

SONY[®]

2000.10



Sony Semiconductor
PRODUCT LIST

CCD Image Sensor

☆Under development

Color Video Camera CCD Image Sensor

Product name	Image size (type)	TV system	Effective pixels (H × V)	Sensitivity Typ. (mV)	Package	Pins	Recommended timing pulse generator
◇ ICX038DNA	1/2	NTSC	768 × 494	660	Cer-DIP	20	CXD1265R
◇ ICX248AK*2	1/2	NTSC	768 × 494	1,100	Cer-DIP	20	CXD1265R
◇ ICX039DNA	1/2	PAL	752 × 582	660	Cer-DIP	20	CXD1265R
◇ ICX249AK*2	1/2	PAL	752 × 582	1,100	Cer-DIP	20	CXD1265R
◇ ICX038DNB	1/2	NTSC	768 × 494	660	Small-size round type ceramic	16	CXD1265R
◇ ICX039DNB	1/2	PAL	752 × 582	660	Small-size round type ceramic	16	CXD1265R
ICX254AK*2	1/3	NTSC	510 × 492	2,000	Plastic DIP	16	CXD1257AR
ICX404AK	1/3	NTSC	510 × 492	1,350	Plastic DIP	16	CXD1257AR
ICX255AK*2	1/3	PAL	500 × 582	2,000	Plastic DIP	16	CXD1257AR
ICX405AK	1/3	PAL	500 × 582	1,300	Plastic DIP	16	CXD1257AR
ICX258AK*2	1/3	NTSC	768 × 494	1,100	Plastic DIP	16	CXD1265R
ICX408AK	1/3	NTSC	768 × 494	650	Plastic DIP	16	CXD1265R
ICX259AK*2	1/3	PAL	752 × 582	1,100	Plastic DIP	16	CXD1265R
ICX409AK	1/3	PAL	752 × 582	650	Plastic DIP	16	CXD1265R
ICX206AK*1	1/4	NTSC	510 × 492	900	Plastic DIP	14	CXD1257AR
ICX226AK	1/4	NTSC	510 × 492	900	Plastic DIP	14	—
ICX207AK*1	1/4	PAL	500 × 582	880	Plastic DIP	14	CXD1257AR
ICX227AK	1/4	PAL	500 × 582	880	Plastic DIP	14	—
ICX228AK	1/4	NTSC	768 × 494	450	Plastic DIP	14	—
ICX229AK	1/4	PAL	752 × 582	440	Plastic DIP	14	—
ICX206AKB*1	1/4	NTSC	510 × 492	900	Small-size round type ceramic	13	CXD1257AR
ICX207AKB*1	1/4	PAL	500 × 582	880	Small-size round type ceramic	13	CXD1257AR
◇ ICX096AKE*1	1/6	NTSC	510 × 492	330	Ceramic SON (LCC)	12	CXD1257AR
◇ ICX097AKE*1	1/6	PAL	500 × 582	300	Ceramic SON (LCC)	12	CXD1257AR
ICX238AKE	1/6	NTSC	768 × 494	300	Ceramic SON (LCC)	12	CXD1265R
ICX239AKE	1/6	PAL	752 × 582	300	Ceramic SON (LCC)	12	CXD1265R

*1: **Super HAD CCD™**

Super HAD CCD is a trademark of Sony Corporation. The Super HAD CCD is a version of Sony's high performance CCD HAD (Hole-Accumulation Diode) sensor with sharply improved sensitivity by the incorporation of a new semiconductor technology developed by Sony Corporation.

*2: **EXview HAD CCD™**

EXview HAD CCD is a trademark of Sony Corporation. EXview HAD CCD is a CCD that drastically improves light efficiency by including near infrared light region as a basic structure of HAD (Hole-Accumulation Diode) sensor.

Note) ◇ : Discontinued product. We have a plan to develop its successor.

