



Graphics Display Controllers

MB88F334/-6 - SC1711AH5 - SC1701AK3 - SC1701AH5



Next Generation In-Vehicle Remote Display Controllers supporting Domain Architecture

Socionext SC172x Series, enables highly optimized and cost-effective automotive display controller solutions, covering a broad range of in-vehicle remote display use cases. With a high level of integration, SC172x, reduces the overall BOM content, realizing competitive, cost optimized Automotive cockpit display systems.

Embedded features, including our patented SERIES graphics processing & Signature Units, provide key safety and integrity elements. Some SC172x Series variants, have two display controllers in a single device, which enable flexible architectures, including applications having more than one display in a single chain.

Optional APIX video link supports up to 12 Gbps uncompressed or equivalent to 28 Gbps compressed video data by utilizing VESA DSC compression method.

Key features:

- Up to 4K Resolution (3840 x 2160 @60Hz / 30bpp)
- Socionext SEERIS® 2D Graphics Engine
- Multiple video interfaces (LVDS, MIPI-CSI, APIX)
- Display Output Interfaces (OpenLDI, mini-LVDS, RSDS, TTL)
- Dual Display Controller and dual TCON integrated
- Signature Unit and Safety layer
- Touch Controller connectivity and Audio Generator
- Wide range of peripherals for external connectivity
- Spread Spectrum Modulation to reduce EMI
- AEC-Q100 qualification
- Support for Automotive Safety and Integrity (ASIL B)
- 2 package variants for design and BOM flexibility
- Optional APIX®3 receiver
 - up to 12 Gbps with HDCP 1.4
 - Ethernet extension support

socionext™

SC172x Series

Memory

128kB Flash	256kB SRAM (9kB with ECC)
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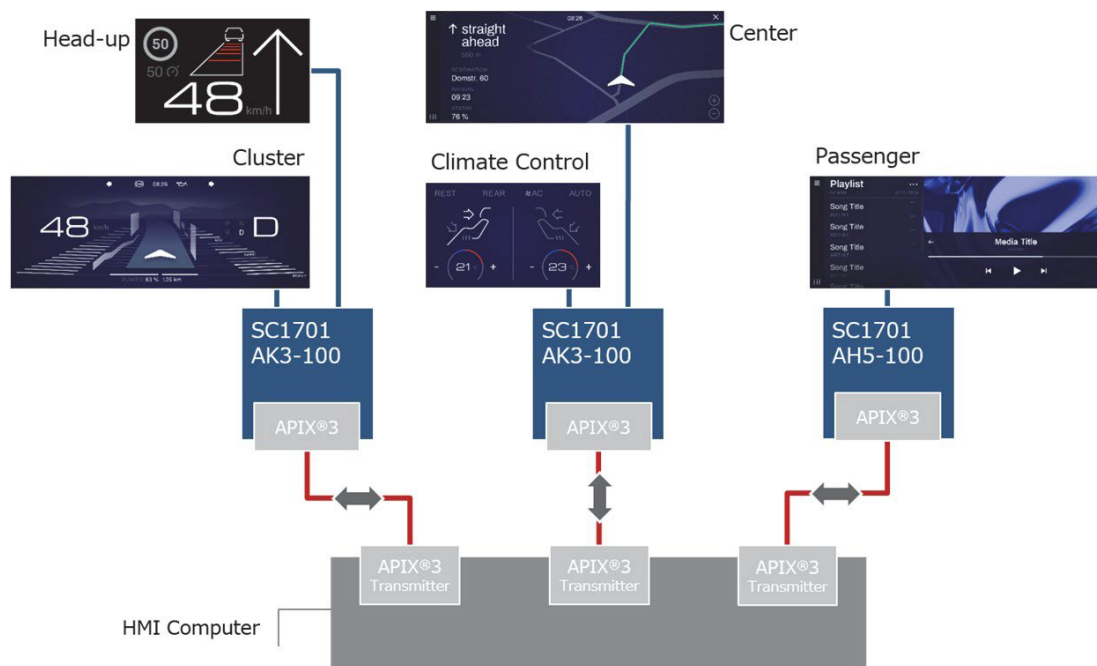
Connectivity	System	Connectivity
ADC	Command Sequencer	SMC
HS-SPI SPI Master	Watchdog Sleep	Ext. Serial Flash I/F
GPIO	Timer Clock	Ethernet ext.
PWM	Temperature Sensor Config. FiFo	HOST I/F
UART USART/LIN		i ² S
CAN		i ² C
		Interrupt

