

Graphics SoC SC1810 Series

OpenVX Compliant Hardware Accelerator



State-of-the-art functions and performance for in-vehicle graphics display applications

The SC1810 Series is optimized for in-vehicle graphics display applications such as digital clusters, central HMI and surround-view-systems. In addition to its high resolution graphics capability with improved 3D image processing performance which is five times more than that of the company's previous products, the SoC is also capable of handling 6 channels Full HD video inputs and 3 channels of Full HD display outputs.

The SoC realizes "Integrated HMI (Human Machine Interface) system" which manages various information

from inside and outside the car and controls multiple displays.

Furthermore, the SC1810 is equipped with a proprietary "Vision Processor Unit (VPU)", which is compliant with the computer vision API OpenVX, developed by the standardization organization Khronos Group. The SC1810 VPU includes OpenVX compliant hardware accelerator, as well as programmable data parallel accelerator, enabling advanced image recognition and other advanced functions at high speed and low power consumption.

■ Features

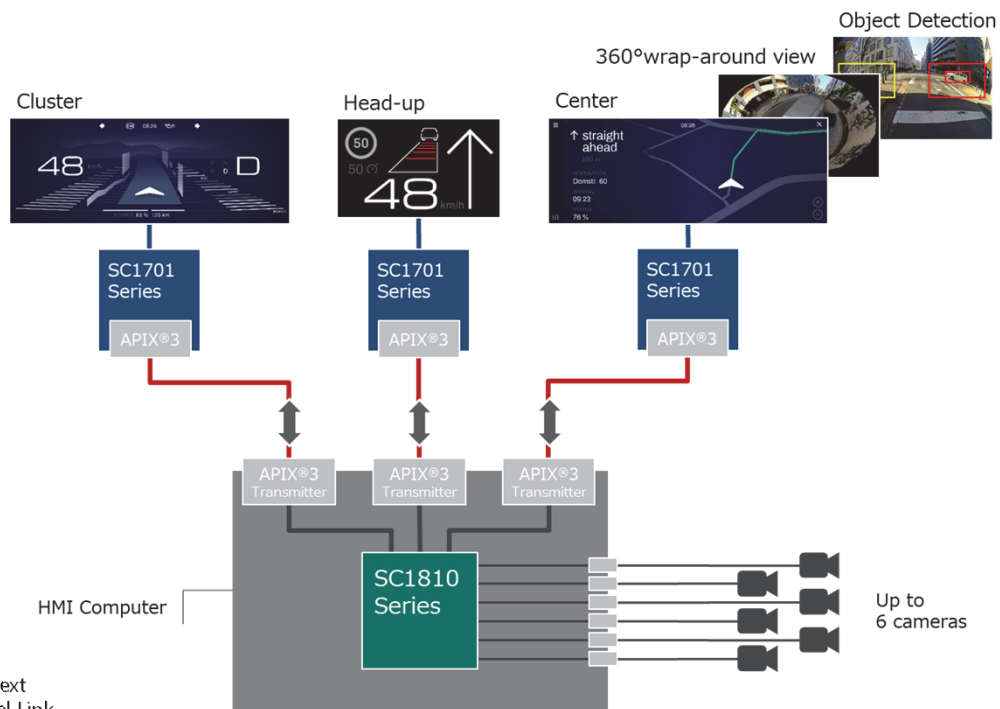
- Quad Arm® Cortex™ A9 MPCore™
- Arm® Neon™ SIMD Engine
- 3D Engine (OpenGL® ES 3.1) POWERVR 8XE
- Socionext SEERIS Capture/Graphics/Display Engines
- Socionext Vision Processor
- DDR3-1866; DDR3L-1600, 16/32/64 bus width
- 3 Independent Display controller
- 6 Independent Video Capture Units
- Multi-format Decoder Full-HD: 6x30fps or 2x60fps
- Wide range of peripherals for external connectivity
- Multi-format Encoder Full-HD: 2x60fps
- Motion JPEG Decoder Full-HD 6x30fps
- Standard I/O: UART, SPI, USB, Ethernet AVB etc.
- Automotive I/F: MediaLB® (3-/6-Pin), CAN
- FCBGA-1024; 0.8 pitch

