

## Diagonal 6 mm (Type 1/3) 250K/380K-Pixel CCD Image Sensor

### 250K/290K Pixels

**ICX404AK(NTSC)**

**ICX404AL(EIA)**

**ICX405AK(PAL)**

**ICX405AL(CCIR)**

### 380K/440K Pixels

**ICX408AK(NTSC)**

**ICX408AL(EIA)**

**ICX409AK(PAL)**

**ICX409AL(CCIR)**

The Type 1/3 CCD has become the main optical system used in surveillance cameras, and is expected to remain an important device in this area for the foreseeable future.

Sony has adopted its unique Super HAD CCD technology and a new structure technology in these new Type 1/3 CCD products, and has significantly improved the sensitivity and smear characteristics over those of conventional products such as the ICX054/055BK/BL and ICX058/059CK/CL.

These new products, the ICX404/405/408/409AK/AL, can improve both the sensitivity and the image quality of existing user products since they can directly replace conventional products.

These new products also feature adjustment-free circuits for externally applied voltages, and thus can contribute to reducing parts counts in the drive circuit.

- Diagonal 6 mm (Type 1/3)
- High sensitivity (Sensitivity improved +4 to +6 dB from conventional Sony products)
- Low smear: -110 dB or better achieved
- High saturation signal (Saturation signal improved +2 to +5 dB from conventional Sony products)

The ICX404/405/408/409AK/AL are diagonal 6 mm (Type 1/3) 250K/290K/380K/440K-pixel CCD image sensors positioned as follow-on devices to Sony's conventional ICX054/055BK/BL and ICX058/059CK/CL CCDs. These new products specifically aim at providing higher image quality, which is particularly desired by our customers, and achieve significant improvements in both sensitivity and smear over conventional products. (See tables 1 to 4.) While the Sony ICX254/255/258/259AK/AL EXview HAD CCDs, which feature sensitivity that extends into the near infrared wavelength region, are appropriate for imaging applications

under low-light conditions, the ICX404/405/408/409AK/AL are appropriate for use in surveillance cameras and other products for general-purpose products. (See figure 1.)

#### ■ High Sensitivity

The Type 1/3 CCDs of this release (ICX404/405/408/409AK/AL) feature sensitivity characteristics improved by between approx. +4 and +6 dB over Sony's conventional products (ICX054/055BK/BL and ICX058/059CK/CL). These products can demonstrate their performance in surveillance applications in particular, since such applications require use in low-light environments. (See photograph 1.)

#### ■ Low Smear

The CCDs of this release adopt a new structure technology that makes the insulation film between the electrodes and the substrate even thinner, and that achieves a large improvement in the smear characteristics. These CCDs reduce smear by -15 to -20 dB and achieve the low smear level of -110 dB or better. (See photograph 2.)

#### ■ High Saturation Signal

As compared to conventional products (ICX054/055BK/BL and ICX058/059CK/CL), these CCD features a saturation signal level improved by approx. +2 to +3 dB in the 250K-pixel products and approx. +4 to +5 dB in the 380K-pixel products. This higher sensitivity and higher saturation signal allow these CCDs to contribute to improved image quality in end products.

#### ■ Easy Replacement of Conventional Products

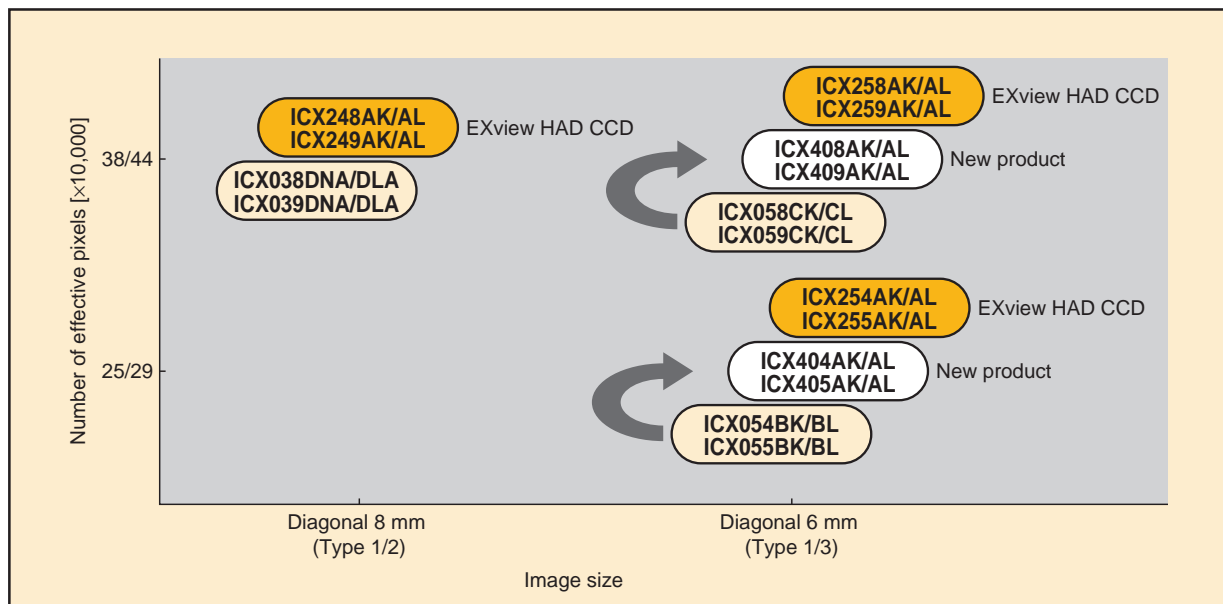
The image sizes, pixel counts, and packages used in these new CCDs are all identical to the corresponding conventional Sony CCDs (ICX054/055BK/BL and ICX058/059CK/CL). In the pin configuration, special efforts were made to keep the changes to the substrates of the conventional products to an absolute minimum. Furthermore, external applied voltages were made adjustment free, allowing the number of external components to be reduced from that in current end products.

