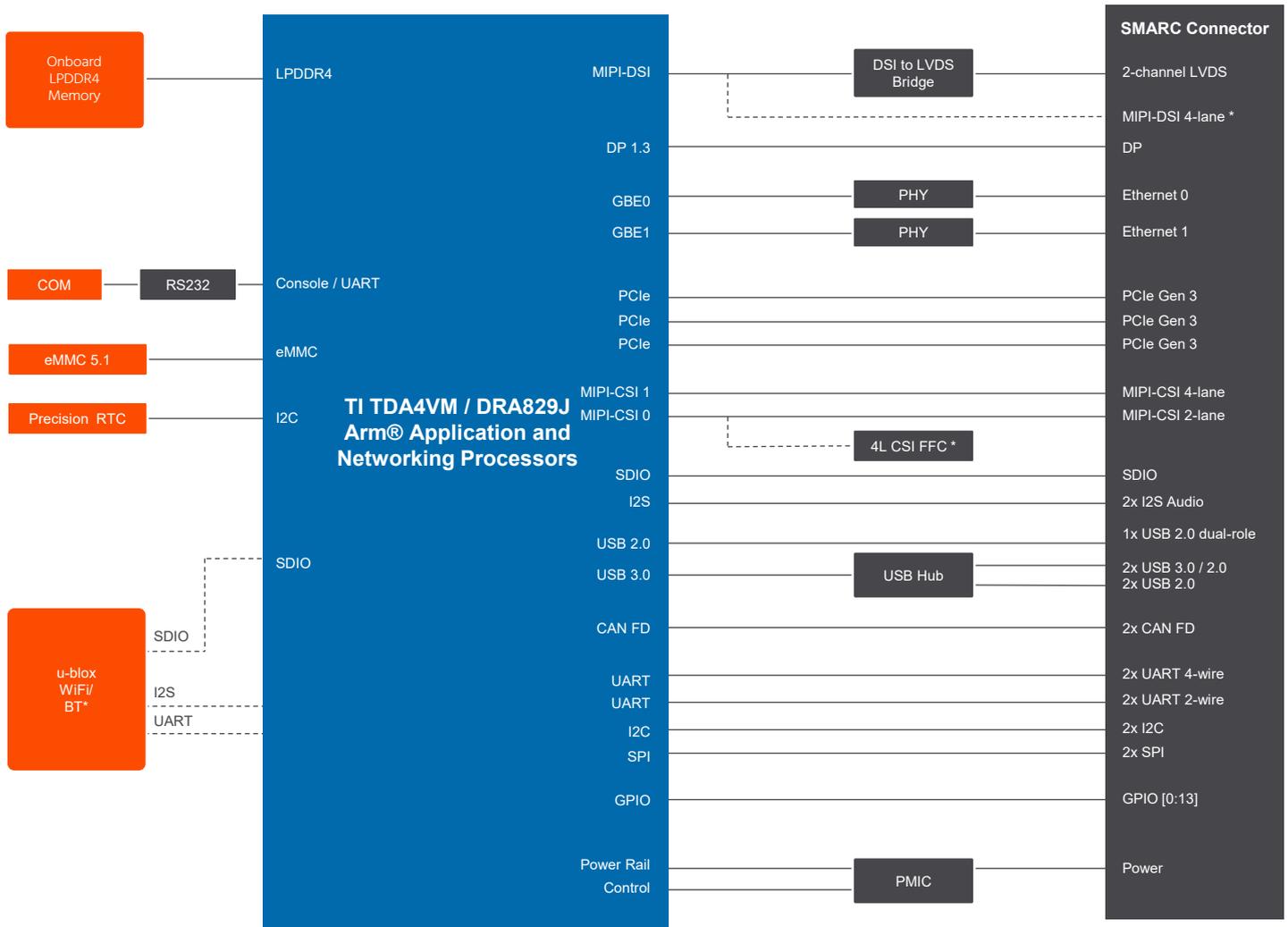


- SMARC Module based on TI TDA4VM AI application processor and DRA829J Arm® networking processor
- Heterogenous architecture with Arm® Cortex®-A72, DSP and accelerators for deep learning and AI
- Arm® Cortex®-R5F to offload real-time communication
- Highest reliability for harsh environment applications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



<b>Form factor</b>	SMARC Module Specification 2.2					
<b>SoC</b>	<b>TI TDA4VM and DRA829J Arm® Application and Networking Processors</b>					
	<b>Arm Cortex-A72</b>	<b>ARM Cortex-R5F</b>	<b>DSP Cores</b>	<b>MMA</b>	<b>GPU</b>	
<b>TDA4VM88</b>	2x @ 2.0 GHz	6x @ 1.0 GHz	1x C7x up to 80 GFLOPs &	Deep Learning	3D PowerVR	
<b>DRA829JM</b>	2x @ 2.0 GHz	6x @ 1.0 GHz	2x C66 up to 40 GFLOPs	up to 8 TOPS	Rogue 8XE GE8430	
<b>DRAM</b>	Up to 8 GB onboard LPDDR4 memory   4266 MT/s   inline ECC   8 MB of on-chip L3 RAM with ECC and coherency   512KB on-chip SRAM in MAIN domain, protected by ECC					
<b>Ethernet</b>	2x Gbit Ethernet with IEEE 1588 support					
<b>I/O Interfaces</b>	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 3x PCIe 3.0 x1   2x I <sup>2</sup> C   2x SPI   4x UART (2x with Handshake)   2x CAN FD   14x GPIO   optional full industrial onboard u-blox WiFi/BT module					
<b>Mass Storage</b>	eMMC 5.1 up to 128 GB optional pseudo-SLC					
<b>Sound</b>	2x I <sup>2</sup> S					
<b>Graphics</b>	Integrated in SoC   Graphics Accelerator 3D GPU PowerVR Rogue 8XE GE8430   up to 1x Ultra-HD or 4x Full-HD 30fps display resolution   up to 4 concurrent displays   VPU up to 4kp30 H.264/H.265 decode / 1080p60 H.264 encode   OpenGL ES 3.1   OpenVX   OpenCL					
<b>Video Interfaces</b>	1x dual channel 24-bit LVDS   1x Display Port up to 4kp30   optional 1x MIPI-DSI 4-lane shared with LVDS   2x MIPI-CSI   integrated Image Signal Processor (ISP) for camera on TDV4VM					
