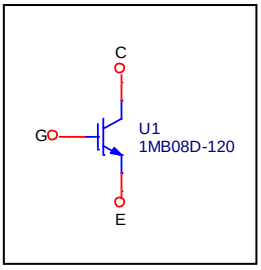
Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: 1MBH08D-120
MANUFACTURER: FUJI ELECTRIC
*REMARK: Free-Wheeling Diode Professional Model

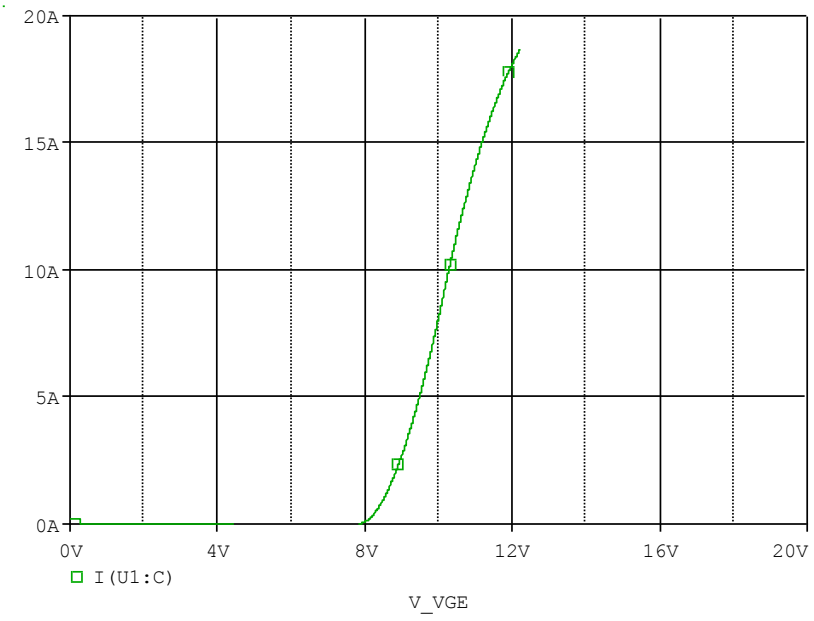
Bee Technologies Inc.

