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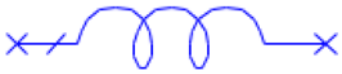
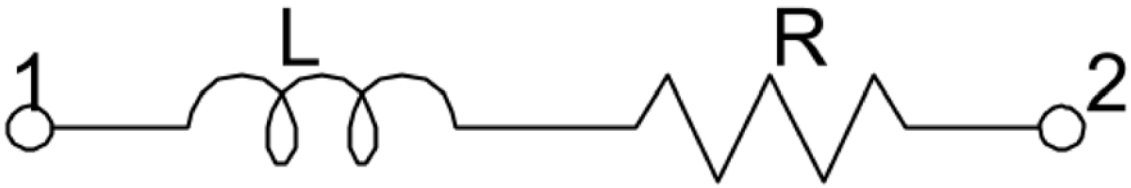
Inductor With Q (Closed Form): INDQ

Symbol



Topology



Parameters

Name	Description	Unit Type	Default
ID	Name	Text	L1
L	Inductance	Inductance	1 nH
Q	Q		0
FQ	Frequency at which Q is evaluated	Frequency	0 GHz
ALPH	Scaling factor for Q		1
DCMod	DC modeling	Vector text (pull-down)	Lossless

Parameter Details

DCMod. Specifies the DC behavior of the model. **Lossless** indicates that the model is modeled as an ideal inductor at DC. **Lossy** indicates that loss is taken into account at DC.

Implementation Details

Implements an inductor with frequency-dependent Q.

$$Q(f) = Q(\frac{f}{\mathrm{FQ}})^{\mathrm{ALPH}}$$

The impedance of the inductor is given by:

$$Z = R + \mathrm{jX} = 2\pi \mathrm{fL}(\frac{1}{Q(f)} + j)$$

$$\left(Q_L = \frac{X}{R} = \frac{2\pi \mathrm{fL}}{R} \text{ or } R = \frac{2\pi \mathrm{fL}}{Q_L}\right)$$

Layout

This element does not have an assigned layout cell. You can assign artwork cells to any element. See "Assigning Artwork Cells to Layout of Schematic Elements" for details.

Restrictions

FQ must be greater than or equal to zero.

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