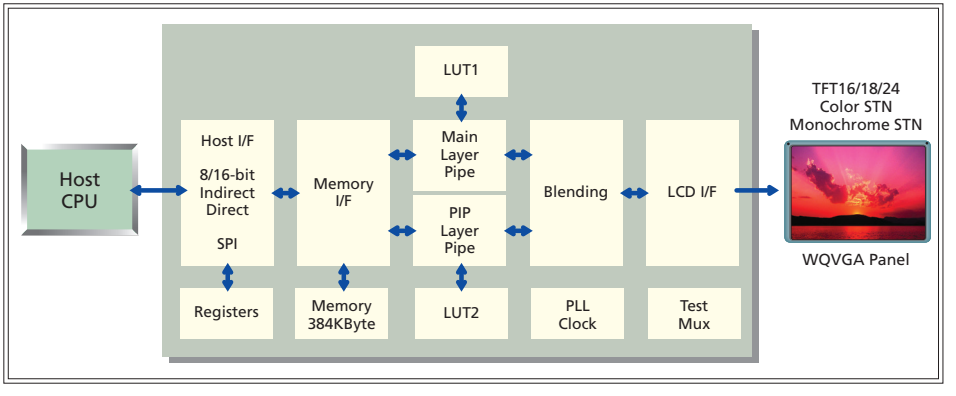
■ LCD Controller with Built-in VRAM

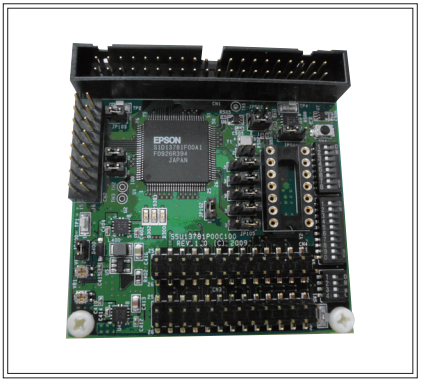
A single-chip LCD controller with built-in display memory allowing for low power consumption, low noise, and space-saving ability.
This product is most suitable for the display control of mobile terminals and operation panels.

