The invention relates to the field of semiconductor electronic devices. The proposed sensor includes a bowtie shaped semiconductor planar structure asymmetrically extending from a center to opposite sides, where one side of the structure broadens more sharply than the opposite one, thus forming a sharply broadening part and a gradually broadening region of the sensor. The planar structure comprises a semiconductor base having semiconductor active region defined by the sharply broadening part and regions of heavier doped semiconductor defined by the gradually broadening part and a part extending outwardly the sharply broadening part. Heavier doped semiconductor regions are coated with a metal layer with ohmic contact being formed between it and the heavier doped semiconductor regions. To increase the responsivity of the sensor, the metal layer covering the semiconductor part which extends outwardly the sharply broadening part is extended to the center direction above the broader side of the semiconductor active region by partially overlapping it and forming a gate that has a non-ohmic contact with the overlapped part of the semiconductor active region below it.