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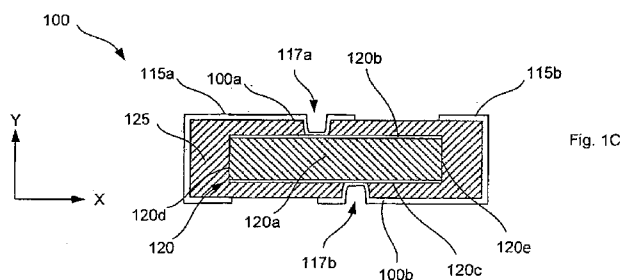
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- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:
17 March 2011

(54) Title: OXYGEN-BARRIER PACKAGED SURFACE MOUNT DEVICE



(57) Abstract: A method for producing a surface mount device (100) includes providing a plurality of layers including a B-staged top layer (300) and bottom layer (315), and a C-staged middle layer (310) with an opening (312). A core device (305) is inserted into the opening, and then the top and bottom layers are placed over and under, respectively, the middle layer. The layers are cured until the layers become C-staged. The core device is substantially surrounded by an oxygen-barrier material with an oxygen permeability of less than approximately 0.4 cm³·mm/m²·atm·day.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2010/002004

A. CLASSIFICATION OF SUBJECT MATTER
INV. H01C1/142

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)
C08J H01C H05K H01B C08K C08G C08L C23C H01L

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 practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 023 403 A (MCGUIRE KATHERINE M [US] ET AL) 8 February 2000 (2000-02-08) claims 29,1,21; figures 7,8,10-16G -----	1-7
Y	CA 1 127 320 A1 (RAYCHEM CORP) 6 July 1982 (1982-07-06) claims 1-11 -----	1-7

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

29 October 2010

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10/02/2011

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2010/002004

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-7

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7

A method for producing a surface mount device characterized in that a core device is covered with an oxygen barrier layer having an oxygen permeability of less than approximately $0.4 \text{ cm}^3 \cdot \text{mm} / \text{m}^2 \cdot \text{atm} \cdot \text{day}$

2. claims: 8, 9

A method for producing a surface mount device characterized in that a core material is placed between contact pads and a conductive clip in electrical contact with the second contact pad.

3. claim: 10

A method for producing a surface mount device characterized in that a first and second substrate layers are provided and the first and second substrate layers include a generally L-shaped interconnect that defines a surface mount device contact surface along a top surface of the substrate layer.

4. claim: 11

A method for producing a surface mount device characterized in that a core device having a top and a bottom surface is encapsulated with an oxygen barrier insulator material and that the first contact pad disposed on an outside surface of the oxygen barrier insulator material is in electrical communication with the top surface of the core device. And the second contact pad disposed on an outside surface of the oxygen barrier insulator material is in electrical communication with the bottom surface of the core device.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2010/002004

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6023403	A	08-02-2000	NONE	
CA 1127320	A1	06-07-1982	JP 1051041 B	01-11-1989
			JP 1771634 C	14-07-1993
			JP 55098801 A	28-07-1980