

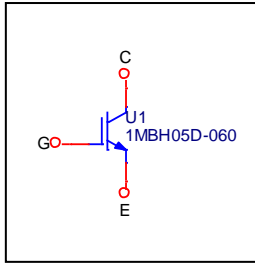
Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: 1MBH05D-060
MANUFACTURER: Fuji Electric
*REMARK: Free-Wheeling Diode Professional Model



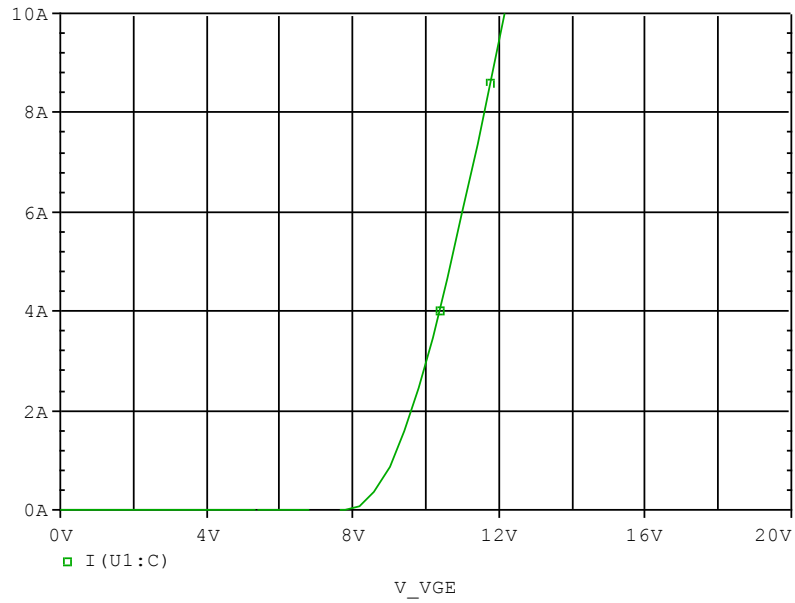
Bee Technologies Inc.

