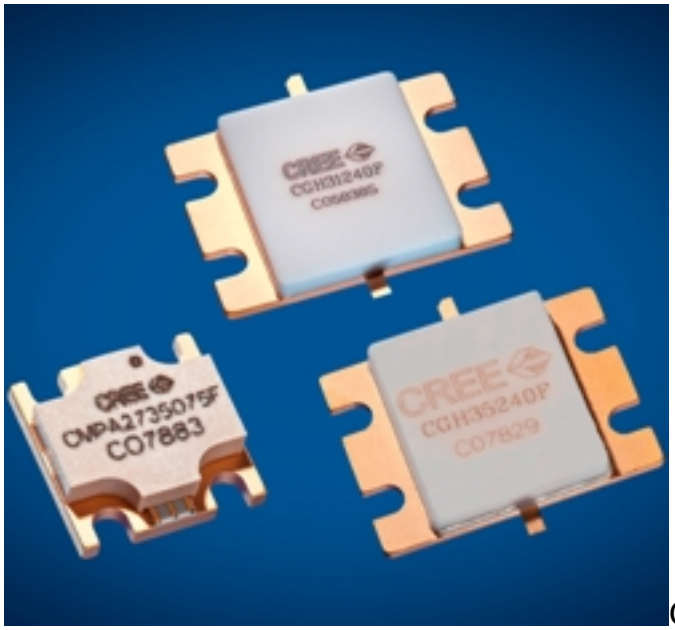
HEMT Transistors and MMIC Enhance S-Band Radar Applications



Cree released a family of packaged GaN HEMT power transistors and high power amplifier (HPA) MMIC in the 2.7-3.5 GHz range (S-Band) with what is presented as the industry's best-known combination of power and efficiency, achieving typical power-added efficiencies (PAEs) of 60%. This results in a reduction in power consumption of up to 20% over existing solutions.

"Cree is pleased to offer these industry leading S-Band GaN HEMT devices for a variety of civilian and military applications, such as air traffic control, weather radar, and homeland defense. Thermal management is a key consideration for radar systems and Cree GaN HEMT products are enabling ultra-high efficiency solutions, which result in lower dissipated power, simplified power distribution, smaller device footprints and lighter weight systems," said Jim Milligan, Cree, director of RF.

The S-Band transistors, CGH31240F and CGH35240F, are fully internally matched to 50 ohms (?) and provide saturated RF output power of 240 watts over 2.7 to 3.1 GHz and 3.1 to 3.5 GHz, respectively, with power gains of greater than 11dB in small package footprints (0.9" x 0.68") with typical power added efficiencies of 60%. The devices also demonstrate impressive pulse droop of less than 0.2dB at specified operating conditions, owing to the combination of high efficiency and the superior thermal properties of GaN on SiC when compared to other technologies such as GaAs and Si.

The CMPA2735075F is a two-stage GaN HEMT high power MMIC amplifier providing a saturated RF output power of 75 watts over 2.7 to 3.5 GHz with a power gain of 20dB in a small package footprint (0.5" x 0.5"). This is the first and only S-Band GaN HEMT MMIC HPA on the market which offers 60% typical PAE with RF pulse widths of 300 microseconds and a 20% duty cycle.

The CGH31240F, CGH35240F and CMPA2735075F are available now. For additional product information, visit www.cree.com/rf [1].

For additional product and company information, please refer to www.cree.com [2].

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