

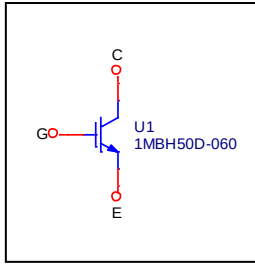
Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: 1MBH50D-060
MANUFACTURER: FUJI ELECTRIC
* REMARK: Free-Wheeling Diode Special Model



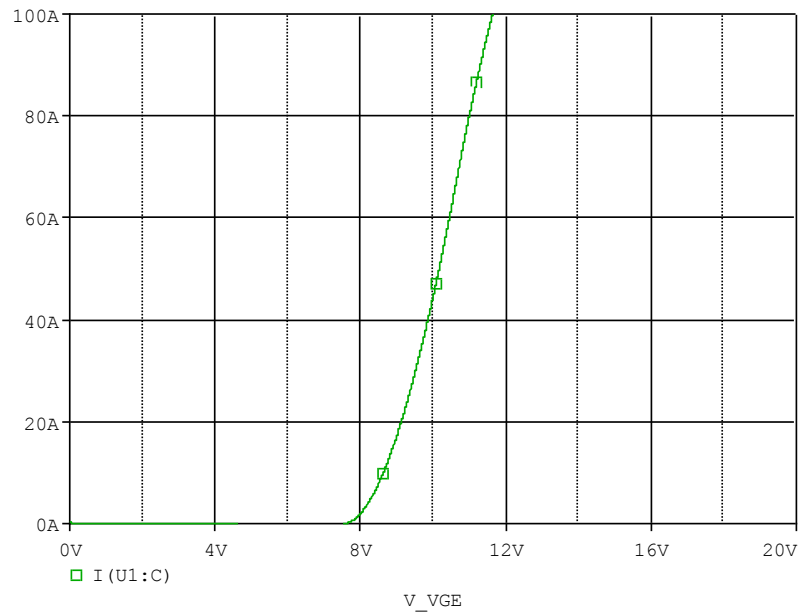
Bee Technologies Inc.