Circuit Configuration

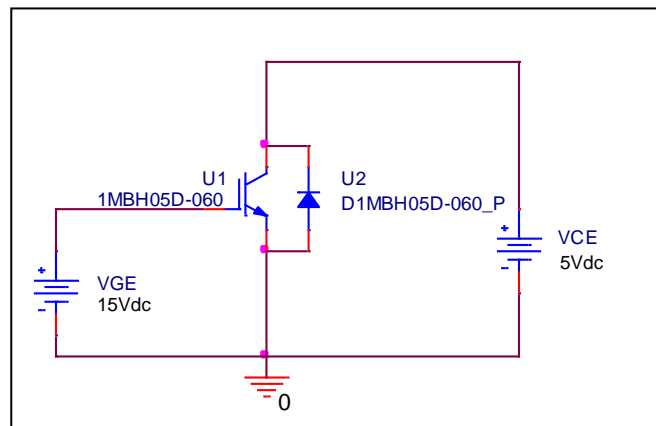


Transfer Characteristics

Circuit Simulation result

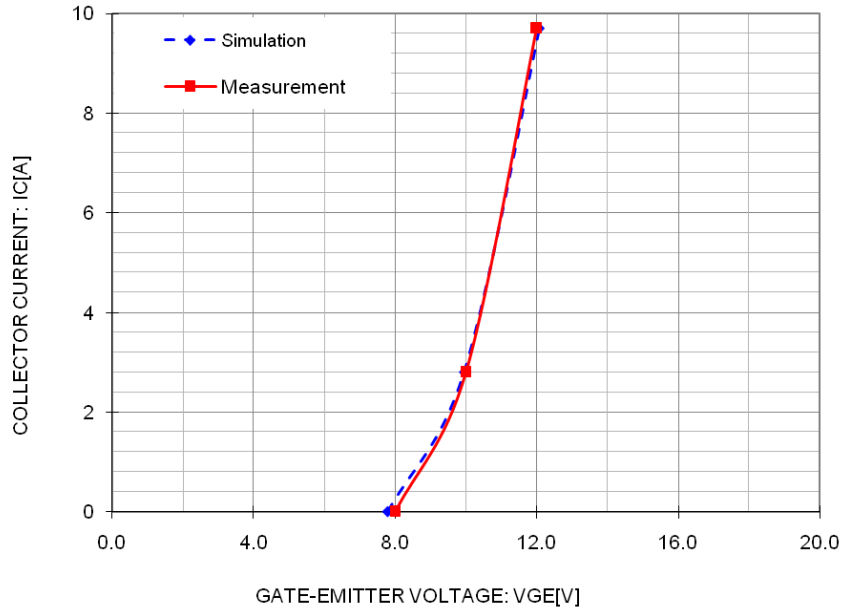


Evaluation circuit



Comparison Graph

Simulation result



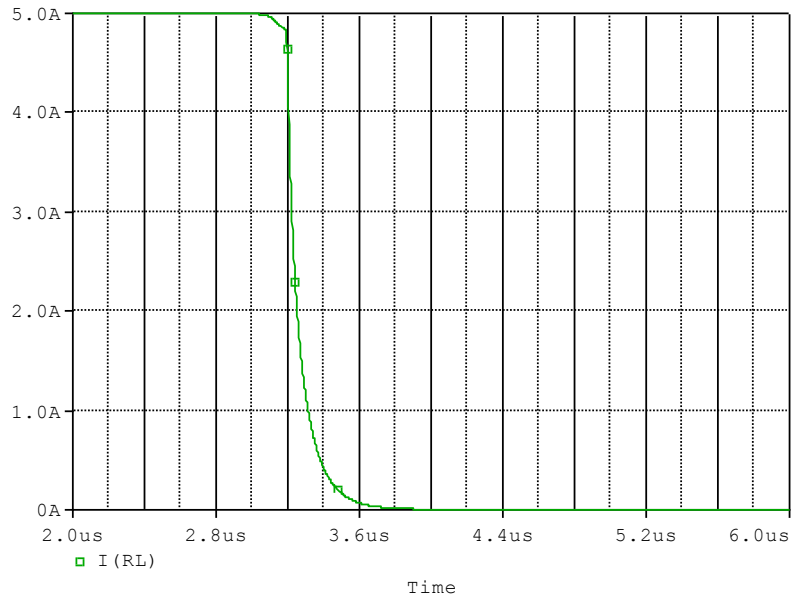
Comparison table

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

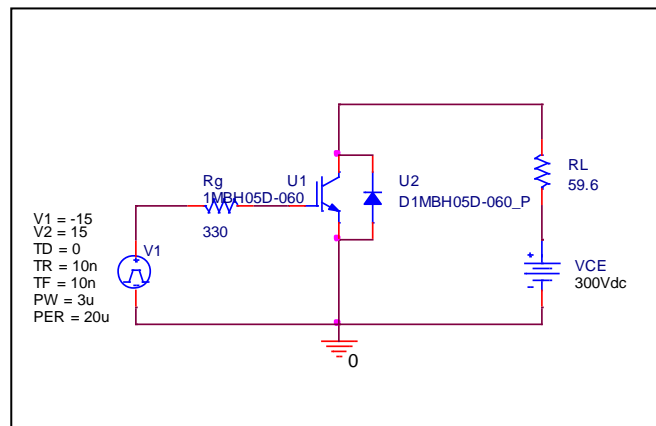
IC (A)	VGE (V)		%Error
	Measurement	Simulation	
0.000	8.000	7.800	-2.50
2.800	10.000	9.939	-0.61
9.700	12.000	12.068	0.57

