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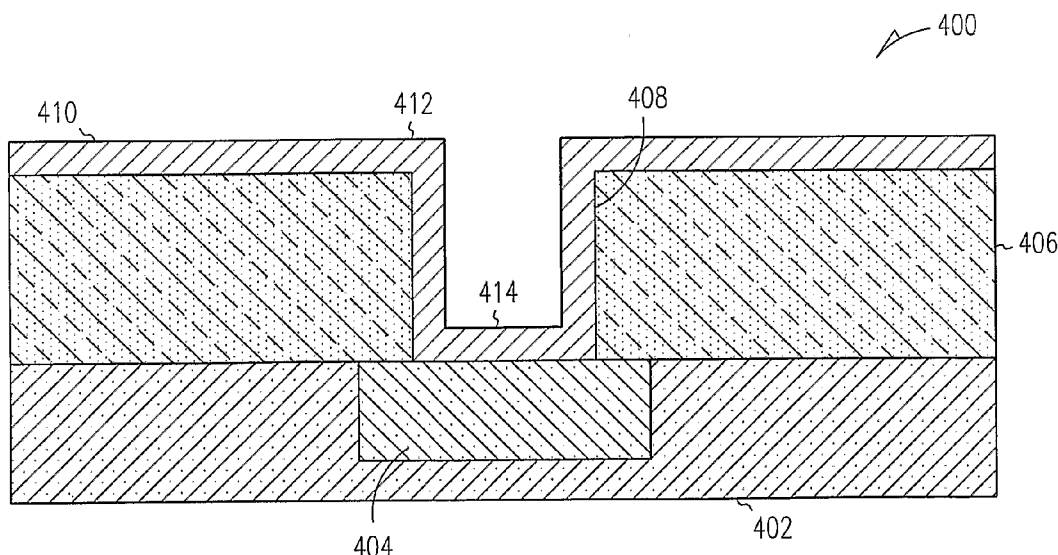
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(54) Title: LOW RESISTANCE TITANIUM NITRIDE FILMS



(57) Abstract: The use of atomic layer deposition (ALD) to form a conductive titanium nitride layer produces a reliable structure for use in a variety of electronic devices. The structure is formed by depositing titanium nitride by atomic layer deposition onto a substrate surface using a titanium-containing precursor chemical such as TDEAT, followed by a mixture of ammonia and carbon monoxide or carbon monoxide alone, and repeating to form a sequentially deposited TiN structure. Such a TiN layer may be used as a diffusion barrier underneath another conductor such as aluminum or copper, or as an electro-migration preventing layer on top of an aluminum conductor. ALD deposited TiN layers have low resistivity, smooth topology, high deposition rates, and excellent step coverage and electrical continuity.

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