

ABSTRACT

An electrostatic discharge protection structure [10] is provided with a dielectric gate [56], source and drain contacts [44,48], and a semiconductor substrate [40]. The semiconductor substrate [40] is of a first conductivity type having the dielectric gate [56] disposed partially on its surface. The source and drain contacts [44,48] are connected to source and drain diffusion regions [64,66] of a second conductivity type separated by the dielectric gate [56]. Deep source and drain wells [60,62] of the second conductivity type respectively disposed under the source and drain diffusion regions [64,66] define a channel region [50] of the first conductivity type. The channel region [50] is doped so that the surface breakdown voltage is exceeded before the subsurface depletion region [72] punch-through voltage is exceeded between the deep source and drain wells [60,62] upon an electrostatic discharge at the drain contact [48].

Figure 3