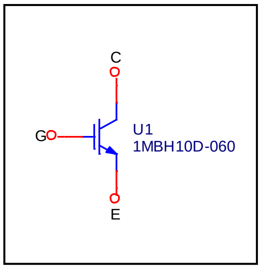
Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: 1MBH10D-060
MANUFACTURER: FUJI ELECTRIC
* REMARK: Free-Wheeling Diode Special Model

Bee Technologies

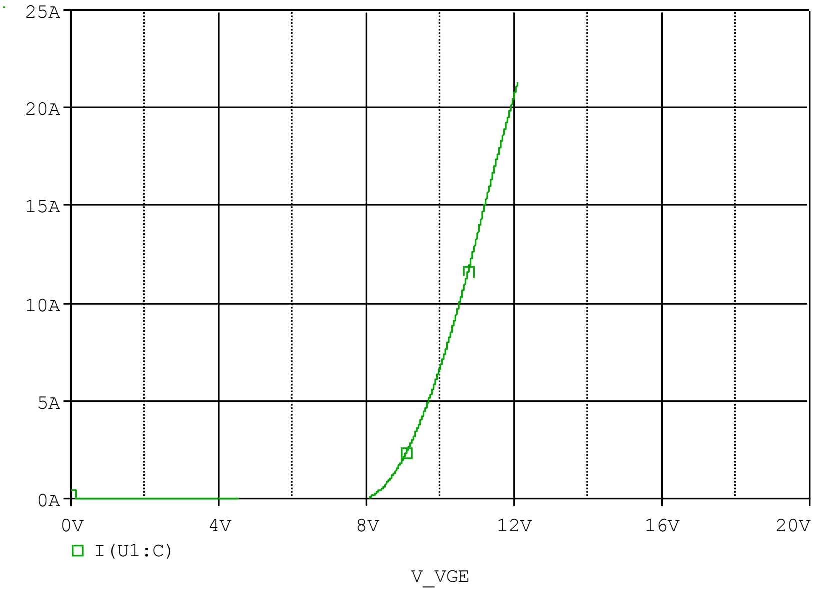
Bee Technologies Inc.

