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- (81) **Designated States** (*unless otherwise indicated, for every
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HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG,
KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY,
MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA,
NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO,
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- (54) **Title:** LOW TEMPERATURE ATMOSPHERIC EPITAXIAL PROCESS

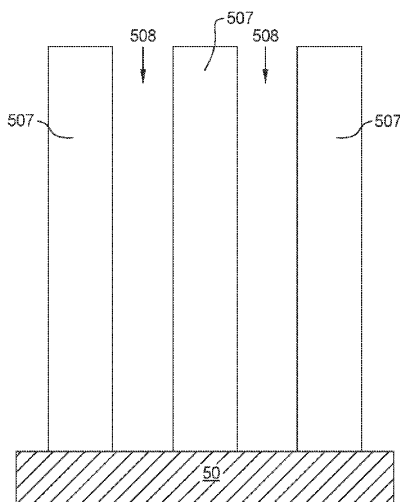


FIG. 5

- (57) **Abstract:** A method of epitaxial deposition is disclosed. The method includes plasma pre-cleaning a substrate having openings with an aspect ratio of greater than 5:1. The plasma pre-cleaning is performed at pre-clean pressure of less than 5 Torr. The method also includes, after the plasma pre-cleaning, depositing a material in the openings using epitaxial deposition at a deposition pressure of about 700 Torr to about 800 Torr. In another embodiment, a method of gap filling using epitaxial deposition includes patterning a substrate with openings having an aspect ratio of 5:1. The method also includes plasma pre-cleaning the substrate, the plasma pre-cleaning being performed at a pre-clean pressure of about 1 Torr to about 5 Torr. The method also includes, after the plasma pre-cleaning, depositing a gap fill material in the openings using epitaxial deposition at a deposition pressure of about 700 Torr to about 800 Torr.

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