

# ABSTRACT

It is an object to provide a CCD solid-state image sensor, in which an area of a read channel is reduced and a rate of a surface area of a light receiving portion (photodiode) to an area of one pixel is increased. There is provided a solid-state image sensor, including: a first conductive type semiconductor layer; a first conductive type pillar-shaped semiconductor layer formed on the first conductive type semiconductor layer; a second conductive type photoelectric conversion region formed on the top of the first conductive type pillar-shaped semiconductor layer, an electric charge amount of the photoelectric conversion region being changed by light; and a high-concentrated impurity region of the first conductive type formed on a surface of the second conductive type photoelectric conversion region, the impurity region being spaced apart from a top end of the first conductive type pillar-shaped semiconductor layer by a predetermined distance, wherein a transfer electrode is formed on the side of the first conductive type pillar-shaped semiconductor layer via a gate insulating film, a second conductive type CCD channel region is formed below the transfer electrode, and a read channel is formed in a region between the second conductive type photoelectric conversion region and the second conductive type CCD channel region.