A Semiconductor Device Having Punch-through Protected Buried Contacts and Method For Making The Same

Abstract of the Disclosure

Adjacent buried contacts (11, 12, 13) formed at the principal surface of a well or substrate region (14) of a semiconductor device, each having a doped contact region (29, 30 31) of one conductivity type and a punch-through prevention region (36, 37, 38) of the opposite conductivity type surrounding the lower portion of the doped contact region are provided. By performing an extra implant or other impurity introduction step while the mask to etch the contacts through the dielectric layer remains in place, the procedure to provide punch-through protected buried contacts is integrated into current processes without an extra mask. Such a structure and procedure enables buried contacts to be spaced closely together without over-doping the well region (14) in which source-drain regions (40, 42, 44, 46) are also formed thus avoiding a degradation in device performance.

FIG. 2 accompanies this abstract.