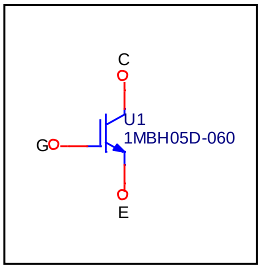
Device Modeling Report

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

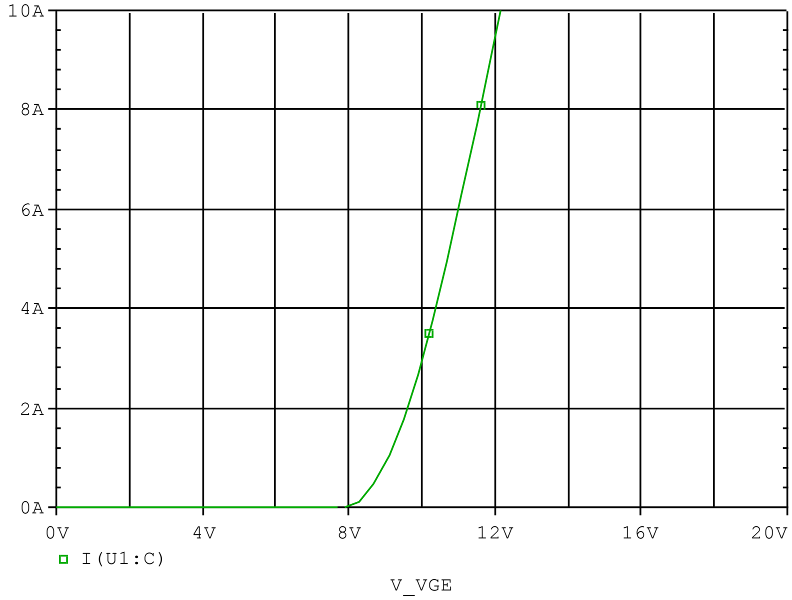
Bee Technologies Inc.