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

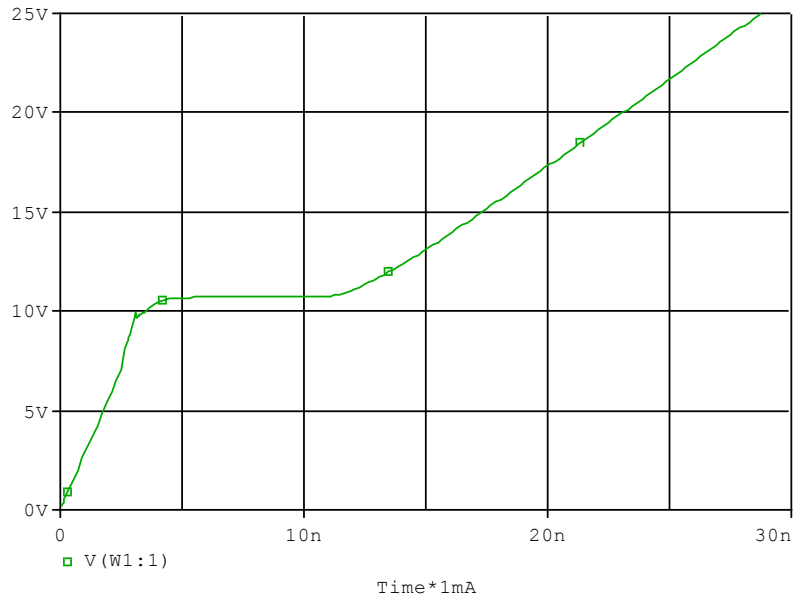


Test condition: $I_C=5$ (A), $V_{CC}=300$ (V)

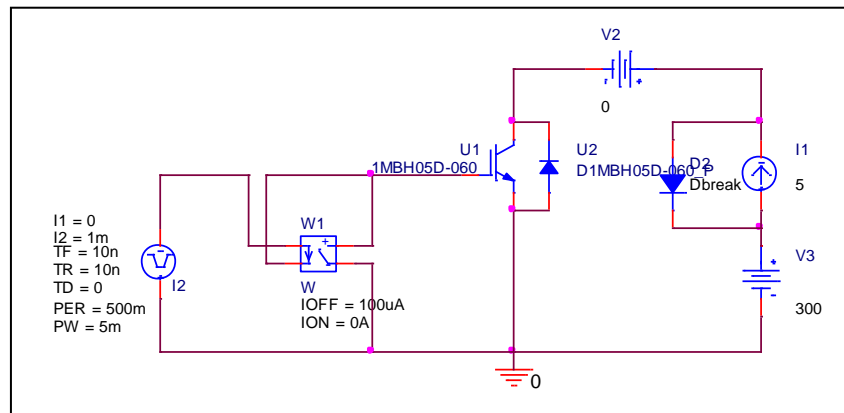
Parameter	Unit	Measurement	Simulation	%Error
tf	us	0.180	0.182	1.381

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

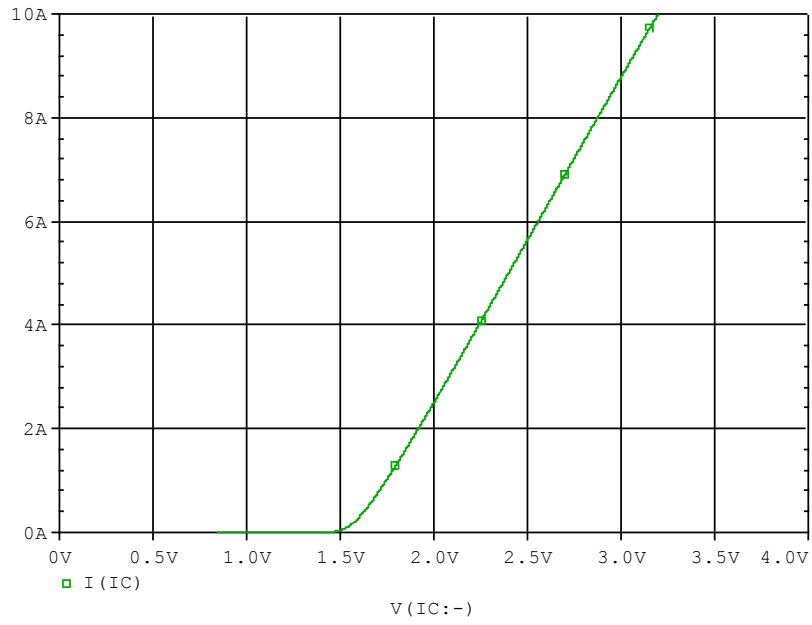


Test condition: $V_{CC}=300$ (V), $I_C=5$ (A), $V_{GE}=15$ (V)

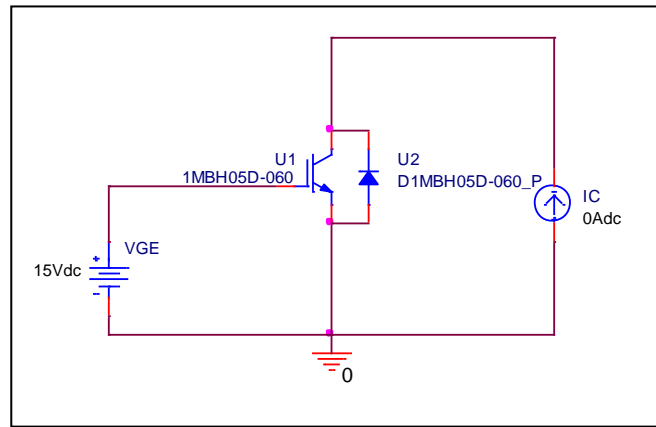
Parameter	Unit	Measurement	Simulation	%Error
Qge	nc	3.500	3.516	0.446
Qgc	nc	8.000	7.995	-0.065
Qg	nc	17.500	17.313	-1.069

