CLAIMS

1. A device comprising: a printed circuit board; a heat generating device located over a surface of the printed circuit board, wherein the heat generating device includes a semiconductor die, wherein the heat generating device comprises a backside and a lateral side, and wherein the backside of the heat generating device faces away from the printed circuit board; a thermally conductive adhesive coupled to the heat generating device; and an energy harvesting device coupled to the heat generating device and laterally surrounding the heat generating device, wherein the energy harvesting device is in contact with the lateral side of the heat generating device through the thermally conductive adhesive, wherein the energy harvesting device comprises: a first thermal conductive layer, extending vertically along the lateral side of the heat generating device, and located laterally around the lateral side of the heat generating device; a thermoelectric generator (TEG) coupled to the first thermal conductive layer, wherein the TEG is configured to convert heat that passes through the TEG into electrical energy; a second thermal conductive layer coupled to the thermoelectric generator (TEG) such that the thermoelectric generator (TEG) is located between the first thermal conductive layer and the second thermal conductive layer; and a thermal insulation layer coupled to the energy harvesting device, and located over the backside of the heat generating device, wherein the thermal insulation layer comprises a solid material, wherein the thermoelectric generator (TEG) and the second thermal conductive layer laterally surround the lateral side of the heat generating device, wherein the second thermal conductive layer is a separate thermal conductive layer from the first thermal conductive layer, wherein the second thermal conductive layer is not in direct contact with the first thermal conductive layer, wherein the thermoelectric generator (TEG) laterally surrounds the first thermal conductive layer, and wherein the second thermal conductive layer laterally surrounds the thermoelectric generator (TEG).

2. The device of claim 1, further comprising an energy storage device configured to store electrical energy from the TEG.

3. The device of claim 1, further comprising an integrated device, wherein the TEG is further configured to provide electrical energy to the integrated device.

4. The device of claim 1, further comprising: a camera device; and a second energy harvesting device coupled to the camera device and laterally surrounding the camera device, wherein the backside and the lateral side of the heat generating device comprises a backside and a lateral side of the semiconductor die.

5. The device of claim 1, wherein the energy harvesting device is configured to harvest about at least 1.5% of the input power of the heat generating device.

6. The device of claim 1, wherein the thermal insulation layer is operable to reduce heat dissipating vertically from the heat generating device.

7. The device of claim 6, wherein the thermal insulation layer is operable to direct heat dissipation laterally through the first thermal conductive layer.

8. The device of claim 6, wherein the thermal insulation layer is operable to direct heat dissipation laterally through the first thermal conductive layer, the TEG, and the second thermal conductive layer.

9. The device of claim 1, wherein the thermal insulation layer is operable to direct heat dissipation laterally through the first thermal conductive layer, the TEG, and the second thermal conductive layer.