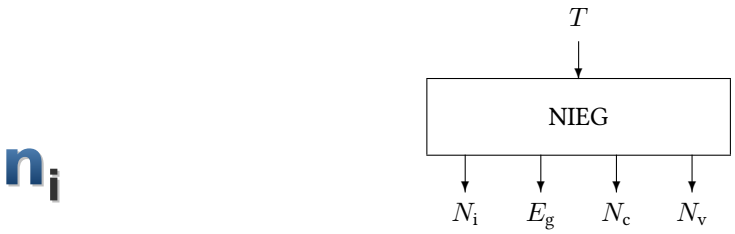
Block NIEG

The NIEG block calculates the intrinsic charge carrier density, the energy band gap and the effective densities of states in conduction and valence bands of a semiconductor as a function of the temperature.



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Inputs

1	Temperature / °C

Outputs

1	Intrinsic charge carrier density / cm^{-3}
2	Band gap / eV
3	Effective density of states in the conduction band / cm^{-1}
4	Effective density of states in the valence band / cm^{-1}

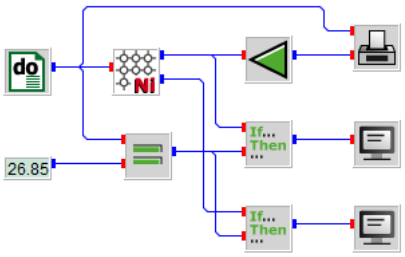
Parameters

1	Relative electon mass $m_{r,n}$
2	Relative hole mass $m_{r,p}$
3	Band gap $E_g(0)$ / eV
4	Band gap parameter a / eV K^-1
5	Band gap parameter b / K

Strings

None

nieg.vseit



A DO block varies the temperature of a semiconductor from 10 to 30 degrees Cesius in steps of 0.01 degrees to calculate the intrinsic charge carrier density and the band gap of the material.

Two IF blocks filter the data for 26.85 degrees to display the respective values by SCREEN blocks as

```
Intrinsic charge carrier density = 0.94067118E+10
Band gap = 1.12051928
```

A PLOT block displays the charge carrier density diluted by a factor 10^{-9} through the ATT block.

