Using GFT Parts and Simulation Templates

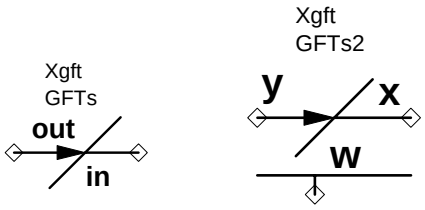
There are 7 Simulation Templates that are used to extract the GFT properties.

GFT: Dual, coupled current/voltage injection
GFTE: Single voltage injection
GFTEE: Dual independent voltage injection
GFTJ: Single current injection
GFTJJ: Dual independent current injection
GFTS: Simplified GFT for loop gain, T, only
GFTTIME: GFTS for transient analysis.

These Simulation Templates are used in conjunction with the following 5 groups of models that you will find in the part browser.

1. Loop Gain
2. Current Gain
3. Transadmittance
4. Transimpedance
5. Voltage Gain

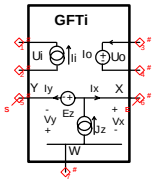
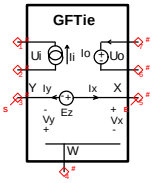
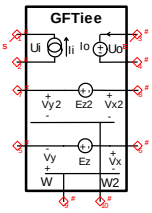
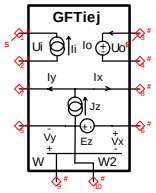
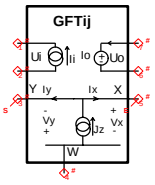
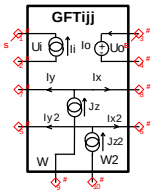
The first group, Loop Gain, must be used with GFTS or GFTTIME. This simplified analysis is used to measure the principal loop gain, T, only. Both GFTs and GFTt use the same symbol. The arrow shows the direction of signal flow. A dual current/voltage injection point is used and its reference node, w, is assumed to be the SPICE ground, node 0. GFTs2 and GFTt2 also share the same symbol. The model for this symbol allows the user to place the current/voltage injection reference node, w.



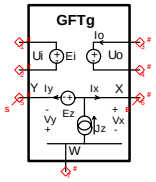
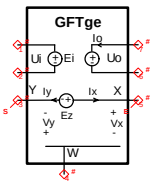
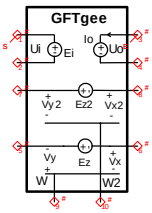
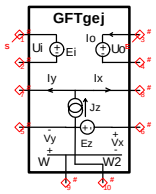
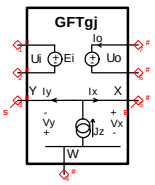
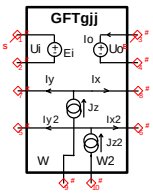
The Simulation Templates manipulate the models internally in order to configure the different simulations and access the internal node voltages and branch currents, for example v(xw:xgft) is the voltage from x to w. To accomplish this it is required that the GFT part be named Xgft .

The following tables illustrate the appropriate combinations of models and templates for the remaining 4 groups of models.

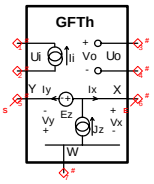
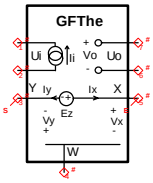
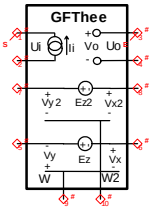
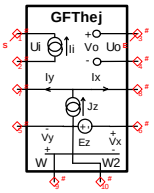
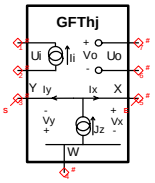
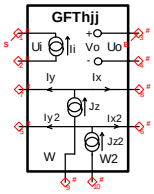
Current Gain

Templates	GFT	GFTE	GFTEE	GFTJ	GFTJJ
Parts	Symbols				
GFTi Dual coupled voltage/current injection					
GFTie Single voltage injection					
GFTiee Dual independent voltage injection					
GFTiej Dual independent voltage/current injection					
GFTij Single current injection					
GFTijj Dual independent current injection					

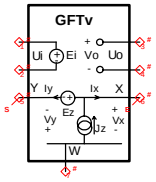
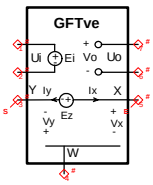
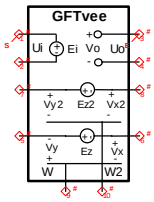
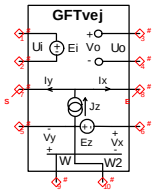
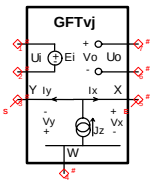
Transadmittance

Templates	GFT	GFTE	GFTEE	GFTJ	GFTJJ
Parts	Symbols				
GFTg Dual coupled voltage/current injection					
GFTge Single voltage injection					
GFTgee Dual independent voltage injection					
GFTgej Dual independent voltage/current injection					
GFTgj Single current injection					
GFTgjj Dual independent current injection					

Transimpedance

Templates	GFT	GFTE	GFTEE	GFTJ	GFTJJ
Parts	Symbols				
GFTh Dual coupled voltage/current injection					
GFThe Single voltage injection					
GFhee Dual independent voltage injection					
GFThej Dual independent voltage/current injection					
GFThj Single current injection					
GFThjj Dual independent current injection					

Voltage Gain

Templates	GFT	GFTE	GFTEE	GFTJ	GFTJJ
Parts	Symbols				
GFTv Dual coupled voltage/current injection					
GFTve Single voltage injection					
GFTvee Dual independent voltage injection					
GFTvej Dual independent voltage/current injection					
GFTvj Single current injection					
GFTvjj Dual independent current injection