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METAL LAYERS FORMED AS A COMPOSITE OF SUB-LAYERS AND DEVICES INCLUDING SAME

Abstract

In an integrated circuit (10), an opening (e.g., via or window) is filled with an Al-based plug (16) which has essentially a <111> orientation and comprises at most three grains. These characteristics are achieved by first depositing a texture control Ti layer (24) followed by at least three Al-based sublayers (16.1, 16.2, 16.3). The grain sizes and deposition conditions are controlled in such a way that during deposition of the third sublayer (16.3), the microstructure of the plug (16) adjusts itself to produce a single grain (or at most three).

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