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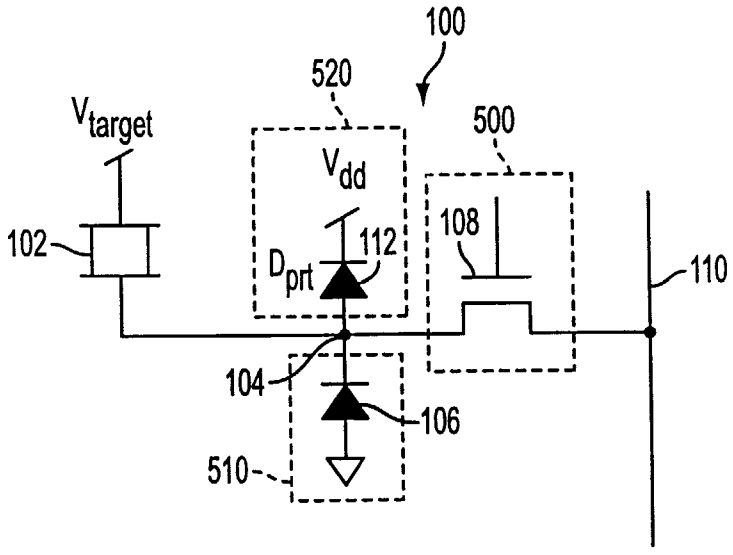
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(54) Title: A CMOS APS WITH STACKED AVALANCHE MULTIPLICATION LAYER AND LOW VOLTAGE READOUT ELECTRONICS



(57) Abstract: In an image sensor which utilizes a charge multiplying photoconversion element, a first inventive feature protects a pixel circuit from breakdown due to excessive voltage from the photoconversion element by connecting a protection circuit between the photoconversion element and a storage element in the pixel circuit where charge generated by the photoconversion element is accumulated. The responsiveness of the photoconversion element is inversely proportional to the intensity of light detected in the image sensor, which causes the signal voltage outputted by the photoconversion element to decrease as detected light intensity increases. A second inventive feature accounts for this inverse relationship by incorporating into the pixel circuit an output control circuit which fixes the voltage level at the output of the photoconversion element, to maintain a constant potential across the photoconversion element. Optionally, the pixel circuit can include both this type of output control circuit and the protection circuit.

WO 2004/019609 A3