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- (71) **Applicant:** **INTERNATIONAL BUSINESS MACHINES CORPORATION** [US/US]; New Orchard Road, Armonk, New York 10504 (US).
- (71) **Applicant (for MG only):** **IBM (CHINA) CO., LIMITED** [CN/CN]; 7F, Bldg. 10, ZhangJiang Innovation Park, 399 Keyuan Road, ZhangJiang High-Tech Campus, Pudong New Area, Shanghai 201203 (CN).
- (72) **Inventors:** **REZNICEK, Alexander**; 257 Fuller Road, Albany, NY 12203-3654 (US). **HEKMATSHOARTABARI, Bahman**; PO Box 218, 1101 Kitchawan Rd., Yorktown Heights, NY 10598 (US). **BALAKRISHNAN, Karthik**; PO Box 218, 1101 Kitchawan Rd., Yorktown Heights, NY 10598 (US).
- (74) **Agent:** **LIU, SHEN & ASSOCIATES**; 10th Floor, Building 1, 10 Caihefang Road, Haidian District, Beijing 100080 (CN).
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(54) **Title:** BIPOLAR JUNCTION TRANSISTOR WITH VERTICALLY INTEGRATED RESISTOR

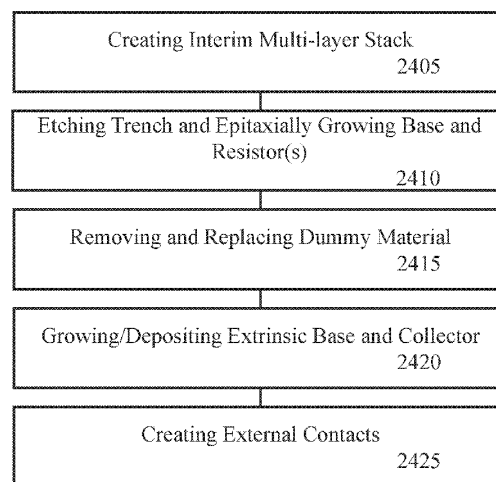


Figure 24

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(57) **Abstract:** Vertical bipolar junction transistors (VBJTs), each with one or more resistors connected in a circuit in different circuit configurations, are disclosed. The VBJT has an emitter substructure that includes an emitter layer, a collector, an intrinsic base, one or more doped epitaxy regions, and one or more resistors. The intrinsic base, the doped epitaxy region (s), and the resistor (s) are stacked upon one another in a channel between the emitter layer and the collector. Various circuit configurations and structures are described including a common-collector circuit, a common-emitter circuit, and an emitter-degenerate circuit. Methods of making these configuration/structures are disclosed.

[Continued on next page]

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