Circuit Configuration

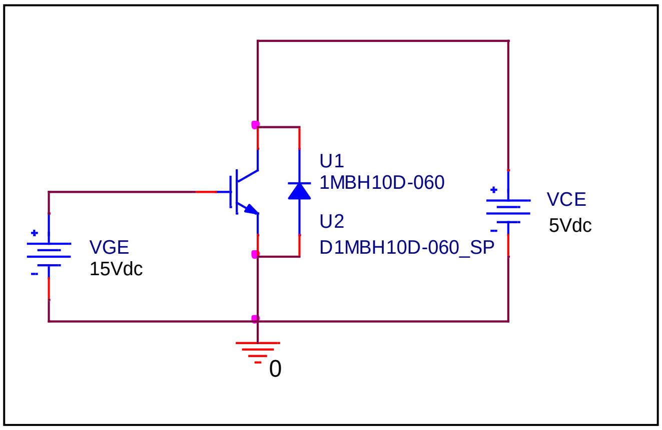


Transfer Characteristics

Circuit Simulation result

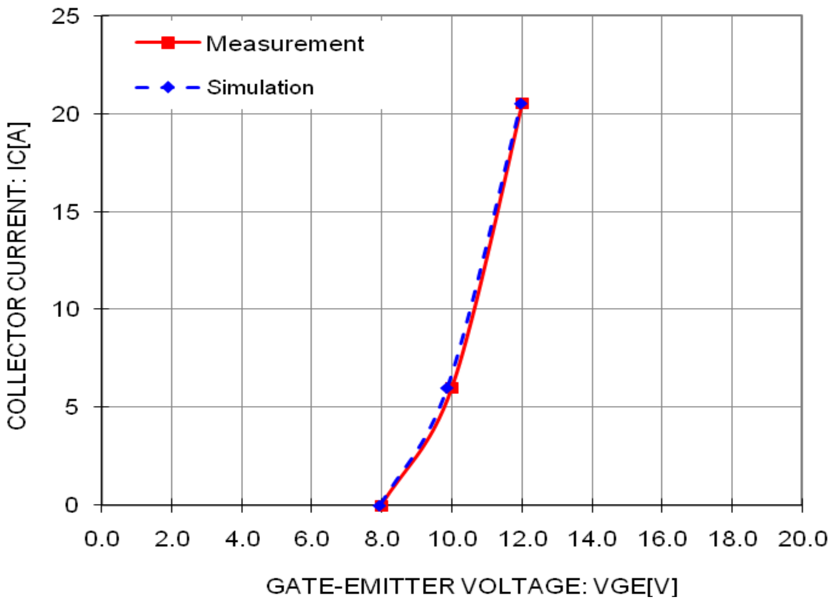


Evaluation circuit



Comparison Graph

Simulation result



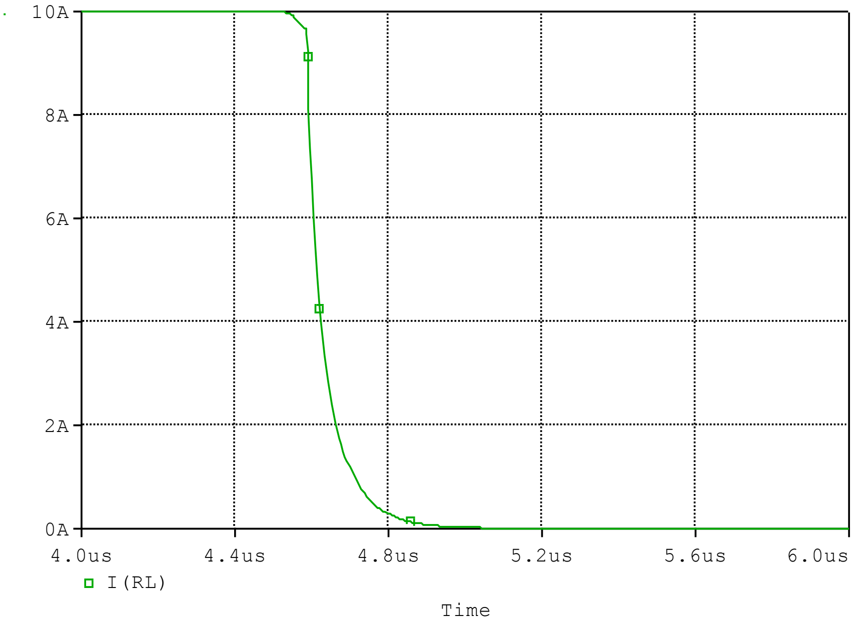
Comparison table

Test condition: VCE =5 (V)

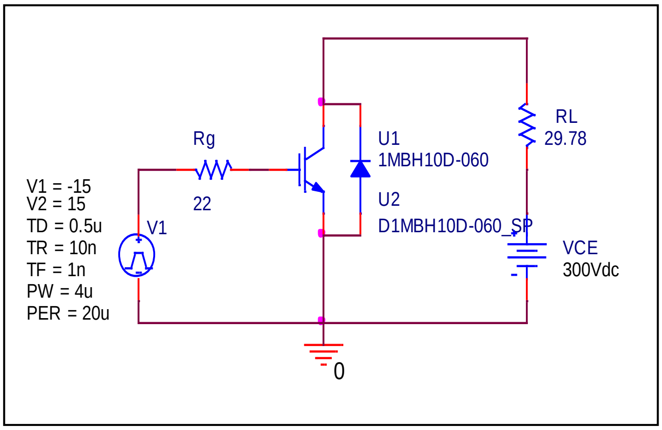
IC (A)	VGE (V)		%Error
	Measurement	Simulation	
0.000	8.000	8.017	0.21
6.000	10.000	9.870	-1.30
20.500	12.000	11.983	-0.14