<b>Features</b>	Watchdog Timer   Console Port   high precision Real Time Clock					
<b>AI &amp; Deep Learning</b>	Deep-learning Matrix Multiply Accelerator Accelerators (MMA) with up to 8 TOPS (8b)   C7x floating point, vector DSP with up to 80 GFLOPs   Vision Processing Accelerators (VPAC) with Image Signal Processor (ISP) and multiple vision assist accelerators   Depth and Motion Processing Accelerators (DMPAC)					
<b>Security</b>	Customer programmable root key, up to RSA-4K or ECC-512   Crypto hardware accelerators, PKA with ECC, AES, SHA, RNG, DES and 3DES   Secure boot with secure runtime support   SHE, Encryption Engine AES-128/192/256, TRNG, SHA-1, SHA1 and SHA2-224/256/384/512, MD5   RSA-1024, 2048, 3072, 4096 and secure key storage					
<b>Boot Loader</b>	U-Boot boot loader					
<b>Operating Systems</b>	Linux					
<b>Power Consumption</b>	Typ. application 5-10W @ 5V					
<b>Temperature Range</b>	Operating Temperature Range:		-40 to +85°C industrial grade			
	Storage Temperature Range:		-40 to +85°C			
<b>Humidity</b>	Operating:		10% to 85% r. H. non cond.			
	Storage:		5% to 85% r. H. non cond.			
<b>Size</b>	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 LPDDR4 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 LPDDR4 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 + 8 TOPS MMA (deep-learning matrix multiply accelerator), 4GB onboard LPDDR4 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 + 8 TOPS MMA (deep-learning matrix multiply accelerator), 2GB onboard LPDDR4 memory and 32GB onboard eMMC. Industrial grade temperature range from -40°C to +85°C.
conga-STDA4/i-TDA4VM-2G eMMC32 MAYA-W260	051520	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 LPDDR4 memory and 32GB onboard eMMC. Features u-blox Wifi/BT module MAYA-W260. 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.