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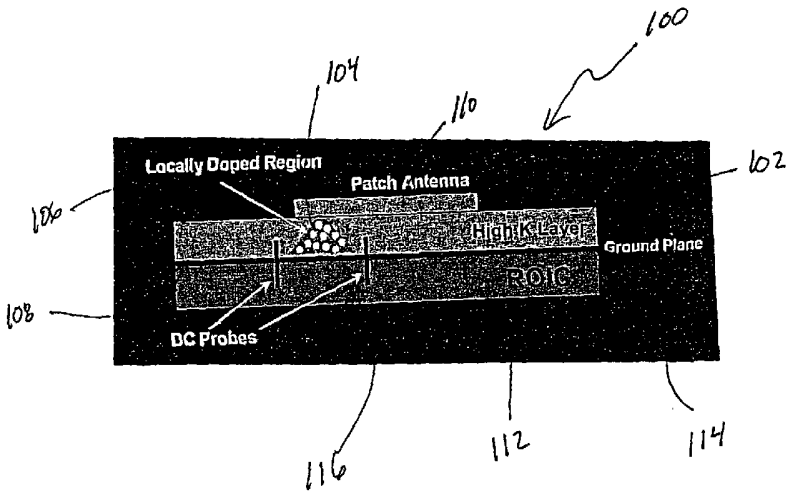
Declarations under Rule 4.17:

— *as to the identity of the inventor (Rule 4.17(i)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK,*

[Continued on next page]

(54) Title: ANTENNA-COUPLED MICROBOLOMETER



(57) Abstract: An antenna-coupled microbolometer multilayer structure (100), and associated method of forming an antenna-coupled microbolometer multilayer structure are disclosed, where the structure includes a dielectric layer (102) of dielectric material having at least one locally doped region (104) doped with a dopant to provide a thermal conductive path from a first side (106) to a second side (108) of the dielectric layer. The structure includes an antenna (110) on the first side of the dielectric layer coupled to the locally doped region; a read-out integrated eircuit (ROIC) (112) on the second side of the dielectrie layer coupled to the locally doped region; a conductive substrate (114) between the dielectric layer and the ROIC; and an electrical connection between the locally doped region and the ROIC, wherein the ROIC is connected to detect, via the electrical connection, a change in electrical resistivity of the locally doped region due to thermal energy absorbed frorn the antenna.

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DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

Published:

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/25878

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H01J 7/24
US CL : 250/238, 221, 216, 338.4: 343/850; 505/1, 847, 848, 849

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 250/238, 221, 216, 338.4: 343/850; 505/1, 847, 848, 849

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,329,649 B1 (JACK et al) 11 December 2001 (11/12/01) See entired document.	1-16

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29 June 2004 (29.06.2004)	15 JUL 2004
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703)305-3230	Authorized officer Que T. Le Telephone No. (703) 308-0956

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INTERNATIONAL SEARCH REPORT

International application No.

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Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

NEW ABSTRACT

An antenna-coupled microbolometer multilayer structure (100), and associated method of forming an antenna-coupled microbolometer multilayer structure are disclosed, where the structure includes a dielectric layer (102) of dielectric material having at least one locally doped region (104) doped with a dopant to provide a thermal conductive path from a first side (106) to a second side (108) of the dielectric layer. The structure includes an antenna (110) on the first side of the dielectric layer coupled to the locally doped region; a read-out integrated circuit (ROIC) (112) on the second side of the dielectric layer coupled to the locally doped region; a conductive substrate (114) between the dielectric layer and the ROIC; and an electrical connection between the locally doped region and the ROIC, wherein the ROIC is connected to detect, via the electrical connection, a change in electrical resistivity of the locally doped region due to thermal energy absorbed from the antenna.