1A. FETs AND BJTs ARE CCDs
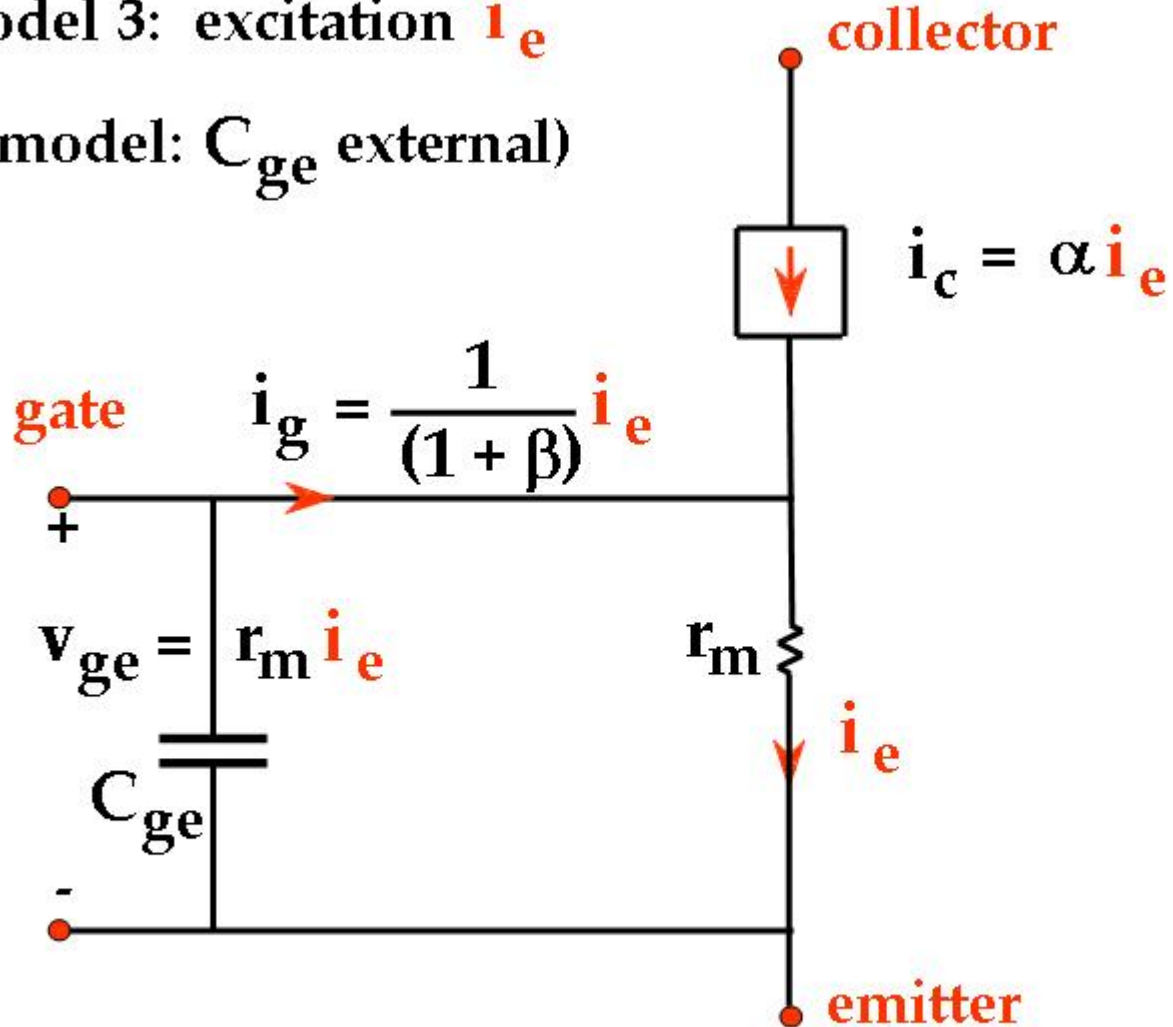
Field-Effect Transistors and Bipolar Junction Transistors are Charge-Controlled Devices

