

ABSTRACT

A trench gate LDMOS structure and method for preparing the same. By expanding the critical dimension (CD) of the gate trench from a deep trench region to a region of the first well region adjacent to deep trench region, an inverted L-shaped gate trench is formed, effectively increasing the process window for etching to form the gate trench and reducing the etching difficulty. In addition, based on the inverted L-shaped gate trench, a gate structure formed subsequently is also inverted L-shaped as a whole. Therefore, when electrically leading out the gate structure, an increased caliber of an upper portion of the gate structure effectively expands the photolithography process window for forming lead-out electrode holes on the gate structure. This not only reduces the precision requirement for lithography machines, but also lowers the requirement for overlay accuracy when forming the lead-out electrode holes on the gate structure.