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(71) Applicant (for all designated States except US): **GLOB-ALFOUNDRIES INC.**; Maple Corporate Services Limited, P.O. Box 309, Ugland House, Grand Cayman KY1-1104 (KY).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **CHO, Hyun-Jin** [KR/US]; 936 Dennis Drive, Palo Alto, CA 94303 (US).

(74) Agent: **DRAKE, Paul, S.**; Advanced Micro Devices, Inc., 7171 Southwest Parkway, Mail Stop B100.3.341, Austin, TX 78735 (US).

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[Continued on next page]

(54) Title: METHODS FOR FABRICATING GATED LATERAL THYRISTOR-BASED RANDOM ACCESS MEMORY (GLTRAM) CELLS

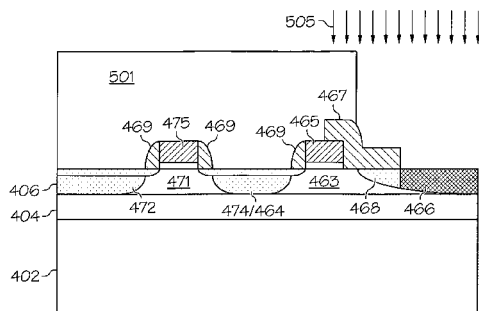


FIG. 20

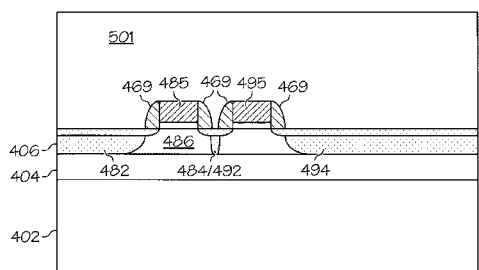


FIG. 21

(57) Abstract: A method for fabricating a gated lateral thyristor-based memory device (gltram) is provided. A semiconductor layer (406) is provided that includes first, second, third and fourth well regions (463, 471, 486, 493) of a first conductivity type in the semiconductor layer 406. A first gate structure (465/408) overlies the first well region (463), a second gate structure (475/408) overlies the second well region (471), a third gate structure (485/408) overlies the third well region (486) and is integral with the second gate structure (475/408), and a fourth gate structure (495/408) overlies the fourth well region (493). Sidewall spacers (467) are formed adjacent a first sidewall (414) of the first gate structure (465/408) and sidewalls (412, 413, 416, 417, 418, 419) of the second through fourth gate structures (475/408, 485/408, 495/408). In addition, an insulating spacer block (469) is formed overlying a portion (468) of the first well region (463) and a portion of the first gate structure (465/408). The insulating spacer block (469) is adjacent a second sidewall (415) of the first gate structure (465/408). A first source region (472) is formed adjacent the first gate structure (465/408), a common drain/cathode region (474/464) is formed between the first and second gate structures (465/408, 475/408), a second source region (482) is formed adjacent the third gate structure (485/408), a common drain/source region (484/492) is formed between the third and fourth gate structures (485/408, 495/408), and a drain region (494) is formed adjacent the fourth gate structure (495/408). A first base region (468) is formed that extends into the first well region (463) under the insulating spacer block (467) adjacent the first gate structure (465/408), and an anode region (466) is formed in the first well region (463) that extends into the first well region (463) adjacent the first base region (468).



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