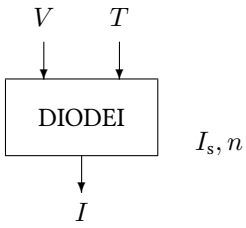
Block DIODEI

The DIODEI block calculates the current of a diode as a function of voltage and temperature.





Name	DIODEI
Function	se0021
Inputs	2
Outputs	1
Parameters	2
Strings	0
Group	S

Inputs

1 Voltage V / V
2 Temperature T / °C

Outputs

1 Current I / A

Parameters

1 Saturation current I_s / A
2 Emission coefficient n

Strings

None

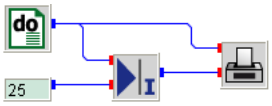
Description

The diode current is given by

$$I = I_s \left(\exp\left(\frac{qV}{nkT} \right) - 1 \right)$$

where k is the Boltzmann constant and q the elementary charge.

diodei.vseit



A DO block varies voltage from -0.5 to 0.65 V in steps of 0.001 V. A CONST block is used to set the diode temperature to 25 °C. For a diode saturation current of 10^{-12} A and an emission coefficient of 1 the PLOT block displays the diode's voltage-current characteristic.

