

## 一种消除CMOS图像传感器行噪声的时序

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摘要:

为了消除CMOS图像传感器中随机变化的行噪声, 本论文在传统相关双采样的基础上, 提出了一种新的读出时序。该时序采用行相关双采样方法, 同时对相邻的两行像素进行操作, 在采集图像信号的同时, 把行随机噪声也采样到电容上, 进行全差分操作, 将行噪声消除。仿真结果表明, 这种读出方法可以将行随机噪声减少86%, 放大32倍后噪声仍小于ADC的LSB, 从而消除图像中随机的横纹, 改善图像质量, 扩展传感器在暗光下的应用。

关键词: CMOS图像传感器; 四管像素; 行随机噪声

## A Low Row Noise Timing Control Circuit for CMOS Image Sensor

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**Abstract:**

In order to remove temporal row noise in COMS image sensor, a new readout timing based on conventional correlated double sampling is proposed in this paper. The new readout timing is row correlated double sampling, operating two rows at the same time. Temporal row noise is sampled to the capacitor at the same time when sampling the image signal, and removed by the switch capacitor amplifier. According to the simulation result, this readout timing can reduce temporal row noise by 86%, using this readout timing, the row noise is still less than the LSB of ADC after the amplifier amplify the signal by gain of 32, so this readout timing can remove the temporal stripes in images, improve the quality of image, and expand the use of CMOS image sensor under low illuminance.

**Keywords:** CMOS image sensor, 4T active pixel, temporal row noise

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