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

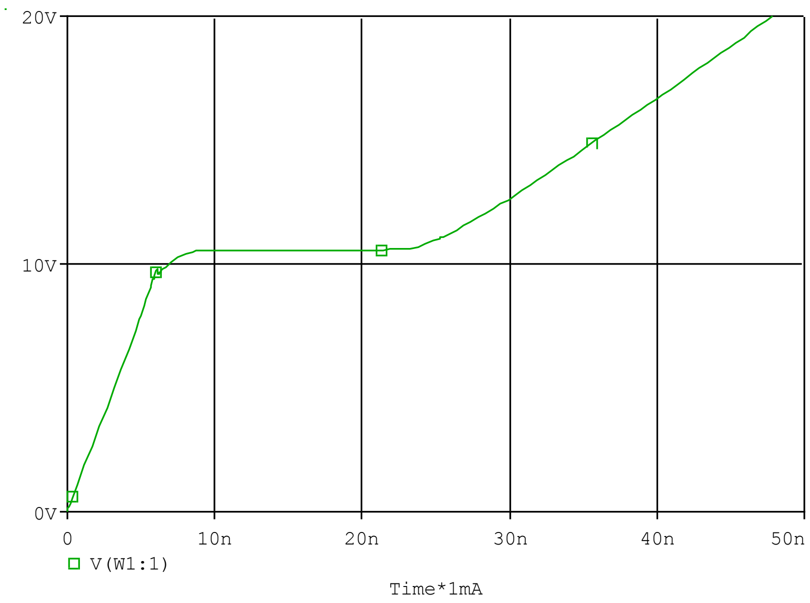


Test condition: IC=10 (A), VCC=300 (V)

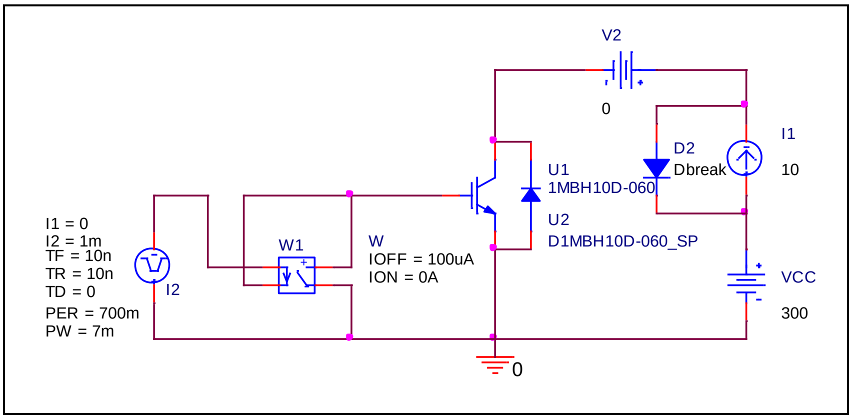
Parameter	Unit	Measurement	Simulation	%Error
tf	ns	120.000	121.333	1.11

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

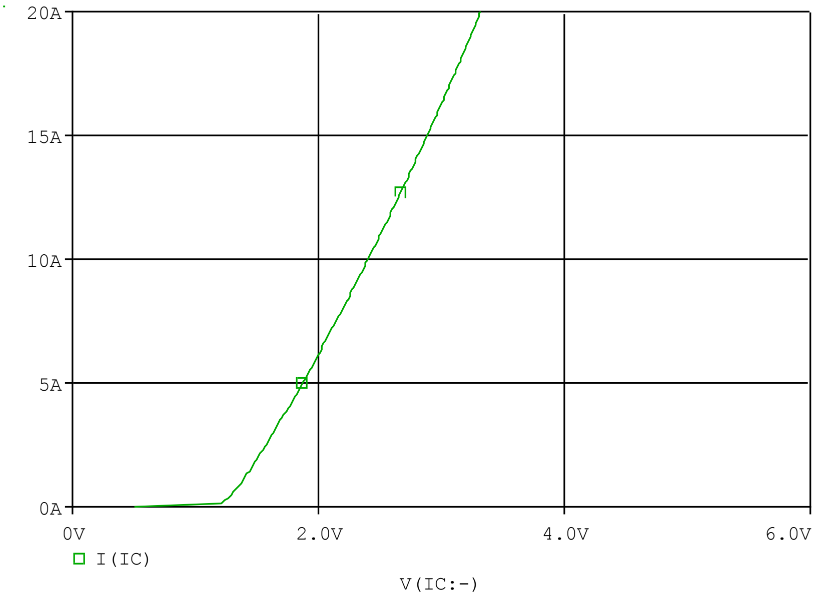


Test condition: V_{CC}=300 (V), I_C=10 (A), V_{GE}=15 (V)