Circuit Configuration

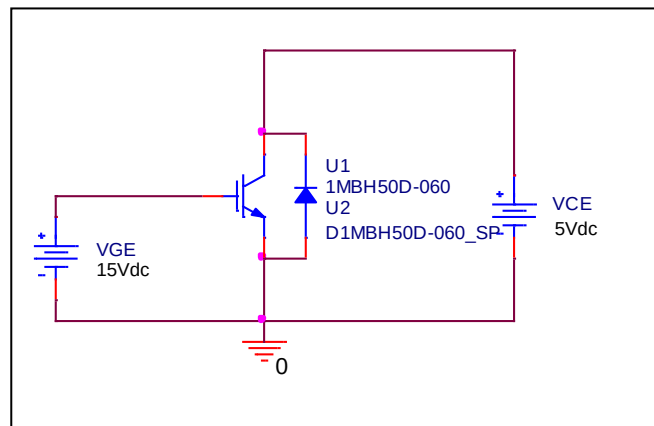


Transfer Characteristics

Circuit Simulation result

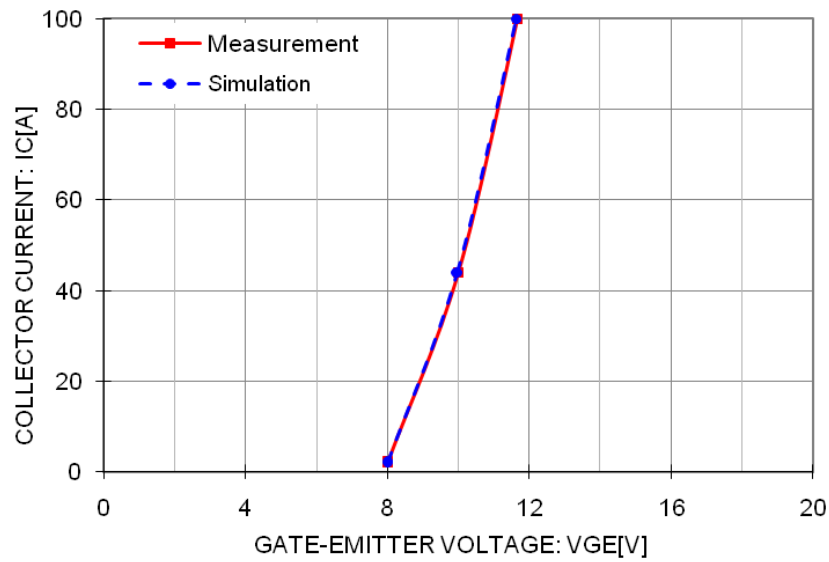


Evaluation circuit



Comparison Graph

Simulation result



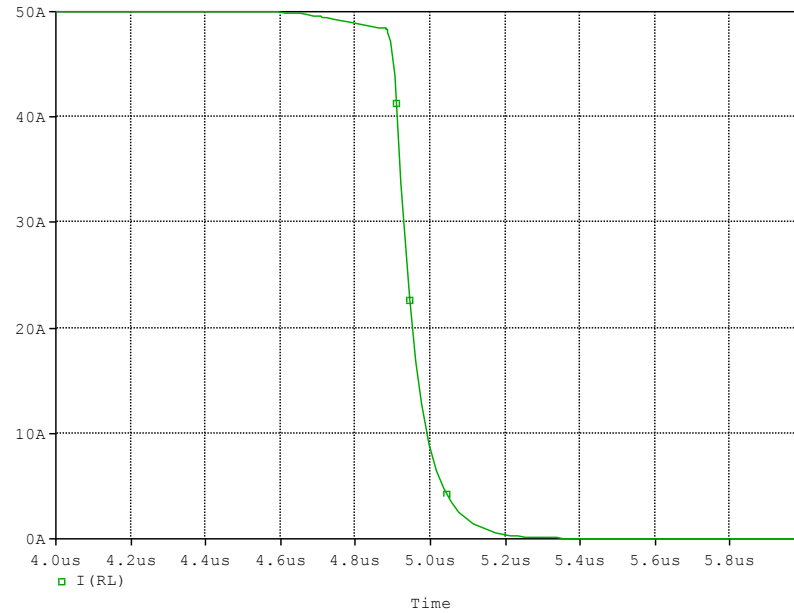
Comparison table

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

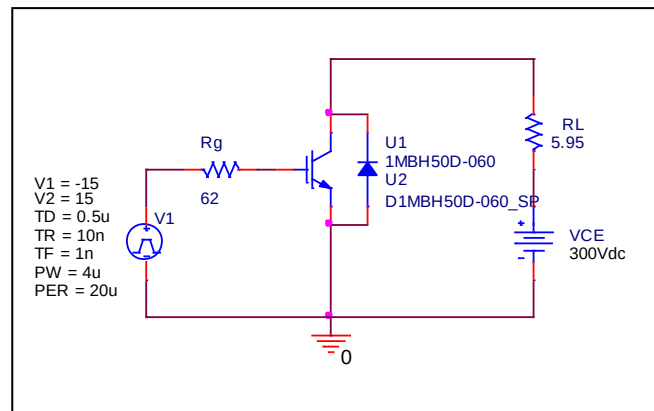
IC (A)	VGE (V)		%Error
	Measurement	Simulation	
2	8.000	8.003	0.04
44	10.000	9.985	-0.15
100	11.665	11.642	-0.20

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

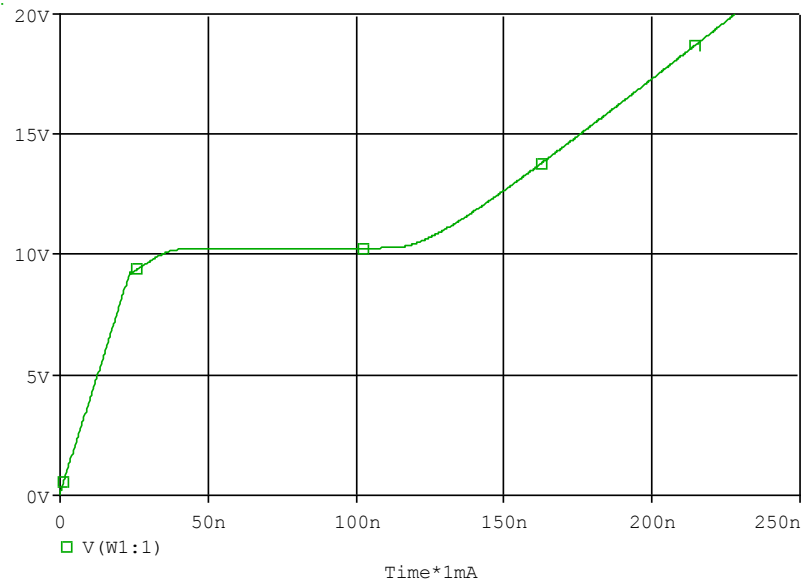


Test condition: $I_C=50$ (A), $V_{CC}=300$ (V)

