



Sharp Image Sensors (CCD and CMOS)

Product Introduction



虹晶股份有限公司 Socle Technology Corp.

July 2018



SHARP CCD/CIS Worldwide Customer Connections

Sharp has a long history of sales with major customers worldwide.

DSC



January 29, 2018

FA / ITS



Surveillance Camera



Broadcasting Camera

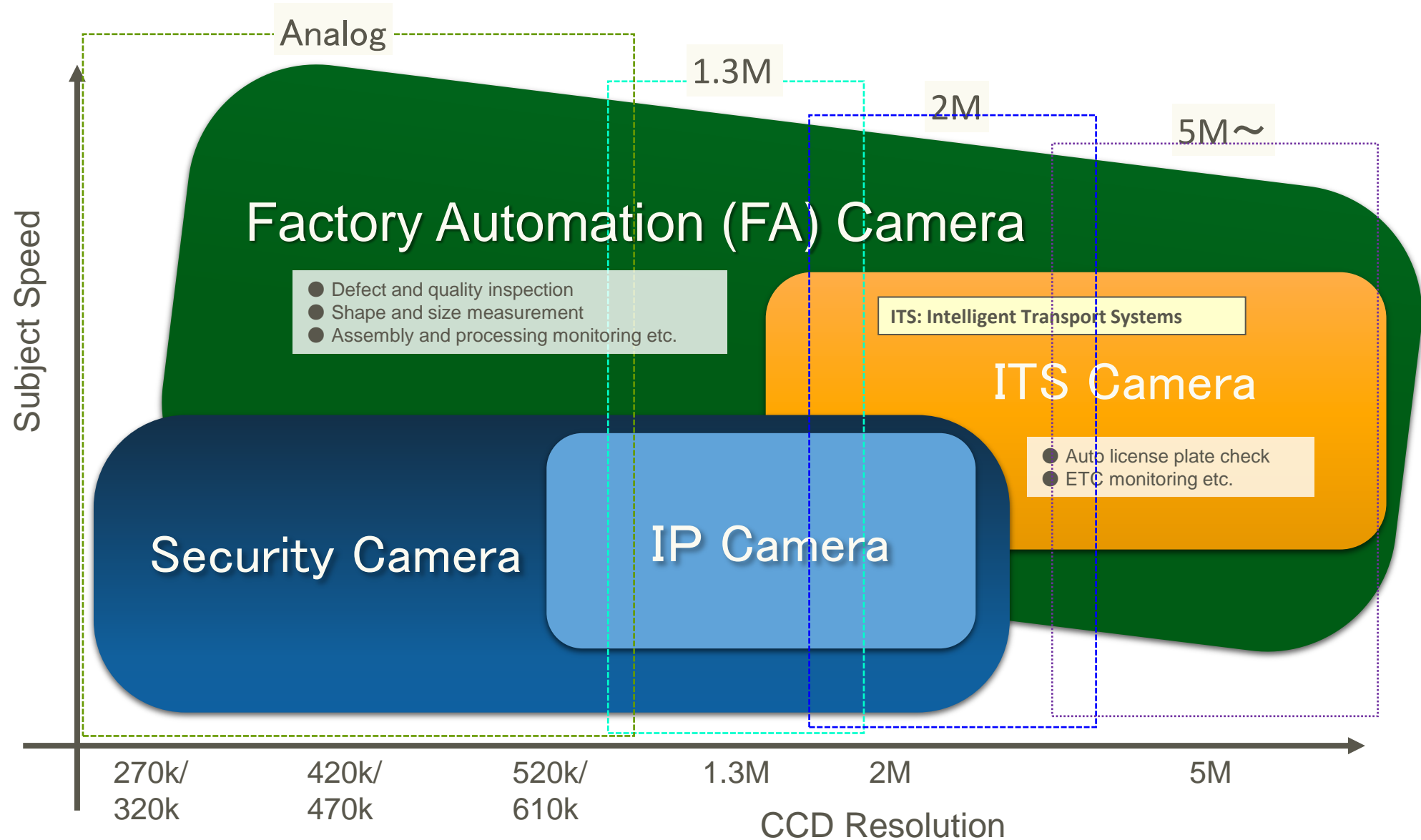


Medical



CCD Sensors

Applications of CCD Sensors based on number of pixels and subject speed



Sharp CCD Lineup for CCTV Cameras

http://www.socle-tech.com/SHARP_image_Sensors_CCD.php

Optical format	Total pixels	Model No.	Standard	Horizontal TV lines	Image pixel (HxV)	Pixel size HxV (um)	Color
1/4 type	270k	RJ2411FA0PB	NTSC	330	512 x 492	7.2 x 5.6	Complementary
	320k	RJ2421FA0PB	PAL		512 x 582	7.2 x 4.73	Complementary
	410k	RJ2455DA0PB	NTSC	480	768 x 494	4.9 x 5.6	Complementary
	470k	RJ2465DA0PB	PAL		752 x 582	5.0 x 4.77	Complementary
	520k	RJ2431AA0PB	NTSC	650	976 x 494	3.75 x 5.56	Complementary
	610k	RJ2441AA0PB	PAL		976 x 582	3.75 x 4.74	Complementary
1/3 type	410k	RJ2355DA0PB	NTSC	480	768 x 494	6.4 x 7.5	Complementary
	470k	RJ2365DA0PB	PAL		752 x 582	6.53 x 6.39	Complementary
	520k	RJ2331BA0PB	NTSC	650	976 x 494	5.0 x 7.4	Complementary
	610k	RJ2341BA0PB	PAL		976 x 582	5.0 x 6.3	Complementary