socionext™		Memory		
SC1810 Series		SRAM 128k	16ch DMA	
		DDR3 1866; DDR3L 1600 16/32/64-bit		
Connectivity		Main Processor		System
ADC 12bit	HS-SPI	Arm® Neon	Arm® Neon	Watchdog
SPI Master	USB 2.0	Arm® Cortex-A9	Arm® Cortex-A9	Timer
SDIO/MMC	UART/USART	Arm® Cortex-A9	Arm® Cortex-A9	JTAG
I2C	I2S	I-Cache 32kB	I-Cache 32kB	PWR Mgmt
PWM	GPI	D-Cache 32kB	D-Cache 32kB	
MediaLB	CAN	L2-Cache 1024kB		
Ethernet-AVB		Vision and 3D Graphics Processor		Video
		Socionext Vision Processor Unit	PowerVR 8XE 3D Shading Engine OpenGL ES 3.1	H264 De-/Encoder
				Motion JPEG Decoder
Capture Engine	SEERIS 2D Engine	Display Engine		Display1 Engine
MIPI-CS12, DRGB888, YCbCr, ITU-R BT.656, SMPTE, Histogram	Pixel Engine SEERIS-MBP	Display Engine SEERIS-MCR		1920x1080, 24Bit up to 8 layers, External Synchronization Dithering, DualView, TCON, SigUnit
Capture Capture Capture	Fill, Copy, Blend, Rop2/3, Scale, Rotate, FIR	1920x1080, 24Bit up to 8 layers Warping, Dithering DualView, TCON, SigUnit		DRGB888, YUV422, FPD-Link
Capture Capture Capture		DRGB888, DRGB888, YUV422, YUV422		

Specifications

Features	SC1810AR3-134	SC1810AR3-113	SC1810AR3-103
Package-Pin	FCBGA-1024		
Size,Pitch	27x27mm, 0.8mm		
Processor	Arm® Cortex™-A9 Dual L1 Cache I:32KB + D:32KB L2 Cache 1MB 1066MHz	Arm® Cortex™-A9 Quad L1 Cache I:32KB + D:32KB L2 Cache 1MB 1066MHz	
Memory	DDR3-1866/DDR3L-1600 ×16, ×32, ×64		
Graphics	3D Engine PowerVR™ Series8XE GE8300 2D Engine Socionext SEERIS™		
Video Output	Display Controller 2× up to 1920×1080p DRGB, FPD-Link, YUV	Display Controller 3× up to 1920×1080p DRGB, FPD-Link, YUV	
Video Input	Video Capture 4×1920x1080 DRGB, YUV, MIPI-CSI2	Video Capture 6×1920x1080 DRGB, YUV, MIPI-CSI2	
Codec	H.264 Decoder M-JPEG Decoder		H.264 Encoder/Decoder M-JPEG Decoder
Recognition	Socionext Vision Processor(Open VX) DPA-only	Socionext Vision Processor(Open VX) DPA+HWA	
Strage	USB2.0 host/func x1 SD/eMMC rev3.0 x1		
Peripherals	Standard I/O I2C, I2S, UART, SPI, etc		
Network	CAN, MOST 3-Pin, Ethernet-AVB(MII/RMII/GMII,IEEE802.1AS/IEEE802.1Qav/IEEE802.1Qat)		
Support OS	eT-Kernel QNX		

Display Domain Architecture



* SEERIS is a trademark of Socionext

* APIX stands for Automotive Pixel Link

APIX is a Point-to-Point Video and Data Link optimized for Automotive environment provided by Inova Semiconductor, which is Headquartered in Munich, Germany

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