

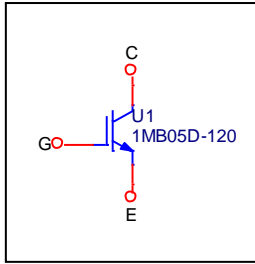
Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: 1MB05D-120
MANUFACTURER: Fuji Electric
*REMARK: Free-Wheeling Diode Professional Model



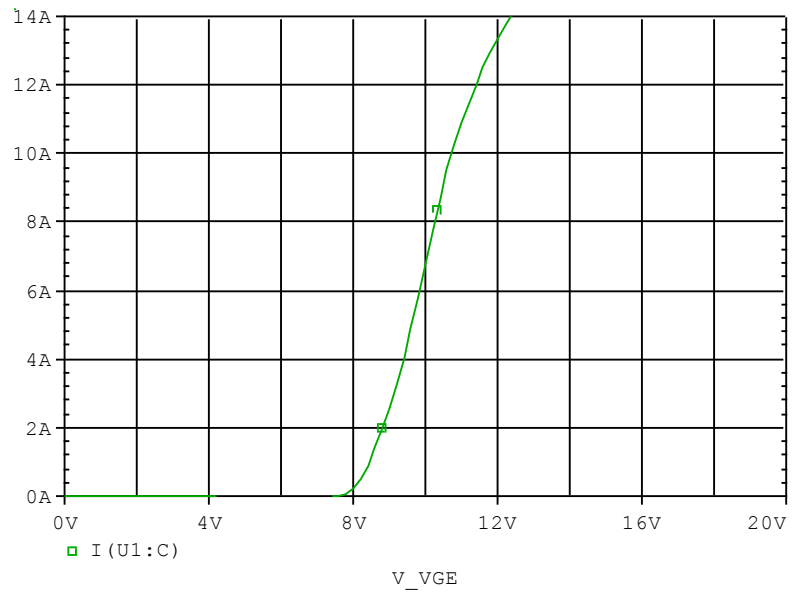
Bee Technologies Inc.