	520k	RJ3331AA0PB	NTSC Progressive	650	976 x 494	5.0 x 7.4	Complementary
	610k	RJ3341AA0PB	PAL Progressive		976 x 582	5.0 x 6.3	Complementary

Sharp CCD Lineup for IP / FA / ITS Cameras

http://www.socle-tech.com/SHARP_image_Sensors_CCD.php

Optical format	Total pixels	Model No.	Video performance	Image pixel (HxV)	Pixel size HxV (um)	Color
1/3 type	350k	RJ33B3AA0DT	VGA 120fps (1ch output)	660 x 494	7.4 x 7.4	Primary
		RJ33B3AD0DT	VGA 240fps (2ch output)			
	1350k	RJ33J3CA0DT	1.3M 30fps, 720p 30fps	1320 x 976	3.75 x 3.75	Primary
1/1.8 type	2100k	RJ31N3AA0DT	2M 25fps (1ch output)	1644 x 1236	4.4 x 4.4	Primary
	2130k	RJ31N3AD0DT	2M 50fps (2ch output)			Primary
	2960k	RJ31P3AA0DT	2.8M 17fps (1ch output)	1940 x 1460	3.69 x 3.69	Primary
		RJ31P3AD0DT	2.8M 30fps (2ch output)			Primary
2/3 type	5240k	RJ32S3AA0DT	5M 9fps (1ch output)	2456 x 2058	3.45 x 3.45	Primary
		RJ32S3AD0DT	5M 15fps (2ch output)			Primary
		RJ32S3AF0DT	5M 30fps (4ch output)	2456 x 2056		Primary
1/1 type	6090k	RJ3DT3AF0DT	6M 30fps (4ch output)	2758 x 2208	4.54 x 4.54	Primary
	8290k	RJ3DV3AF0DT	8M 25fps (4ch output)	3320 x 2496	3.88 x 3.88	Primary
4/3 type	8340k	RJ3EV3EF0DT	8M 25fps (4ch output)	3848 x 2168	5.14 x 5.14	Primary

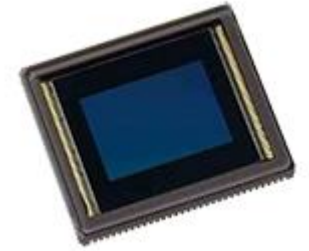
Compare Sharp CCD models with Soxco company models