CCD Image Sensor

☆Under development

B/W Video Camera CCD Image Sensor

Product name	Image size (type)	TV system	Effective pixels (H × V)	Sensitivity Typ. (mV)	Package	Pins	Recommended timing pulse generator
◇ ICX082AL	2/3	EIA	768 × 494	700	Ceramic DIP	20	CXD1265R, CXD1261AR
◇ ICX083AL	2/3	CCIR	752 × 582	700	Ceramic DIP	20	CXD1265R, CXD1261AR
◇ ICX038DLA	1/2	EIA	768 × 494	600	Cer-DIP	20	CXD1265R, CXD2463R
◇ ICX248AL*2	1/2	EIA	768 × 494	5,500*3	Cer-DIP	20	CXD1265R, CXD2463R
◇ ICX039DLA	1/2	CCIR	752 × 582	600	Cer-DIP	20	CXD1265R, CXD2463R
◇ ICX249AL*2	1/2	CCIR	752 × 582	5,500*3	Cer-DIP	20	CXD1265R, CXD2463R
◇ ICX038DLB	1/2	EIA	768 × 494	600	Small-size round type ceramic	16	CXD1265R, CXD2463R
◇ ICX039DLB	1/2	CCIR	752 × 582	600	Small-size round type ceramic	16	CXD1265R, CXD2463R
ICX254AL*2	1/3	EIA	510 × 492	1,600	Plastic DIP	16	CXD2400R, CXD2463R
ICX404AL	1/3	EIA	510 × 492	1,250	Plastic DIP	16	CXD2400R, CXD2463R
ICX255AL*2	1/3	CCIR	500 × 582	1,600	Plastic DIP	16	CXD2400R, CXD2463R
ICX405AL	1/3	CCIR	500 × 582	1,150	Plastic DIP	16	CXD2400R, CXD2463R
ICX258AL*2	1/3	EIA	768 × 494	1,000	Plastic DIP	16	CXD1265R, CXD2463R
ICX408AL	1/3	EIA	768 × 494	650	Plastic DIP	16	CXD1265R, CXD2463R
ICX259AL*2	1/3	CCIR	752 × 582	1,000	Plastic DIP	16	CXD1265R, CXD2463R
ICX409AL	1/3	CCIR	752 × 582	650	Plastic DIP	16	CXD1265R, CXD2463R
ICX206AL*1	1/4	EIA	510 × 492	900	Plastic DIP	14	CXD2400R, CXD2463R
ICX226AL	1/4	EIA	510 × 492	900	Plastic DIP	14	CXD2463R
ICX207AL*1	1/4	CCIR	500 × 582	880	Plastic DIP	14	CXD2400R, CXD2463R
ICX227AL	1/4	CCIR	500 × 582	880	Plastic DIP	14	CXD2463R
ICX228AL	1/4	EIA	768 × 494	450	Plastic DIP	14	CXD2463R
ICX229AL	1/4	CCIR	752 × 582	440	Plastic DIP	14	CXD2463R

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*2: **EXview HAD CCD™**

EXview HAD CCD is a trademark of Sony Corporation. EXview HAD CCD is a CCD that drastically improves light efficiency by including near infrared light region as a basic structure of HAD (Hole-Accumulation Diode) sensor.

*3: Value without IR cut filter

Note) ◇ : Discontinued product. We have a plan to develop its successor.

CCD Image Sensor

☆Under development

Progressive Scan System CCD Image Sensor

Product name	Image size (type)	Filter mounted	Scanned channel	Effective pixels (H × V)	Package	Pins	Recommended timing pulse generator
◇ ICX085AK*	2/3	Primary color mosaic	1-ch	1,300 × 1,030	Ceramic DIP	20	CXD2437TQ
◇ ICX085AL	2/3	Monochrome	1-ch	1,300 × 1,030	Ceramic DIP	20	CXD2437TQ
☆ ICX285AL	2/3	Monochrome	1-ch	1,392 × 1,040	Ceramic DIP	20	Under preparation
◇ ICX074AK*	1/2	Primary color mosaic	Selection of 1- or 2-ch	659 × 494	Cer-DIP	22	CXD2408AR
◇ ICX074AL	1/2	Monochrome	Selection of 1- or 2-ch	659 × 494	Cer-DIP	22	CXD2408AR
◇ ICX075AK*	1/2	Primary color mosaic	Selection of 1- or 2-ch	782 × 582	Cer-DIP	22	CXD2424R
◇ ICX075AL	1/2	Monochrome	Selection of 1- or 2-ch	782 × 582	Cer-DIP	22	CXD2424R
◇ ICX205AK*	1/2	Primary color mosaic	1-ch	1,392 × 1,040	Cer-DIP	20	CXD2460R
◇ ICX205AL	1/2	Monochrome	1-ch	1,392 × 1,040	Cer-DIP	20	CXD2460R
◇ ICX084AK*	1/3	Primary color mosaic	1-ch	659 × 494	Plastic DIP	16	CXD2434ATQ
◇ ICX084AL	1/3	Monochrome	1-ch	659 × 494	Plastic DIP	16	CXD2434ATQ
◇ ICX204AK*	1/3	Primary color mosaic	1-ch	1,034 × 779	Plastic DIP	16	CXD2457R
◇ ICX204AL	1/3	Monochrome	1-ch	1,034 × 779	Plastic DIP	16	CXD2457R
◇ ICX098AK*	1/4	Primary color mosaic	1-ch	659 × 494	Plastic DIP	14	CXD2450R
◇ ICX098AL	1/4	Monochrome	1-ch	659 × 494	Plastic DIP	14	CXD2450R