Circuit Configuration

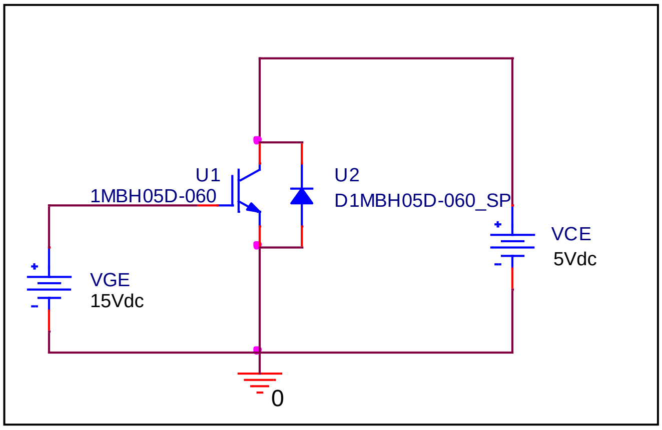


Transfer Characteristics

Circuit Simulation result

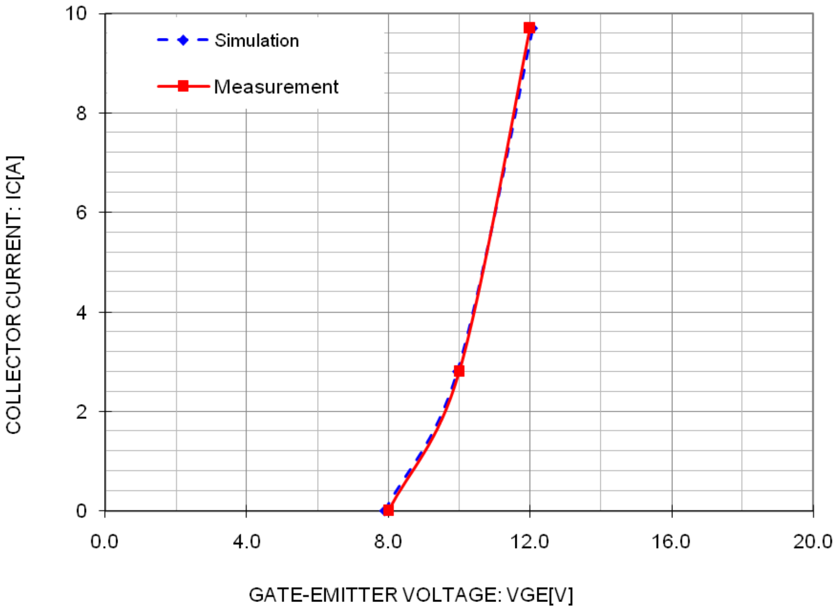


Evaluation circuit



Comparison Graph

Simulation result



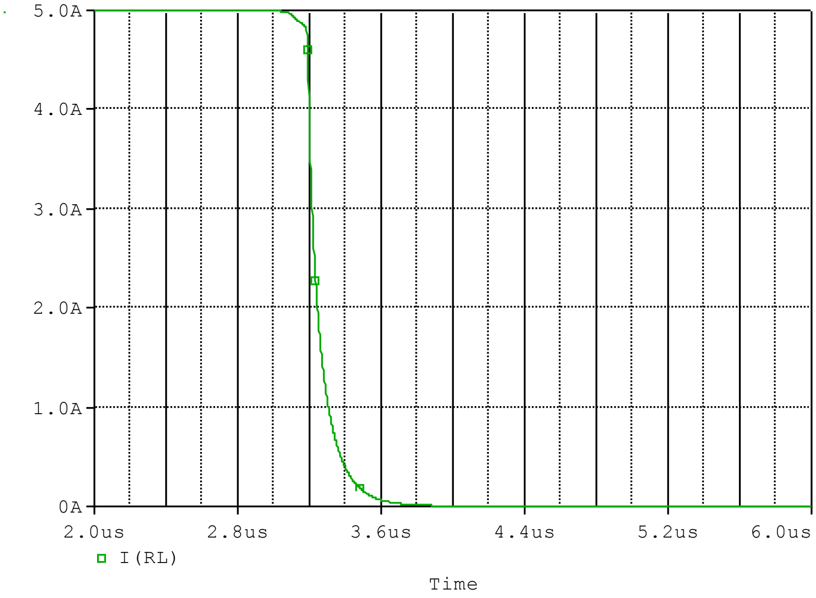
Comparison table

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

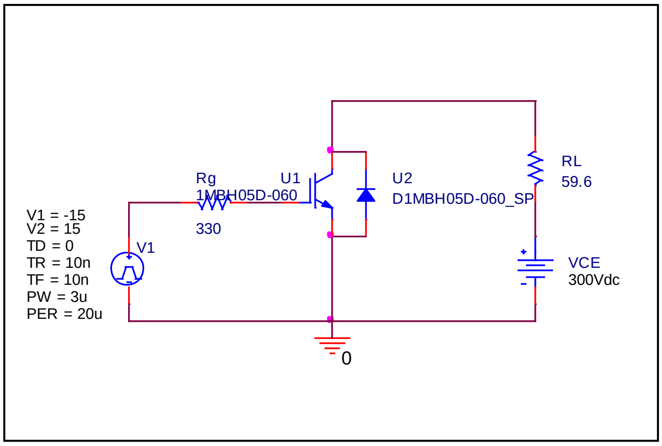
IC (A)	VGE (V)		%Error
	Measurement	Simulation	
0.000	**8.000**	**7.900**	**-1.25**
2.800	**10.000**	**9.943**	**-0.57**
9.700	**12.000**	**12.068**	**0.57**

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

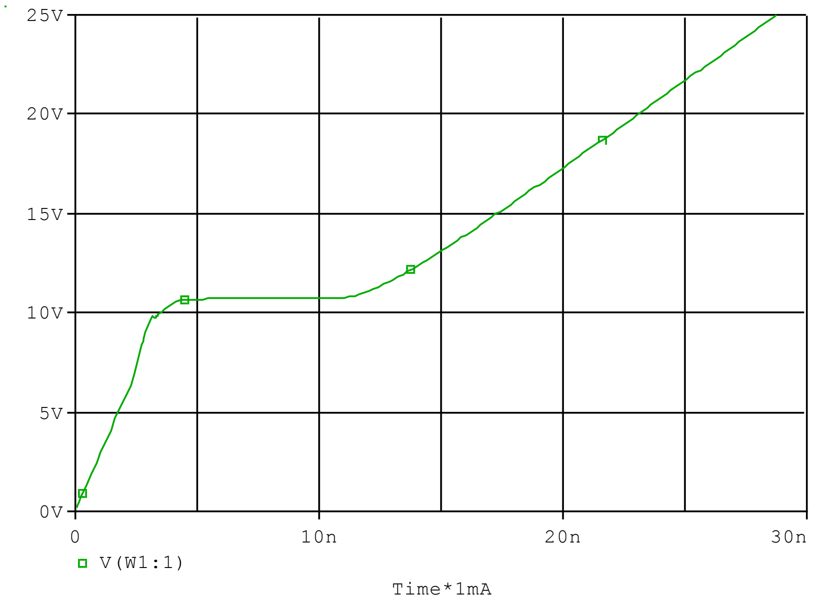


Test condition: IC=5 (A), VCC=300 (V)