Circuit Configuration

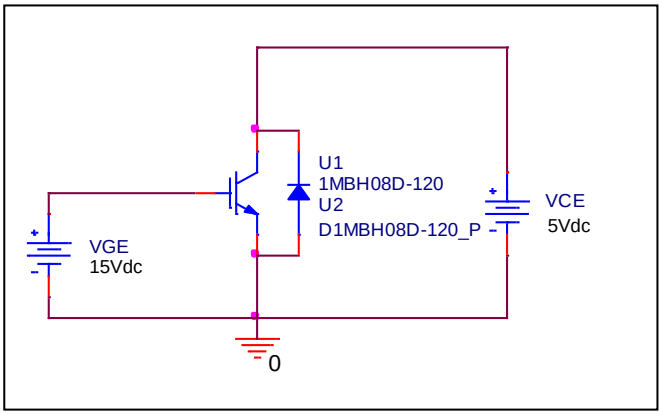


Transfer Characteristics

Circuit Simulation result

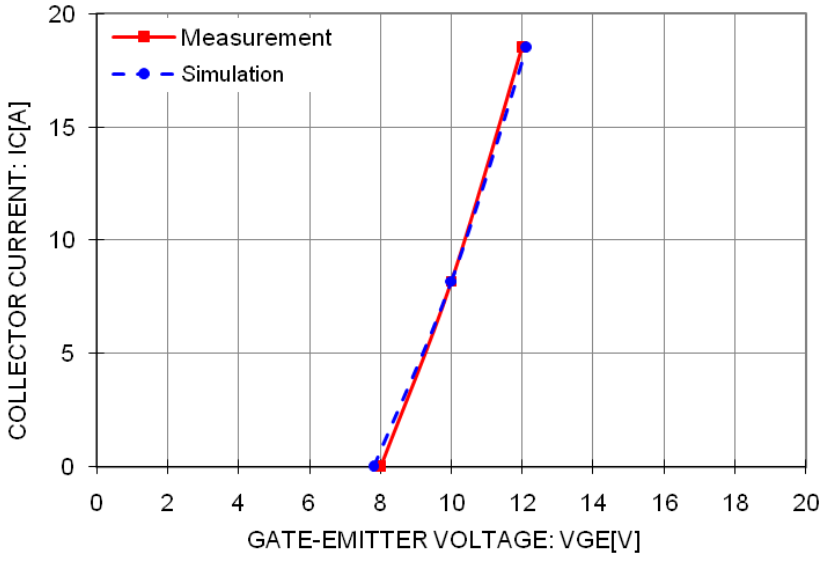


Evaluation circuit



Comparison Graph

Simulation result



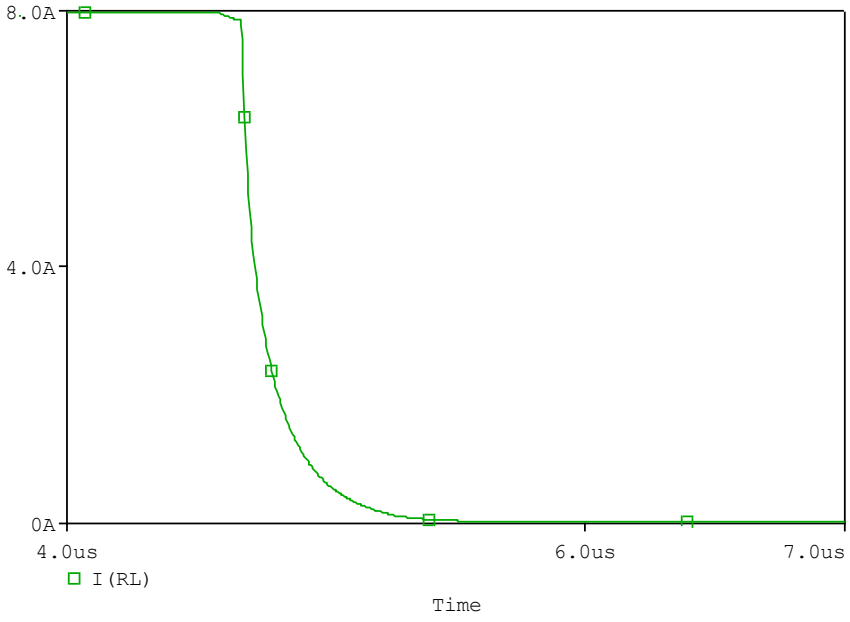
Comparison table

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

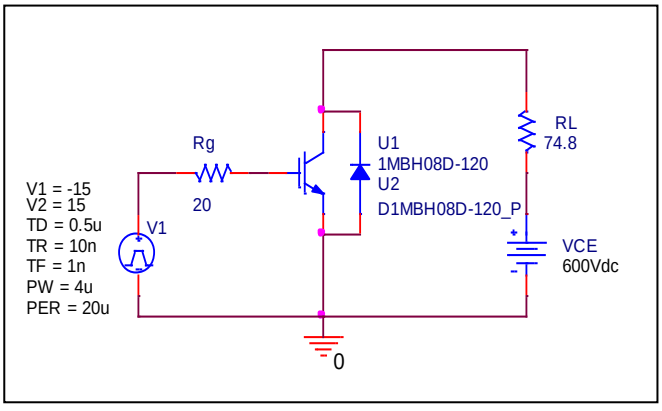
IC (A)	VGE (V)		%Error
	Measurement	Simulation	
0.000	8.000	7.812	-2.35
8.200	10.000	10.011	0.11
18.500	12.000	12.138	1.15

