

**LEAD-FREE AND ANTIMONY-FREE SOLDER ALLOY, SOLDER BALL, BALL
GRID ARRAY AND SOLDER JOINT**

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ABSTRACT

Provided are a solder alloy and a solder joint which have high tensile strength, can suppress Ni leaching and can suppress generation of voids at a bonded interface. The solder alloy has an alloy composition consisting of, by mass%, Ag: 1.0 to 4.0%, Cu: 0.1 to 1.0%, Ni: 0.005 to 0.3%, Co: 0.003 to 0.1%, and Ge: 0.001 to 0.015% with the balance being Sn,

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wherein the alloy composition satisfies the following relation (1):

$$0.00030 < (\text{Ni}/\text{Co}) \times (1/\text{Ag}) \times \text{Ge} < 0.05 \quad (1)$$

wherein Ni, Co, Ag, and Ge in the relation (1) each represent the contents (mass%) in the alloy composition.

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[No Figure]