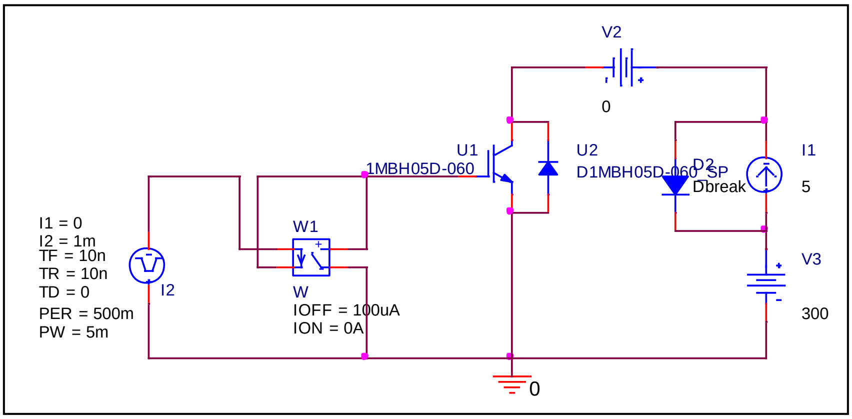
Parameter	Unit	Measurement	Simulation	%Error
tf	us	0.180	0.183	1.404

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

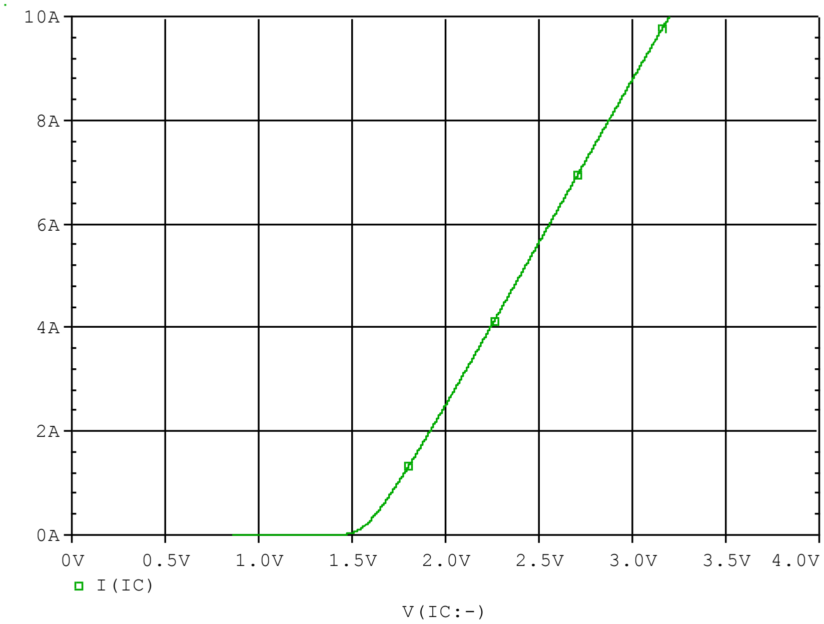


Test condition: V_{CC}=300 (V), I_C=5 (A), V_{GE}=15 (V)