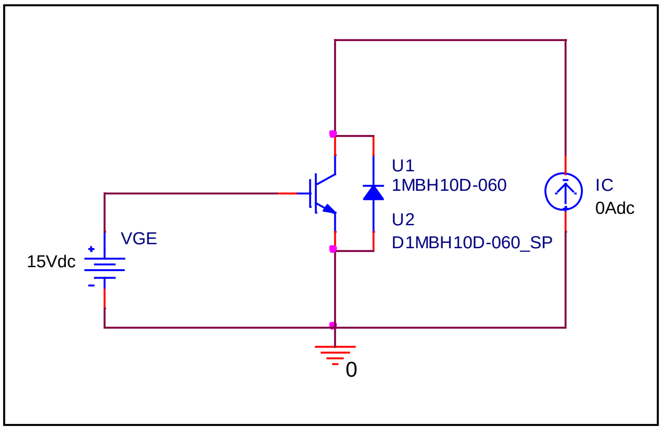
Parameter	Unit	Measurement	Simulation	%Error
Qge	nc	6.000	6.054	0.90
Qgc	nc	17.500	17.189	-1.78
Qg	nc	35.600	35.891	0.817

Saturation Characteristics

Circuit Simulation result

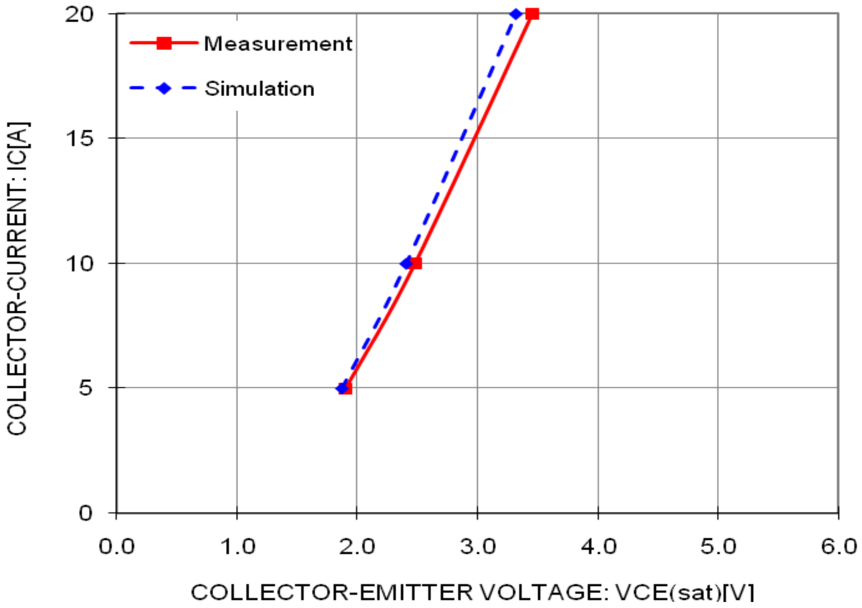


Evaluation circuit



Comparison Graph

Simulation result



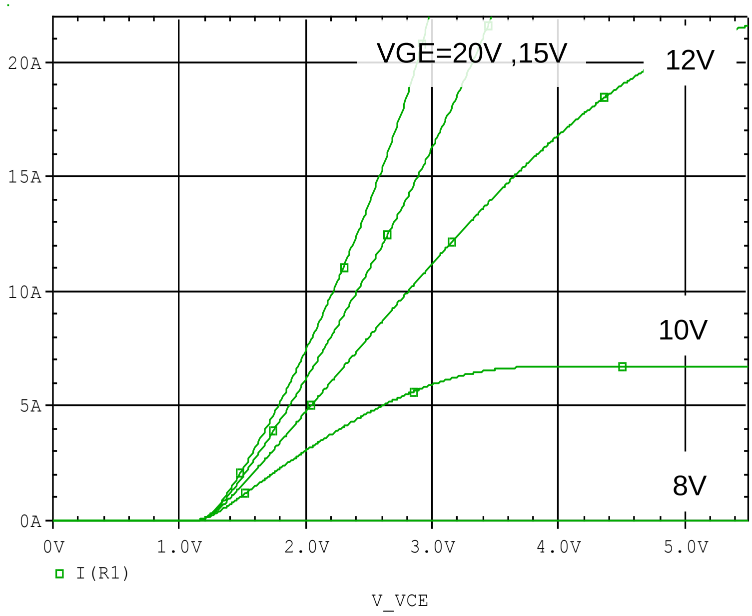
Comparison table

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

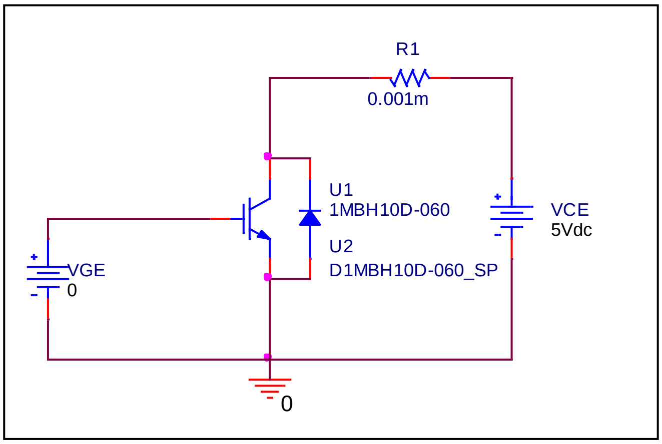
IC (A)	VCE (V)		%Error
	Measurement	Simulation	
5	1.900	1.869	-1.63
10	2.475	2.404	-2.87
20	3.450	3.319	-3.80

