

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
24 May 2007 (24.05.2007)

PCT

(10) International Publication Number
WO 2007/059191 A1

(51) International Patent Classification:
H01L 23/485 (2006.01) **H01L 21/60** (2006.01)

(21) International Application Number:
PCT/US2006/044299

(22) International Filing Date:
14 November 2006 (14.11.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/273,879 15 November 2005 (15.11.2005) US

(71) Applicant (for all designated States except US): **INTEL CORPORATION** [US/US]; 2200 Mission College Boulevard, Santa Clara, CA 95052 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **MANEPALLI, Rahul, N.** [IN/US]; 14435 South 48th Street, Apt. 1126, Phoenix, AZ 85044 (US). **AGRAHARAM, Sairam** [IN/US]; 14435 South 48th Street, Apt. 1083, Phoenix, AZ 85044 (US).

(74) Agents: **TROP, Timothy, N.** et al.; Trop, Pruner & Hu, P.C., 1616 S. Voss Road, Suite 750, Houston, TX 77057-2631 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, 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, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

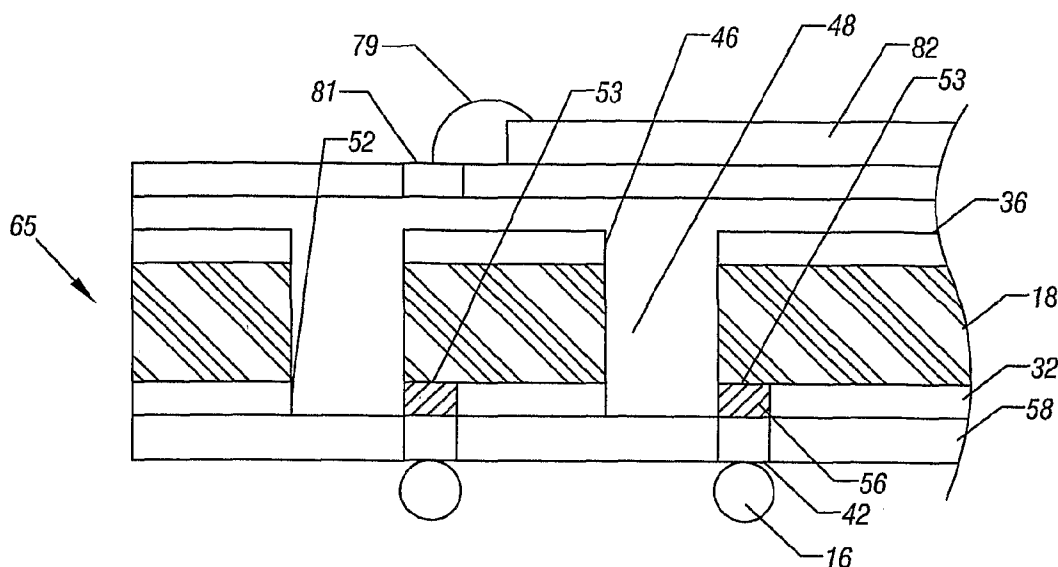
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ENHANCING SHOCK RESISTANCE IN SEMICONDUCTOR PACKAGES



(57) Abstract: A shock load applied to a solder ball may be cushioned by providing a viscoelastic material in association with the solder ball. The viscoelastic material dampens shock loads applied to the solder ball and reduces the rate of failure between the solder ball and the rest of the package.

WO 2007/059191 A1