Product	CPU Interface Support	LCD Interface Support				Color Depth (Max.)	Internal Memory Capacity	Supply Voltage		Additional Features	Package
		Monochrome STN	Color STN	TFT	Typical Resolution			Core	IO		
S1D13700F02A	8-bit I/F, Direct addressing Indirect addressing	4-bit	n/a	n/a	QVGA	16 grayscale	32KB, SRAM	3.0V to 3.6V	3.0V to 5.5V	3 overlay screens	TQFP13-64
S1D13705F00A	8-bit I/F (with external logic) 16-bit I/F, Direct addressing	4-bit / 8-bit	4-bit / 8-bit	9-bit / 12-bit	QVGA	MSTN:16 grayscale CSTN:256 colors TFT:256 colors	80KB, SRAM	2.7V to 3.6V	2.7V to 5.5V	SwivelView	QFP14-80
S1D13706F00A	8-bit I/F(with external logic), 16-bit I/F, Direct addressing	4-bit / 8-bit	4-bit / 8-bit / 16-bit	9-bit / 12-bit / 18-bit	QVGA	MSTN:64 grayscale CSTN:64K colors TFT:64K colors	80KB, SRAM	1.8V to 3.6V	1.8V to 3.6V	SwivelView, PinP	TQFP15-100
S1D13709F00A	8-bit I/F, Direct addressing Indirect addressing	4-bit	n/a	4-bit mono/ 6-bit color	QVGA	MSTN:16 grayscale TFT:64 colors	32KB, SRAM	3.0V to 5.5V	3.0V to 5.5V	3 overlay screens	TQFP14-80
S1D13742F01A	8-bit / 16-bit I/F Indirect addressing	n/a	n/a	18-bit	VGA	256K colors	768KB, SRAM	1.4V to 1.6V	1.65V to 3.60V	SwivelView	QFP20-144
S1D13743F00A	8-bit / 16-bit I/F Indirect addressing	n/a	n/a	18-bit / 24-bit	WQVGA	16M colors	464KB, SRAM	1.4V to 1.6V	1.65V to 3.60V	SwivelView	QFP20-144
S1D13748F00A S1D13748B00B	16-bit I/F, Indirect addressing	n/a	n/a	18-bit / 24-bit	WVGA	64K colors	1024KB, SRAM	1.35V to 1.65V	1.62V to 3.60V	PinP	QFP20-144 PFBGA10U-121
S1D13781F00A	8-bit / 16-bit I/F, Direct addressing Indirect addressing, SPI	4-bit / 8-bit	8-bit / 16-bit	16-bit / 18-bit / 24-bit	WQVGA	MSTN:64 grayscale CSTN:64K colors TFT:16M colors	384KB, SRAM	1.35V to 1.65V	1.62V to 3.60V	PinP, a-Blend, 2D BitBLT	QFP15-100
S1D13A04F00A B00B	8-bit I/F (with external logic) 16-bit I/F, Direct addressing	4-bit / 8-bit	4-bit / 8-bit / 16-bit	9-bit / 12-bit / 18-bit	QVGA	MSTN:64 grayscale CSTN:64K colors TFT:64K colors	160KB, SRAM	1.8V to 2.75V	3.0V to 3.6V	2D BitBLT, SwivelView, USB client 1.1	TQFP15-128 PFBGA10U-121
S1D13A05B00B	8-bit I/F (with external logic) 16-bit I/F, Direct addressing	4-bit / 8-bit	4-bit / 8-bit / 16-bit	9-bit / 12-bit / 18-bit	QVGA	MSTN:64 grayscale CSTN:64K colors TFT:64K colors	256KB, SRAM	1.8V to 2.75V	3.0V to 3.6V	2D BitBLT, SwivelView, USB client 1.1	PFBGA10U-121

■ S1D13781 Block Diagram



■ S1D13781 Evaluation Board (S5U13781P00C100)

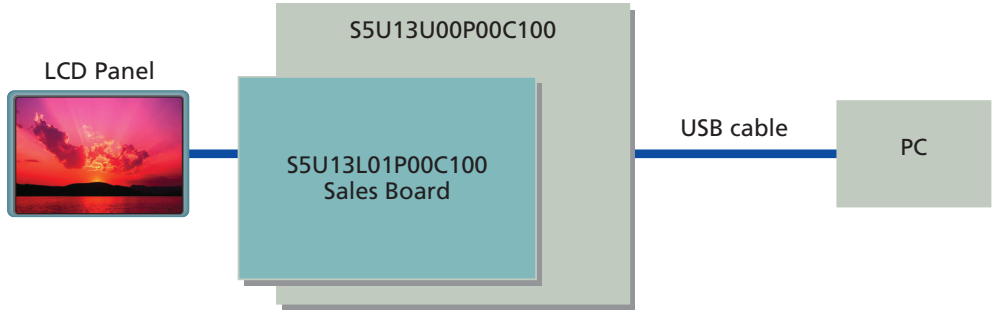


■ Simple LCD Controller

LCD controller with simple function.