Saturation Characteristics

Circuit Simulation result

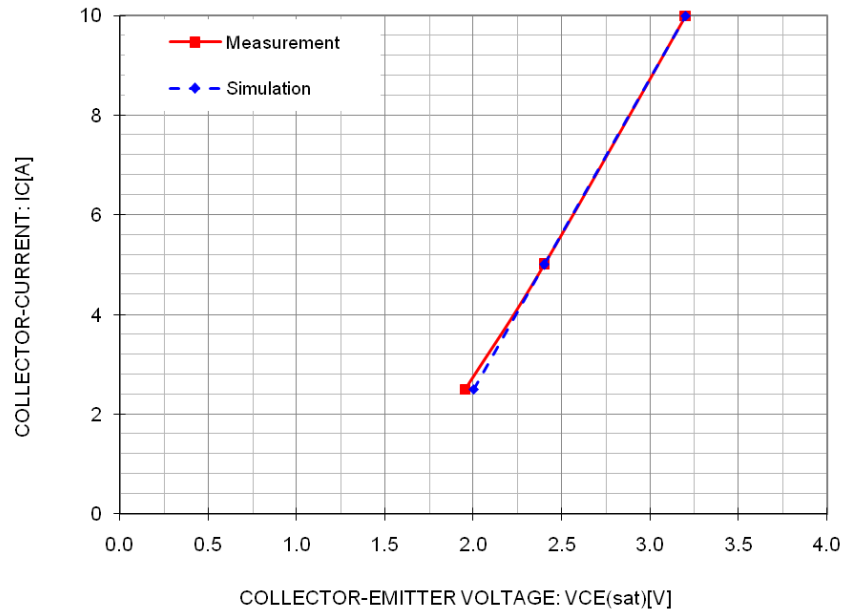


Evaluation circuit



Comparison Graph

Simulation result



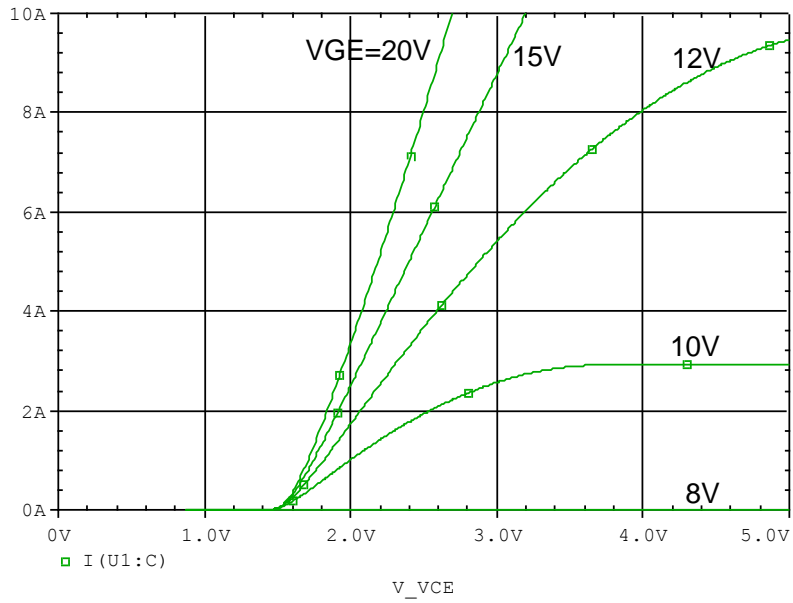
Comparison table

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

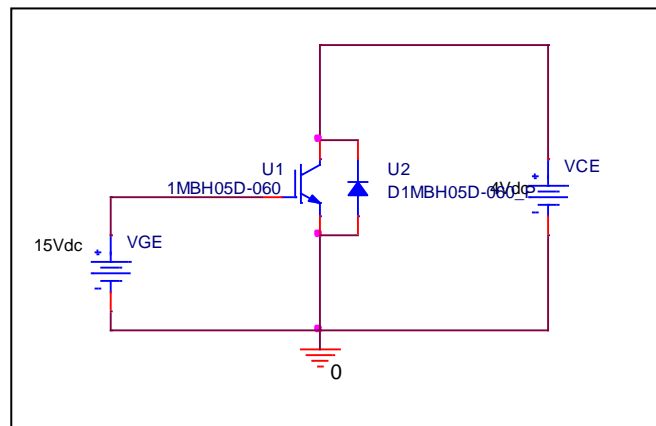
Ic(A)	VCE (V)		%Error
	Measurement	Simulation	
2.5	1.950	2.000	2.55
5.0	2.400	2.399	-0.03
10.0	3.200	3.199	-0.04

