

IGBT WITH INTEGRATED CONTROLABSTRACT OF THE DISCLOSURE

A monolithic IGBT and control circuit therefore are integrated into a common chip. The IGBT is formed in a first area of the chip and the control circuit is formed in a second laterally spaced area and in a P well. Means are provided to prevent hole injection from the P⁺ substrate into the P well during IGBT operation. The means includes a sufficient spacing between the areas; a P⁺ collection region between the areas or an N⁺ diffusion between the areas which is connected to the P⁺ substrate. The areas are surrounded by a common field termination structure which, however, leaves a small surface bridge between the two areas. Control conductors from the control area to the IGBT area cross over the narrow area, and not over the field terminations. A lateral PNP transistor which is integrated in the chip and is external of the IGBT area is connected to the central N⁺ diffusion between IGBT and control areas and permits its connection to the P type substrate only when the IGBT area conducts.

This Sheet Has Been Replaced