Product	CPU Interface Support	LCD Interface Support				Color Depth (Max.)	Internal Memory Capacity	External Memory Capacity	Supply Voltage		Additional Features	Package
		Monochrome STN	Color STN	TFT	Typical Resolution				Core	IO		
S1D13L01F00A	8-bit / 16-bit I/F, Direct addressing Indirect addressing, SPI	n/a	n/a	16-bit / 18-bit / 24-bit	WQVGA	16M colors	384KB, SRAM	n/a	1.35V to1.65V	1.62V to 3.6V	Picture in picture	QFP15-128
S1D13L02F00A	16-bit I/F, Indirect addressing	n/a	n/a	18-bit / 24-bit	WVGA	16M colors	1024KB, SRAM	n/a	1.35V to1.65V	1.62V to 3.6V	Picture in picture	QFP22-208
S1D13L03F00A	8-bit /16-bit I/F Indirect addressing	n/a	n/a	18-bit	WVGA	256K colors	768KB, SRAM	n/a	1.4V to 1.6V	1.65V to 3.6V	n/a	QFP21-176
S1D13L04F00A	16-bit I/F, Direct addressing Indirect addressing, Serial I/F	n/a	n/a	18-bit	XGA	256K colors	n/a	Up to 16MB. SDRAM	1.65V to 1.95V	3.0V to 3.6V	Picture in picture, Alpha blend	QFP22-208

■ S1D13L01 Structure of Sales Board



Checked available panel:

Newhaven Display International, Inc.
NHD-4.3-480272EF-ATXL# (WQVGA)

Kyocera
TCG043WQLBAANN-GN00 (WQVGA)

KOE
TX11D06VM2APA (WQVGA)

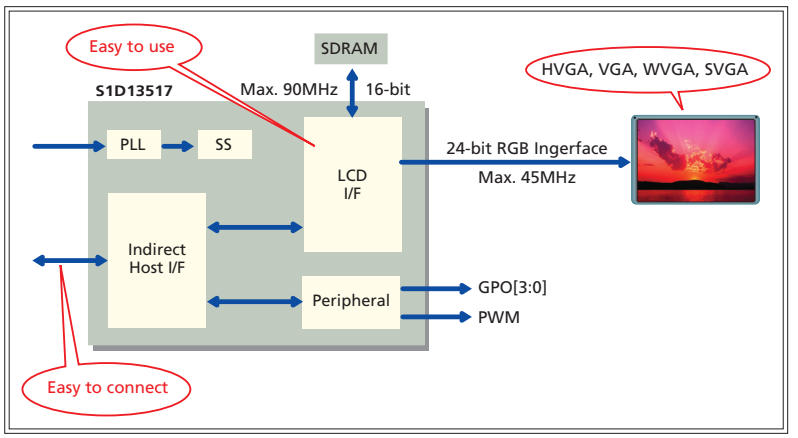


■ LCD Controller with External VRAM

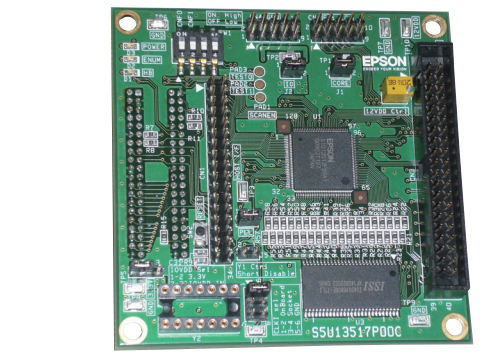
LCD controller for application in a wide range of small- to large-size panel types.
This product is most suitable for the display control of OA or FA equipment operation panels as well as for in-vehicle devices.

Product	CPU Interface Support	LCD Interface Support				Color Depth (Max.)	External Memory Capacity	Supply Voltage		Additional Features	Package
		Monochrome STN	Color STN	TFT	Typical Resolution			Core	IO		
S1D13513F01A	16-bit I/F, Direct addressing, Indirect addressing, Serial I/F	8-bit	8-bit	18-bit	XGA	MSTN:64 grayscale CSTN:256K colors TFT:256K colors	Up to 16MB SDRAM	1.65V to 1.95V	3.0V to 3.6V	2D Sprite, 2D BitBLT	QFP22-208
S1D13513B01B	16-bit I/F, Direct addressing, Indirect addressing, Serial I/F	8-bit	8-bit	18-bit / 24-bit	XGA	MSTN:64 grayscale CSTN:256K colors TFT:16M colors	Up to 64MB SDRAM	1.65V to 1.95V	3.0V to 3.6V	2D Sprite, 2D BitBLT	PBGA1UC256
S1D13515F00A B00B	16-bit I/F, Direct addressing, Indirect addressing, Serial I/F	n/a	n/a	18-bit / 24-bit	XGA	16M colors	Up to 64MB SDRAM	1.65V to 1.95V	3.0V to 3.6V	Prewarping Embedded RISC CPU	QFP22-256 PBGA1UC256
S1D13517F00A	8-bit /16-bit I/F Indirect addressing	n/a	n/a	18-bit / 24-bit	SVGA	16M colors	Up to 16MB SDRAM	2.3V to 2.7V	3.0V to 3.6V	PinP α-Blend	QFP15-128

