Title (en)

COOLING DEVICE FOR AN INTEGRATED CIRCUIT

Title (de)

KÜHLVORRICHTUNG FÜR EINE LEITERPLATTE

Title (fr)

DISPOSITIF DE REFROIDISSEMENT D UN CIRCUIT INTEGRE

Publication

EP 1687535 A1 20060809 (FR)

Application

EP 04805827 A 20041112

Priority

- FR 2004050584 W 20041112
- FR 0350910 A 20031125

Abstract (en)

[origin: FR2862629A1] The micro-pump has a flexible membrane (6) that deforms when it contacts a conducting layer (3) and when a control circuit (V) applies a voltage. The volume of air pocket located between the membrane and the layer decreases when the membrane is deformed in order to displace air towards an air duct (4). The membrane is separated from the layer when the circuit stops applying the voltage. Independent claims are also included for the following: (a) an integrated circuit having a micro-pump (b) a method for forming a micro-pump in the integrated circuit (c) a method for actuating a micro-pump.

IPC 8 full level

F04B 43/04 (2006.01); **B81B 3/00** (2006.01); **F15C 5/00** (2006.01)

CPC (source: EP US)

B81B 7/0093 (2013.01 - EP US); **F04B 43/043** (2013.01 - EP US); **H01L 23/473** (2013.01 - EP US); B81B 2201/036 (2013.01 - EP US); B81B 2203/0127 (2013.01 - EP US); B81B 2203/0315 (2013.01 - EP US); H01L 2924/0002 (2013.01 - EP US)

C-Set (source: EP US)

H01L 2924/0002 + H01L 2924/00

Citation (search report)

See references of WO 2005052371A1

Citation (examination)

US 2002184907 A1 20021212 - VAIYAPURI VENKATESHWARAN [SG], et al

Designated contracting state (EPC)

DE FR GB

DOCDB simple family (publication)

FR 2862629 A1 20050527; **FR 2862629 B1 20060217**; EP 1687535 A1 20060809; JP 2007512468 A 20070517; US 2007278663 A1 20071206; US 2012187519 A1 20120726; US 8164183 B2 20120424; US 8804300 B2 20140812; WO 2005052371 A1 20050609

DOCDB simple family (application)

FR 0350910 A 20031125; EP 04805827 A 20041112; FR 2004050584 W 20041112; JP 2006540554 A 20041112; US 201213436583 A 20120330; US 58032404 A 20041112