

It is suggested that the appropriate datasheet hFE profile is examined, and a SPICE test circuit created that simulates the device in question and generates a set of hFE curves. Two or three such iterations should normally be sufficient to define a value for XTB in each case.

Please remember that these notes are only a rough guide as to the effect of model parameters. Also, many of the parameters are interdependent so adjusting one parameter can affect many device characteristics.

At Diodes, we have tried to make the models perform as closely to actual samples as possible but some compromises are forced which can result in simulation errors under some circumstances. The main areas of error observed so far have been:

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- SPICE is often over optimistic in the hFE a transistor will give when operated above its data sheet current ratings. This is particularly true for a high voltage transistor operated at a low collector-emitter voltage and quasi-saturation parameters RCO, GAMMA and QUASIMOD have been introduced to improve the models in this region.
- SPICE can be pessimistic when predicting switching storage time when current is extracted from the base of a transistor to speed turn-off.