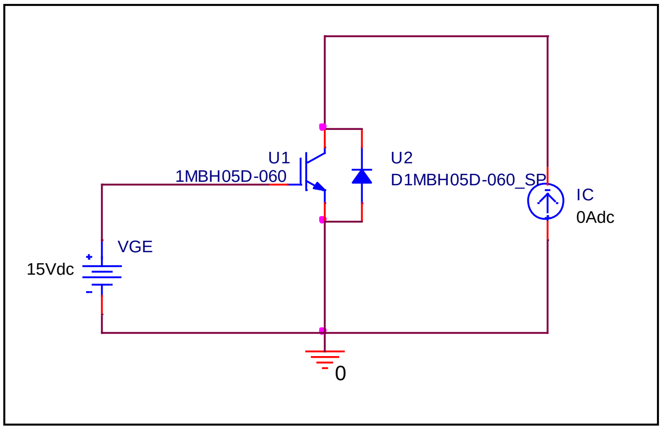
Parameter	Unit	Measurement	Simulation	%Error
Qge	nc	3.500	3.516	0.446
Qgc	nc	8.000	7.995	-0.065
Qg	nc	17.500	17.314	-1.063

Saturation Characteristics

Circuit Simulation result

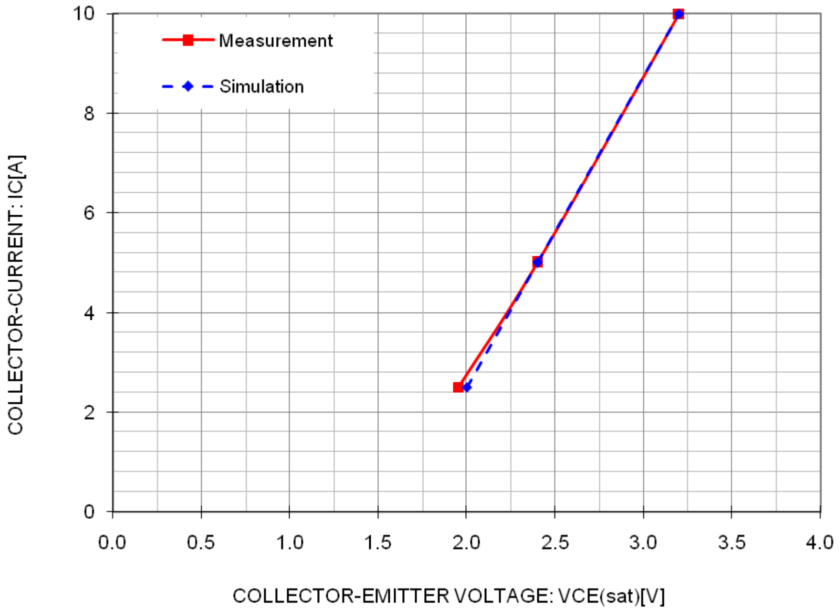


Evaluation circuit



Comparison Graph

Simulation result



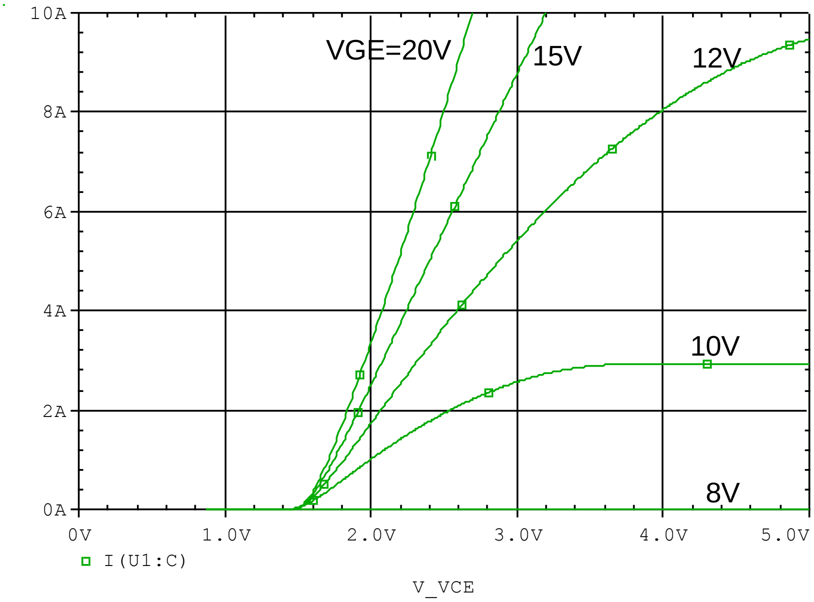
Comparison table

Test condition: VGE =15 (V)

