



(51) International Patent Classification:
H01L 21/60 (2006.01)

(21) International Application Number:
PCT/US2009/067113

(22) International Filing Date:
8 December 2009 (08.12.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
12/317,598 23 December 2008 (23.12.2008) US

(71) Applicant (for all designated States except US): **INTEL CORPORATION** [US/US]; 2200 Mission College Boulevard, MS: RNB-4-150, Santa Clara, California 95052 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **PANG, Mengzhi** [CN/US]; 16214 S 17th Lane, Phoenix, Arizona 85045 (US). **GURUMURTHY, Charan** [US/US]; 504 N. Swallow Lane, Higley, Arizona 85236 (US).

(74) Agents: **VINCENT, Lester, J.** et al.; **BLAKELY SOKOLOFF TAYLOR & ZAFMAN**, 1279 Oakmead Parkway, Sunnyvale, California 94085 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

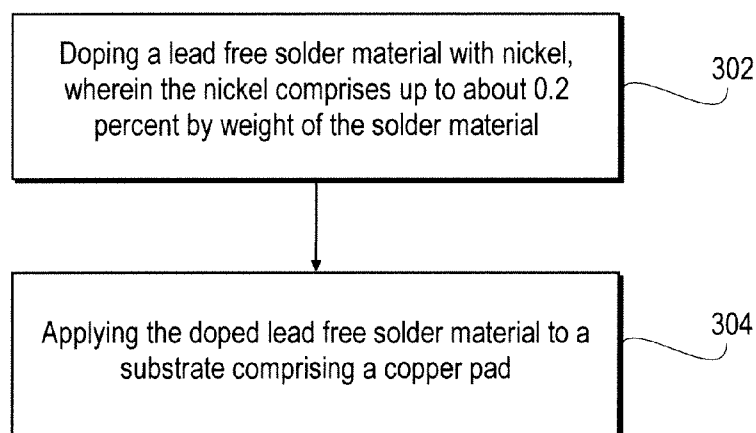
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

[Continued on next page]

(54) Title: DOPING OF LEAD-FREE SOLDER ALLOYS AND STRUCTURES FORMED THEREBY



(57) Abstract: Methods of forming a microelectronic structure are described. Those methods include doping a lead free solder material with nickel, wherein the nickel comprises up to about 0.2 percent by weight of the solder material, and then applying the solder material to a substrate comprising a copper pad.

FIG. 3



(88) Date of publication of the international search report:
26 August 2010