

# Display Controllers Spec List

## ■ LCD controller

Product	CPU Interface Support	LCD Interface Support				Typical resolution	Color Depth (Max.)	Internal Memory Capacity	External Memory Capacity	Supply Voltage		Additional features	Package
		Monochrome STN	Color STN	TFT						Core	IO		
S1D13505F00A	8bit /16bit I/F Direct addressing	4-bit / 8-bit	4-bit / 8-bit / 16-bit	9-bit / 12-bit / 18-bit	VGA	MSTN: 16 grayscale CSTN: 4K colors TFT: 64K colors	0	Up to 2MB EDO-RAM	2.7V~5.5V	2.7V~5.5V	CRT support	QFP15-128	
S1D13506F00A	8bit /16bit I/F Direct addressing	4-bit / 8-bit	4-bit / 8-bit / 16-bit	9-bit / 12-bit / 18-bit	VGA	MSTN: 16 grayscale CSTN: 64K colors TFT: 64K colors	0	Up to 2MB EDO-RAM	2.7V~5.5V	2.7V~5.5V	CRT or NTSC, PAL support, 2D BiBLT	QFP15-128	
S1D13700F02A	8bit I/F, Direct addressing Indirect addressing	4-bit	n/a	n/a	QVGA	16 grayscale	32KB, SRAM	n/a	3.0V~3.6V	3.0V~5.5V	3 overlay screens	TQFP13-64	
S1D13705F00A	8bit I/F (with external logic) 16bit 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	n/a	2.7V~3.6V	2.7V~5.5V	SwivelView	QFP14-80	
S1D13706F00A	8bit I/F (with external logic), 16bit 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	n/a	1.8V~3.6V	1.8V~3.6V	SwivelView, Picture in picture	TQFP15-100	
S1D13742F01A	8bit /16bit I/F Indirect addressing	n/a	n/a	18-bit	VGA	256K colors	768KB, SRAM	n/a	1.4V~1.6V	1.85V~3.60V	SwivelView	QFP20-144	
S1D13742B01C	8bit /16bit I/F Indirect addressing	n/a	n/a	18-bit	VGA	256K colors	768KB, SRAM	n/a	1.4V~1.6V	1.85V~3.60V	SwivelView	FCBGA8-121	
S1D13743F00A	8bit /16bit I/F Indirect addressing	n/a	n/a	18-bit / 24-bit	WQVGA	16M colors	464KB, SRAM	n/a	1.4V~1.6V	1.85V~3.60V	SwivelView	QFP20-144	
S1D13743B00C	8bit /16bit I/F Indirect addressing	n/a	n/a	18-bit / 24-bit	WQVGA	16M colors	464KB, SRAM	n/a	1.4V~1.6V	1.85V~3.60V	SwivelView	FCBGA8-121	
S1D13745A01B	8bit /16bit I/F Indirect addressing	n/a	n/a	18-bit / 24-bit	WVGA	16M colors	1280KB, DRAM	n/a	1.4V~1.6V and 2.3V~2.7V	1.65V~1.95V and 2.3V~2.7V	NTSC, PAL support, Color Management System	PFBGA8-161	
S1D13748F00A	16bit I/F, Indirect addressing	n/a	n/a	18-bit / 24-bit	WVGA	64K colors	1024KB, SRAM	n/a	1.35V~1.65V	1.62V~3.60V	Picture in picture	QFP20-144	
S1D13748B00B	16bit I/F, Indirect addressing	n/a	n/a	18-bit / 24-bit	WVGA	64K colors	1024KB, SRAM	n/a	1.35V~1.65V	1.62V~3.60V	Picture in picture	PFBGA10-121	
S1D13781F00A	8bit / 16bit 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	n/a	1.35V~1.65V	1.62V~3.60V	PinP, α-Blend, 2D BiBLT	QFP15-100	
S1D13A04F00A	8bit I/F (with external logic) 16bit 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	n/a	1.8V~2.75V	3.0V~3.6V	2D BiBLT, SwivelView, USB client 1.1	TQFP15-128	
S1D13A04B00B	8bit I/F (with external logic) 16bit 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	n/a	1.8V~2.75V	3.0V~3.6V	2D BiBLT, SwivelView, USB client 1.1	PFBGA10-121	
S1D13A05F00A	8bit I/F (with external logic) 16bit 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	n/a	1.8V~2.75V	3.0V~3.6V	2D BiBLT, SwivelView, USB client 1.1	QFP5-128	
S1D13A05B00B	8bit I/F (with external logic) 16bit 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	n/a	1.8V~2.75V	3.0V~3.6V	2D BiBLT, SwivelView, USB client 1.1	PFBGA10-121	
S1D13517F00A	8bit /16bit I/F, Direct addressing	n/a	n/a	18-bit / 24-bit	SVGA	16M colors	0	Up to 16MB SDRAM	2.3V~2.7V	3.0V~3.6V	Picture in picture α-Blend	QFP15-128	
S1D13U11F00A	USB2.0 HS	n/a	n/a	18-bit / 24-bit	SVGA	16M colors	0	Up to 16MB SDRAM	1.85V~1.95V	3.0V~3.6V	PinP α-Blend	QFP20-144	