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

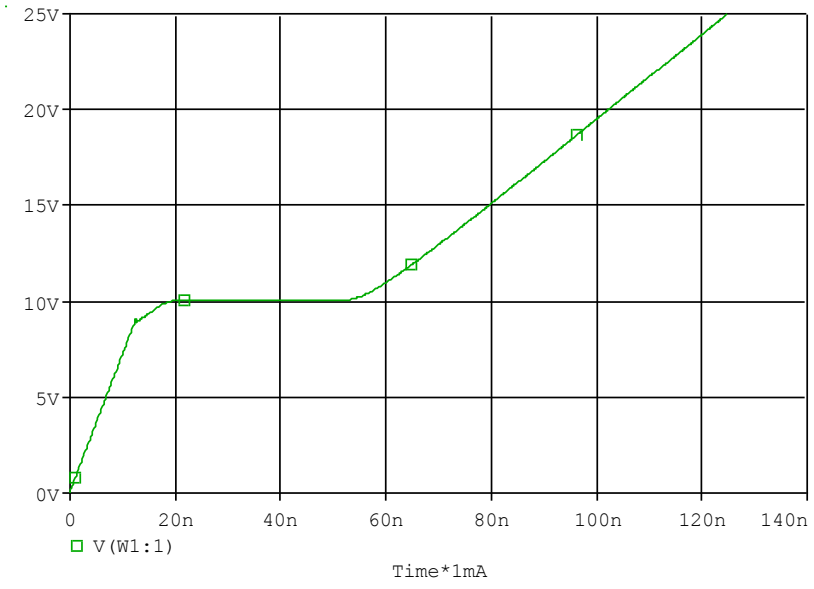


Test condition: I_C=8 (A), V_{CC}=600 (V)

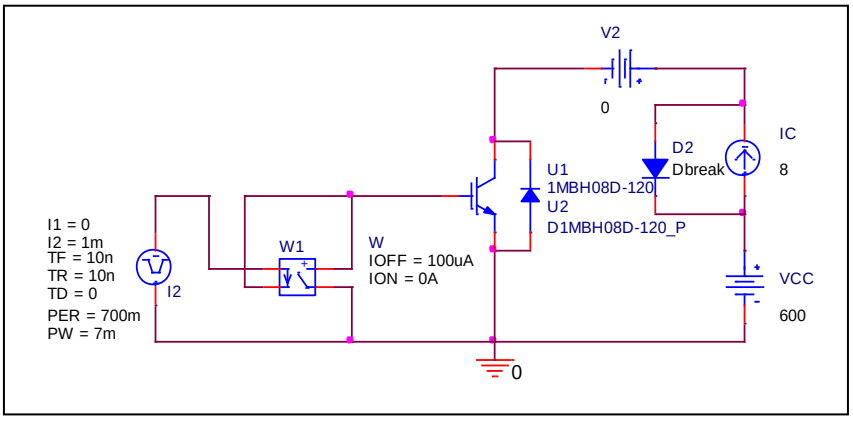
Parameter	Unit	Measurement	Simulation	%Error
tf	us	0.280	0.284	1.46

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

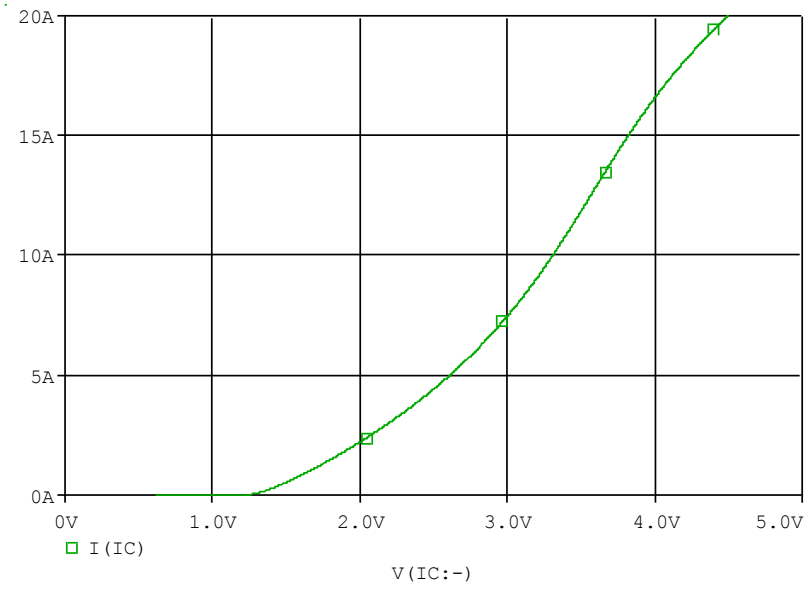


Test condition: V_{CC}=600 (V), I_C=8 (A), V_{GE}=15 (V)