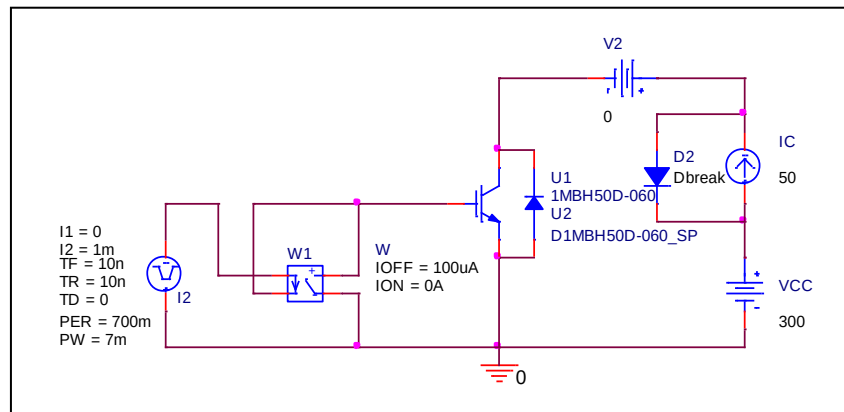
Parameter	Unit	Measurement	Simulation	%Error
tf	us	0.130	0.132	1.54

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

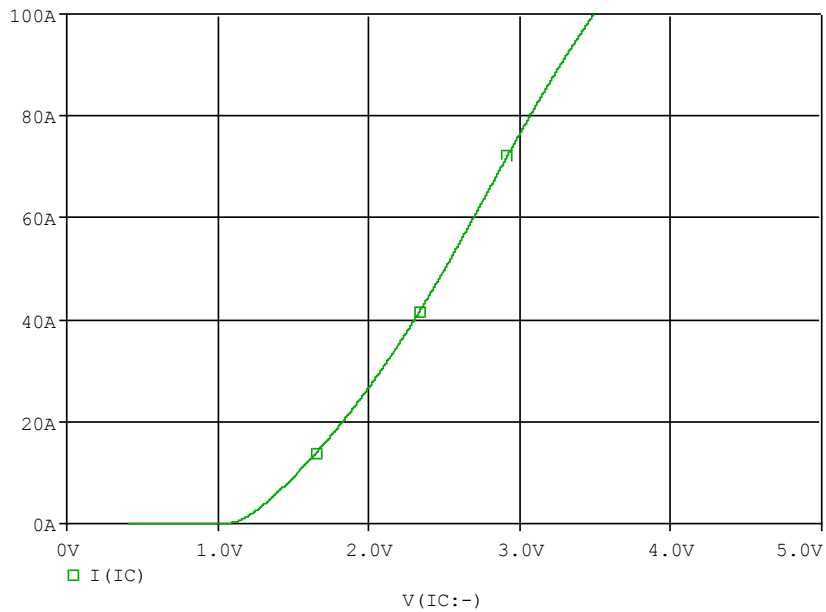


Test condition: $V_{CC}=300$ (V), $I_C=50$ (A), $V_{GE}=15$ (V)