Circuit Configuration

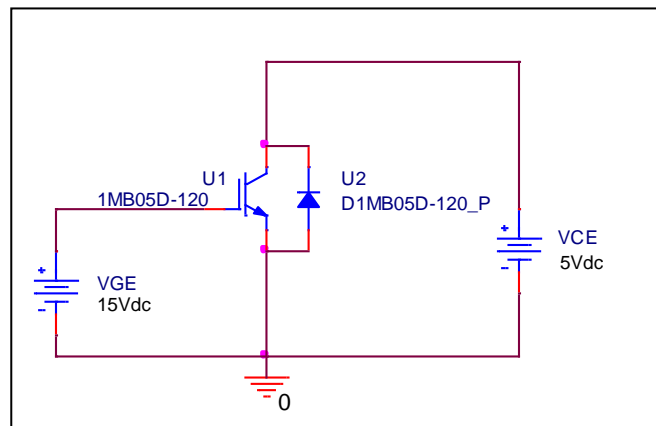


Transfer Characteristics

Circuit Simulation result

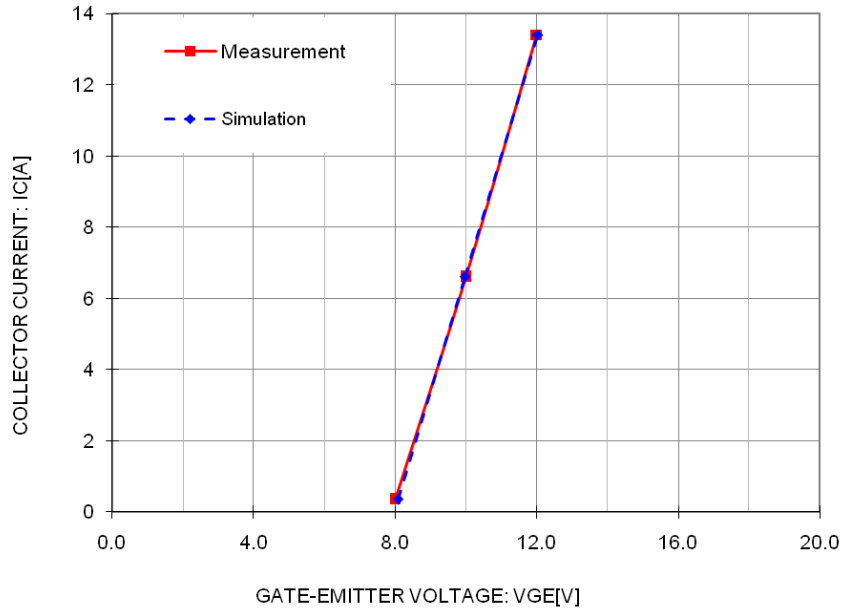


Evaluation circuit



Comparison Graph

Simulation result



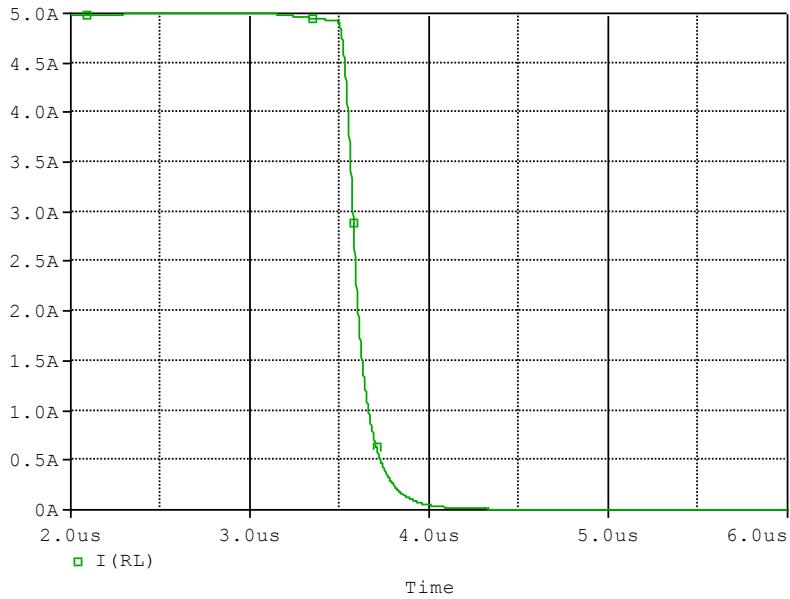
Comparison table

Test condition: $V_{CE} = 5$ (V)

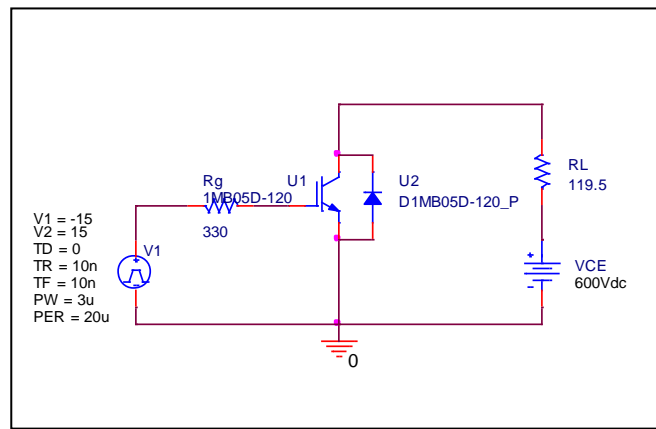
IC (A)	VGE (V)		%Error
	Measurement	Simulation	
0.350	8.000	8.082	1.02
6.600	10.000	9.970	-0.30
13.400	12.000	12.037	0.31

