

Thermally Robust Ta-Doped Ni SALICIDE Process Promising for sub-50nm CMOSFETs

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For sub-50nm device application, NiTa SALICIDE has been developed for the first time. Addition of tantalum makes nickel silicide on 50nm gate thermally-robust up to 600°C during device fabrication. NiTa SALICIDE process is also successfully applied at 30nm gates. Furthermore, PMOS drive current is greatly increased. Conclusively, NiTa is believed to be the unique SALICIDE material to overcome both the silicide agglomeration of cobalt and phase transition problem of pure nickel at sub-50nm process.