

**ABSTRACT:**

The Schottky diodes enjoined with coplanar waveguides are investigated for applications in on-chip rectenna device applications without insertion of a matching circuit. The design, fabrication, DC characteristics and RF-to-DC conversion of the AlGaAs/GaAs HEMT Schottky diode is presented. The RF signals are well converted by the fabricated Schottky diodes with cut-off frequency up to 25 GHz estimated in direct injection experiments. The outcomes of these results provide conduit for breakthrough designs for ultra-low power on-chip rectenna device technology to be integrated in nanosystems.