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

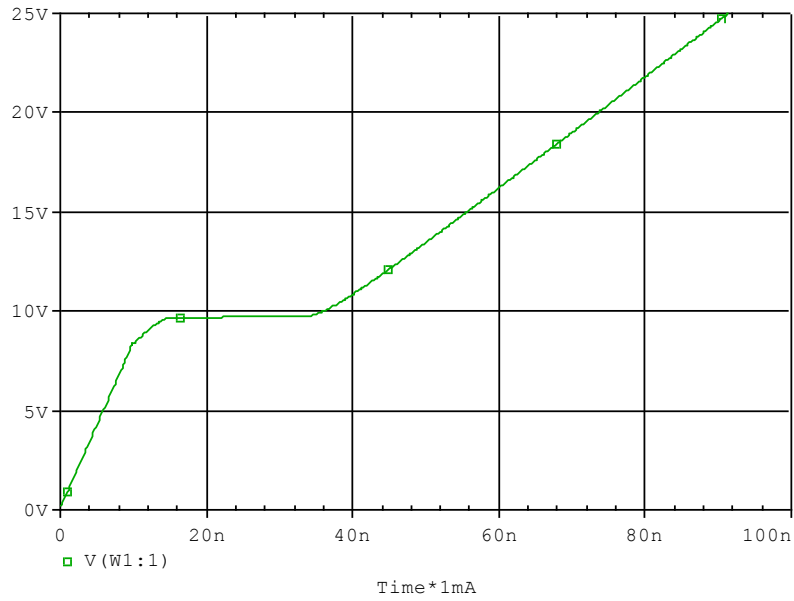


Test condition: $I_C=5$ (A), $V_{CC}=600$ (V)

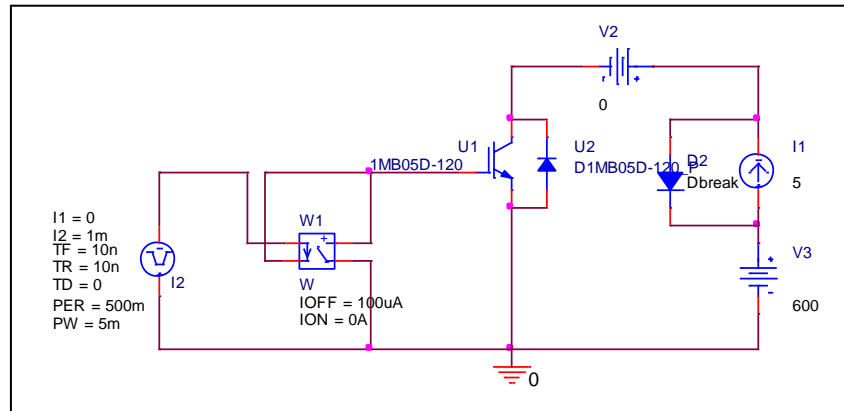
Parameter	Unit	Measurement	Simulation	%Error
tf	us	0.200	0.201	0.373

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

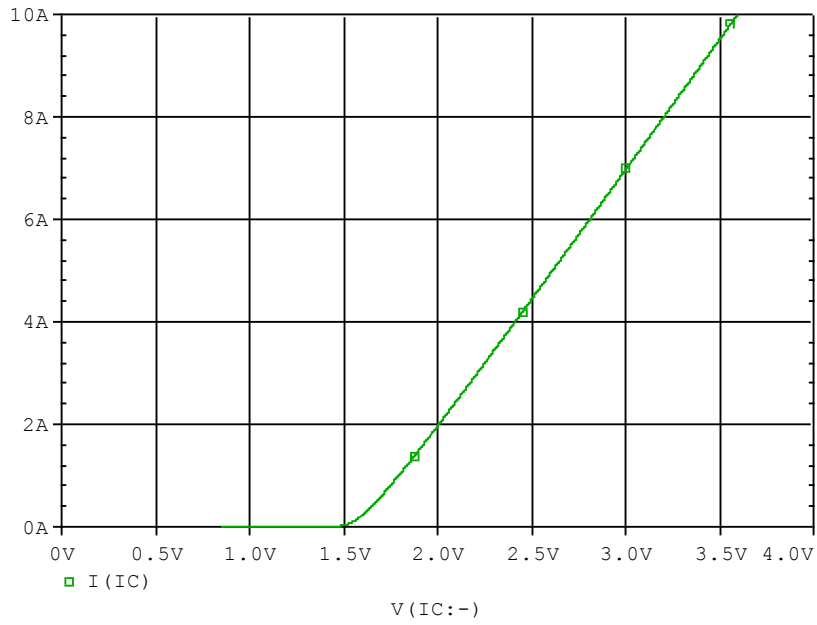


Test condition: $V_{CC}=600$ (V), $I_C=5$ (A), $V_{GE}=15$ (V)

