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(57) Abstract :

A heat modulation system for power devices comprises of a network of thermal resistance and capacitance that adjusts to surrounding conditions to track temperature changes in real time to account heat generated by the power device during operation, a calculation module to calculate heat build-up in high-power electronic devices by tracking power loss changes caused by switching speed and heat spread, a simulation module that predicts heat and power loss efficiently, suitable for high-power circuits and works with design protocol to simulate real-world conditions, a model that combines electrical and thermal effects, using thermal resistance and capacitance, to monitor heat flow and improve device performance, the thermal network estimate temperature based on device datasheets and external conditions, to continuously monitor heat during device operation and adjusts calculations based on real-world factors like air temperature to optimize performance.

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