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(54) Quantum field effect device.

(57) A Semiconductor device having at least three terminals and a single PN junction using quantum-effect tunneling for the primary conduction mode comprises a substrate or well (22) of a first conductinity type, a source region (12) of said first conductinity type and a drain region (10) of a second conductinity type. A further region (18) of a first conductinity type is provided between source (12) and drain (10) regions and forms a PN junction with said drain region (10). Conductance through said PN junction in the tunneling mode is controlled by changing the junction depletion width by means of a MOS gate electrode (14,20) formed on said region (18). A Schottky gate device, a bidirectional device and a complementary device are further disclosed.

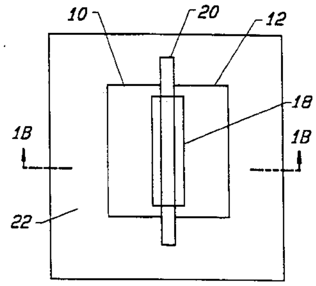

FIG. 1A

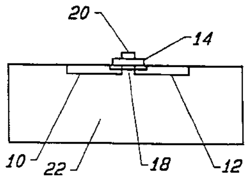

FIG. 1B

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EUROPEAN SEARCH REPORT

Application Number

EP 91 30 6888

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	FR-A-2 607 630 (E.ROSENCHER) * the whole document * ---	1	H01L29/72
X,P	US-A-4 969 019 (TEXAS INSTRUMENTS INCORPORATED) * the whole document * ---	1	
X	IBM TECHNICAL DISCLOSURE BULLETIN. vol. 25, no. 6, November 1982, NEW YORK US pages 2930 - 2931; A.B.FOWLER: 'GATED TUNNEL DIODES' * the whole document * ---	1	
X	IBM TECHNICAL DISCLOSURE BULLETIN. vol. 16, no. 7, December 1973, NEW YORK US page 2303; W.FISCHER: 'FIELD INDUCED DIODE' * the whole document * -----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			H01L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	17 AUGUST 1992	PELSERS L.

CATEGORY OF CITED DOCUMENTS

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