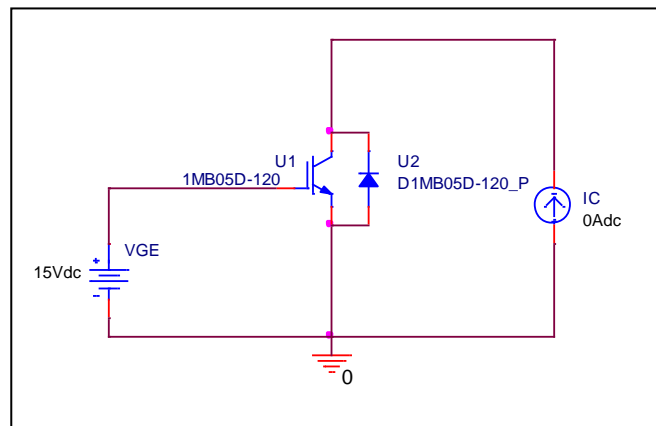
Parameter	Unit	Measurement	Simulation	%Error
Qge	nc	12.000	12.000	0.000
Qgc	nc	26.000	25.565	-1.673
Qg	nc	55.000	55.626	1.138

Saturation Characteristics

Circuit Simulation result

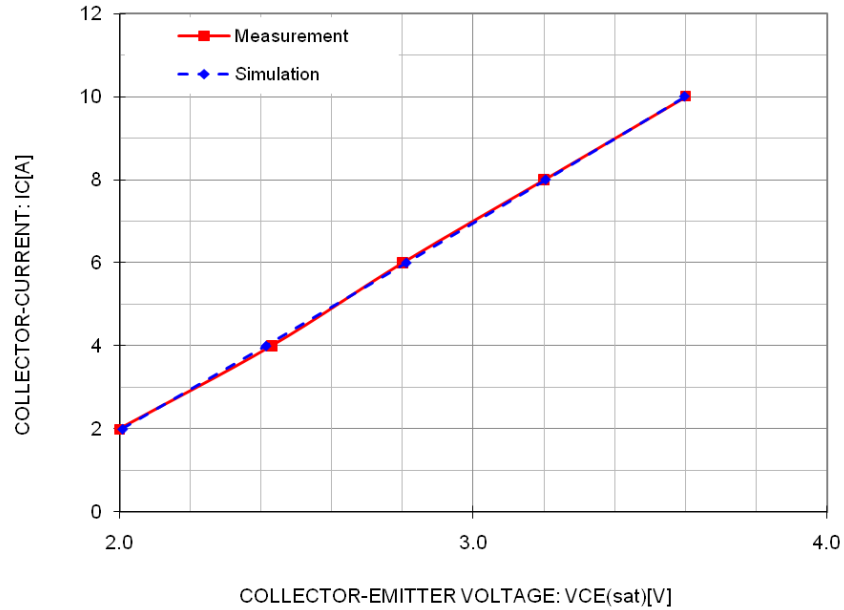


Evaluation circuit



Comparison Graph

Simulation result



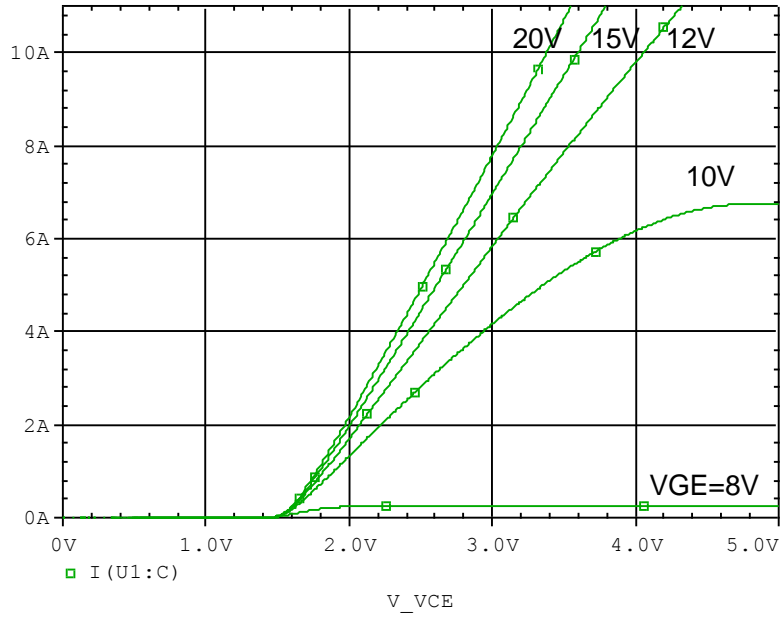
Comparison table

Test condition: $V_{GE} = 15$ (V)

