

CLAIMS

1. A copper alloy bonding wire for semiconductor devices, comprising in total 0.03% by mass or more to 3% by mass or less of at least one or more kinds of elements selected
5 from Ni, Zn, Ga, Ge, In, and Ir, with the balance comprising Cu and inevitable impurities, wherein the copper alloy bonding wire is bare Cu alloy wire.
2. The copper alloy bonding wire for semiconductor
10 devices according to claim 1, wherein an average crystal grain size (μm) in core cross section in a direction vertical to a wire axis of the copper alloy bonding wire is
 $0.02 \times R + 0.4$ or more (1a)
 $0.1 \times R + 0.5$ or less (1b)
15 where R (μm) is a diameter of the wire.
3. The copper alloy bonding wire for semiconductor devices according to claim 1 or 2, wherein an average film thickness of copper oxide on a surface of the wire is in a
20 range of 0.0005 μm or more and 0.02 μm or less.
4. The copper alloy bonding wire for semiconductor devices according to any one of claims 1 to 3, wherein the copper alloy bonding wire further comprises 0.0001% by mass
25 or more and 0.050% by mass or less of each of at least one or more kinds of elements selected from Ti, B, Ca, La, As, Te, and Se, with respect to the entire wire.
5. The copper alloy bonding wire for semiconductor
30 devices according to any one of claims 1 to 4, wherein the copper alloy bonding wire further comprises in total 0.0005% by mass or more and 0.5% by mass or less of at

least one or more kinds of elements selected from Ag and Au,
with respect to the entire wire.

6. The copper alloy bonding wire for semiconductor
5 devices according to any one of claims 1 to 5, wherein the
copper alloy bonding wire further comprises 1.15% by mass
or less of Pd.

7. The copper alloy bonding wire for semiconductor
10 devices according to any one of claims 1 to 6, wherein the
copper alloy bonding wire comprises two or more kinds of
elements selected from Ni, Zn, Ga, Ge, In, and Ir.

8. The copper alloy bonding wire for semiconductor
15 devices according to any one of claims 1 to 7, wherein the
copper alloy bonding wire does not have a coating layer
based on a metal other than copper.

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