## ■ LCD controller with Camera I/F

Product	CPU Interface Support	LCD Interface Support				Typical resolution	Color Depth (Max.)	Internal Memory Capacity	External Memory Capacity	Camera (pixel)	JPEG Codec	Supply Voltage		Additional features	Package
		Monochrome STN	Color STN	TFT								Core	IO		
S1D13513F01A	16bit I/F, Direct addressing, Indirect addressing, Serial I/F	8-bit	8-bit	18-bit	VGA	MSTN: 64 grayscale CSTN: 256K colors TFT: 256K colors	0	Up to 16MB SDRAM	0.3MP	n/a	1.65V~1.95V	3.0V~3.6V	2D Sprite, 2D BiBLT	QFP22-208	
S1D13513B01B	16bit I/F, Direct addressing, Indirect addressing, Serial I/F	8-bit	8-bit	18-bit / 24-bit	VGA	MSTN: 64 grayscale CSTN: 256K colors TFT: 16M colors	0	Up to 64MB SDRAM	0.3MP	n/a	1.65V~1.95V	3.0V~3.6V	2D Sprite, 2D BiBLT	PBGA17-256	
S1D13515F00A	16bit 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~1.95V	3.0V~3.6V	Prewarping Embedded RISC CPU	QFP22-256	
S1D13515B00B	16bit 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~1.95V	3.0V~3.6V	Prewarping Embedded RISC CPU	PBGA17-256	
S1D13717F00A	16bit I/F, Direct addressing, Indirect addressing, Serial port I/F for LCD	n/a	n/a	18-bit	176x220	64K colors	224KB, SRAM	n/a	0.3MP	Encode/ Decode	1.65V~1.95V	2.75V~3.25V	SD memory card I/F	QFP21-176	
S1D13717B00C	16bit I/F, Direct addressing, Indirect addressing, Serial port I/F for LCD	n/a	n/a	18-bit	176x220	64K colors	224KB, SRAM	n/a	0.3MP	Encode/ Decode	1.65V~1.95V	2.75V~3.25V	SD memory card I/F	FCBGA8-161	
S1D13717B00B	16bit I/F, Direct addressing, Indirect addressing, Serial port I/F for LCD	n/a	n/a	18-bit	176x220	64K colors	224KB, SRAM	n/a	0.3MP	Encode/ Decode	1.65V~1.95V	2.75V~3.25V	SD memory card I/F	PFBGA12-180	
S1D13774B02B	18bit I/F, Indirect addressing, I2C	n/a	n/a	18-bit / 24-bit	WVGA	16M colors	1280KB, DRAM	n/a	0.3MP	n/a	1.4V~1.8V and 2.3V~2.7V	1.7V~1.9V and 2.3V~2.7V	Auto Movie Enhancement	VFBGA7-161	
S1D13715F01A	16bit I/F, Direct addressing, Indirect addressing, Serial port I/F for LCD	n/a	n/a	18-bit / 24-bit	QVGA	16M colors	320KB, SRAM	n/a	1.3MP	Encode/ Decode	1.65V~1.95V	2.75V~3.25V	2D BiBLT, SwivelView	QFP21-176	
S1D13715B00B	16bit I/F, Direct addressing, Indirect addressing, Serial port I/F for LCD	n/a	n/a	18-bit / 24-bit	QVGA	16M colors	320KB, SRAM	n/a	1.3MP	Encode/ Decode	1.65V~1.95V	2.75V~3.25V	2D BiBLT, SwivelView	PFBGA10-160	
S1D13719B00B	16bit 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~1.95V	2.75V~3.25V	2D BiBLT, SwivelView, SD memory card I/F	PFBGA10-180	
S1D13719F00A	16bit 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~1.95V	2.30V~3.25V	2D BiBLT, SwivelView, SD memory card I/F	QFP8-208	