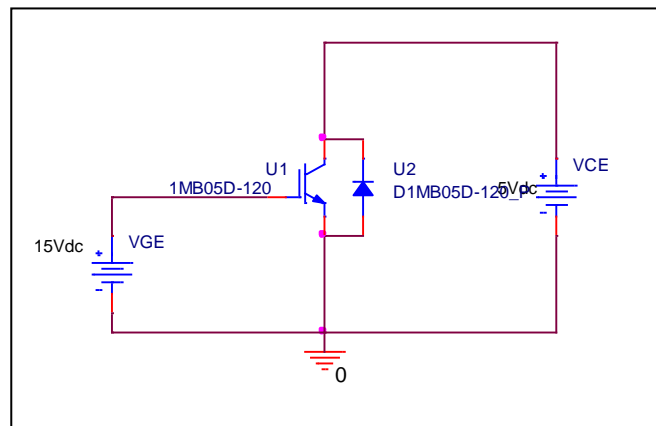
Ic(A)	VCE (V)		%Error
	Measurement	Simulation	
2.0	2.000	2.01	0.35
4.0	2.430	2.41	-0.71
6.0	2.800	2.81	0.35
8.0	3.200	3.20	0.12
10.0	3.600	3.60	-0.09

Output Characteristics

Circuit Simulation result

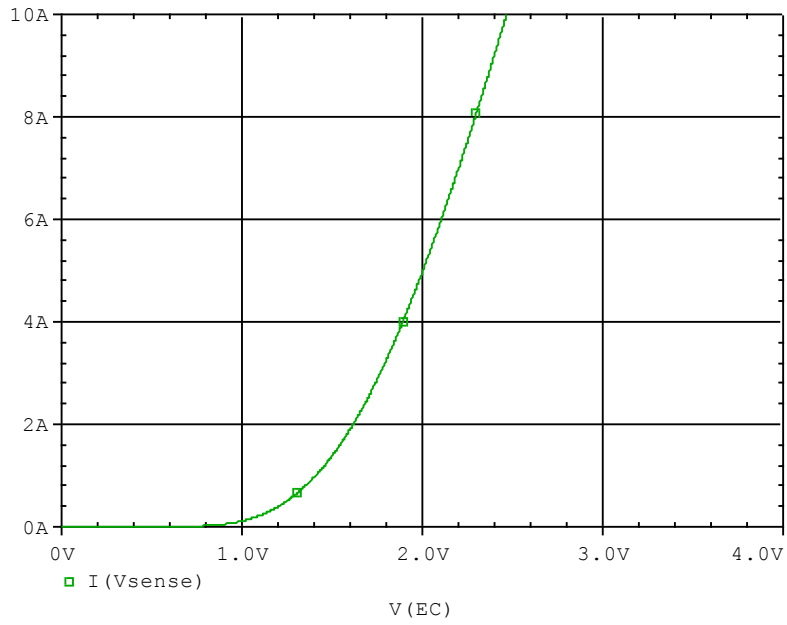


Evaluation circuit

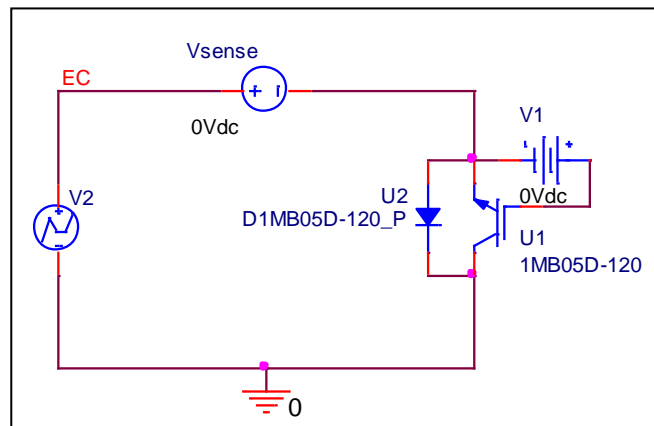


FWD Forward Current Characteristics

Circuit Simulation result

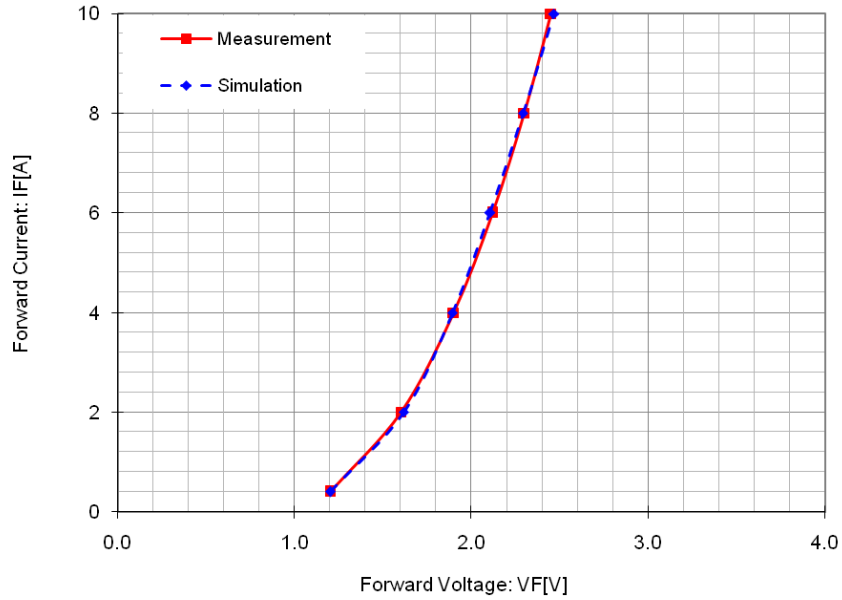


Evaluation circuit



Comparison Graph

