

The dynamic admittance of Al/a-SiN_x:H/n-c-Si structure as function of bias voltage (V) and frequency (ω) have been investigated in wide ranges of frequency (300 Hz–1 MHz) and bias voltage (0–9 V) respectively at room temperature. Negative capacitance (NC) behavior has been observed at forwards bias voltages. It appears from value of bias voltage which depends on the frequency. This value corresponds on the current–voltage characteristics at the beginning bias voltage of thermionic emission regime of electrical conduction. Therefore the injection of electrons at a-SiN_x:H/n-c-Si interface by thermionic emission may be involved in the NC mechanism. In C – ω plot, a strong peak of NC has been observed at low-frequency, its intensity is about 110 times the geometrical capacitance. The frequency and the intensity of the NC peak show a linear variation versus a square root of bias voltage in semi logarithmic representation. The NC behavior is always accompanied with relatively high conductance “ G/ω ”.