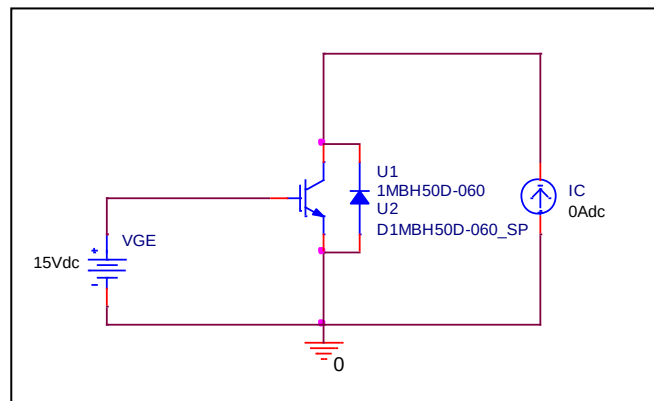
Parameter	Unit	Measurement	Simulation	%Error
Qge	nc	30.000	30.870	2.90
Qgc	nc	85.000	85.217	0.26
Qg	nc	178.000	175.630	-1.33

Saturation Characteristics

Circuit Simulation result

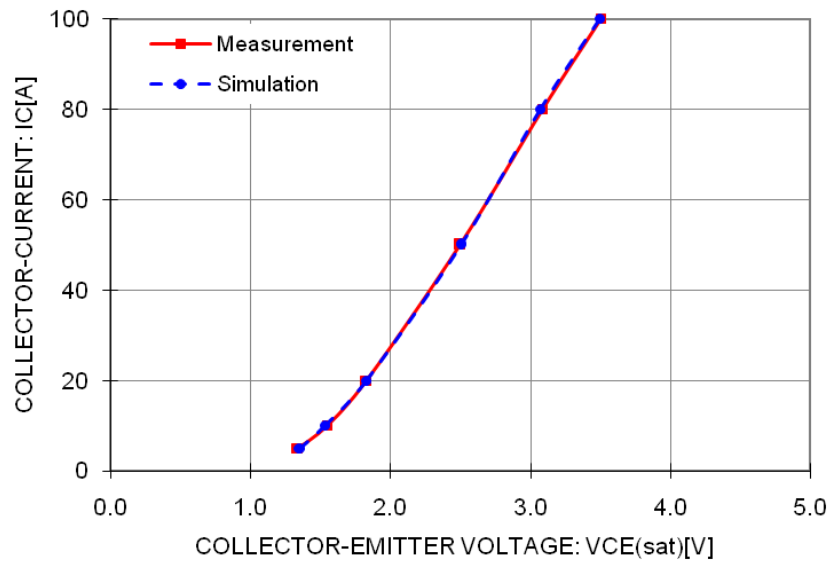


Evaluation circuit



Comparison Graph

Simulation result



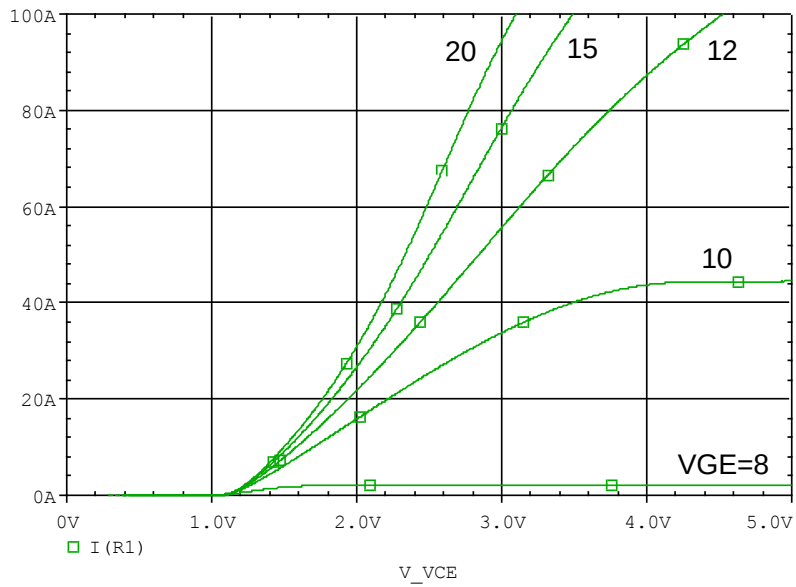
Comparison table

Test condition: VGE =15 (V)

