一种CMOS图像传感器4T-APS像素电路线性化技术

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摘 要：传统CMOS图像传感器4T-APS像素电路中源跟随器阈值电压随源极电压发生变化，导致源跟随器输入输出电压之间有较大的非线性，严重影响传感器的成像质量. 提出了一种像素电路线性化技术，在不改变像素的填充因子的前提下，对像元电路中源极跟随器引入的非线性进行了校正. 经仿真验证，传统源跟随器输出误差达205.9 mV，线性化技术产生的误差不到300 μV.

关键词：4T-APS像素；体效应；源跟随器；线性化
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A Linearization Method for 4T-APS Pixel Circuit in CMOS Image Sensor

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Abstract: In the conventional 4T-APS pixel circuit of CMOS image sensor the threshold voltage of source follower varies with the soure voltage, and that results in the nonlinearity of the input-output characteristic, which will have a severe effect on the image quality. This paper proposes a linearization method for pixel circuit which corrects the nolineartity of the source follower in the pixel circuit without effectting the fill factor of the pixel. The simulation suggests that the output error of the conventional source follower is 205.9 mV, while the output error of the proposed one is no more than 300 μV.

Key words: 4T-APS pixel; body effect; source follower; linearizaton

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