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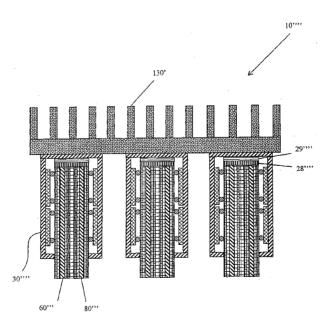
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(54) Title: EDGE PLATED PRINTED WIRING BOARDS



(57) Abstract: Printed wiring board assemblies are described that include printed wiring boards having at least one thermally conductive plane. In addition, the printed wiring boards can also include edge plating on at least a portion of an edge of the printed wiring board. The printed wiring boards can also include heat spreaders, heat sinks and/or thermally conductive heat paths to dissipate heat from the printed wiring board assembly. In many instances, the heat spreaders include microfoils. In one embodiment, the invention includes at least one circuit layer, at least one dielectric layer, at least one thermally conductive plane and edge plating that conducts the at least one thermally conductive plane.





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Category *	Citation of document, with indication, where a	ppropriate, of the relevant passages	Relevant to claim No.		
Х	US 4,882,454 A (PETERSON ET AL.) 21 Novembe	r 1989 (21.11.1989), Figure 4.	1		
Y		·	2-18		
Y	US 4,888,247 A (ZWEBEN ET AL.) 19 December 1	989 (19.12.1989), Figure 3.	1-3, 6-7, 10-13		
Y	US 5,217,657 A (ENGLE) 08 June 1993 (08.06.1993	3), column 2, lines 3-4.	4-5		
X 	US 6,212,071 B1 (ROESSLER ET AL.) 03 April 2001 (03.04.2001).		19-20, 22-27, 29-33, 37		
Y			21, 28, 34-36		
Y	US 5,672,433 A (COOK) 30 September 1997 (30.09, line 64.	.1997), column 3, line 39 and column 4,	15-18		
	documents are listed in the continuation of Box C.	See patent family annex.			
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International application No. PCT/US05/30277

ategory *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim N
Y	US 6,329,603 B1 (JAPP ET AL.) 11 December 2001 (11.12.2001), column 3, lines 2-8.	8-9, 14
Y	US 4,656,559 A (FATHI) 07 April 19 • (07.04.1987), Figures 3 and 5.	21
Y	US 5,036,428 A (BROWNHILL ET AL.) 30 July 1991 (30.07.1991), Figure 1.	28, 34
Y	US 6,400,008 B1 (FARNSWORTH) 04 June 2002 (04.06.2002), figure 3.	35-36
A	US 4,495,378 A (DOTZER ET AL.) 22 January 1985 (22.01.1985), figure 2.	1
Α	US 2004/0020673 A1 (MAZURKIEWICZ) 05 Feburary 2004 (05.02.2004), figure 6B.	1
Α	US 5,461,201 A (SCHONBERGER ET AL.) 24 October 1995 (24.10.1995), figure 1.	1
Α	US 6,207,904 B1 (KRAMER ET AL) 27 March 2001 (27.03.2001), figures 1 and 2.	1
Α	US 5,586,011 A (ALEXANDER) 17 December 1996 (17.12.1996), Figure 3.	1