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**Dierickx**

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(54) **HIGH DYNAMIC RANGE IN DIRECT INJECTION**

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(52) **U.S. Cl.**  
CPC ..... **H04N 5/3559** (2013.01); **H04N 5/3594** (2013.01); **H04N 5/378** (2013.01)

(58) **Field of Classification Search**  
CPC ..... H04N 5/355; H04N 5/3594; H04N 5/378  
See application file for complete search history.

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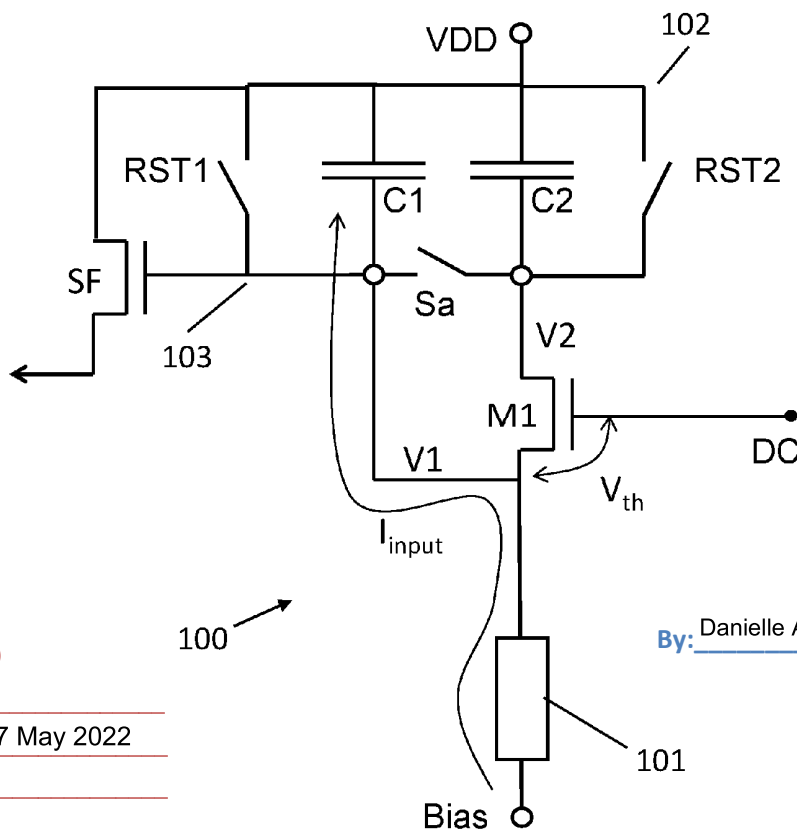
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(57) **ABSTRACT**

A pixel structure and a method of reading charges generated by a radiation sensing element upon exposure thereof to radiation is presented. The pixel structure comprises at least two capacitors configured for integrating charge from a radiation sensing element, where an overflow transistor sets a predetermined threshold level by a static voltage on its control electrode. This allows charges generated in the radiation sensing element to be integrated in either the first capacitor for a level of charge generated by the radiation sensing element, while the level remains under a predetermined threshold level, or in the at least one further capacitor for a level of charge generated by the radiation sensing element when said level surpasses said predetermined threshold level. At least one merge switch is used for merging the charges of the first capacitor with the charges of the at least one further capacitor.

**14 Claims, 8 Drawing Sheets**



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