

Title (en)  
METHOD FOR PERMANENTLY BONDING WAFERS BY A CONNECTING LAYER BY MEANS OF SOLID-STATE DIFFUSION OR PHASE TRANSFORMATION

Title (de)  
VERFAHREN ZUM PERMANENTEN BONDEN VON WAFERN DURCH EINE VERBINDUNGSSCHICHT MITTELS FESTKÖRPERDIFFUSION ODER PHASENUMWANDLUNG

Title (fr)  
PROCÉDÉ DE LIAISON PERMANENTE DE TRANCHES PAR UNE COUCHE DE LIAISON AU MOYEN D'UNE DIFFUSION EN PHASE SOLIDE OU D'UNE TRANSFORMATION DE PHASE

Publication  
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Application  
**EP 11749832 A 20110830**

Priority  
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Abstract (en)  
[origin: WO2013029656A1] The present invention relates to a method for bonding a first solid substrate (1) to a second solid substrate (2), which contains a first material, comprising the following steps, in particular with the following sequence: - forming or applying a functional layer (5) containing a second material onto the second solid substrate (2), - making contact between the first solid substrate (1) and the second solid substrate (2) at the functional layer (5), - pressing together the solid substrates (1, 2) to form a permanent bond between the first and the second solid substrates (1, 2), at least partly reinforced by solid-state diffusion and/or phase transformation of the first material with the second material, wherein an increase in volume is brought about at the functional layer (5). During bonding, the solubility limit of the first material for the second material is not exceeded, or is only slightly exceeded, such that precipitation of intermetallic phases is avoided to the greatest possible extent and, by contrast, the solid solution is formed. The first material can be copper and the second material can be tin.

IPC 8 full level  
**H01L 21/60** (2006.01); **H01L 23/488** (2006.01)

CPC (source: CN EP KR US)  
**B23K 35/001** (2013.01 - EP US); **B23K 35/0255** (2013.01 - EP US); **B23K 35/262** (2013.01 - EP US); **B23K 35/302** (2013.01 - EP US); **H01L 21/185** (2013.01 - EP US); **H01L 21/64** (2013.01 - KR); **H01L 21/67** (2013.01 - KR); **H01L 21/76251** (2013.01 - US); **H01L 23/48** (2013.01 - KR); **H01L 24/05** (2013.01 - CN EP US); **H01L 24/08** (2013.01 - CN EP US); **H01L 24/27** (2013.01 - CN EP US); **H01L 24/29** (2013.01 - CN EP US); **H01L 24/32** (2013.01 - CN EP US); **H01L 24/83** (2013.01 - CN EP US); **H01L 24/94** (2013.01 - CN EP US); **H01L 25/0657** (2013.01 - CN EP US); **H01L 25/50** (2013.01 - CN EP US); **B23K 20/021** (2013.01 - EP US); **B23K 20/023** (2013.01 - EP US); **B23K 2101/40** (2018.07 - EP US); **H01L 2224/038** (2013.01 - CN EP US); **H01L 2224/0384** (2013.01 - CN EP US); **H01L 2224/04026** (2013.01 - CN EP US); **H01L 2224/05557** (2013.01 - EP US); **H01L 2224/05647** (2013.01 - CN EP US); **H01L 2224/0801** (2013.01 - CN EP US); **H01L 2224/08501** (2013.01 - CN EP US); **H01L 2224/2745** (2013.01 - CN EP US); **H01L 2224/27452** (2013.01 - CN EP US); **H01L 2224/275** (2013.01 - CN EP US); **H01L 2224/27505** (2013.01 - CN EP US); **H01L 2224/278** (2013.01 - CN EP US); **H01L 2224/2784** (2013.01 - CN EP US); **H01L 2224/29019** (2013.01 - EP US); **H01L 2224/2908** (2013.01 - CN EP US); **H01L 2224/29111** (2013.01 - CN EP US); **H01L 2224/29124** (2013.01 - CN EP US); **H01L 2224/29144** (2013.01 - CN EP US); **H01L 2224/29147** (2013.01 - CN EP US); **H01L 2224/29166** (2013.01 - CN EP US); **H01L 2224/29181** (2013.01 - CN EP US); **H01L 2224/29184** (2013.01 - CN EP US); **H01L 2224/29211** (2013.01 - CN EP US); **H01L 2224/29311** (2013.01 - CN EP US); **H01L 2224/29347** (2013.01 - CN EP US); **H01L 2224/3201** (2013.01 - CN EP US); **H01L 2224/325** (2013.01 - CN EP US); **H01L 2224/32501** (2013.01 - CN EP US); **H01L 2224/7565** (2013.01 - CN EP US); **H01L 2224/83013** (2013.01 - CN EP US); **H01L 2224/83022** (2013.01 - CN EP US); **H01L 2224/83191** (2013.01 - EP US); **H01L 2224/83193** (2013.01 - EP US); **H01L 2224/83203** (2013.01 - CN EP US); **H01L 2224/83345** (2013.01 - EP US); **H01L 2224/83365** (2013.01 - EP US); **H01L 2224/83385** (2013.01 - EP US); **H01L 2224/838** (2013.01 - CN EP US); **H01L 2224/8383** (2013.01 - CN EP US); **H01L 2224/8384** (2013.01 - CN EP US); **H01L 2224/94** (2013.01 - CN EP US); **H01L 2924/01029** (2013.01 - CN EP US); **H01L 2924/01327** (2013.01 - CN EP US); **H01L 2924/1434** (2013.01 - CN EP US); **H01L 2924/351** (2013.01 - CN EP US); **H01L 2924/3511** (2013.01 - CN EP US)

C-Set (source: EP US)  
1. **H01L 2224/29147 + H01L 2924/0105**  
2. **H01L 2224/2908 + H01L 2224/29111 + H01L 2224/29147**  
3. **H01L 2224/325 + H01L 2924/01029 + H01L 2924/0105**  
4. **H01L 2224/29211 + H01L 2224/29347**  
5. **H01L 2224/94 + H01L 2224/83**

Citation (search report)  
See references of WO 2013029656A1

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JP 2014527503 A 20110830; KR 20137027626 A 20110830; SG 2013082714 A 20110830; TW 101123933 A 20120703;  
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