Both can be represented by the same small-signal equivalent circuit model

Recommended model for both the FET and the BJT:
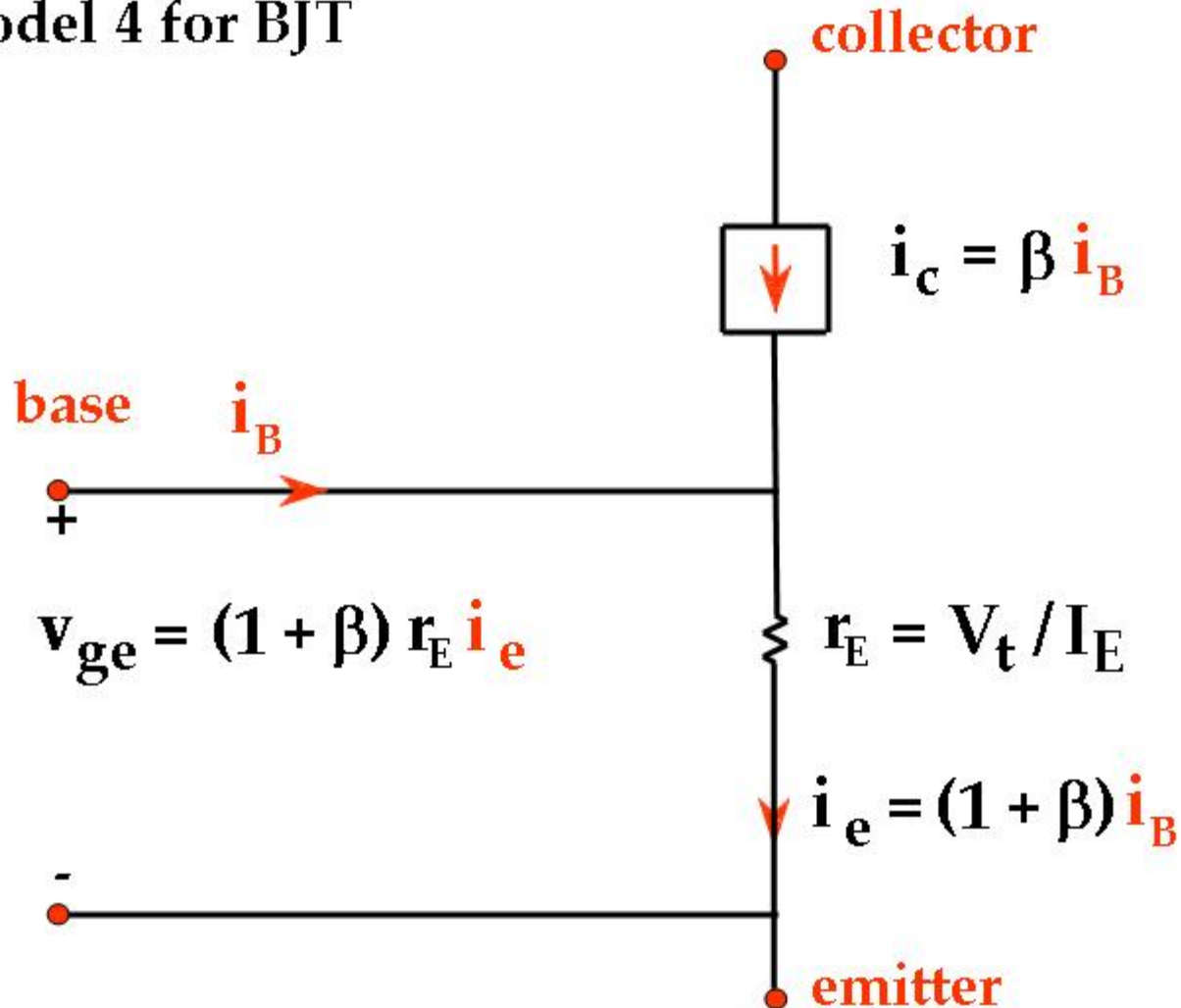
Model 3: excitation i_e

(T model: C_{ge} external)

For the FET, set $\alpha=1$, $\beta=\infty$

Conventional terminology:

Model 4 for BJT

collector

$i_c = \beta\, i_B$

base $\quad i_B$

+

$v_{ge} = (1 + \beta)\, r_E\, i_e$ $\qquad r_E = V_t / I_E$

$i_e = (1 + \beta)\, i_B$

−

emitter

This is the model used throughout the TT DVD

Addition of some "parasitic" elements: the Pi Model

http://www.RDMiddlebrook.com
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