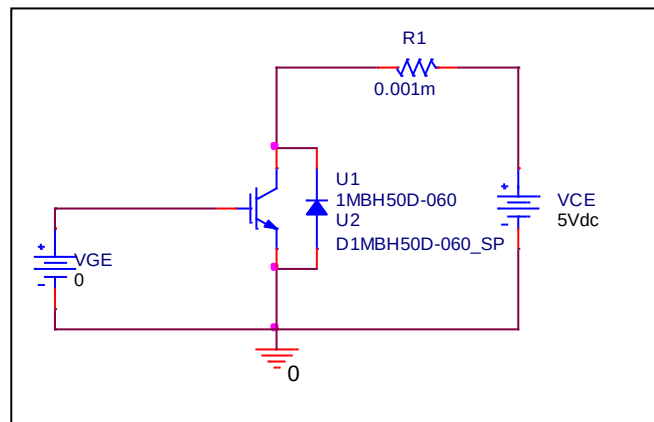
Ic(A)	VCE (V)		%Error
	Measurement	Simulation	
5	1.340	1.355	1.11
10	1.550	1.530	-1.29
20	1.830	1.827	-0.16
50	2.500	2.505	0.20
80	3.085	3.068	-0.54
100	3.500	3.492	-0.23

Output Characteristics

Circuit Simulation result

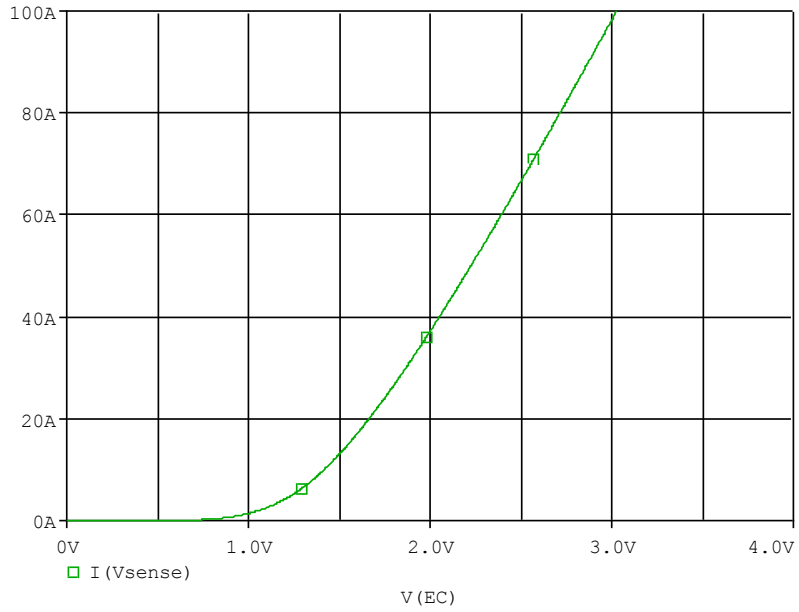


Evaluation circuit

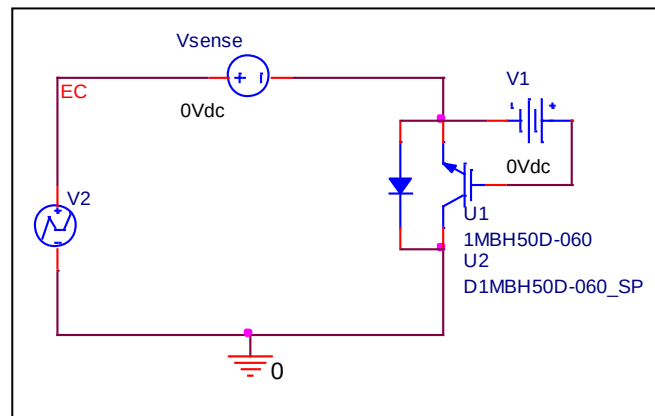


FWD Forward Current Characteristics

Circuit Simulation result

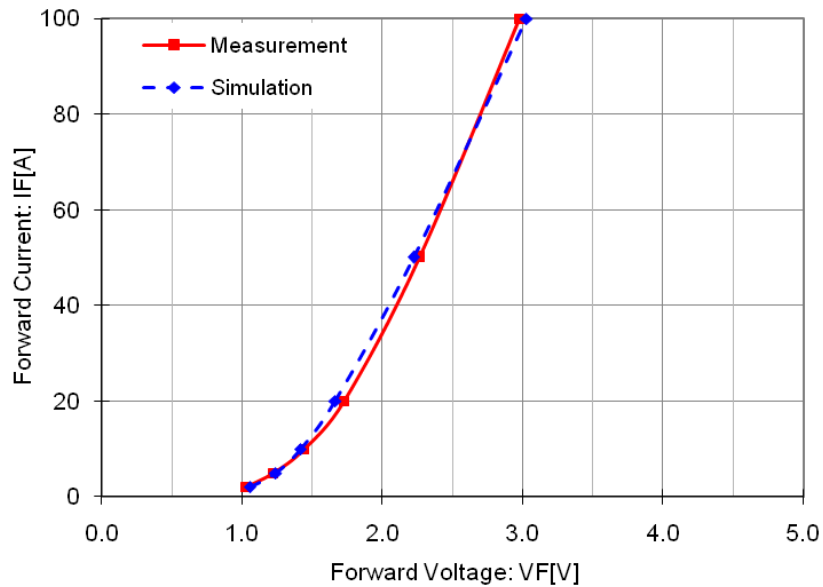


Evaluation circuit



Comparison Graph