Output Characteristics

Circuit Simulation result

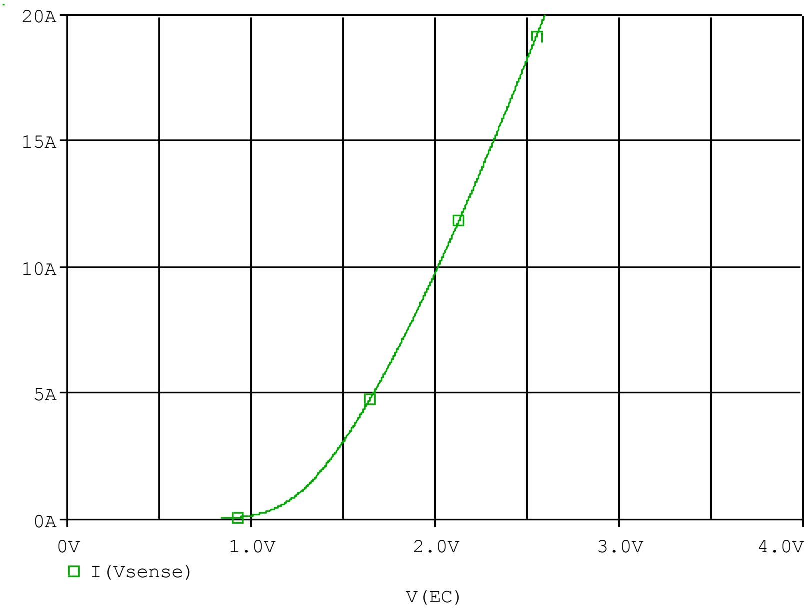


Evaluation circuit

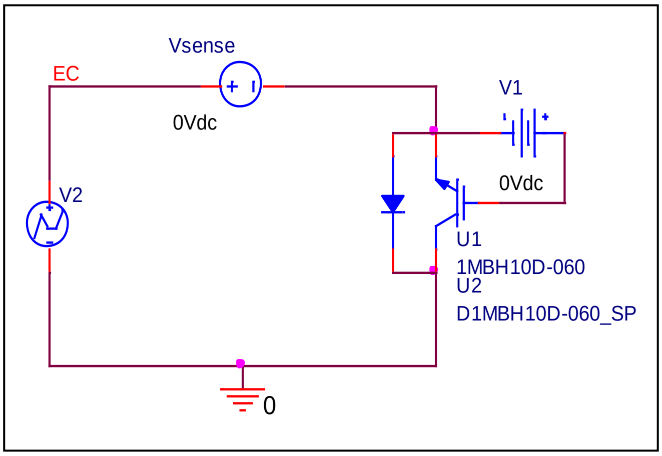


FWD Forward Current Characteristics

Circuit Simulation result

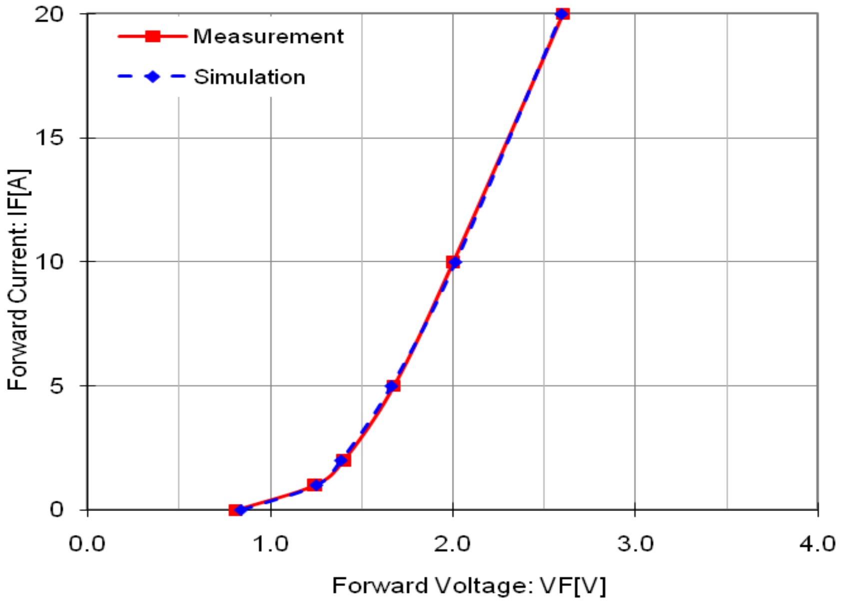


Evaluation circuit



Comparison Graph

Simulation result

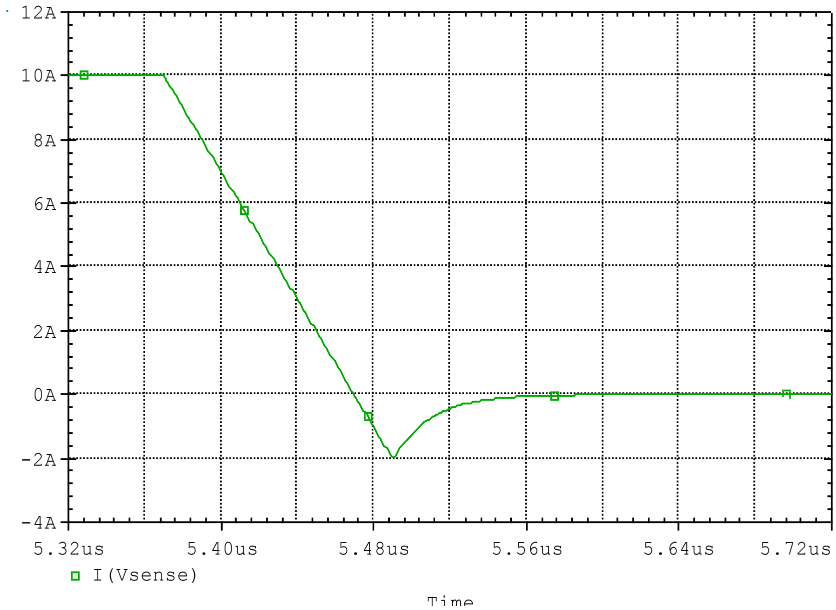


Comparison table