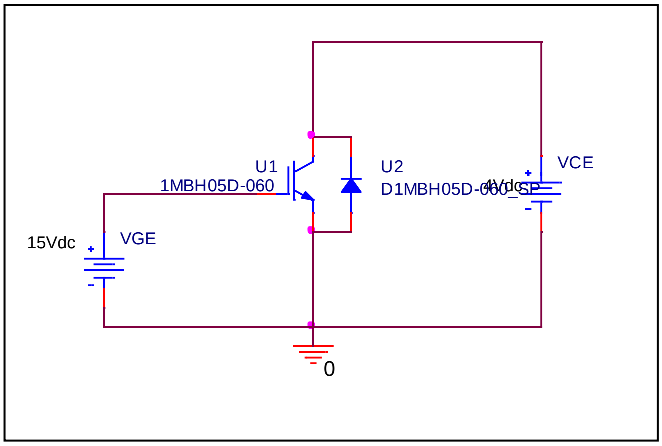
Ic(A)	VCE (V)		%Error
	Measurement	Simulation	
2.5	1.950	2.000	2.55
5.0	2.400	2.399	-0.03
10.0	3.200	3.199	-0.04

Output Characteristics

Circuit Simulation result

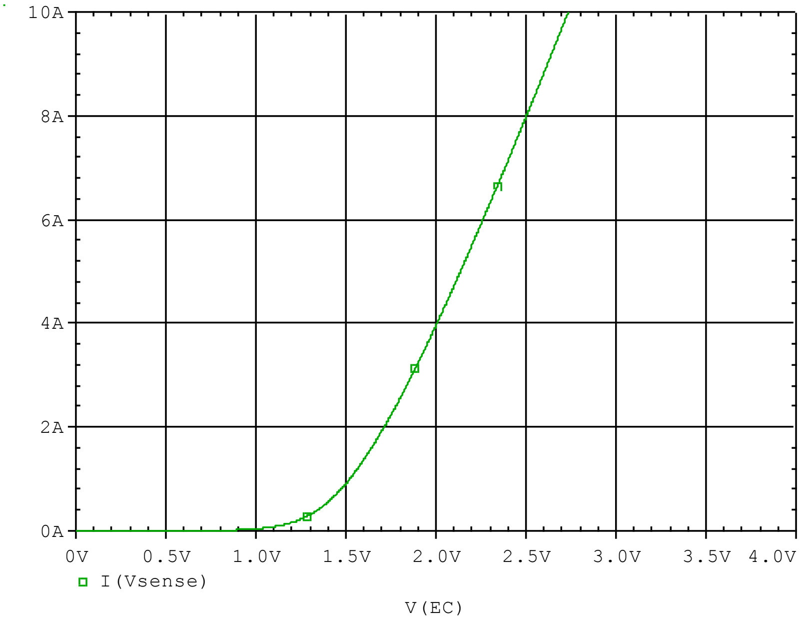


Evaluation circuit

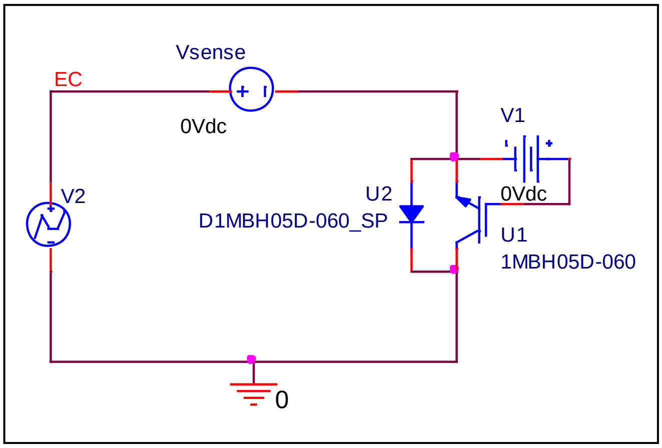


FWD Forward Current Characteristics

Circuit Simulation result

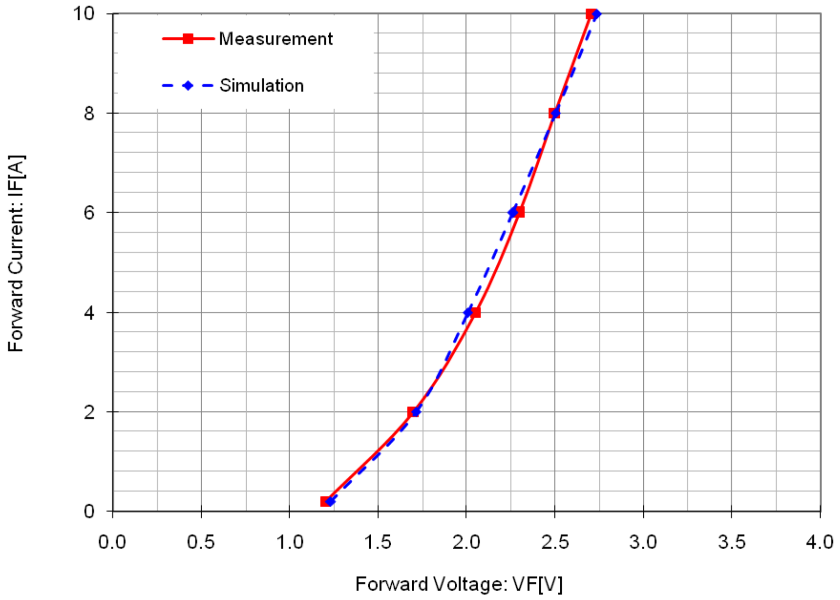


Evaluation circuit



Comparison Graph

Simulation result