*WfineCCD™

Wfine CCD is a trademark of Sony Corporation. Represents a CCD adopting progressive scan, primary color filter, and square pixel.

Note) ◇ : Discontinued product. We have a plan to develop its successor.

Frame Readout System CCD Image Sensor

Product name	Image size (type)	Filter mounted	Effective pixels (H × V)	Package	Pins	Recommended timing pulse generator
ICX282AK	2/3	Complementary color mosaic	2,588 × 1,960	Plastic DIP	24	CXD2498R
ICX282AKF	2/3	Complementary color mosaic	2,588 × 1,960	Plastic SOP	24	CXD2498R
ICX282AQ	2/3	Primary color mosaic	2,588 × 1,960	Plastic DIP	24	CXD2498R
ICX282AQF	2/3	Primary color mosaic	2,588 × 1,960	Plastic SOP	24	CXD2498R
ICX252AK	1/1.8	Complementary color mosaic	2,088 × 1,550	Plastic DIP	20	CXD2497R
ICX252AKF	1/1.8	Complementary color mosaic	2,088 × 1,550	Plastic SOP	20	CXD2497R
ICX252AQ	1/1.8	Primary color mosaic	2,088 × 1,550	Plastic DIP	20	CXD2497R
ICX252AQF	1/1.8	Primary color mosaic	2,088 × 1,550	Plastic SOP	20	CXD2497R
ICX262AQ	1/1.8	Primary color mosaic	2,088 × 1,550	Plastic DIP	20	CXD2497R
ICX262AQF	1/1.8	Primary color mosaic	2,088 × 1,550	Plastic SOP	20	CXD2497R
ICX224AK	1/2	Complementary color mosaic	1,636 × 1,236	Plastic DIP	20	CXD2470R
ICX224AKF	1/2	Complementary color mosaic	1,636 × 1,236	Plastic SOP	20	CXD2470R
ICX224AQ	1/2	Primary color mosaic	1,636 × 1,236	Plastic DIP	20	CXD2470R
ICX224AQF	1/2	Primary color mosaic	1,636 × 1,236	Plastic SOP	20	CXD2470R
ICX284AK	1/2.7	Complementary color mosaic	1,636 × 1,236	Plastic DIP	16	CXD2470R
ICX284AQ	1/2.7	Primary color mosaic	1,636 × 1,236	Plastic DIP	16	CXD2470R
ICX232AK	1/3.6	Complementary color mosaic	1,290 × 966	Plastic DIP	16	CXD2470R
ICX232AQ	1/3.6	Primary color mosaic	1,290 × 966	Plastic DIP	16	CXD2470R

CCD Camera System

☆Under development

● Example of Combination of CCD Image Sensor and Camera Signal Processing IC

Color (NTSC, PAL)