Output Characteristics

Circuit Simulation result

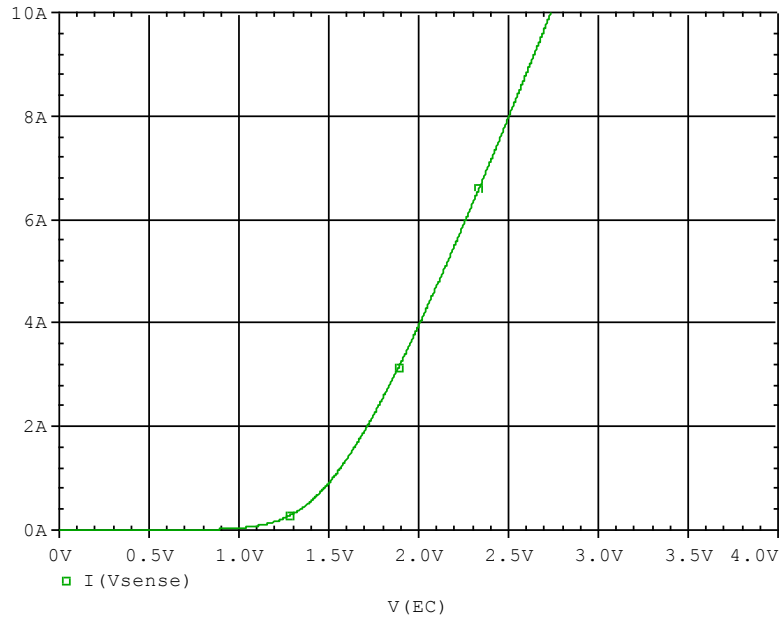


Evaluation circuit

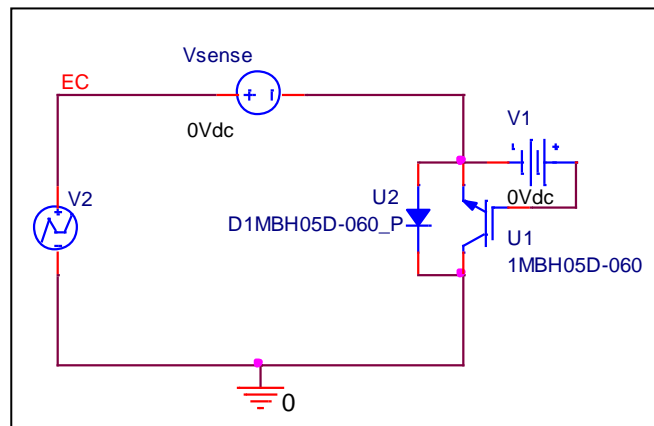


FWD Forward Current Characteristics

Circuit Simulation result

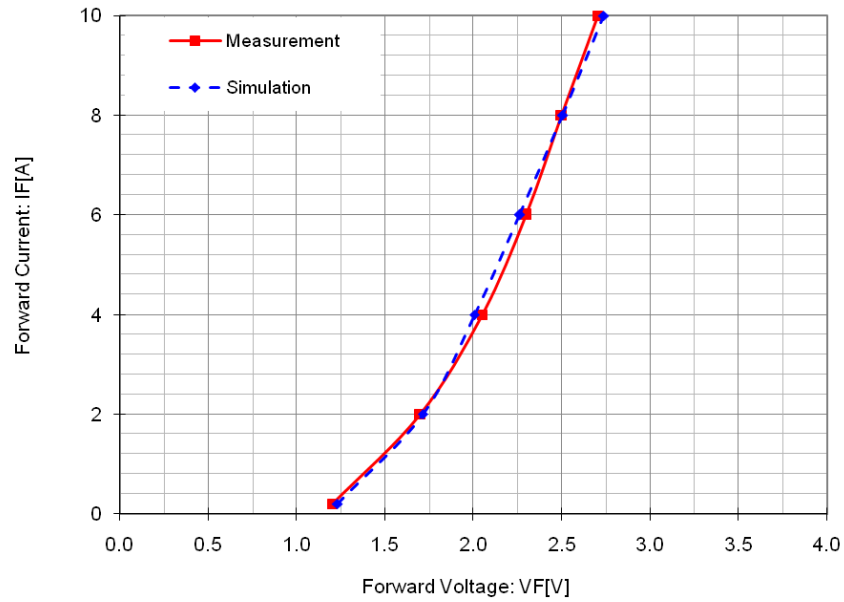


Evaluation circuit



Comparison Graph

Simulation result

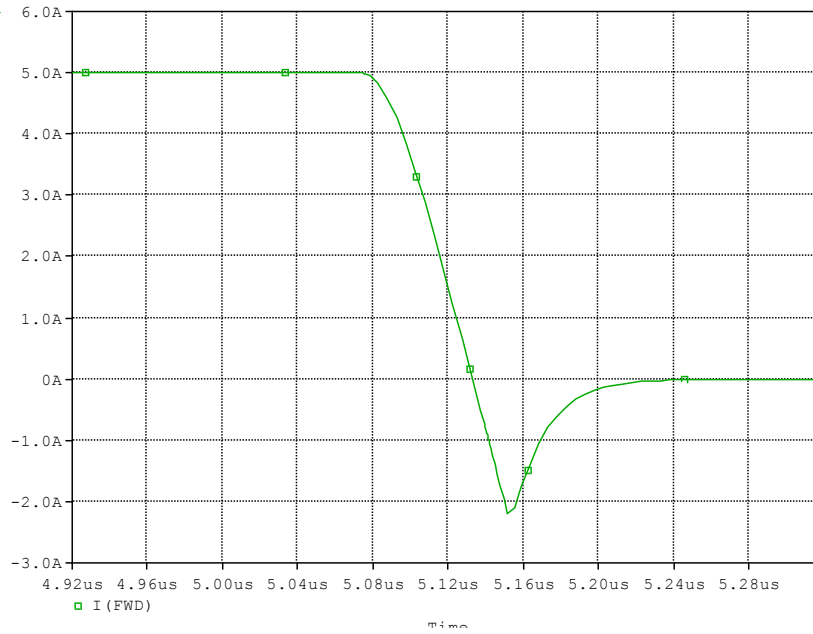


Comparison table

