

IMPROVED COPPER-BASED METALLIZATIONS FOR HYBRID INTEGRATED CIRCUITS

Abstract

A new metallization is described which is a composite of subsequent metal layers beginning with a layer of titanium and having in an ascending order the following composition: Ti - TiPd - Cu - Ni - Au. TiPd is an alloy of titanium and palladium containing from 0.3 to 14 weight percent Pd, by the weight of the alloy. The TiPd alloy is etchable in an aqueous HF solution containing from 0.5 to 2.0 and higher, preferably from 0.5 to 1.2 weight percent HF. The use of the TiPd alloy avoids the occurrence of Pd residues remaining after the etching of Ti layer and lift-off (rejection etching) of Pd layer in a prior art Ti-Pd-Cu-Ni-Au metallization. Ti and TiPd layers are present in a thickness ranging from 100 to 300 nm and from 50 to 300 nm, respectively, and in a total minimum thickness needed to maintain bonding characteristics of the metallization. The metallization is suitable for use in various circuits including integrated circuits (ICs), hybrid integrated circuits (HICs), film integrated circuits (FICs), multi-chip modules (MCMs), etc.