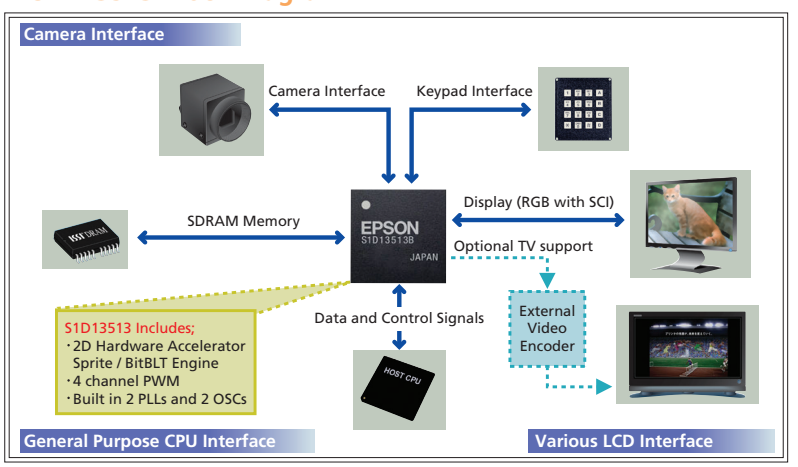
■ S1D13517 Block Diagram



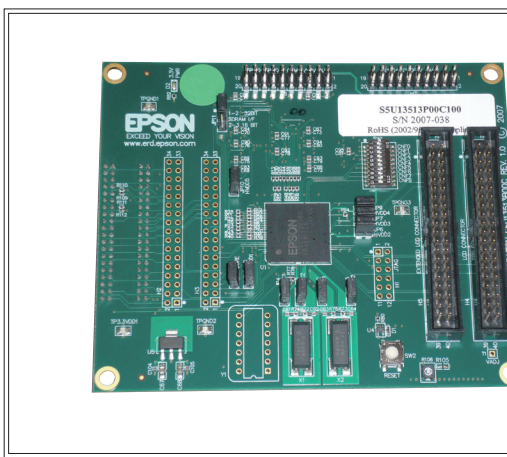
■ S1D13517 Evaluation Board (S5U13517P00C100)



■ S1D13513 Block Diagram



■ S1D13513 Evaluation Board (S5U13513P00C100)



■ LCD Controller Supporting Camera Interface

With the installation of a camera interface, this LCD controller can display camera images on the panel without placing load on the CPU.
This product is most suitable for the display control of a wide variety of applications such as mobile terminals and security devices.

Product	CPU Interface Support	LCD Interface Support		Color Depth (Max.)	Internal Memory Capacity	External Memory Capacity	Camera (pixel)	JPEG Codec	Supply Voltage		Additional Features	Package
		TFT	Typical Resolution						Core	IO		
S1D13515F00A B00B	16-bit I/F, Direct addressing, Indirect addressing, Serial I/F	18-bit / 24-bit	XGA	16M colors	0	Up to 64MB SDRAM	0.3MP	n/a	1.65V to 1.95V	3.0V to 3.6V	Prewarping Embedded RISC CPU	QFP22-256 PBGA1UC256
S1D13719B00B	16-bit I/F, Direct addressing, Indirect addressing	18-bit / 24-bit	QVGA	16M colors	512KB, SRAM	n/a	2.0MP	Encode/ Decode	1.65V to 1.95V	2.30V to 3.25V	2D BitBLT, SwivelView, SD memory card I/F	PFBGA10U-180

■ In-vehicle LCD Controller

In our line-up of display controller products, this controller complies with in-vehicle quality.