Classification								
CCD image sensor	NTSC	ICX038DNA ICX038DNB ICX248AK	ICX254AK ICX404AK	ICX258AK ICX408AK	ICX206AK ICX206AKB ICX226AK	ICX228AK	ICX096AKE	ICX238AKE
	PAL	ICX039DNA ICX039DNB ICX249AK	ICX255AK ICX405AK	ICX259AK ICX409AK	ICX207AK ICX207AKB ICX227AK	ICX229AK	ICX097AKE	ICX239AKE
	Image size (type)	1/2	1/3		1/4		1/6	
	Effective pixels (H × V)	NTSC	768 × 494	510 × 492	768 × 494	510 × 492	768 × 494	510 × 492
	PAL	752 × 582	500 × 582	752 × 582	500 × 582	752 × 582	500 × 582	752 × 582
System IC	Vertical driver	Built into CXD2480R						
	Horizontal driver	Built into CXD2480R						
	Timing controller	CXD2480R						
	CDS/AGC	CXA2006Q						
	A/D converter	Built into CXD2163BR						
	Camera signal processor	CXD2163BR						

B/W (EIA, CCIR)

Classification							
CCD image sensor	EIA	ICX082AL	ICX038DLA ICX038DLB	ICX404AL	ICX408AL	ICX206AL	
	CCIR	ICX083AL	ICX039DLA ICX039DLB	ICX405AL	ICX409AL	ICX207AL	
	Image size (type)	2/3	1/2	1/3		1/4	
	Effective pixels (H × V)	EIA	768 × 494		510 × 492	768 × 494	510 × 492
	CCIR	752 × 582		500 × 582	752 × 582	500 × 582	
Timing/Driver system	Vertical driver	CXD1268M	CXD1250M/N, CXD1267AN				
	Horizontal driver	—	Built into timing generator				
	Timing generator	CXD1265R CXD1261AR	CXD1265R CXD1261AR CXD2463R	CXD2400R CXD2463R	CXD1265R CXD1261AR CXD2463R	CXD2400R CXD2463R	
	Sync signal generator	CXD1159Q, CXD1217M/Q					
Signal processing system	Sample-and-hold AGC Process	CXA1310AQ					

Note) CXD1261AR, CXD2400R: Built-in sync signal generator
 CXD2463R: Built-in vertical driver, horizontal driver, and sync signal generator

CCD Camera System

☆Under development

● Example of Combination of Progressive Scan System CCD Image Sensor and System IC

Classification								
Progressive scan CCD	Product name	ICX085AK ICX085AL	ICX074AK ICX074AL	ICX075AK ICX075AL	ICX205AK ICX205AL	ICX084AK ICX084AL	ICX204AK ICX204AL	ICX098AK ICX098AL
	Image size (type)	2/3		1/2		1/3		1/4
	Effective pixels (H × V)	1,300 × 1,030	659 × 494	782 × 582	1,392 × 1,040	659 × 494	1,034 × 779	659 × 494
System IC	Vertical driver	CXD1268M × 2	CXD1250M/N CXD1268M		Built into timing generator	CXD1267AN	Built into timing generator	
	Horizontal driver	—			Built into timing generator			
	Timing generator	CXD2437TQ	CXD2408AR	CXD2424R	CXD2460R	CXD2434ATQ	CXD2457R	CXD2450R
	Sync signal generator	—	Built into timing generator		Built into timing generator*	—	Built into timing generator*	
	CDS/AGC	CXA1690Q × 2			CXA2006Q			
	A/D converter	CXD2311AR	CXD2311AR × 2		CXD2311AR			

Note) ICX085AK/AL requires the SUB driver, which is separately available.

* Generates only H. sync and V. sync signals.

● Example of Combination of Frame Readout System CCD Image Sensor and System IC

Classification									
CCD	Product name	ICX282AK ICX282AQ	ICX282AKF ICX282AQF	ICX252AK ICX252AQ	ICX252AKF ICX252AQF	ICX224AK ICX224AQ	ICX224AKF ICX224AQF	ICX284AK ICX284AQ	ICX232AK ICX232AQ
	Image size (type)	2/3		1/1.8		1/2		1/2.7	1/3.6
	Effective pixels (H × V)	2,588 × 1,960		2,088 × 1,550		1,636 × 1,236		1,290 × 966	
System IC	Vertical driver	Built into timing generator							
	Horizontal driver	Built into timing generator							
	Timing generator	CXD2498R		CXD2497R		CXD2470R			
	CDS/AGC	CXA2006Q							
	A/D converter	CXD2310AR		CXD2311AR					

