

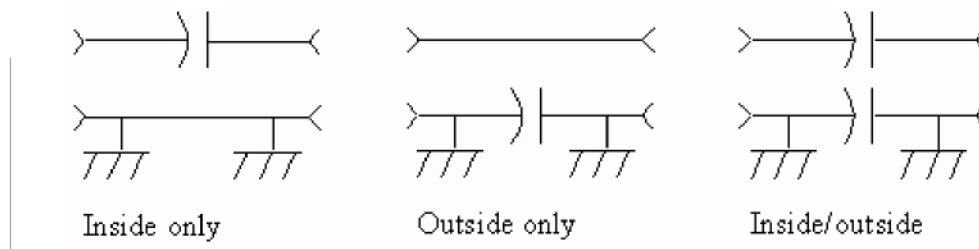
DC Blocks & Bias Tees

DC Blocks and Bias Tees are primarily used in applications to inject/remove DC currents or voltages in RF circuits without affecting the RF signal through the main transmission path.

DC Blocks are ideal for eliminating unwanted DC voltages or surges to tower top amplifiers or sensitive lab equipment.

A DC block is nothing more than a capacitor that has low series reactance at the RF frequency, and allows you to separate DC voltages along a transmission line. A parallel coupled line can also serve as a DC block.

DC blocks can be placed in the "hot" conductor of a transmission line such as coax, or the ground plane, or both, as shown below. Many vendors offer coaxial DC blocks in all three arrangements. When would you want a DC block in the ground plane? Perhaps you want to inject a voltage onto the source of a shunt FET, which is grounded to your fixture. Users of this type of DC block must be aware that their equipment could provide a voltage when they touch it. Careful where you drop that wrench!



Three types of DC blocks

DC blocks are used to prevent direct current (DC) energy from flowing through sensitive radio frequency (RF) components. DC blocks are essentially capacitors in series with a transmission line. The capacitors prevent the flow of DC energy while allowing RF signals to pass with small or no attenuation. Electrical signals can include a DC component and an AC component. DC blocking can remove the DC component from portions of the circuit where a DC bias is undesirable. If the DC blocking capacitor is on the center conductor, the DC block is called an inner block. If the DC capacitor is on the outer conductor, the DC block is called an outer block. An inner/outer block prevents DC from passing on both conductors. A DC block can be incorporated into a connector block (also called a block connector).

Bias Tees are passive device used in applications to inject/remove DC voltages in RF circuits without affecting the RF signal through the main transmission path. Ideal for remote powering of bi-directional amplifiers (BDAs), repeaters and tower top amplifiers (TTAs) by BTS control modules.