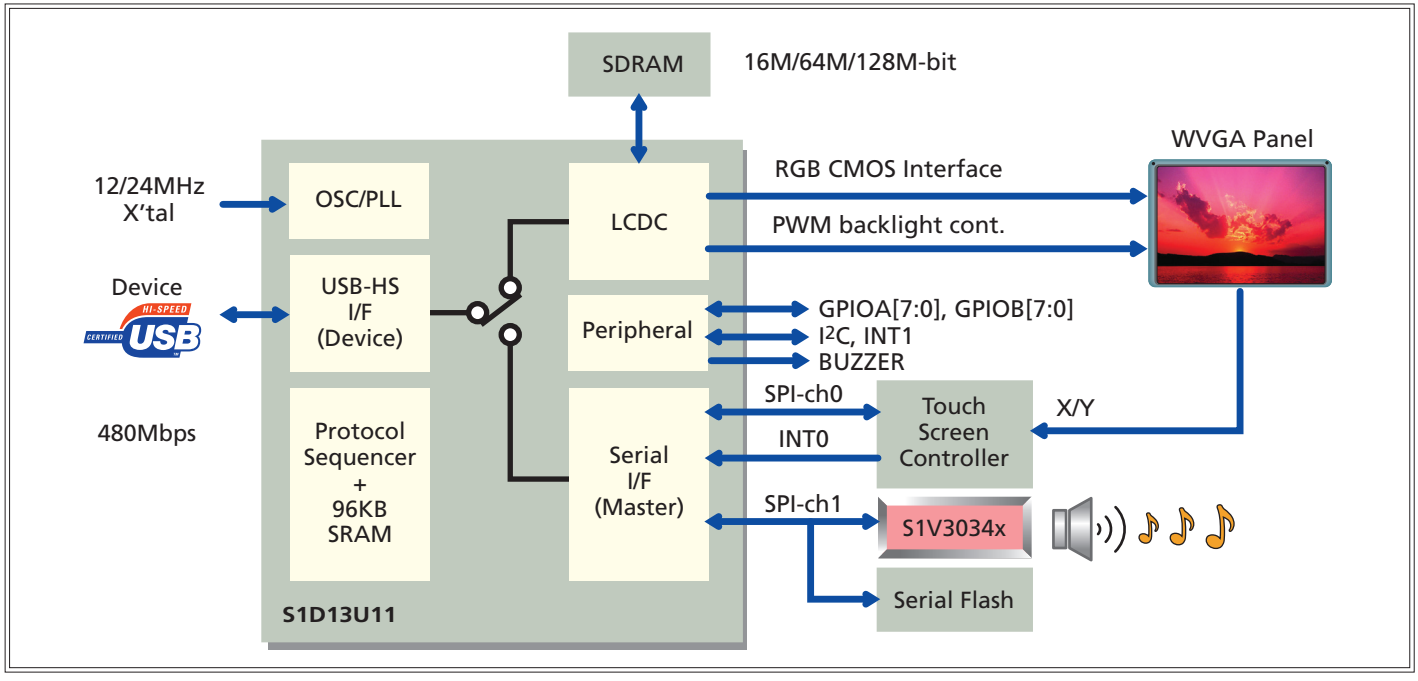
Product	CPU Interface Support	LCD Interface Support				Color Depth (Max.)	Internal Memory Capacity	External Memory Capacity	Camera (pixel)	JPEG Codec	Supply Voltage		Temperature Range	Additional features	Package
		Monochrome STN	Color STN	TFT	Typical Resolution						Core	IO			
S2D13513F01A	16-bit I/F, Direct addressing, Indirect addressing, Serial I/F,	8-bit	8-bit	18-bit	XGA	64 grayscale 256K colors	0	Up to 16MB SDRAM	0.3MP	n/a	1.65V to 1.95V	3.0V to 3.6V	-40 to +105°C	2D Sprite, 2D BitBLT	QFP22-208
S2D13513B01B	16-bit I/F, Direct addressing, Indirect addressing, Serial I/F,	8-bit	8-bit	18-bit / 24-bit	XGA	64 grayscale 16M colors	0	Up to 64MB SDRAM	0.3MP	n/a	1.65V to 1.95V	3.0V to 3.6V	-40 to +105°C	2D Sprite, 2D BitBLT	PBGA1UC256
S2D13515F00A B00B	16-bit I/F, Direct addressing, Indirect addressing, Serial I/F,	n/a	n/a	18-bit / 24-bit	XGA	16M colors	0	Up to 64MB SDRAM	0.3MP	n/a	1.65V to 1.95V	3.0V to 3.6V	-40 to +105°C	Prewarping Embedded RISC CPU	QFP22-256 PBGA1UC256
S2D13719F00A	16-bit I/F, Direct addressing, Indirect addressing	n/a	n/a	18-bit / 24-bit	QVGA	16M colors	512KB, SRAM	n/a	2.0MP	Encode/ Decode	1.65V to 1.95V	2.3V to 3.6V	-40 to +105°C	2D BitBLT, SwivelView, SD memory card I/F	QFP22-208

