

Abstract

An Aluminum Alloy Wire for Connection to Semiconductor Devices

[Object]

To improve thermal shock resistance of an Al alloy bonding wire and also to prevent chip cracking.

[Means to solve the problems]

The wire contains 0.2 – 2.0 mass % of iron (Fe) and the balance aluminum of a purity of 99.99 mass % or higher, wherein iron is dissolved by 0.01 – 0.05 % in an aluminum matrix, and also the after-drawn matrix tissue as seen in cross section of the aluminum alloy wire has a uniform fine recrystallization pattern of an order of several micrometers, and Fe-Al intermetallic compound particles are uniformly crystallized in the boundaries and interior of the fine recrystallization tissue. Highly deformed Al is subjected to a solution heat treatment so as to dissolve Fe to approximately its solid solubility limit and by a conditioning heat treatment the above-described tissue is obtained. During the ultrasonic wave wire bonding, the wire deforms and undergoes a dynamic recrystallization, and thus is pressure bonded without experiencing a work hardening.

[Selected drawing]

Fig. 1