RF power LDMOS transistors feature high-power density and ruggedness for pulsed applications

At the IEEE MTT-S International Microwave Symposium today, Infineon Technologies introduced a family of high power transistors for pulsed applications in commercial avionics, radar systems and other types of industrial amplifiers. Based on a new 50V LDMOS process technology, the new devices offer high power density, for compact and efficient system design, and industry leading specifications for ruggedness.

The first products in the PTVA family include two sets of paired driver and output transistors in 400W and 500W output power class for L-Band and UHF-Band radar systems, and a 1000W device for applications in the 965-1215 MHz commercial avionics frequency. Each of the devices is capable of withstanding a minimum of 10:1 VSWR (Voltage Standing Wave Ratio) load mismatch, a measurement of ruggedness which is double that of similar devices.

“This new device family builds on our strong record of quality and best-in-class RF power performance to meet requirements for increasingly efficient and cost-effective new system designs,” said Gerhard Wolf, Vice President and General Manager RF Power at Infineon Technologies. “With a 50V LDMOS technology, avionics and radar engineers now have the ability to reach design targets for power output in compact, lightweight and reliable systems.”

The high ruggedness specification of PTVA family contributes to system performance in noisy signal environments with a less complex circuit design than alternatives, which reduces overall cost and improves system reliability. Thermal resistance as low as 0.20 degree C/watt also allows for better thermal management and the use of small heat sinks to further enhance reliability while lowering costs.

Typical performance

Following is a summary of typical performance of the PTVA family of devices in three operating frequency ranges (measured @P3dB).

· 390-450 MHz: PTVA035002EV achieves 500W Pout with 17.5 dB Gain and 65 percent efficiency. Companion driver, PTVA030121EA achieves 14W Pout with 22 dB gain and 73 percent efficiency (50V with a 12µsec 10% duty cycle pulse.)

· 1200-1400 MHz: PTVA123501EC achieves 400W Pout with 13 dB Gain and 52 percent efficiency. Companion driver, PTVA120251EA achieves 38W with 14.5 dB gain and 58 percent efficiency (50V with a 100µsec 10% duty cycle pulse).

· 965-1215 MHz: PTVA101K02EV achieves 1100W Pout with 15.5 dB gain and 60 percent efficiency (50V with a 100µsec 10% duty cycle pulse).

All devices are available in RoHS compliant, open cavity ceramic packages.

Availability

Samples of the radar frequency band PTVA transistors are available now. UHF-Band devices are in production, with the L-Band devices slated for production this summer. The Avionics frequency devices will begin sampling this calendar quarter, with production the fourth quarter of this year.

Further information on the new PTVA 50V Power LDMOS family is available at www.infineon.com/rfpower [1].

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[1] http://www.infineon.com/rfpower