AlInGaP LED Stress Sensor and It's Application on Package

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ABSTRACT

Piezo-resistors act as a stress sensors were made by dry etching through AlGaInP/GaAs LED epi-wafer. Three meander shaped stress sensors along [110] and [10] were made on P layers. Their resistances were approximately 40KΩ、140KΩ and 250KΩ respectively. External forces were exerted on a sensor strip. Four-point bending method was used to calibrate the resistance changes under both tensile stress and compressive stress. It was found that the resistance of stress sensor along [110] has an increment of 0.76-1.54% under tensile stress. Larger the tensile stress higher the resistance change. By contrast, the resistance of those stress sensors along [110] has the decrement of -1.12%至-0.59% under compressive stress. Again, larger the compressive stress higher the resistance change. After making a detailed calibration, stress sensor was mounted into SMD packaging. The stress type and quantity inside the SMD packaging is successfully measured.

Keywords : piezoresistor ; four-point bending ; stress sensor

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