xfrl2 (2-Winding Linear Transformer)

Associated Symbols:	`xfrl2`
License Requirements:	SABER_SIMULATOR
Part Category:	Magnetic Templates
Related Topics:	Introduction to Magnetic Templates

Functional Description

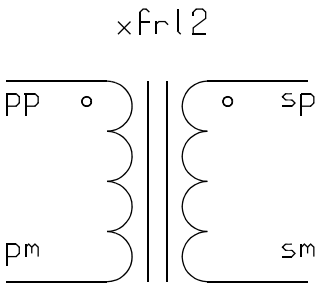
详述

The **xfrl2** model is a linear, two-winding transformer. You can specify either electrical arguments (`lp`, `ls`) or magnetic arguments (`np`, `ns`, `len`, `area`, `ur`). Values for electrical arguments override those for magnetic arguments. The `k`, `rp`, and `rs` arguments are used with both electrical and magnetic arguments.

Template Description Sections

xfrl2 Connection Points

Name	Type	Description
pp	electrical	primary plus connection
pm	electrical	primary minus connection
sp	electrical	secondary plus connection
sm	electrical	secondary minus connection



Two-winding linear transformer (xfrl2)

xfrl2 Symbol Properties

Property		
primitive	Description:	This symbol calls the template **xfr**, which models a 2-winding transformer template that allows you to specify electrical arguments (lp, ls) or magnetic arguments (np, ns, len, area, ur). Specifying electrical arguments overrides the magnetic arguments.
ref	Description:	Suffix appended to a template name that uniquely identifies a part in a schematic.
	Default:	If not specified, is assigned by the schematic capture tool
	Example Input:	Can be any alpha_numeric string
lp	Description:	Inductance of primary winding. Specifying lp and ls overrides the magnetic arguments (np, ns, len, area, ur).
	Default (units):	undef (H)
	Example Input:	3e-2

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Property		
np	Description:	Number of winding turns in primary winding
	Default (units):	undef (turns)
	Example Input:	60
rp	Description:	Winding resistance of primary winding
	Default (units):	0 (Ω)
	Example Input:	1m
ls	Description:	Inductance of secondary winding. Specifying lp and ls overrides the magnetic arguments (np, ns, len, area, ur).
	Default (units):	undef (H)
	Example Input:	2e-3

Property		
ns	Description:	Number of winding turns in secondary winding
	Default (units):	undef (turns)
	Example Input:	4
rs	Description:	Winding resistance of secondary winding
	Default (units):	0 (Ω)
	Example Input:	1m
len	Description:	Magnetic path length of core
	Default (units):	undef (m)
	Example Input:	3e-2
area	Description:	Cross-sectional area of magnetic path
	Default (units):	undef (m^2)
	Example Input:	6e-5

Property		
ur	Description:	Relative permeability of linear core
	Default (units):	1 (—)
	Example Input:	1
k	Description:	Coupling coefficient (see Usage Notes).
	Default (units):	1 (—)
	Example Input:	0.98

xfrl2 Usage Notes

This template uses a model of a linear core to couple all windings of the transformer.

You can specify a value for the coupling coefficient (k) in the following range:

$$-1 \leq k \leq +1$$

For an iron core, the value of k is nearly 1. For an air core, k assumes a very small positive value. If k is specified less than zero, it reverses the polarity of the transformer.