



**INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS**

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Thesis Title: Micro-Scale Power Management Interface Circuits for IoT node

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SHORT ABSTRACT

Harvesting energy from ambient sources (i.g., vibration, solar radiation, thermal gradient or RF) has become an attractive and promising option for powering an IoT (Internet-of-Things) node. Extracting the maximum energy, with a minimum loss, from an energy harvesting sources is one of the primary design goals of an energy processing circuit, and to realize it, an optimized energy processing circuitry is required. The energy transfer capability of an energy processing circuit depends on its implementation technology, architecture and circuit topology, input and output voltages, and device sizes. The first part of the thesis focuses on the development of on-chip switched capacitor based DC-DC boost converter for micro-scale energy harvesting systems, the second part focuses on developing an on-chip photovoltaic power harvesting system which has low-overhead adaptive maximum power point tracking scheme, and the final part of the thesis focuses on improving the overall system efficiency by a suitable architectural change.