

# igbt\_1.ebe

## Attributes

```
ebe name=igbt_1 x_inputs=yes
Jacobian: variable
nodes: p n
state_vars:
aux_vars:
aux_vars_startup:
x_vars: x
iparms:
sparms:
rparms:
+ r_on=1m
+ r_off=1M
+ v_on=0
+ x_high=1.0
stparms:
igparms:
outparms: i v
```

## Description

`igbt_1.ebe` is an ideal IGBT connected between nodes C and E (denoted internally by `p` and `n`, respectively). Its equivalent circuit is shown in the figure. For the device to be conducting, two conditions are required: (a) the controlling input `x` must be greater than  $x_{\text{high}}/2$ , (b)  $V_p > V_n$ .

In the on state,  $R'$  is equal to `r_on`; otherwise, it is `r_off`. The branch current and branch voltage are made available as output variables `i` and `v`, respectively.

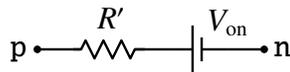


Figure 1: Equivalent circuit of `igbt_1.ebe`.