After deciding which of the configurations is required, major characteristics of wideband transformers are:

**Input and Output Impedances**

Impedances are determined by the source and load impedances to be interfaced by the transformer. Inasmuch as the transformer is essentially a loss less device, terminal voltages and impedance levels are ideally related as $\sqrt{\frac{Z_{in}}{Z_{out}}}$.

**Bandwidth**

Usually defined by the high and low frequencies where the amplitude response drops 3 dB below that at mid-frequency. Bandwidth may also be defined at the high end, as that frequency where a specified value of VSWR is not exceeded. A typical specification value would be 1.25:1 (~19 dB return loss).

**Insertion Loss**

Usually specified at mid-band, and typically on the order of 0.2 to 0.5 dB, depending on bandwidth and center frequency.

**Power Level**

Maximum input that the transformer must handle without saturation, distortion or overheating.

**Flatness**

In some applications, the transformer insertion loss over a specified band must be held within certain limits. This tolerance value defines the flatness of response.

**Return Loss (VSWR)**

This is the ratio, in dB, of reflected to incident power, and is essentially a measure of the quality of the transformer’s specified match to source or load impedance.

**Signal Balance in dB**

Specified for balanced output windings. Alternately a Common Mode Rejection (CMR) may be specified.

**Isolation**

Most requirements dictate dc isolation between windings. Exceptions are devices such as coaxial adapters and phase inverters.
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