Model (Soxco company)	Proposed Model *1 (SHARP)	Optical Size	Pixel	Color Filter			Scan		Compatibility		Comment
				Primary	Comp.	B/W	Interlace	Progressive	Package	Pin Assign	
ICX212	RJ3351AA0AT	1/3 type	410k		○	○		○ NTSC	○	×	
ICX213	RJ3361AA0AT	1/3 type	470k		○	○		○ PAL	○	×	
ICX274	RJ31N3AA0DT	1/1.8 type	2M	○		○		○	×	×	
ICX424	RJ33B3AA0DT	1/3 type	350k	○		○		○	×	×	
ICX445	RJ33J3CA0DT	1/3 type	1.3M	○	○	○		○	×	×	
ICX625	RJ32S3AD0DT	2/3 type	5M	○		○		○	○	○*4	
ICX638	RJ2355DA0PB	1/3 type	410k		○	○	○ NTSC		○	○*2	
ICX639	RJ2365DA0PB	1/3 type	470k		○	○	○ PAL		○	○*2	
ICX642	RJ2411FA0PB	1/4 type	270k		○	○	○ NTSC		○	×	
ICX643	RJ2421FA0PB	1/4 type	320k		○	○	○ PAL		○	×	
ICX648	RJ2455DA0PB	1/4 type	410k		○	○	○ NTSC		○	○*3	
ICX649	RJ2465DA0PB	1/4 type	470k		○	○	○ PAL		○	○*3	
ICX655	RJ32S3AA0DT	2/3 type	5M	○		○		○	○	○*4	
ICX662	RJ3331AA0PB	1/3 type	520k		○	○		○ NTSC	○	○*2	
ICX663	RJ3341AA0PB	1/3 type	610k		○	○		○ PAL	○	○*2	
ICX678	RJ2431AA0PB	1/4 type	520k		○	○	○ NTSC		○	○*3	
ICX679	RJ2441AA0PB	1/4 type	610k		○	○	○ PAL		○	○*3	
ICX687	RJ31P3AA0DT	1/1.8 type	2.8M	○		○		○	○	×	1ch Output
	RJ31P3AD0DT	1/1.8 type	2.8M	○		○		○	○	×	2ch Output
ICX694	RJ3DT3AF0DT	1/1 type	6M	○		○		○	×	×	
ICX672, ICX810, ICX872	RJ2331BA0PB	1/3 type	520k		○	○	○ NTSC		○	○*2	
ICX873, ICX811, ICX873	RJ2341BA0PB	1/3 type	610k		○	○	○ PAL		○	○*2	

CMOS Image Sensors (CIS)

Sharp CMOS Image Sensors (CIS)

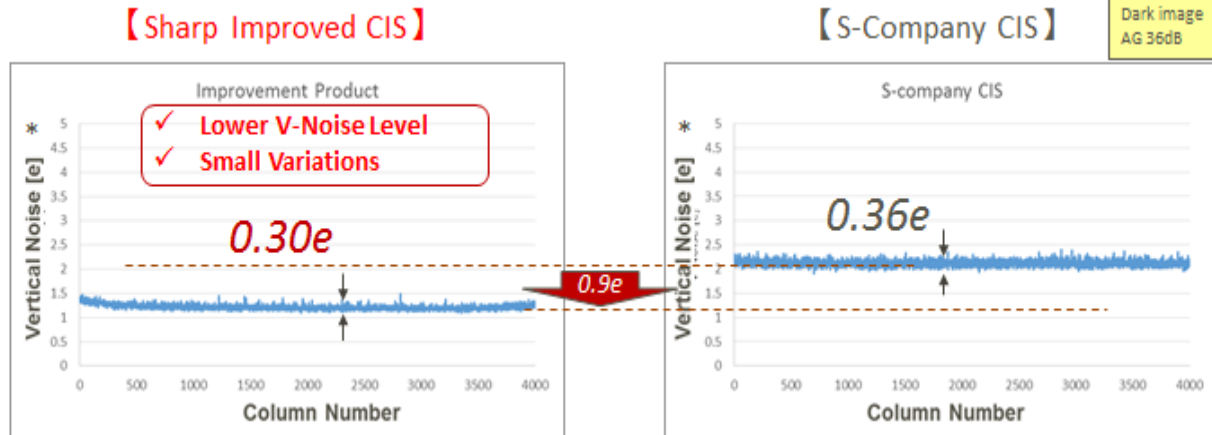
- High-resolution image sensors which can be used in digital cameras and digital camcorders, and can support 4K 60fps video.
- Sharp CIS have higher near-infrared (NIR) sensitivity than competitors.
- Sharp CIS have lower vertical noise than competitors:



RJ5DY1BA0LT

Vertical Noise Level Comparison

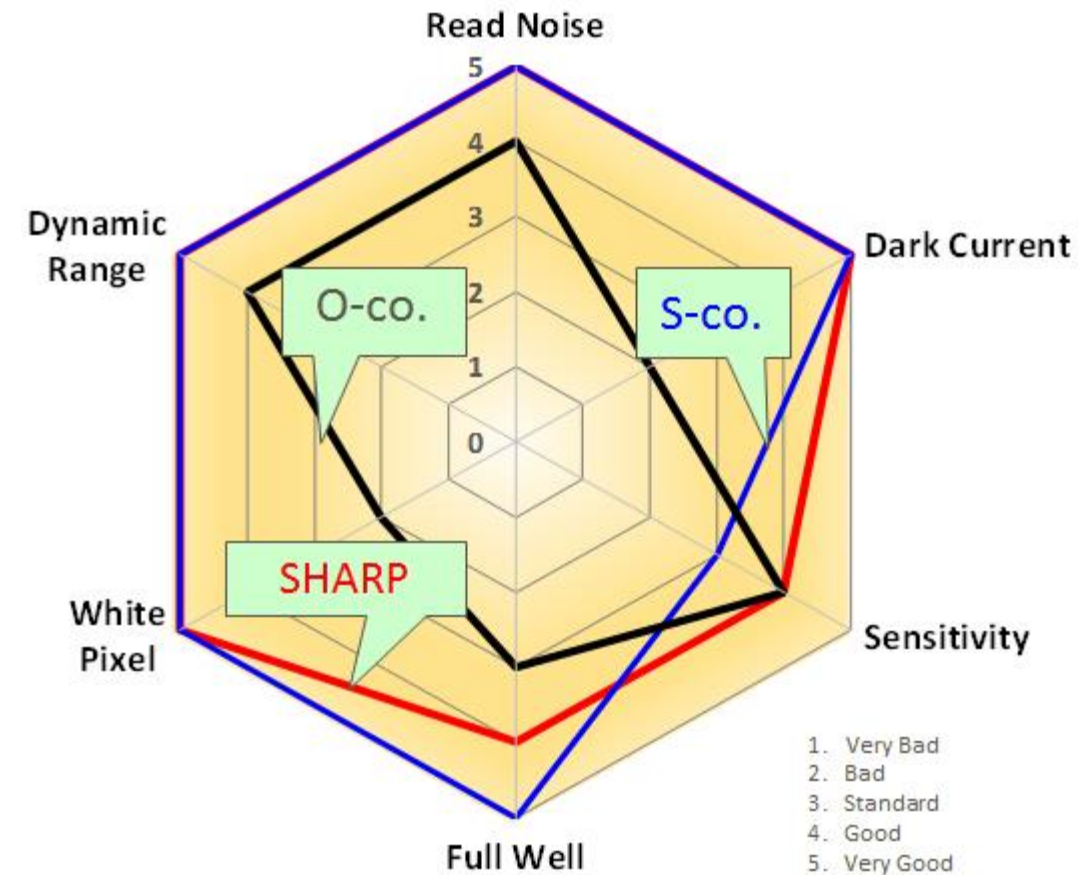
*These graph shows the standard deviation for each column.



- [Available Models:](#)
 - RJ5DY1BA0LT - 13M, 4K2K 60fps, 4144x3096 resolution
 - RJ52V1BA0LT - 9M, 4K2K 60fps, 3968×2232 resolution

