

Amplifier Circuit Description

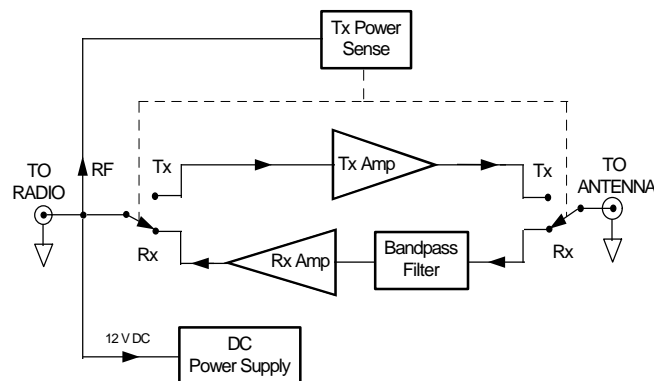
Amplifier Module

The model AMP2440 is a bi-directional amplifier intended for use in the 2.4 GHz band. The amplifier features automatic transmit/receive switchover, low noise receive amplification and GaAs MMIC transmit amplification. Power is supplied through the coaxial cable via a DC injector. All internal voltages are regulated.

During receive operation, signal from the antenna is routed through an RF switch to a bandpass filter whose response is optimized for the 2.4 GHz ISM band. RF signal from the filter is sent to a low noise amplifier (LNA). Receive gain may be adjusted by a fixed factory selected attenuator, which follows the LNA. The signal is then sent to another RF switch, and then to the coaxial cable (to the DC injector and radio).

In the transmit direction, signal from the radio is fed into an RF switch and then to the power amplifier MMIC. Transmit gain is factory adjusted by a variable attenuator. This insures that each amplifier has a consistent transmit power gain regardless of the normal variation found in the power amp IC. RF input signals at the "To Radio" connector is sampled by an RF detection circuit which determines the presence of RF and activates the power amplifier appropriately. All receive circuitry is shut down while the power amplifier is activated. The amplified transmit signal is filtered by a n=5 low pass filter, and then is sent to the antenna RF switch. Direct Ground lightning and surge protection is provided at the antenna connector.

Model 2440 Functional Block Diagram



DC Injector

The DC Injector feeds power to the amplifier through the RF coaxial cable, eliminating the need for a separate power cable. The RF path in the DC injector is straight through, with only a "DC block" at the input connector. DC power is fed to the output connector through a decoupling network and is protected by a resettable fuse. DC current is sampled and associated circuitry determines whether the system is in the transmit or receive mode and appropriate LED indicators are illuminated.