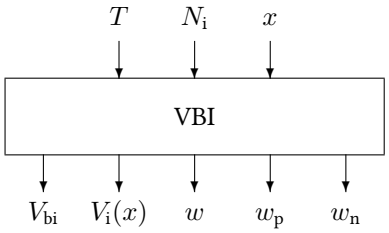
Block VBI

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} donator atoms in a c-Si crystal is about 0.8 volt as displayed by the SCREEN block.

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0.82823104
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