



Unit Load Based Return Loss

Michael Paul

analog.com

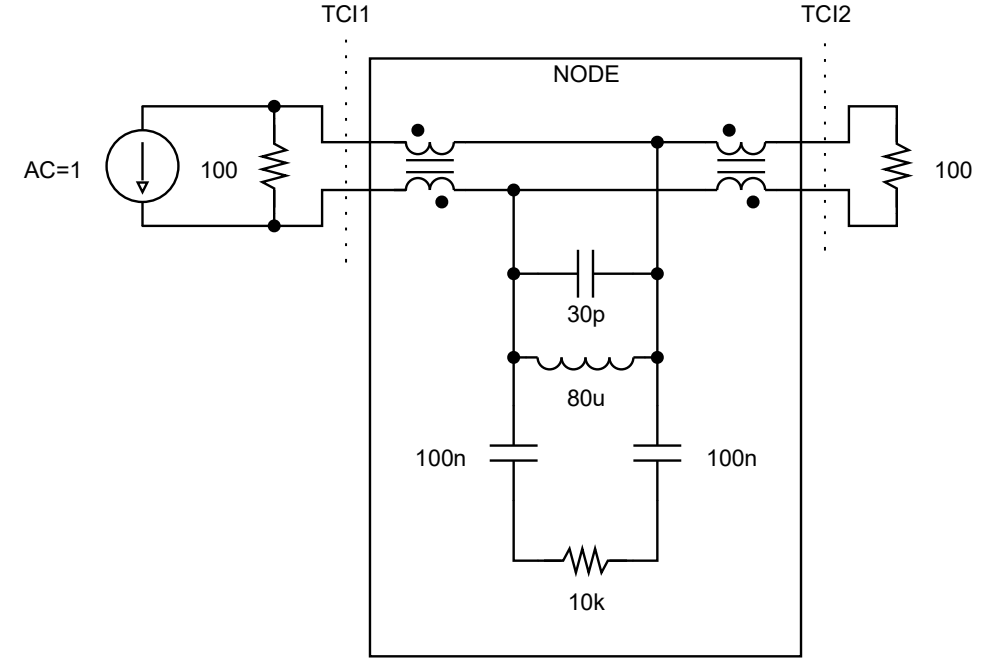
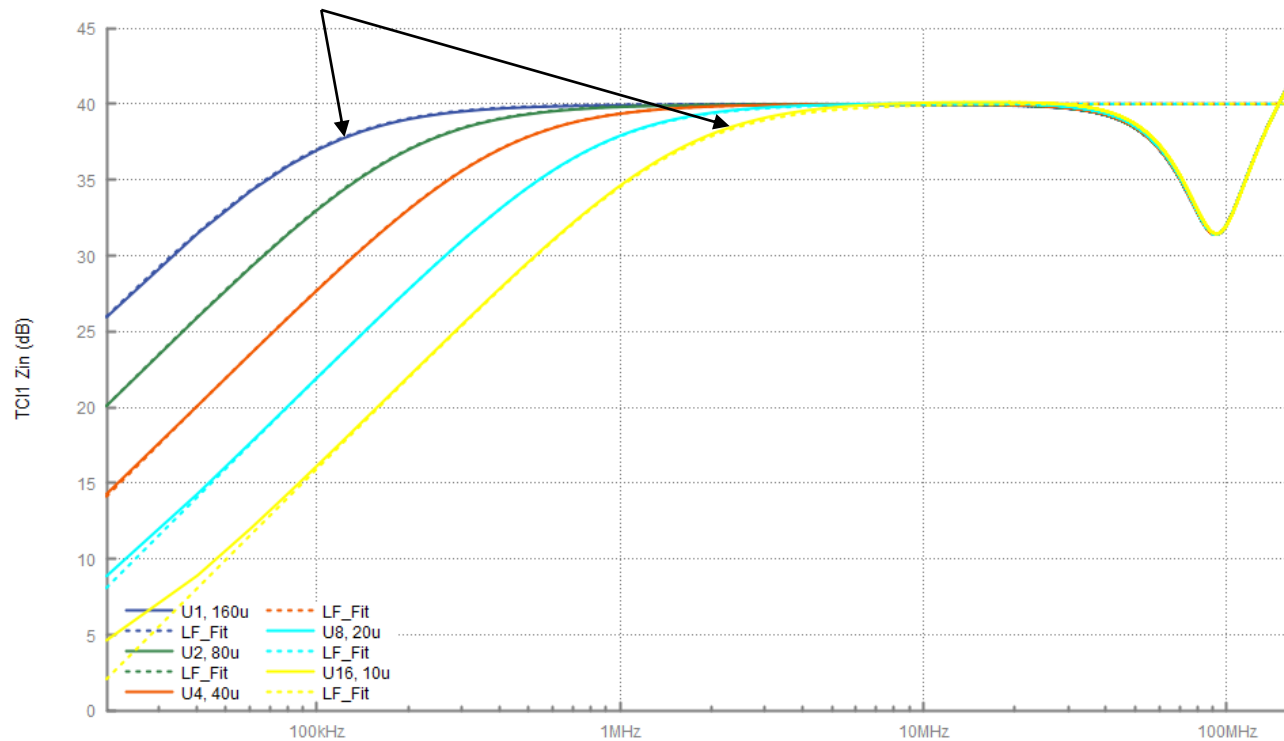
Low Frequency Return Loss of Node

Measure Input Impedance at TC1

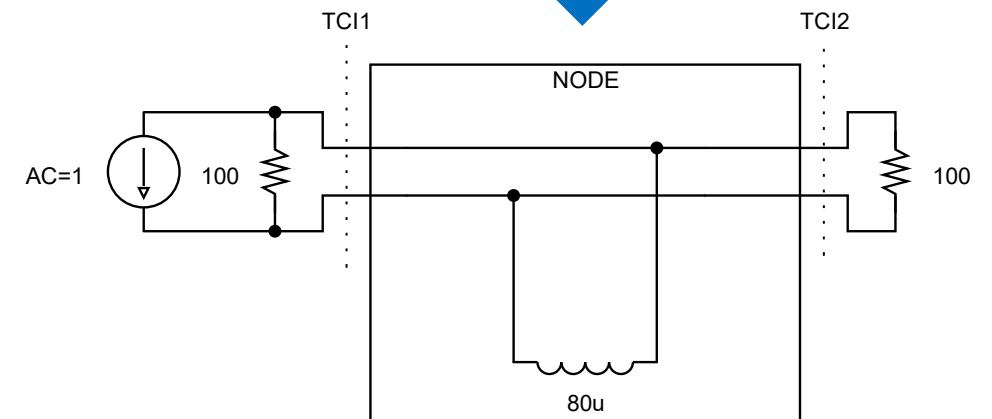
Below 10MHz, model input impedance with single pole model

HPF Corner Frequency:

$$f = 2 \cdot \pi \cdot (L_{pod1} / 100\Omega)$$



Single Pole Model $f < 10\text{MHz}$



Convert Low Frequency Corner To Return Loss

Single - pole model works well below ~10MHz

Convert TC1 impedance to Return Loss...

Low frequency return loss based on unit load:

$$RL(f) \geq \min(0, 93.94 - 20 \cdot \log_{10}(f / N_{UNIT})) \text{ dB} \quad 0.3 \leq f < 10$$

Where

f is the frequency in MHz

N_{UNIT} is the unit load value of the node; $1 \leq N_{UNIT} \leq 16$

