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特邀报告

搭桥晶粒多晶硅薄膜晶体管

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摘要: 提出了一种薄膜晶体管的新结构。这种新结构充分发挥了短沟道效应和多结效应的优点。通过器件模拟,验证了此种器件结构的物理机制。通过应用这种新结构,薄膜晶体管的阈值电压、伪亚阈值斜率、开关电流比和场效应迁移率都大幅改善,并且器件的热载流子和自加热可靠性也得到了极大的改善。

关键词: 搭桥晶粒 多晶硅 薄膜晶体管

Bridged-Grain Polycrystalline Silicon Thin-Film Transistors

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Abstract: A new structure for thin-film transistors is proposed and demonstrated, exhibiting the benefits but not the drawbacks of both short-channel and multi-junction effects. Simulations are performed to verify the physics of this device structure. All characteristics such as threshold voltage, pseudo subthreshold slope, on-off current ratio and field-effect mobility are improved. Furthermore, device hot carrier and self-heating reliability are also improved by this new structure.

Keywords: bridged-grain polycrystalline silicon thin-film transistors

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