SEERIS® 2D Engine		Additional Features
Capture Engine	LVDS, VESA DSC decode, histogram	Video Capture Options: APIX5, LVDS, Dual LVDS, MIPI-CSI
Pixel Engine	4 planes, 34 layers, Alpha blend, Up/down-scale, Safety layer Signature Unit	Local Dimming, Warping, etc.
Display Output Engine	Dithering, Gamma, Dual TCON Dual output: 2x266Mpix/s, 4k/30bit LVDS/OpenLDI, miniLVDS, TTL, RSDS	Safety Mechanisms
		ISO26262 - ASILB

Graphics Display Controller Line-up

Features	MB88F334-/6	SC1711AH5	SC1701AK3	SC1701AH NEW!
Package –Pin	LQFP–208	EP–LQFP–17	HS–BGA–319	EP–LQFP–2
Size, Pitch	28x28mm, 0.5mm	20x20mm, 0.4mm	23x23mm, 1.0mm	24x24mm, 0.4mm
2DCore	Socionext SEERIS®-MVL	Socionext SEERIS®-MVL	Socionext SEERIS®-MVL	Socionext SEERIS®-MVL
Video Channels	2	1	2	1
Video Output Resolution	1920x1024 @60fps (18bit) 1920x768 @60fps (24bit)	1280x480 @60fps (24bit)	1x3840x2160 @60fps (30bit) 2x2560x1600 @60fps (30bit)	1x1920x1080 @60fps (30bit)
Video Output	TCON-RSDS;TTL dual LVDS(OpenLDI)	TCON-RSDS;TTL dual LVDS(OpenLDI)	Dual TCON-RSDS 2x 6 pair mini-LVDS,TTL 2x dual LVDS(OpenLDI)	TCON-RSDS 6 pair mini-LVDS,TTL dual LVDS(OpenLDI)
Video Formats Decompression	RGBA, Indexed, Grey Scale @10 bits per component	RGBA, Indexed, Grey Scale @10 bits per component	RGBA or YUV4:4:4 / 4:2:2 VESADSCv1.2 (2:1/3:1)	RGBA or YUV4:4:4 / 4:2:2 VESADSCv1.2 (2:1/3:1)
Pixel Speed	144MHz		2x266MPix/s or 1x533MPix/s	266MPix/s
Signature Units	4	4	2 x8	8
Image Processing	CLUT, Matrix, Dither, Gamma, Sprites, α blending	CLUT, Matrix, Dither, Gamma, Sprites, α blending	CLUT, Matrix, Dither, Gamma, Sprites, α blending, scaling	CLUT, Matrix, Dither, Gamma, Sprites, α blending, scaling
Audio	I ² S over APIX®2, Sound Generator		I ² S over APIX®3, Sound Generator	
APIX® Down –Up	APIX®2 @3Gbps - 187 Mbps	APIX®2 @1Gbps - 187 Mbps	APIX®3 @12Gbps - 187 Mbps	APIX®3 @6Gbps - 187 Mbps
Content Protection	HDCP 1.4 / -		HDCP 1.4(APIX®3)	
Network	MII - Ethernet over APIX®2 @100 Mbps		MII - Ethernet over APIX®3 @100 Mbps	
Option	Available also without APIX®3 Rx and related features			
Daisy Chain	Yes	-	Yes, requires external Tx	-
Video input / Capture	-		Dual MIPI-DSI v1.2, dual-LVDS (OpenLDI)	
SRAM–Flash	64k - 32k	128k - 56k	256k (9kB ECC) - 128k	
Standard I/O	USART-LIN, I ² C, GPIO, PWM, ADC, HS-SPI		USART-LIN, I ² C, GPIO, PWM, ADC, HS-SPI, CAN listener	
Stepper Motor Control	6			
Qualification	AEC-Q100, Ta -40 ...+105 °C			

Display Domain Architecture



* SEERIS® is a registered trademark of Socionext

* APIX stands for **A**utomotive **P**ixel **L**ink

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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