

고온 단결정 3C-SiC 압저항 압력센서 특성

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Characteristics of high-temperature single-crystalline 3C-SiC piezoresistive pressure sensors

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Abstract : This paper describes on the fabrication and characteristics of a 3C-SiC (Silicon Carbide) micro pressure sensor for harsh environment applications. The implemented micro pressure sensor used 3C-SiC thin-films heteroepitaxially grown on SOI (Si-on-insulator) structures. This sensor takes advantages of the good mechanical properties of Si as diaphragms fabricated by D-RIE technology and temperature properties of 3C-SiC piezoresistors. The fabricated pressure sensors were tested at temperature up to 250°C and indicated a sensitivity of 0.46 mV/V*bar at room temperature and 0.28 mV/V*bar at 250°C. The fabricated 3C-SiC/SOI pressure sensor presents a high-sensitivity and excellent temperature stability.

Key Words : Single-crystalline 3C-SiC, piezoresistive, pressure sensor