NXP’s 1500 W RF Power Transistor Sets New Benchmark

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Combines industry's highest RF output power with superior ruggedness and thermal performance

NXP Semiconductors today introduced the most powerful RF transistor in any technology operating at any frequency. Designed to deliver 1.50 kW CW at 50V, the MRF1K50H can reduce the number of transistors in high-power RF amplifiers, which decreases amplifier size and bill of materials. The MRF1K50H operates up to 500 MHz for a broad range of applications from laser and plasma sources to particle accelerators, industrial welding machines, radio and VHF TV broadcast transmitters, and amateur radio linear amplifiers.

Like all rugged LDMOS transistors, the MRF1K50H is expected to survive a VSWR of 65:1 but can absorb 50 percent more energy than its predecessor, the 1.25-kW MRFE6VP61K25H. This level of ruggedness increases reliability, which makes the transistor an excellent alternative to vacuum tubes.

The MRF1K50H is housed in a standard air cavity ceramic package, and is impedance compatible with existing high-power transistors on the market today: it can simply be dropped into existing systems, without the need to redesign the printed-circuit board (PCB), requiring only light retuning.

"This new transistor provides RF designers with the highest output power and highest energy absorption in the market while dropping into existing PCBs," said Pierre Piel senior director for RF power industrial technologies at NXP. "The MRF1K50H adds reliability to industrial systems that require operation in the harshest environments."

Even greater reliability can be achieved with the over-molded plastic version of the transistor, the MRF1K50N, which reduces the thermal resistance by 30 percent compared to the MRF1K50H. NXP's plastic packaging technology helps extract more performance from RF transistors, while simplifying amplifier manufacturability thanks to tighter dimensional tolerances and better solder connections.

Specifications for both versions include efficiency of 80 percent at 100 MHz, gain of 23.5 dB, and minimum breakdown voltage of 135V. Once in production, the transistors will be part of NXP's Product Longevity Program, ensuring availability for at least 15 years. For terms and conditions and to obtain a list of available products please see www.nxp.com/productlongevity.

The MRF1K50H and MRF1K50N are currently sampling, and production is expected in July 2016. Reference circuits for various frequencies are available.
For pricing or additional information, please contact your local NXP sales office or NXP approved distributor.