

A Single 5 V Power-Supply High-Resolution Linear Sensor with On-Chip Electronic Shutter Function for Bar Code Applications

CCD Linear Sensor

ILX526A

Bar codes as a central feature of automated distribution systems.

The ILX526A, a key device in bar code readers, offers the low voltage operation and high resolution required by bar code scanners, and features a small package, the need for fewer external components, and an on-chip electronic shutter function.

- Effective pixel size : 7 μm x 200 μm
- Effective number of pixels : 3,000
- Single 5 V power supply
- On-chip electronic shutter function
- Small package (32 mm x 10 mm)
- Ultra-high sensitivity : 300 V/(lx-s)
- On-chip clock driver
- On-chip sample-and-hold circuit
- Maximum operating frequency : 1 MHz

■ Small Set Size

The achievement of the smallest sensor pitch, at 7 μm , of any 3,000-pixel class bar code linear sensor has resulted in a smaller chip and package size, while the inclusion of an on-chip timing generator and clock driver data register has made it possible to use 5 Vp-p logic system drive, resulting in a major simplification of external circuitry. These factors will help in achieving a smaller set size.

■ Highest Sensitivity in Its Class

Table 1 shows a comparison of the electrooptical characteristics of the ILX526A and the ILX511. At 300 V/(lx-s), the sensitivity of the ILX526A is 50% higher than that of the ILX511, and the highest in this class. This higher sensitivity makes it possible to decrease the number of LED light sources used in a bar code scanner, cutting the cost of the light source used in the set and helping to reduce the total set power consumption.

■ Easier to Use

Increasing the number of pixels from the 2,000-pixel level currently in wide use provides higher resolution plus the ability to read wider bar codes. As with the ILX511, the structure of the sample-and-hold circuit allows the internal sample-and-hold function to be switched on and off to suit the particular application simply by changing the voltage at the sample-and-hold switching pin.

In anticipation of the needs of the latest bar code readers, an electronic shutter function is also included for greater ease of use. The block diagram of the ILX526A is shown in figure 1, application circuit in figure 2, and clock timing chart in figure 3.

V O I C E

The ILX526A is the first 3,000-pixel class bar code linear sensor to incorporate an electronic shutter function. It offers a high-grade solution to the conflicting requirements of a large number of pixels and a small package. Sony plans to continue to develop linear sensors that more fully anticipate our customers' needs.



