DC to 20 GHz GaAs MMIC Distributed PA

Endwave Corporation has announced its Model EWH2001ZZ distributed power amplifier (PA) for commercial, industrial, and military applications from DC to 20 GHz.

Based on GaAs pseudomorphic high-electron-mobility-transistor (pHEMT) technology, the monolithic-microwave-integrated-circuit (MMIC) distributed PA delivers +26 dBm typical output power at 1-dB compression (P1dB) through 12 GHz and typically +23 dBm through 20 GHz.

The amplifier features impressive gain and gain flatness over its broad bandwidth, with small-signal gain of typically 19 dB at 2 GHz and typically 18 dB at 20 GHz, with gain flatness of ±2 dB from DC to 20 GHz. In fact, the broadband amplifier provides usable gain of 10 dB through 30 GHz. In addition, gain remains flat with temperature, with typical temperature-dependent gain variations of only 0.03 dB/°C from DC to 20 GHz and at operating temperatures from -55 to +85°C.

The flat gain and generous output-power levels of the DC-coupled model EWH2001ZZ distributed PA make it ideal for applications in broadband commercial wireless and optical communications systems as well as in military radar and electronic-warfare systems. It offers outstanding linearity, with an output third-order intercept point (IP3) of typically +33 dBm to 12 GHz and typically +31 dBm to 20 GHz.

For applications requiring a wide dynamic range, it can handle high input signal levels to +23 dBm with minimal distortion, and maintains a low noise figure of typically 3.5 dB through 12 GHz and typically 5.0 dB through 20 GHz. The distributed PA produces saturated output power levels of typically +28 dBm to 12 GHz and typically +25 dBm to 20 GHz.

The EWH2001ZZ incorporates built-in temperature sensing circuitry to monitor device temperature under changing operating conditions. The versatile distributed PA is internally matched to 50 ohms and is unconditionally stable. It has typical input return loss of 15 dB through 12 GHz and 12 dB through 20 GHz, with typical output return loss of 14 dB through 12 GHz and 12 dB through 20 GHz.

It operates with typical drain voltages of +7.5 to +8.5 VDC and typical supply current of 270 to 290 mA. The broadband amplifier requires gate voltages of typically -0.55 and +3 VDC, which can be varied to achieve a gain-control range of about 10 dB.

Model EWH2001ZZ is supplied as a RoHS-compliant die measuring 3.12 x 1.63 x 0.1 mm. The MMIC PA is rated for storage temperatures from -65 to +150°C. It is 100% DC and RF tested and visually inspected to MIL-STD-883, Method 2010 requirements.

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