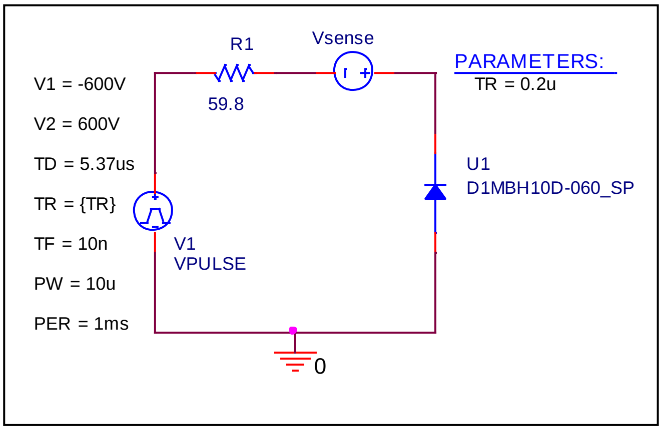
IF(A)	VF (V)		%Error
	Measurement	Simulation	
0	0.810	0.841	3.83
1	1.240	1.253	1.02
2	1.400	1.388	-0.84
5	1.675	1.665	-0.61
10	2.000	2.015	0.75
20	2.600	2.597	-0.11

Reverse Recovery Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: VCC=600 (V), IC=10 (A), -dit/dt=100A/usec.

Parameter	Unit	Measurement	Simulation	%Error
trr	nsec	65.000	65.059	0.09
Irr	A	2.000	1.991	-0.47