## V O I C E

The introduction of the latest technologies has allowed us to achieve CCDs that significantly surpass the characteristics of conventional Type 1/3 CCDs. We are convinced that these CCDs can respond to your needs. We hope you will verify their superlative characteristics through your customers' eyes.



# New Products



■ Figure 1 250K/380K-Pixel CCD Lineup

■ Table 1 250K-Pixel Color CCD Characteristics Comparison

	ICX404AK/405AK (new product)	ICX054BK/055BK (conventional product)	Improvement
Sensitivity (at F 5.6)	1700 mV	970 mV/940 mV	Approx. +5 dB
Smear (at F 5.6)	-115 dB	-94 dB	Approx. -20 dB
Saturation signal	1000 mV	800 mV/720 mV	Approx. +2 to +3 dB

■ Table 2 250K-Pixel Black-and-White CCD Characteristics Comparison

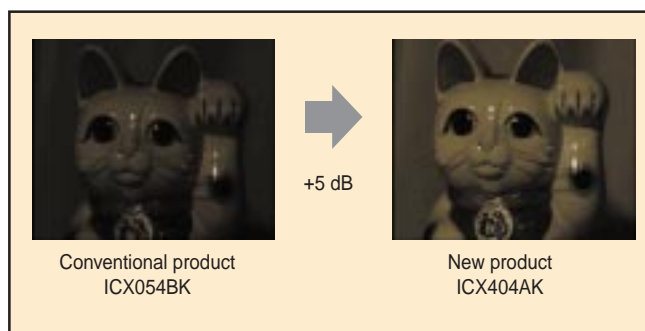
	ICX404AL/405AL (new product)	ICX054BL/055BL (conventional product)	Improvement
Sensitivity (at F 8)	1350 mV	900 mV/840 mV	Approx. +4 dB
Smear (at F 8)	-115 dB	-94 dB	Approx. -20 dB
Saturation signal	1000 mV	800 mV/720 mV	Approx. +2 to +3 dB

■ Table 3 380K-Pixel Color CCD Characteristics Comparison

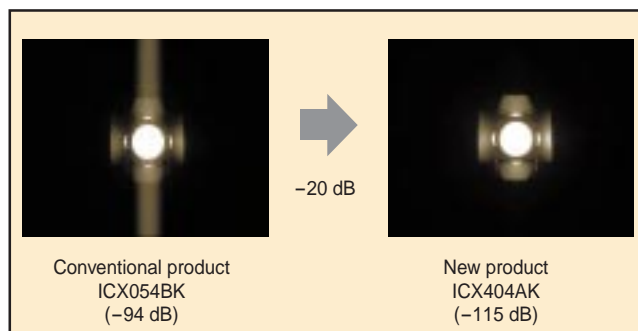
	ICX408AK/409AK (new product)	ICX058CK/059CK (conventional product)	Improvement
Sensitivity (at F 5.6)	950 mV	460 mV	Approx. +6 dB
Smear (at F 5.6)	-110 dB	-94 dB	Approx. -15 dB
Saturation signal	1000 mV	600 mV/540 mV	Approx. +4 to +5 dB

■ Table 4 380K-Pixel Black-and-White CCD Characteristics Comparison

	ICX408AL/409AL (new product)	ICX058CL/059CL (conventional product)	Improvement
Sensitivity (at F 8)	850 mV	460 mV	Approx. +5 dB
Smear (at F 8)	-110 dB	-94 dB	Approx. -15 dB
Saturation signal	1000 mV	600 mV/540 mV	Approx. +4 to +5 dB



■ Photograph 1 Sensitivity Characteristics Comparison



■ Photograph 2 Smear Characteristics Comparison (at F 5.6)