Compare Sharp CMOS Image Sensor with competitor models

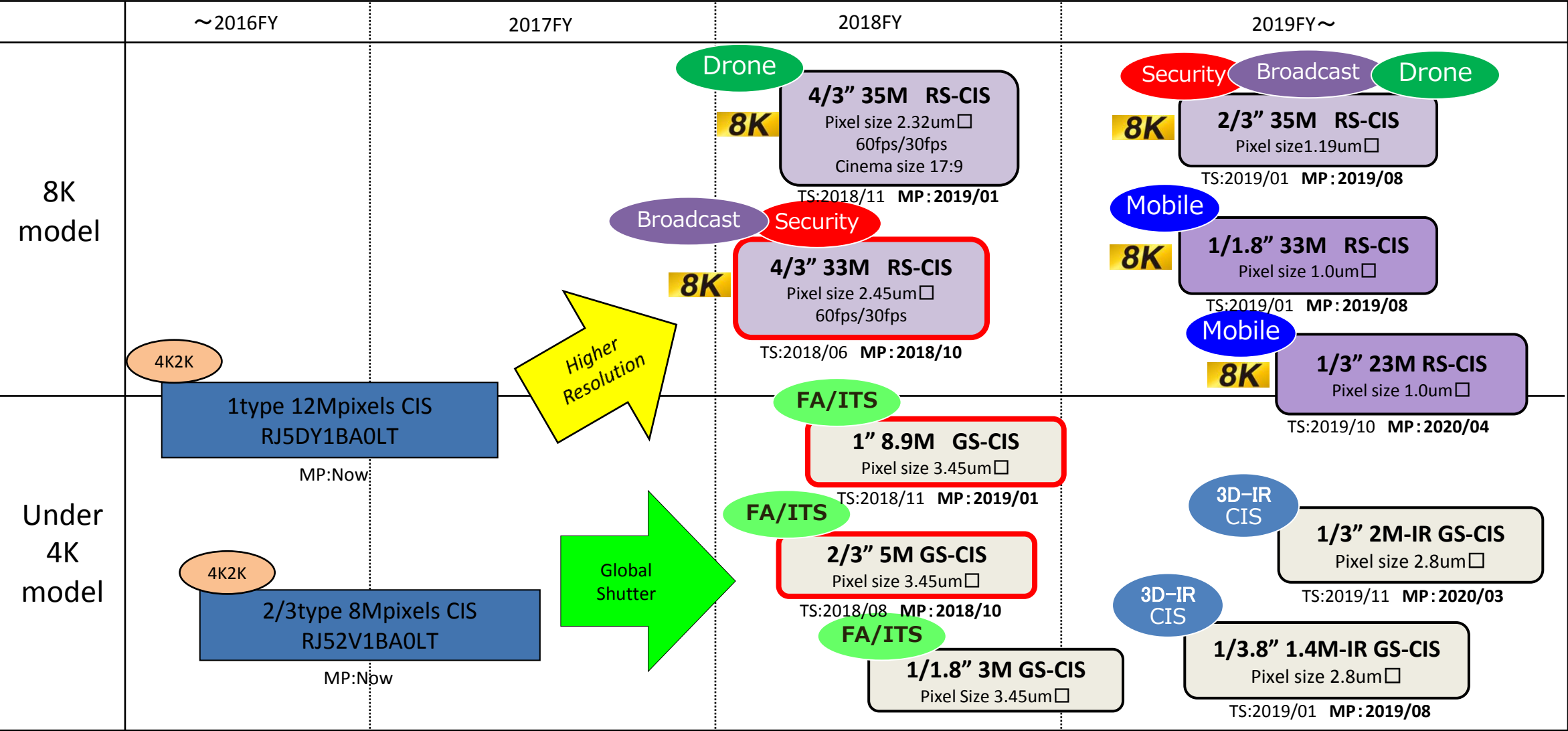
Specification	SHARP	S company	O company
Product Name	RJ52V1BA0LG (2/3' 8M)	(1" 20M)	(1/9" VGA)
Fab.	Fukuyama F4	S company	T company
Process Generation	130nm FSI	65nm BSI	110nm FSI
Pixel Size	2.5um \square	2.4um \square	2.5um \square
Voltage Supply	3.0V/1.8V	2.9V/1.8V/1.2V	2.8V/1.5V/1.8V
Dynamic Range	75.4dB	75.3dB	71dB
Max SN-ratio	43dB	42dB	38dB
Sensitivity	19.5ke/luxs	17ke/luxs	18ke/luxs
Full Well Capacity	10ke	12ke	6.5ke
Read Noise	1.6e	1.75e	2.0e
Dark Current @60°C	15e/sec	10e/sec	100e/sec
White Pixel@60 °C	500ppm	400ppm	2,000ppm



Sharp CIS Roadmap



SHARP continues to develop CIS for a wide range of applications, not only for surveillance but also for FA, ITS, Drone, 3D-IR and more.



About Socle Technology Corp.

- Founded in 2001, Socle Technology Corp is a leading semiconductor design firm headquartered in Taiwan
- Socle provides SoC (System-on-Chip) design services for IoT, server, automotive, multimedia, and peripheral market segments
- 100% owned by Foxconn Technology Group (Hon Hai Precision Industry Co., Ltd.)
- Sales and marketing for Sharp Optoelectronics components and sensors in North America and China since 2017
- Parts are still designed and manufactured by Sharp, no change in production or packaging or branding
- Authorized distributors: WPG Americas, Future Electronics, Mouser, Digi-Key, WPI Group

For more information, contact: Socle_Sales_NA@socle-tech.com

<http://www.socle-tech.com/>