Subject: Crossover Slopes
Posted by Wayne Parham on Tue, 23 Jan 2007 03:23:04 GMT
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I always put a Zobel RC damper on any woofer that uses a passive crossover, second-order or higher. Sometimes, I'll run a midwoofer "wide open", or maybe with just a series coil. Of course, a woofer with a single series coil does not really have a first-order crossover since the load is not purely resistive. In fact, the woofer's voice coil is highly inductive, so a coil in series acts more like a voltage divider than a filter, making a sort of a shelved response. That's why I like to call them pseudo-first-order filters, to call attention to the fact that HF content is not attenuated with a 6dB/octave slope.On the tweeter circuit, I load the crossover with a higher impedance to make it slightly underdamped. This combined with top-octave compensation provides a couple octaves of flat response before HF augmentation begins. It does this by providing a tiny bit of peaking down near the crosover frequency. The net effect is a response curve that looks like shown below, which both pads the tweeter down to match the midwoofer and also compensates for the high-frequency rolloff of the compression horn.