Simulation result

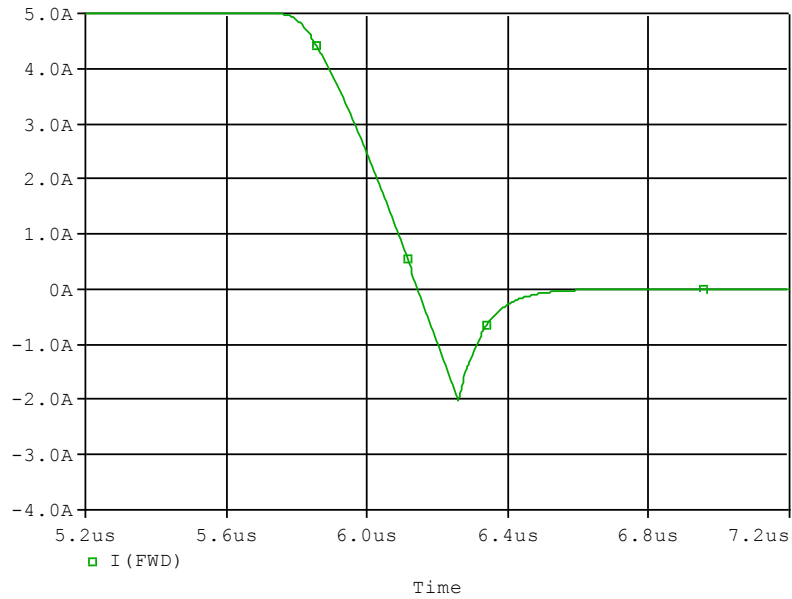


Comparison table

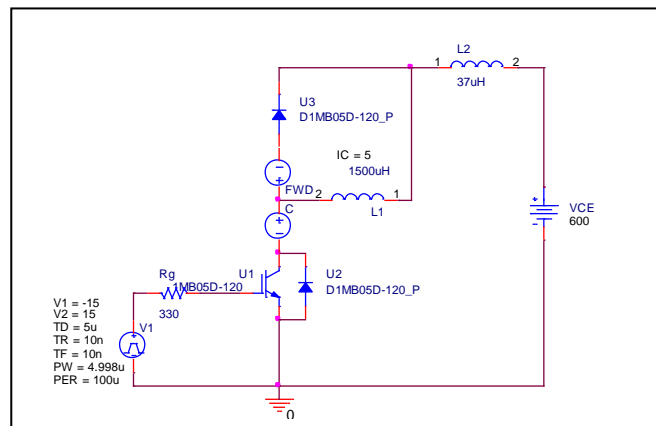
IF(A)	VF (V)		%Error
	Measurement	Simulation	
0.4	1.200	1.203	0.22
2	1.600	1.616	1.03
4	1.900	1.891	-0.46
6	2.120	2.105	-0.72
8	2.300	2.293	-0.31
10	2.450	2.467	0.69

Reverse Recovery Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: VCC=600 (V), IC=5 (A), -di/dt=15A/usec.

Parameter	Unit	Measurement	Simulation	%Error
trr	nsec	280.000	280.370	0.13
Irr	A	2.000	2.009	0.43