Simulation result

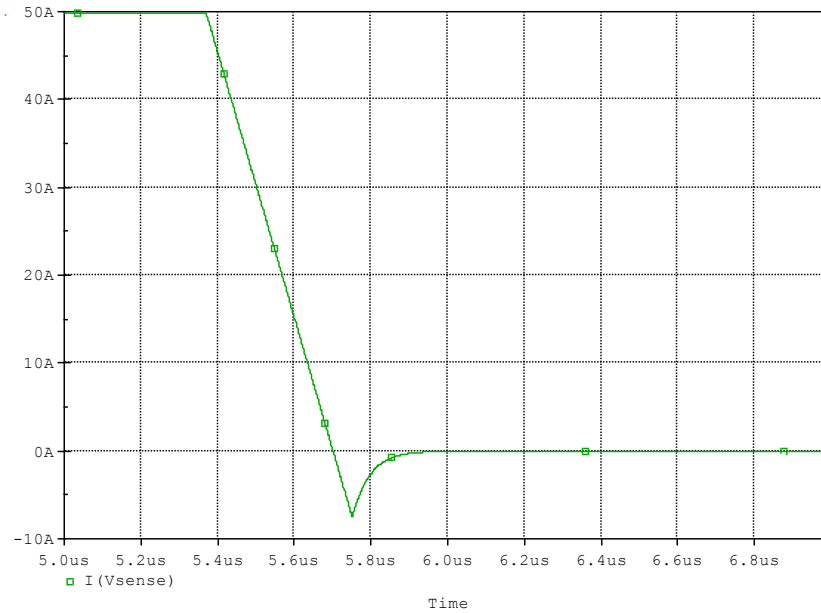


Comparison table

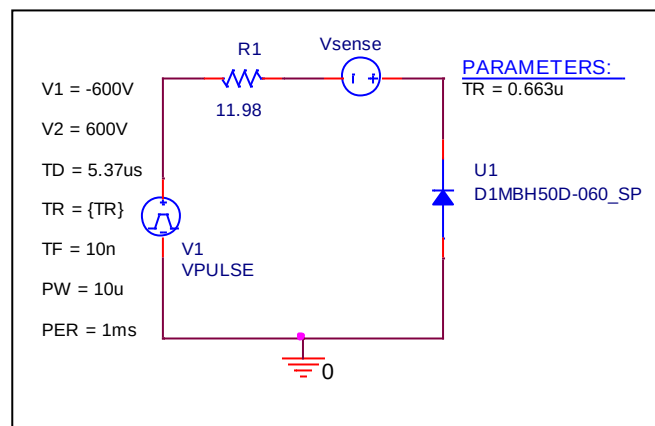
IF(A)	VF (V)		%Error
	Measurement	Simulation	
2	1.025	1.058	3.22
5	1.220	1.239	1.56
10	1.440	1.417	-1.60
20	1.725	1.665	-3.50
50	2.265	2.225	-1.77
100	2.975	3.028	1.77

Reverse Recovery Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: $V_{CC}=600$ (V), $I_C=50$ (A), $-di/dt=150$ (A/ μs)

Parameter	Unit	Measurement	Simulation	%Error
trr	nsec	155.000	155.674	0.43
Irr	A	7.500	7.483	-0.23