

Abstract

COPPER-PLATINUM ALLOY WIRE FOR CONNECTION IN SEMICONDUCTOR DEVICE

In a copper wire for ball bonding, a second bonding property is improved, chip breakage in ball bonding is prevented, and a looping property is improved. In the course of producing an element wire by continuous casting of a molten copper-platinum alloy containing high purity copper (Cu) including 0.1 to 2.0 mass% of platinum (Pt) as well as 1 to 10 mass ppm of sulfur (S) and 10 to 150 mass ppm of oxygen (O) as non-metallic elements and 1 to 5 mass ppm of phosphorus (P) as required, a very thin copper layer free from platinum is formed owing to segregation and then oxidized in the atmosphere to form an oxide film of 6 to 2 nm on a wire surface layer after continuous wire drawing. As a bonding wire having Vickers hardness of 77 to 105 Hv, the uniform oxide film improves the second bonding property, and the elements added to the matrix suppress dynamic strength during the ball bonding, thereby preventing aluminum splash and maintaining static strength which does not cause leaning.

Fig. 3