

(12) 按照专利合作条约所公布的国际申请

(19) 世界知识产权组织
国际局

(43) 国际公布日
2023 年 8 月 31 日 (31.08.2023)



(10) 国际公布号
WO 2023/160730 A1

(51) 国际专利分类号:
B21C 1/02 (2006.01) *C23C 14/02* (2006.01)
B21C 3/02 (2006.01) *C23C 14/12* (2006.01)

(21) 国际申请号: PCT/CN2023/089202

(22) 国际申请日: 2023 年 4 月 19 日 (19.04.2023)

(25) 申请语言: 中文

(26) 公布语言: 中文

(30) 优先权:
202210163419.3 2022 年 2 月 22 日 (22.02.2022) CN

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(54) Title: METHOD FOR MANUFACTURING INSULATED GOLD BONDING WIRE FOR DOUBLE-LAYER SUPERPOSED PACKAGING OF INTEGRATED CIRCUIT

(54) 发明名称: 一种用于集成电路双层叠加封装的绝缘键合金丝制造方法

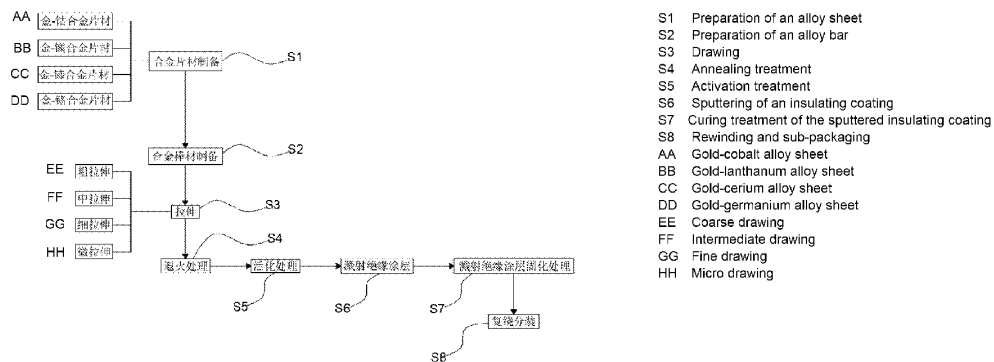


图 1

(57) Abstract: The present invention discloses a method for manufacturing an insulated gold bonding wire for the double-layer superposed packaging of an integrated circuit, and relates to the technical field of gold bonding wires for microelectronic packaging. The manufacturing method specifically comprises the following steps: the preparation of an alloy sheet; the preparation of an alloy bar; drawing; an annealing treatment; an activation treatment; sputtering of an insulating coating; and rewinding and sub-packaging. In the present invention, the surface of a gold bonding wire in a large-scale integrated circuit and double-layer superposed packaging is provided with a polyaryletherketone insulating coating, so that the gold bonding wire is allowed to contact and intersect with itself during packaging, without any influence on the product performance, the cost and the quality; two high-hardness and high-conductivity materials, i.e. cobalt and germanium, are added, so that the tensile strength of the material is greatly enhanced, wherein under the conditions of a room temperature of 25 °C, the fracture force of a wire sample with a diameter of 20 μm reaches 8.2 Cn, whereas the

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SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ,
UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW。

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fracture force of a gold bonding wire with the same diameter is 6.0-6.9 Cn; and the four elements of cobalt, lanthanum, cerium and germanium are added, so that not only is the tensile strength of the material enhanced, but the length of a heat affected zone of FBA is also greatly reduced during packaging and wire bonding.

(57) 摘要: 本发明公开了一种用于集成电路双层叠加封装的绝缘键合金丝制造方法, 涉及微电子封装键合金丝技术领域, 具体包括如下步骤: 合金片材制备; 合金棒材制备; 拉伸; 退火处理; 活化处理; 溅射绝缘涂层; 复绕分装, 本发明在规模型集成电路及双层叠加封装中由于键合金丝表面有聚芳醚酮绝缘涂层, 因此, 允许键合金丝封装时接触、交叉, 而不影响产品性能、成本和质, 添加了钴和锆两种高硬度高导电性材料, 极大地增强了材料的抗拉强度, 25℃室温条件下, 直径为20um的丝材样品断裂力达到8.2Cn, 而同等直径的键合金丝的断裂力为6.0Cn—6.9Cn, 添加钴、镧、铈、锆4种元素, 不仅增强了材料的抗拉强度, 而且在封装焊线时, 极大的降低了FBA的热影响区长度。