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(54) **METHOD OF FORMING AN INTEGRATED
CIRCUIT STRUCTURE INCLUDING A
RESISTIVE RANDOM ACCESS MEMORY
(RRAM) CELL**

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ABSTRACT

Resistive random access memory (RRAM) cells, for example conductive bridging random access memory (CBRAM) cells and oxygen vacancy-based RRAM (OxRRAM) cells are provided. An RRAM cell may include a metal-insulator-metal (MIM) structure formed between adjacent metal interconnect layers or between a silicided active layer (e.g., including MOSFET devices) and a first metal interconnect layer. The MIM structure of the RRAM cell may be formed by a damascene process including forming a tub opening in a dielectric region, forming a cup-shaped bottom electrode in the tub opening, forming a cup-shaped insulator in an interior opening defined by the cup-shaped bottom electrode, and forming a top electrode in an interior opening defined by the cup-shaped insulator. The cup-shaped bottom electrode, or a component thereof (in the case of a multi-layer bottom electrode) may be formed concurrently with interconnect vias, e.g., by deposition of tungsten or other conformal metal.

