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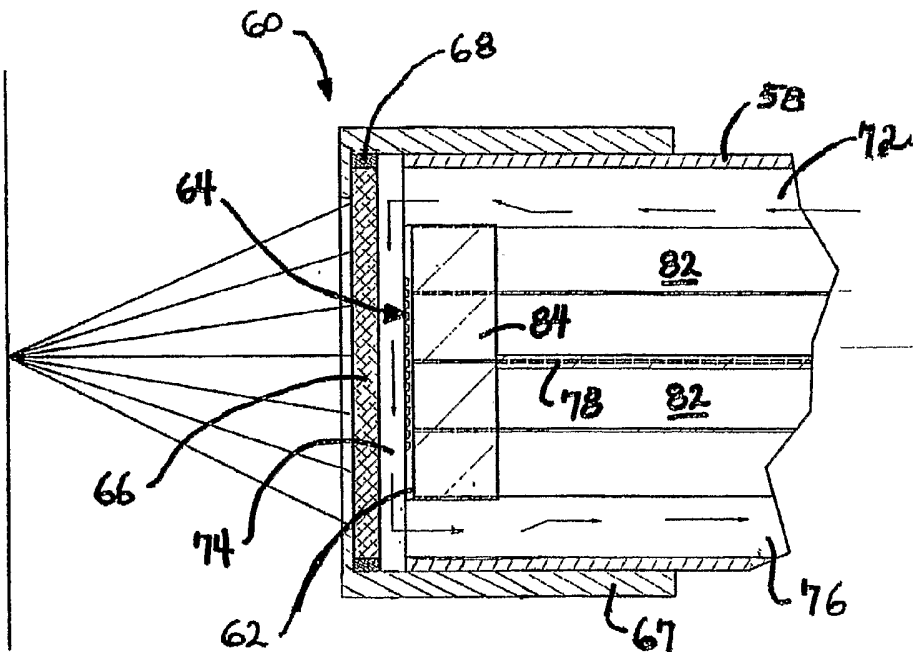
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(54) Title: DIRECT COOLING OF LEDS



(57) Abstract: The present invention provides a thermal management system for semiconductor devices such as an LED array that applies a coolant directly to the LED array. Preferable, the coolant is an optically transparent cooling fluid that flows across the LED array and circulates through a system to remove heat generated by the LED array.

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A. CLASSIFICATION OF SUBJECT MATTER
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USPC: 257/81,88,433,443,714
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B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 U.S. : 257/81, 88, 433, 443, 714

 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.
X	US 6,708,501 B1 (GHOSAL Et al.) 23 March 2004 (23-03-2004), Col. 4 and 5; Col. 3-7	1, 2, 4, 7, 8 and 25
Y	US 4,435,732 (HYATT) 6 March 1984 (6-3-01984), Col. 49-58	5, 6, 11-16, 26 and 27
Y	US 3, 586,959 (ECCLES) 22 June 1971 (22-6-1971), Col. 2, line 38	5, 6, 11-16. 26 and 27
Y	US 5,296,724 (OGATA et al.) 22 March 1994 (22-3-1994), Col. 6 and 7	3

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

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
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BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Group I: Claims 1-8, 11-17 and 25-27

Group II: Claims 9, 10 and 18-24

Special technical features of the group I are related to a system/method of cooling a device using a single coolant.

Special technical features of the group II are related to a system/method of cooling a device using a first and a second coolant through a plurality of channels. The technical features of the group I are not present in those of the group II and vice versa, therefore, unity of the invention is lacking.