Abstracts

Monolithic 2-18 GHz Low Loss, On-Chip Biased PIN Diode Switches

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Two state-of-the-art monolithic GaAs PIN diode switches have been designed, fabricated and tested. These single-pole double-throw (SPDT) switches exhibit insertion losses of 1.15 ± 0.15 dB over a 2-18 GHz band, which is an unprecedented performance in loss and flatness for monolithic wideband switches incorporating on-chip bias networks. Isolation and return loss are greater than 43 dB and 12 dB, respectively, and the input port power handling is 23 dBm at 1-dB insertion loss compression. These performance characteristics were measured at a nominal bias setting of -8 V, which corresponds to 3.7 mA of series diode bias current and a total dc power consumption of 55mW. The input power at the third-order interception is 40 dBm. The switches can handle up to 31 dBm (1.25 W) at a higher bias of -18 V and 9.3 mA.

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