

Re: AC sine wave: What does increasing the frequency do?

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Date: Mon, 29 Nov 2004 15:20:33 -0800

On Mon, 29 Nov 2004 00:54:10 -0000, "john jardine"
<john@jjdesigns.fsnet.co.uk> wrote:

>
> "John Larkin" <jjlarkin@highlandSNIPtechTHISnologyPLEASE.com> wrote in
> message >
>.....
>> a. For a sinusoidal source, a time-varying resistive load can have a
>> load current with a non-zero fundamental phase shift, hence a reactive
>> load component. This load component can be expressed as an equivalent
>> inductance or capacitance.
>>
>> b. For a sinusoidal source, a time-varying reactive load can have a
>> load current with a non-quadrature phase shift, hence a real load
>> component. This real component can be expressed as a positive or
>> negative equivalent resistance. This is why a varicap can be used as a
>> parametric amplifier.
>>
>>
>> In case a, it takes no power to vary the resistance (as say moving a
>> pot wiper or switching resistors in or out) because the synthesized
>> reactance doesn't dissipate power. In case b, power must be involved
>> in varying the reactance (spinning the shaft of a variable cap, or
>> pumping a varactor) because we're synthesizing a real resistance.
>>
>> Also interesting is that, in case a, since we can shift the
>> fundamental but can't shift the zero crossings, we must also generate
>> harmonics. There's probably something similar in case b.
>>
>> I'm not trying so much to win an argument as I am marvelling over a
>> few things I hadn't given a lot of thought to before. There's some
>> sort of neat duality going on here. I'm especially