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A Review on: X-band Class C Power Amplifier Using GaN HEMT Technology

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Abstract

The Class C amplifier produced by the ADS algorithm is the main subject of this article. Given its high frequency and power characteristics, GaN transistors might be difficult to achieve optimum performance without proper impedance matching. Class AB mode often requires accurate biassing to function properly. Its operating frequency range stability may be more intricate than that of silicon transistors. When efficiency and high power are critical, Class C amplifiers perform better than Class AB amplifiers when the conduction angle is less than 180 degrees. One advantage is the use of GaN (Gallium Nitride) transistors, which are typical in Class AB power amplifiers. In addition to having a low on-resistance and a high electron mobility, GaN transistors improve efficiency in other areas as well. Class C amplifiers lose less power due to heat since they are more efficient. It is essential in high-power applications to properly regulate heat, and GaN transistors help with that. An S-band frequency range operation for a GaN power amplifier is suggested by this notion. Among the many benefits offered by Class AB power amplifiers powered by GaN (GalliumNitride) transistors are their great efficiency and power density. The suggested power amplifier might be constructed with the help of a 150nm-based Advanced Design System (ADS) program. This amplifier's gain, harmonic balance, and stability factor are all great for use with radar.

Keywords
Low power, Class C Power amplifier, GaN HEMT