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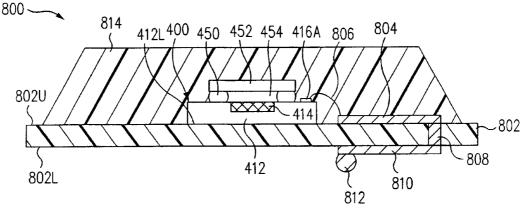
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(54) Title: MICROMACHINE PACKAGE



(57) Abstract: A micromachine package (800) includes a micromachine chip (412) having a micromachine area (414) in an upper surface of micromachine chip (412). A coupon (452) is attached above micromachine area (414) by a bead (450). Coupon (452) and bead (450) form an enclosure, which defines a free space (454) above micromachine area (414). This enclosure has sufficient structural integrity to withstand the injection of plastic encapsulant (814) around micromachine chip (412), bead (450), and coupon (452). Further, by forming coupon (452) of ceramic, coupon (452) does not accumulate static charge which would render micromachine chip (412) inoperable, and coupon (452) does not have to be grounded.





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A. CLASSIFICATION OF SUBJECT MATTER IPC 7 B81B7/00 B81C5/00

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

B. FIELDS SEARCHED

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, WPI Data, PAJ, INSPEC, COMPENDEX

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Jaleyory	Challott of document, with indication, where appropriate, or the relevant passages	TIOOVAIN TO GIAMITTO.
X	US 5 860 210 A (HAWKINS GEORGE W)	1-4,6,8,
•	19 January 1999 (1999-01-19)	9,15,18,
	13 0411441 9 1333 (1333 01 13)	19,22,
		25-42,45
	figures 1-8	
	column 1, line 65 -column 2, line 39	
	column 6, line 11 - line 14	
′	·	16,17,
		20,21,
		43,44
4		5,7,
		10-14,
		23,24,46
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X Further documents are listed in the continuation of box C.	χ Patent family members are listed in annex.		
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Date of the actual completion of the international search 13 July 2001	Date of mailing of the international search report 20/07/2001		
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tet. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Authorized officer Polesello, P		

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Ir' national Application No

		PC1/US 00/41483			
	Category Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No.				
Category '	Citation of document, with indication,where appropriate, of the relevant passages	nelevani to Ciami No.			
Y	WO 98 48461 A (AMKOR ELECTRONICS INC) 29 October 1998 (1998-10-29) figures 1-3 page 5, line 27 -page 24, line 23	16,17 1-3,			
А		8-15, 18-46			
Υ	GB 2 100 521 A (PLESSEY CO PLC) 22 December 1982 (1982-12-22) figures 1-4 page 1, line 98 -page 2, line 60	20,21, 43,44			
X	EP 0 828 346 A (HARRIS CORP) 11 March 1998 (1998-03-11) figures 1-6,8-11	1-3, 8-14, 22-38,46			
	column 2, line 11 -column 3, line 5 column 3, line 32 -column 4, line 57 column 5, line 19 -column 6, line 6				
A		4-7, 15-21, 39-45			
X	WO 99 50913 A (HONEYWELL INC) 7 October 1999 (1999-10-07)	1,2,8, 10-14, 25, 31-37,39			
Α	figures 1-6 page 2, line 21 -page 5, line 33	3-7,9, 15-24, 26-30, 38,40-46			
А	US 5 597 767 A (NG LAURINDA ET AL) 28 January 1997 (1997-01-28) figures 1-3 column 2, line 20 -column 5, line 45	4–7			
A	US 5 742 007 A (RICE THOMAS W ET AL) 21 April 1998 (1998-04-21)	1,8, 10-14, 18, 23-25, 31-35, 37,38, 40,46			
	figures 1,2 column 2, line 15 -column 4, line 27/				

1

In' national Application No
PUT/US 00/41483

····	tion) DOCUMENTS CONSIDERED TO BE RELEVANT	[5]	
ategory "	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	
	US 5 414 300 A (TOZAWA YOJI ET AL) 9 May 1995 (1995-05-09) figures 1-3 column 5, line 61 -column 6, line 66	1,8,15, 18,25, 28,29, 31-35, 37,38, 40,41,45	
	column 5, line 61 -column 6, line 66		

1

Information on patent family members

PuffUS 00/41483

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5860210 A	19-01-1999	NONE	
WO 9848461 A	29 - 10-1998	US 6034429 A EP 0976160 A US 6117705 A US 5950074 A	07-03-2000 02-02-2000 12-09-2000 07-09-1999
GB 2100521 A	22-12-1982	DE 3217687 A FR 2506112 A IT 1152132 B JP 58025246 A NL 8201957 A US 4480148 A	16-12-1982 19-11-1982 31-12-1986 15-02-1983 01-12-1982 30-10-1984
EP 0828346 A	11-03-1998	US 5798557 A JP 10098121 A US 5915168 A	25-08-1998 14-04-1998 22-06-1999
WO 9950913 A	07-10-1999	US 6036872 A EP 1070353 A	14-03-2000 24-01-2001
US 5597767 A	28-01-1997	NONE	
US 5742007 A	21-04-1998	NONE	
US 5414300 A	09-05-1995	JP 7221217 A	18-08-1995