

The United States of America



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Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

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A handwritten signature in black ink, reading "Jon W. Dudas". The signature is stylized, with a large, looped initial "J" and a distinct "D" for "Dudas".

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(12) **United States Patent**
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(54) **METAL BONDING METHOD FOR SEMICONDUCTOR CIRCUIT COMPONENTS EMPLOYING PRESCRIBED FEEDS OF METAL BALLS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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228/111.5, 262.61, 262.51, 56.3

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(57) **ABSTRACT**

A method for fabricating metal bonding for a semiconductor circuit component employing prescribed feed of metal ball is disclosed. The method comprises the steps of, first, placing a metal ball at the metallization site on the surface of the circuit die of the component; then, melting the metal ball on the site; and subsequently solidifying the molten metal and forming a metal bump at the site. A circuit die having formed with one or more metal bumps can then be made into a circuit component featuring stable and reliable electrical leads and suitable to be utilized as large power rating yet with reduced component size in electronic equipment.

9 Claims, 7 Drawing Sheets