■ USB Interface LCD Controller

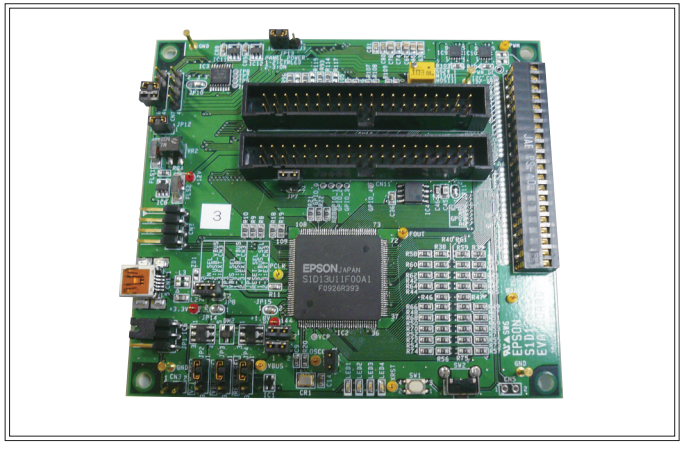
LCD controller allowing for reception of display data and transmission of touch-screen coordinate data at high speed via USB2.0-HS.
Most suitable for application to OA equipment such as multi-functional printers with long lengths of cabling between the host CPU and LCD panel, and to in-vehicle devices such as rear entertainment displays.

Product	CPU Interface Support	LCD Interface Support				Color Depth (Max.)	Internal Memory Capacity	External Memory Capacity	Supply Voltage		Additional Features	Package
		Monochrome STN	Color STN	TFT	Typical Resolution				Core	IO		
S1D13U11F00A	USB2.0 HS	n/a	n/a	18-bit / 24-bit	SVGA	16M colors	0	Up to 16MB SDRAM	1.65V to 1.95V	3.0V to 3.6V	PinP α-Blend	QFP20-144

■ S1D13U11 Block Diagram



■ S1D13U11 Evaluation Board (S5U13U11P00C100)