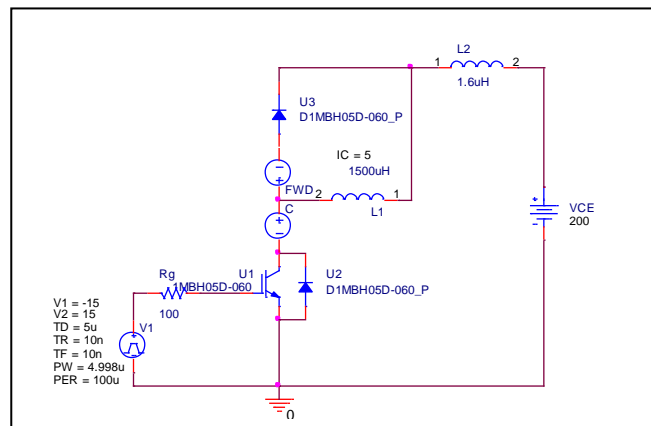
IF(A)	VF (V)		%Error
	Measurement	Simulation	
0.2	1.200	1.232	2.66
2	1.700	1.713	0.76
4	2.050	2.006	-2.13
6	2.300	2.263	-1.63
8	2.500	2.504	0.15
10	2.700	2.736	1.35

Reverse Recovery Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: $V_{CC}=200(V)$, $I_C=5(A)$, $-di/dt=100A/usec$

Parameter	Unit	Measurement	Simulation	%Error
trr	nsec	61.000	61.873	1.43
Irr	A	2.200	2.191	-0.39