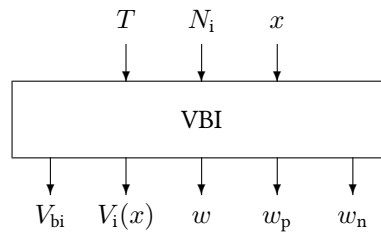


Block VBI

The VBI block calculates the built-in voltage of a pn-junction.



Name	VBI
Function	se0032
Inputs	2 ... [3]
Outputs	5
Parameters	3
Strings	0
Group	S

Inputs

- 1 Temperature / °C
- 2 Intrinsic carrier density / cm^{-3}
- 3 Position x in pn-junction / μm

Outputs

- 1 Built-in voltage / V
- 2 Built-in voltage at x / V
- 3 Width of the depletion region / μm
- 4 Width of the depletion region in p-type material / μm
- 5 Width of the depletion region in n-type material / μm

Parameters

- 1 Number of acceptor atoms N_a / cm^{-3}
- 2 Number of donator atoms N_d / cm^{-3}
- 3 Relative permittivity ϵ_r of the semiconductor (e. g., c-Si 11.68)

Strings

None

vbi.vseit



The built-in voltage for 10^{17} acceptor and 10^{17} donor atoms in a c-Si crystal is about 0.8 volt as displayed by the [SCREEN](#) block.

0.82823104