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Surface and bulk properties of silicon sensors obtained from quality control test structures for the CMS experiment

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In the following years, the LHC is going to be upgraded to the so called High Luminosity LHC (HL-LHC). Therefore, the CMS (Compact Muon Solenoid) detector will be adapted to the new conditions by incorporating new silicon sensors into the tracker and the calorimeter endcap. The strategy to monitor the quality and stability of the sensor production process is based on a test structure set, implemented at least twice on each production wafer, that provides access to critical process parameters. Process quality control parameters obtained from Metal-Oxide-Semiconductor Capacitors (MOS-C), Metal-Oxide-Semiconductor Field-Effect Transistors (MOS-FET), Diodes and other test structures are discussed. Additionally, first measurements of test structures irradiated with neutrons to study the impact of irradiation on surface and bulk properties are presented.

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