sensitive faults [11]. From this analysis, it's apparent that the MSCAN algorithm consumes fewer gates, resulting in lower power dissipation. However, it exhibits very poor fault coverage. Conversely, March C- boasts the highest fault coverage but entails increased power dissipation and area overhead. Balancing these factors necessitates sacrificing one parameter for better performance. Compared to traditional methods like MSCAN and Checkerboard, the MATS, MATS+, MarchX, MarchA, MarchY, and MarchB algorithms showcase superior efficiency and fault coverage [13]. Despite ongoing enhancements aimed at bolstering fault coverage in existing algorithms, there remains a critical need for a novel algorithm capable of efficiently detecting a wide array of fault types [14]. As semiconductor memory density escalates, research persistently pursues advanced pattern sequences and alternative strategies such as DFT and BIST to fortify testing capabilities. These efforts are aimed at meeting the evolving challenges posed by advancing semiconductor technologies. Emerging alternatives like MATP, GALPAT, Butterfly, and Signature Analysis using LFSR promise enhanced results, although the trade-off between parameters remains an inevitable consideration.

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