



NXP LDMOS RF power transistor BLF578

LDMOS RF power transistor delivering 1000 W of CW output power

Delivering 1000 W of CW output power with 26 dB of gain and 75% efficiency, this rugged LDMOS device is ideally suited for use in broadcast transmitters and industrial, scientific and medical (ISM) applications operating in the HF to 500 MHz range.

Key features

- ▶ Typical CW performance at 108 MHz, a supply voltage of 50 V and an I_{DQ} of 50 mA:
 - Output power = 1000 W
 - Power gain = 26 dB
 - Efficiency = 75%
- ▶ Delivers up to 1200 W under pulsed CW conditions
- ▶ Excellent ruggedness (VSWR > 13:1)
- ▶ Excellent manufacturing consistency
- ▶ Excellent thermal stability due to very low R_{th} of only 0.14 K/W
- ▶ A single device to cover the whole frequency range between 10 and >500 MHz
- ▶ ROHS compliant
- ▶ Easy power control
- ▶ Integrated ESD protection

Key applications

- ▶ Communication transmitter applications
- ▶ Industrial Scientific and Medical (ISM) applications
- ▶ RF lighting
- ▶ RF pumped lasers
- ▶ MRI scanners Synchrotrons

The BLF578 easily delivers 1000 W CW output power for any RF application in the HF to 500 MHz band.

Being an unmatched device, this high-power transistor is an RF workhorse. It is very versatile, offers reliable broadband operation, and is rugged enough to withstand the awkward RF loads often encountered in ISM.

To achieve its high power level, the device is built using a new high-voltage LDMOS process with a supply voltage of 50 V. With the high power levels handled by the transistor, the very low thermal resistance allows excellent heat transfer away from the die.

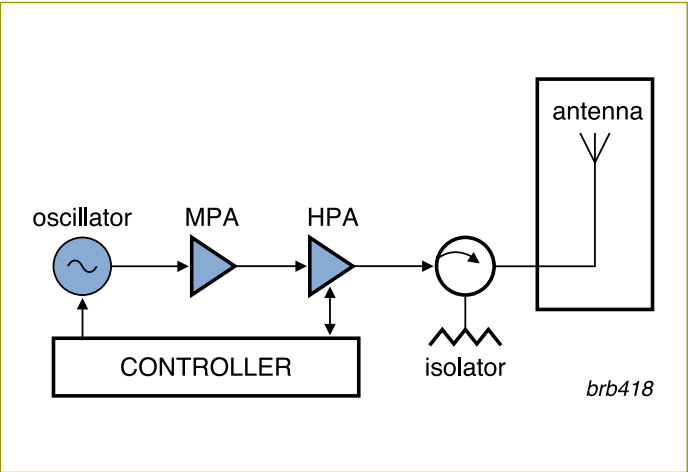


Design support and tooling

To help RF system engineers complete design-in and integration in the shortest time possible, we offer various design and data documents such as layout files, best-in-class large signal models, and loadpull data. We also offer sample applications (Application Notes and demo boards) for various frequency bands. Prime examples for these are a 1 kW FM broadcast amplifier (88 - 108 MHz) with 80% efficiency and a 1 kW RF booster amplifier at 352 MHz and 72% efficiency for electron synchrotron radiation facilities.

NXP provides fully physics-based electrothermal models for its RF power transistors. The RF power models allow designers to assess the performance of complex PA systems at an early stage of the development process. These models are available for Advanced Design System (ADS)[®] from Agilent and for Microwave Office (MWO)[®] from Applied Wave Research (AWR). These models yield the most reliable simulation results over a wide range of electrical conditions. Furthermore, they come with all necessary libraries and documentation, and can be downloaded from NXP’s website.

Multi-purpose RF amplifier line-up



Support material

Type	Equivalent Circuit	ADS Model	Demo Frequency Band	Demoboard Status	PCB Design Files
BLF578	Yes	Yes	88 to 108 MHz 174 to 230 MHz 352 MHz 500 MHz	Available Available Available Available	Yes Yes Yes Yes