CCD Camera System

☆Under development

Scanning System IC for CCD Camera

● Sync Signal Generator

Product name	TV system	Functions	Supply voltage (V)	Package	Pins
CXD1159Q	NTSC, PAL	14/18 MHz countdown, window pulse output	5	QFP	32
CXD1217M/Q	NTSC, PAL, PALM, SECAM	Output synchronized with 910 f _H or 908 f _H clock, color framing for NTSC/PAL/PALM	5	SOP/QFP	28/32

● CCD Timing Pulse Generator

Product name	TV system	Compatible pixels (H × V)	Shutter control	Supply voltage (V)	Package	Pins	Remarks
CXD1254AQ/AR	NTSC, EIA, CCIR	510 × 492, 500 × 582	High speed, low speed (Δ)	5	QFP/LQFP	64	Built-in SG
CXD1257AR	NTSC, PAL	510 × 492, 500 × 582	High speed, low speed	5	LQFP	64	—
CXD1261AR	EIA, CCIR	768 × 494, 752 × 582	High speed, low speed (Δ*)	5	LQFP	64	Built-in SG
CXD1265R	NTSC, PAL, EIA, CCIR	768 × 494, 752 × 582	High speed, low speed*	5	LQFP	64	—

* The low-speed shutter cannot be used during frame reading.
(Δ): Available only for serial input.

● CCD Timing Controller

Product name	TV system	Compatible pixels (H × V)	Functions	Supply voltage (V)	Package	Pins
CXD2400R	EIA, CCIR	510 × 492, 500 × 582	Electronic iris, 1/100,000s high-speed shutter, external synchronization, non interlace	5	LQFP	48
CXD2401R	NTSC, PAL	510 × 492, 500 × 582	Electronic iris, 1/100,000s high-speed shutter	5	LQFP	48
CXD2463R	EIA, CCIR	510 × 492, 500 × 582, 768 × 494, 752 × 582	Electronic iris, 1/100,000s high-speed shutter, external synchronization, backlight correction	5	LQFP	48
CXD2480R	NTSC, PAL	510 × 492, 500 × 582, 768 × 494, 752 × 582	Electronic iris, 1/100,000s high-speed shutter, vertical clock driver	3.3/5/ 15/–8.5*	LQFP	48

* Negative (power) supply voltage differs according to CCD.

CCD Camera System

☆Under development

● Progressive Scan System CCD Timing Generator

Product name	Compatible pixels (H × V)	Internal sync signal generator	Functions	Supply voltage (V)	Package	Pins
CXD2408AR	659 × 494	EIA	High-speed/low-speed electronic shutter, random trigger shutter, external synchronization	5	LQFP	64
CXD2424R	782 × 582	CCIR	High-speed/low-speed electronic shutter, random trigger shutter, external synchronization	5	LQFP	64
CXD2434ATQ	659 × 494	—	High-speed/low-speed electronic shutter, external trigger shutter function	5	TQFP	48
CXD2437TQ	1,300 × 1,030	—	High-speed/low-speed electronic shutter, external trigger shutter function	5	TQFP	64
CXD2450R	659 × 494	*	High-speed/low-speed electronic shutter, vertical clock driver, shutter pulse driver	3.3/15/–5.5	LQFP	48
CXD2457R	1,034 × 779	*	High-speed/low-speed electronic shutter, vertical clock driver, shutter pulse driver	3.3/15/–7.5	LQFP	48
CXD2460R	1,392 × 1,040	*	High-speed/low-speed electronic shutter, vertical clock driver, shutter pulse driver	3.3/5/15/–8.0	LQFP	48

* Generates only H. sync and V. sync signals.