*New
Products*

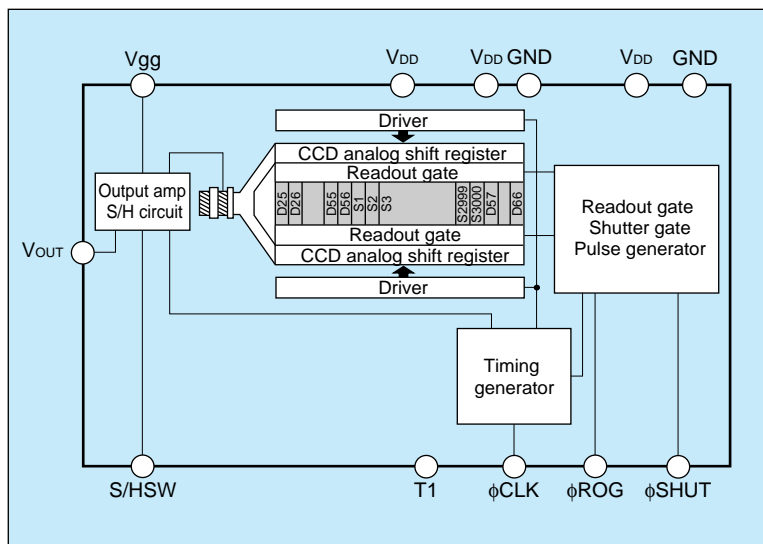


Figure 1 ILX526A Block Diagram

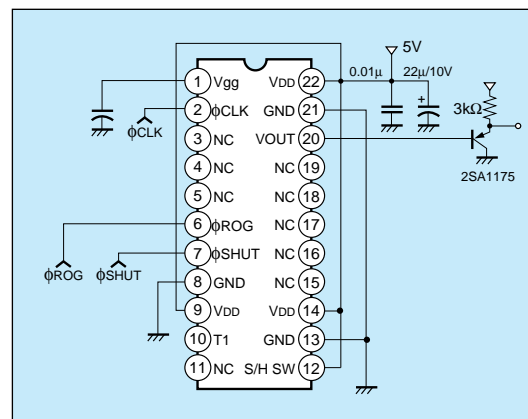


Figure 2 ILX526A Application Circuit (Internal S/H Not Used)

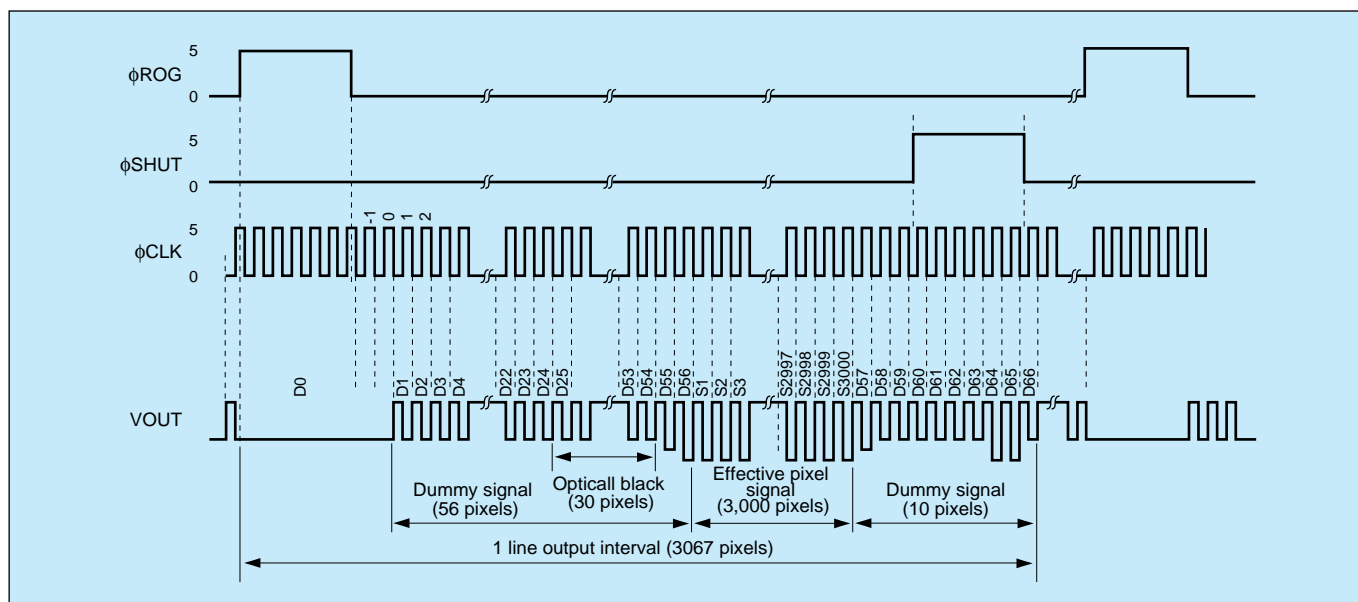


Figure 3 ILX526A Clock Timing Chart (Internal S/H Not Used)

Table 1 Comparison of ILX526A and ILX511

Item	ILX526A	ILX511
Effective pixels	3,000	2,048
Effective pixel size	7μm×200μm	14μm×200μm
Pixel pitch	7μm	14μm
Electronic shutter function	Yes	No
Package size	32 mm×10 mm	41.6 mm×10 mm
Sensitivity (Typ.)	300 V/(lx*s)	200 V/(lx*s)
Sensitivity non-uniformity (Typ.)	5 %	
Saturation output voltage (Typ.)	0.8 V	
Image log (Typ.)	1 %	