Liquid Crystal Capacitor: capacitorLC

Description:
This element implements a Liquid Crystal Capacitance

Form: capacitorLC: <instance name> n1 n2 <parameters>
    <instance name> : instance of the model
    n1 anode,
    n2 cathode

The capacitance of a liquid crystal capacitance is not constant. It varies from a minimum capacitance when no voltage is applied across the LC cell to a maximum capacitance when the LC cell is fully turned on. The permittivity factor, ε_{PS} of the model is bias-dependent, which is calculated by,

$$\varepsilon_{PS} = \varepsilon_{PL} + \delta * \gamma * \exp(D_{TIME}) * (V/Vc - 1.0)^{1/2}$$

The total amount of LC capacitance (Clc) is calculated from ε_{PS} and the geometry of the LC cell as,

$$Clc = \varepsilon_0 * \varepsilon_{PS} * L * W / D$$

Parameter Description	Type	Default Value	Required
Length (L)	Double	$152\,\mu$m	No
Thickness (D)	Double	$10.02\,\mu$m	No
Width (W)	Double	$148\,\mu$m	No
Viscosity of Liquid Crystals (δ)	Double	51 mm^2/s	No
Fitting Paramter (γ)	Double	51.2 ms/ mm^2	No
Delay Time (D$_{TIME}$)	Double	100ms	No
Threshold Voltage (Vc)	Double	1.887V	No
Dielectric Permittivity (ε_{PL})	Double	3.1	No

Example:
capacitorLC:c1 1 2 l=152u w=10u

Credits:

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