● Frame Readout System CCD Timing Generator

Product name	Compatible pixels (H × V)	Functions	Supply voltage (V)	Package	Pins
CXD2470R	1,636 × 1,236, 1,290 × 966	High-speed/low-speed electronic shutter, vertical clock driver, shutter pulse driver	3.3/5/15/–7.5	LQFP	48
CXD2497R	2,088 × 1,550	High-speed/low-speed electronic shutter, vertical clock driver, shutter pulse driver	3.3/5/15/–7.5	LQFP	48
CXD2498R	2,588 × 1,960	High-speed/low-speed electronic shutter, vertical clock driver, shutter pulse driver	3.3/15/–7.5	LQFP	48

● CCD Clock Driver IC

Product name	Functions	V _L * (V)	V _{DD} (V)	V _M (V)	V _H (V)	V _{HH} (V)	Package	Pins
CXD1250M/N	Built-in 4-ch vertical clock driver, 1-ch shutter pulse driver	–9	5	0	15	15	SOP/SSOP	20
CXD1267AN	Built-in 4-ch vertical clock driver, 1-ch shutter pulse driver, charge pump circuit for sub voltage	–8.5	—	0	15	—	SSOP	20
CXD1268M	Built-in 4-ch vertical clock driver	–9	5	0	15	—	SOP	20
CXD3400N	Built-in 6-ch vertical clock driver, 1-ch shutter pulse driver	–7.5	3.3	0	15	—	SSOP	20

* V_L is different according to CCD.

CCD Camera System

☆Under development

Signal Processing IC for CCD Camera

● Signal Processing IC for Color Video Camera

Product name	Applications	Functions	Supply voltage (V)	Package	Pins
CXD2163BR	Signal processor LSI for Ye, Cy, Mg and G single-chip CCD color cameras	AE/AWB detection circuit, sync signal generation circuit, external sync circuit	3.3/5	LQFP	100

● Signal Processing IC for B/W Video Camera

Product name	Applications	Functions	Supply voltage (V)	Package	Pins
CXA1310AQ	Processing for CCD black/white camera	CDS, AGC amplifier, gamma correction, 75Ω video output	5	QFP	32

● Single-function IC for CCD Camera

Product name	Applications	Functions	Supply voltage (V)	Package	Pins
CXA1439M	CDS for CCD color and black/white camera	Built-in CDS and amplifier (6 dB, 9.5 dB)	4.8	SOP	8
CXA1690Q	Preamplifier for video camera A/D converter	CDS, AGC, A/D converter S/H, reference output	4.75	QFP	32
CXA2006Q	Preamplifier for video camera A/D converter	CDS, AGC, A/D converter S/H, reference output	4.75	QFP	32
CXA2056Q	CDS + AGC for DVC/digital camera	CDS, AGC, A/D converter S/H, reference output, VCR processing	3.15	QFP	32
CXA2096N	CDS + AGC for DVC/digital camera	CDS, AGC, A/D converter S/H, reference output	3.15	SSOP	24

CCD Linear Sensor

☆Under development

Product name	Classification	Effective pixels	Pixel size (μm)	Sensitivity (V/(lx • s))	Maximum data rate (MHz)	Resolution (DPI)	Package	Pins
ILX554A	B/W	2,048	14 × 56	260	2	—	Cer-DIP	22
ILX551A	B/W	2,048	14 × 14	40	5	B4 200	Cer-DIP	22
ILX751A	B/W	2,048	14 × 14	40	5	B4 200	Cer-DIP	22
(Provided with shutter function)								
ILX553A	B/W	5,150	7 × 7	13	15	A4 600	Plastic DIP	22
ILX548K	Color (RGB)	5,340 × 3	4 × 4 (4 μm pitch)	R 2.5, G 2.9, B 2.6	5 × 3 (R, G, B)	A4 600	Cer-DIP	22
ILX550K	Color (RGB)	10,680 × 3	4 × 4 (4 μm pitch)	R 2.5, G 2.9, B 2.6	5 × 3 (R, G, B)	A4 1200	Plastic DIP	24
☆ ILX555K	Color (RGB)	10,680 × 3	3.5 × 3.5 (3.5 μm pitch)	R 2.5, G 2.9, B 2.6	5 × 3 (R, G, B)	A4 1200	Plastic DIP	24

CCD Linear Sensor Peripheral IC

Product name	Functions	Package	Pins
CXA1439M	Analog signal processor with a built-in CDS, 6 dB amplifier and 9.5 dB amplifier	SOP	8
CXD1175AM	8-bit, 20MSPS, built-in sample and hold, A/D converter	SOP	24
CXD2310AR	10-bit, 20MSPS, A/D converter	LQFP	48