(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :05/12/2022

(21) Application No.202241070142 A
(43) Publication Date : 09/12/2022

(54) Title of the invention : The Impact of Temperatures on the Functioning of A Group of Semiconductor Components

(51) International classification :H01L0051000000, F02D0041140000, H01L0029100000, H04W0052380000, A61B0018120000
(86) International Application No :PCT//
Filing Date :01/01/1900
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
Abstract The research outlines the results of an investigation into the effect of thermal phenomena, including self-heating throughout semiconductor materials and mutual thermal connectors between them, on the performance characteristics of certain electronic networks that make use of bipolar transistors (BJTs). To determine the non-isothermal DC as well as the dynamic properties of the transistors and specified networks utilizing transistors. The researchers utilized tiny electro-thermal models that have been developed independently. The measurement findings are compared to those chosen to define them. The current waveforms inside the investigated networks are determined after considering thermal phenomena. Discrepancies between the calculated and measured values, as well as the calculated results obtained without thermal phenomena, are highlighted. In particular, we focus on cooling situations when the considered networks are vulnerable to thermal phenomena and need to be protected.

No. of Pages : 14 No. of Claims : 5