

Title (en)
EMITTER-SWITCHED THYRISTOR

Title (de)
EMITTERGESTEUERTER THYRISTOR

Title (fr)
THYRISTOR COMMANDE PAR EMETTEUR

Publication
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Application
EP 97943875 A 19970920

Priority
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• EP 9705165 W 19970920

Abstract (en)
[origin: DE19638769C1] In an emitter-switched thyristor with a main thyristor (TH) composed of a p+ anode emitter (1), a drift zone (3') of opposite conductivity type, a zone (4) which has in the switched-off state a blocking zone with respect to zone (3) and an emitter zone (5) at the cathode side, again with an opposite conductivity type, so that a p+n-pn+ zone sequence results, a transistor structure (T) composed of the first three zones of alternating conductivity is provided in parallel thereto with an emitter (1), a base (3) and a collector (8). This structure contains a NMOSFET (M1) for directly driving the cathode emitters (5) through the cathode connection (KA). The source of this transistor is contacted by the cathode, as well as the collector zone (8) which forms the channel zone of the MOSFET at the surface of the semiconductor. The corresponding drain zone is connected to the n+ cathode emitter (5) of the main thyristor (TH) by an electric conductor (6). A switching-in DMOSFET (M2) is further provided whose gate (G2) is connected to the gate (G1) of the NMOSFET (M1), a source (S2) contacted by the cathode (K) and embedded in a p-base. A conductive connection is established with the cathode contact of the switching-in NMOSFET (M1), and the common connection extends up to a cathode connection (KA). A drain zone (D2) is embedded in the drift zone (3) and the substrate zones of M1 and M2 are in contact with the cathode. The structure contains a PMOSFET (M3) whose gate is connected to the cathode, whose drain (D3) forms a part of the collector zone (8) of the transistor (T) for the secondary current, whose source zone is connected to the base zone (4) of the main thyristor (TH) next to the cathode and whose substrate zone is formed by a part of the n-doped zone (3) adjacent to the surface of the component.

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