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Patent Number(s): JP2012160686-A
Title: Resonant tunneling diode of terahertz oscillator, has electron transit layer whose potential is lower than potential of collector layer in joint surface with barrier layer
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Abstract: NOVELTY - The resonant tunneling diode has buffer layer (22), sub-emitter layer (23), emitter layer (24), spacer layer (25), two barrier layers (26,28), well layer (27), electron transit layer (29), and collector layer (30) that are laminated on substrate (21). The potential of electron transit layer is lower than the potential of collector layer in a joint surface with barrier layer (28). The potential in joint surface with the collector layer is identical to the potential of the collector layer. The collector layer is made of indium-gallium-arsenide.
USE - Resonant tunneling diode of terahertz oscillator (claimed).
ADVANTAGE - Since the travel speed of the electron applied to collector layer from double barrier layer is not fell, the operating speed of resonant tunneling diode and high frequency of the oscillating frequency of oscillator can be improved. The power consumption of resonant tunneling diode can be reduced.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for terahertz oscillator.
DESCRIPTION OF DRAWING(S) - The drawing shows a sectional view of the resonant tunneling diode. (Drawing includes non-English language text)
Substrate (21)
Buffer layer (22)
Sub-emitter layer (23)
Emitter layer (24)
Spacer layer (25)
Barrier layers (26,28)
Well layer (27)
Electron transit layer (29)
Collector layer (30)
Derwent Class Code(s): L03 (Electro-(in)organic, chemical features of electrical devices); U11 (Semiconductor Materials and Processes); U12 (Discrete Devices, e.g. LEDs, photovoltaic cells); U23 (Oscillation and Modulation)
Derwent Manual Code(s): L04-C17; L04-E02; U11-C05F6; U11-C18B1; U11-C18B9; U12-C01G; U12-E01A1; U23-Q
IPC: H01L-021/329; H01L-029/88; H03B-007/08