ABSTRACT OF THE DISCLOSURE

A method of forming closely spaced metal electrodes contacting different regions of a semiconductor device is disclosed. The method includes first depositing a sacrificial layer over a developing semiconductor structure. Next, a photoresist layer is deposited over the sacrificial layer and then patterned and developed with a re-entrant profile opening. An opening in the dielectric layer is formed to expose a first semiconductor layer through the re-entrant profile using an anisotropic etch. The photoresist opening is enlarged by removing a portion of the photoresist layer. Then, a metal layer is deposited over the entire structure such that the metal contacts the first semiconductor layer and extends over a portion of the sacrificial layer. The photoresist layer, the sacrificial layer and portions of the first semiconductor layer are removed so that a first metal electrode is connected to a semiconductor region. The first electrode has a lateral extension determined by the amount the photoresist opening is enlarged. The vertical clearance between the first electrode and a second semiconductor layer is determined by the thickness of the sacrificial layer. A second metal electrode is formed by either a conventional lift-off procedure or by a conventional deposition and etch procedure.

Figure 5

This Sheet Has Been Replaced