## Video Encoders

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		
S1D13506F00A	8bit /16bit I/F Direct addressing	Composite / S-video	PAL NTSC	5:6.5 8bpp 4bpp	n/a	0	Up to 2MB EDO-RAM	2.7V~5.5V	2.7V~ 5.5V	2.7V~5.5V	LCD support 2D BitBLT	QFP15-128
S1D13745A01B	8bit /16bit I/F Indirect addressing	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	1280KB, DRAM	n/a	1.4V~1.6V and 2.3V~2.7V	1.65V~ 1.95V	2.3V~2.7V	LCD support Color Management System	PFBGA8-161
S1D13746F01A	8bit /16bit 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~1.65V	1.62V~ 3.6V	2.7V~3.3V	SwivelView, Image Enhancement Engine	QFP15-128
S1D13746B01B	8bit /16bit 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~1.65V	1.62V~ 3.6V	2.7V~3.3V	SwivelView, Image Enhancement Engine	PFBGA7-100
S1D13771B01B	8bit I/F, Indirect addressing	Composite	PAL: B, D, G, H, I, M, N, Nc NTSC: M, J	8:8.8 6:6.6 5:6.5	4:2:2	228KB, SRAM	n/a	1.35V~1.65V	1.65V~ 3.6V	2.7V~3.3V	Image Enhancement Engine	WCSP (4.46mmx 4.46mm)

## Bridge Devices

Product	Input Interface	Output Interface	Supply Voltage		Additional features	Package
			Core	IO		
S1D13747B00B	12/24-bit Parallel RGB and/or 3-Wire Serial	8-bit Intel 80	1.65V~1.95V	1.65V~1.95V	—	PFBGA5-60

## Organic EL controller

Product	Memory capacity	CPU Interface Support	Driver support		Color depth (Max.)	Supply Voltage		Package
			Oki Semiconductor	Renesas		Core	IO	
S1D13701F00A	24KB	8bit / 16bit I/F Indirect addressing	ML9361 ML9371 ML9362 ML9372	C64665 C64666	4K colors	1.8V	3.3 / 5.0V	QFP13-64pin
S1D13702F00A	72KB	8bit / 16bit I/F Indirect addressing			256K colors	1.8V	3.3V	QFP14-80pin

## VFD controller

Product	Memory capacity	CPU Interface Support	Operating Temperature	Color depth (Max.)	Supply Voltage		Package
					Core	IO	
S1D13703F00A	8KB	8 bit I/F Indirect addressing SPI	-40 °C to +105 °C	16 gray scale	3.3V		QFP13-64pin

## LCD controller for automotive

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	16bit I/F, Direct addressing, Indirect addressing, Serial I/F	8-bit	8-bit	18-bit	VGA	64 grayscale 256K colors	0	Up to 16MB SDRAM	0.3MP	n/a	1.65V~ 1.95V	3.0V~3.6V	-40~105°C	2D Sprite, 2D BitBLT	QFP22 -208	
S2D13513B01B	16bit I/F, Direct addressing, Indirect addressing, Serial I/F	8-bit	8-bit	18-bit / 24-bit	VGA	64 grayscale 16M colors	0	Up to 16MB SDRAM	0.3MP	n/a	1.65V~ 1.95V	3.0V~3.6V	-40~105°C	2D Sprite, 2D BitBLT	PBGA1 7-256	
S2D13515F00A	16bit 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~ 1.95V	3.0V~3.6V	-40~105°C	Prewarp ing Embedd ed RICS CPU	QFP22 -256	
S2D13515B00B	16bit I/F, Direct addressing, Indirect addressing, Serial I/F	n/a	Na/	18-bit / 24-bit	XGA	16M colors	0	Up to 64MB SDRAM	0.3MP	n/a	1.65V~ 1.95V	3.0V~3.6V	-40~105°C	Prewarp ing Embedd ed RICS CPU	PBGA1 7-256	
S2D13719F00A	16bit 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~ 1.95V	2.3V~3.6V	-40~105°C	2D BitBLT, SwivelVi ew, SD memory card I/F	QFP22 -208	

## EPD controller (supporting the E Ink's EPD)

Products	Supported CPU interface	Built-in memory	External memory	Maximum resolution	Gray scale	Supply voltage		Other functions	Package
						Core	IO		
S1D13521B01B	16bit I/F Indirect addressing	—	SDRAM /F (for frame buffer)	4096 x 4096	2/3/4/5bpp	1.65V to 1.95V	1.65 to 1.95 2.70 to 3.60	16 area partial update	PFBGA8-181 PFBGA12-180
S1D13522A00B	16bit I/F Indirect addressing Serial I/F	2MB	—	1024 x 768	2/3/4bpp	1.65V to 1.95V	1.65 to 3.60	15 area partial update, Picture in Picture with Transparency	PFBGA10-144

## In-vehicle multi-camera interface IC

Products	Supported CPU interface	Function	Operating temperature range	Supply voltage			Package
				Core	IO	Analog signals	
S2D13P04F00A	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	3.0V to 3.6V	QFP15-100
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	3.0V to 3.6V	PFBGA10-121

.... : Under development