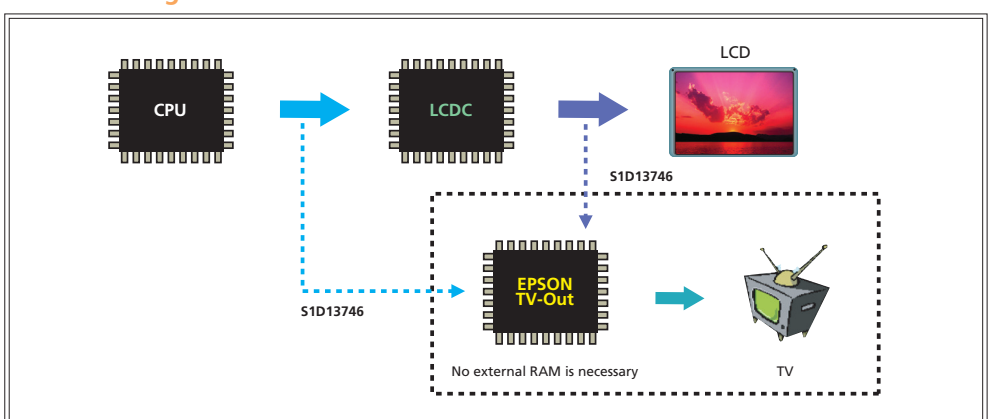


■ Video Encoder

A video encoder with built-in VRAM, able to be connected directly with the host CPU bus and TFT panel interface.
This product is most suitable for various applications that display images on televisions, because it supports a wide array of input formats and complies with NTSC/PAL standards.

Product	CPU Interface Support	TV Output	TV Standard	Input Data Format		Internal Memory Capacity	External Memory Capacity	Supply Voltage			Additional Features	Package
				RGB	YUV			Core	IO	DAC		
S1D13746F01A B01B	8-bit / 16-bit I/F Direct addressing, Serial I/F (only for register access)	Composite / S-video	PAL:B, D, G, H, I, M, N, Nc NTSC:M, J	8:8:8 6:6:6 5:6:5 3:3:2	4:2:2 4:2:0	312KB, SRAM	n/a	1.35V to 1.65V	1.62V to 3.6V	2.7V to 3.3V	SwivelView, Image Enhancement Engine	QFP15-128 PFBGA7U-100

■ S1D13746 System Block Diagram

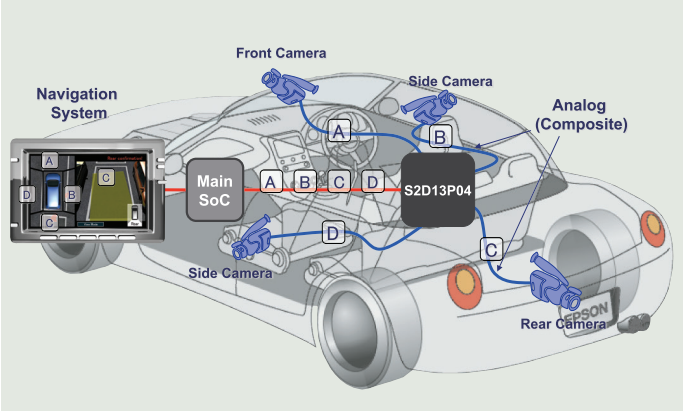


■ In-vehicle Multi-Camera Interface IC

An interface IC that synthesizes input images from multi-channel analog cameras and outputs the images.
This product complies with in-vehicle quality requirements. Most suitable for security-related applications such as monitoring cameras and in-vehicle camera systems.

Product	Host CPU Interface	Function	Temperature Range	Supply Voltage		Package
				Core	IO / Analog	
S2D13P04F00A S2D13P04B00B	I²C SPI	Including four channels of NTSC/PAL decoders 8-bit digital output (supporting ITU-R BT656) Equipped with multi-image synthesis mode Distortion correction function	-40°C to +85°C	1.65V to 1.95V	3.0V to 3.6V	QFP15-100 PFBGA10U-121

■ S2D13P04 System Configuration Example



■ S2D13P04 Evaluation Board (S5U13P04P00C100)