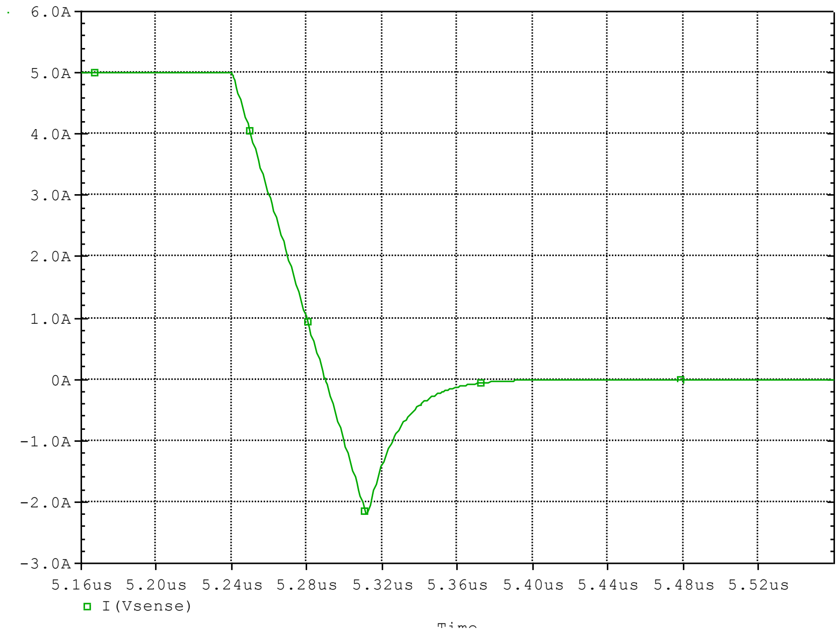


Comparison table

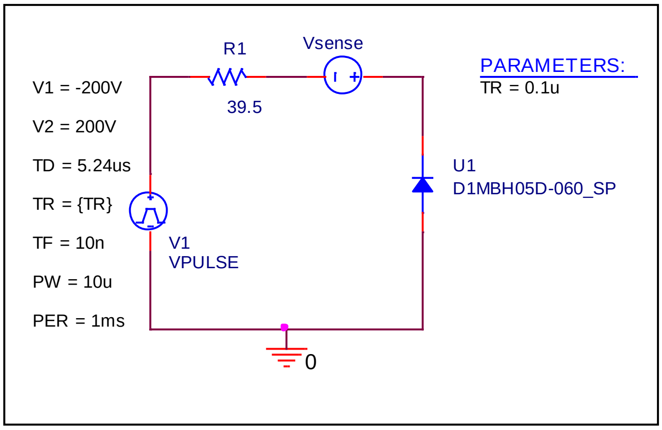
IF(A)	VF (V)		%Error
	Measurement	Simulation	
0.2	1.200	1.232	2.65
2	1.700	1.713	0.74
4	2.050	2.006	-2.16
6	2.300	2.262	-1.66
8	2.500	2.503	0.11
10	2.700	2.735	1.30

Reverse Recovery Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: VCC=200 (V), IC=5 (A), -di/dt=100 (A/us)

Parameter	Unit	Measurement	Simulation	%Error
trr	nsec	61.000	61.054	0.09
Irr	A	2.200	2.194	-0.27