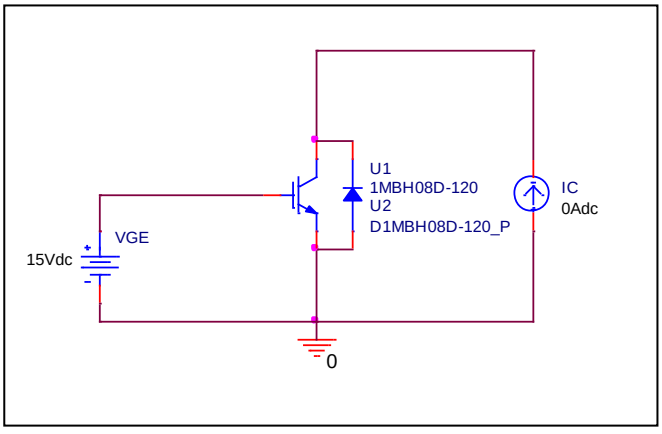
Parameter	Unit	Measurement	Simulation	%Error
Qge	nc	15.000	15.244	1.63
Qgc	nc	42.000	40.366	-3.89
Qg	nc	80.000	79.530	-0.59

Saturation Characteristics

Circuit Simulation result

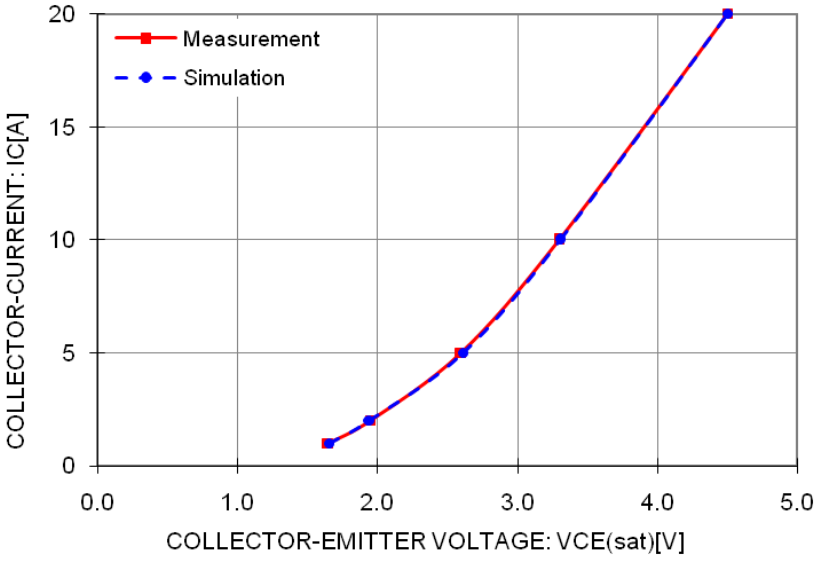


Evaluation circuit



Comparison Graph

Simulation result



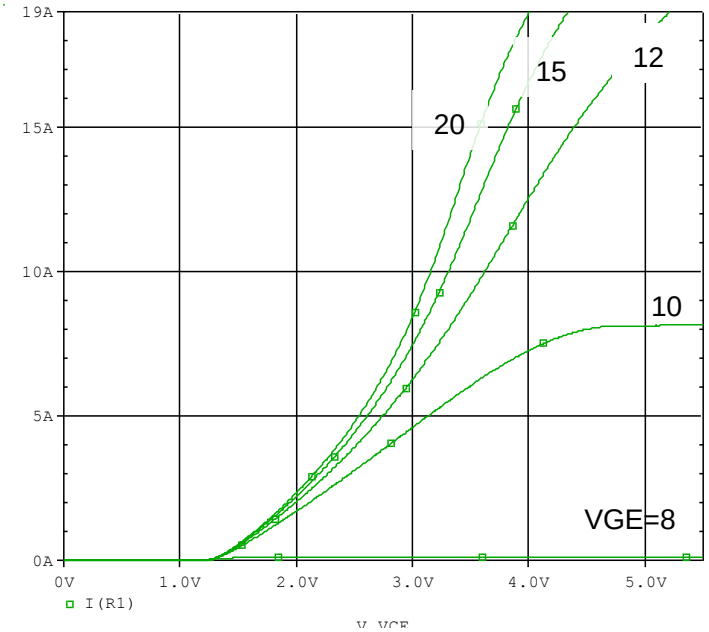
Comparison table

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

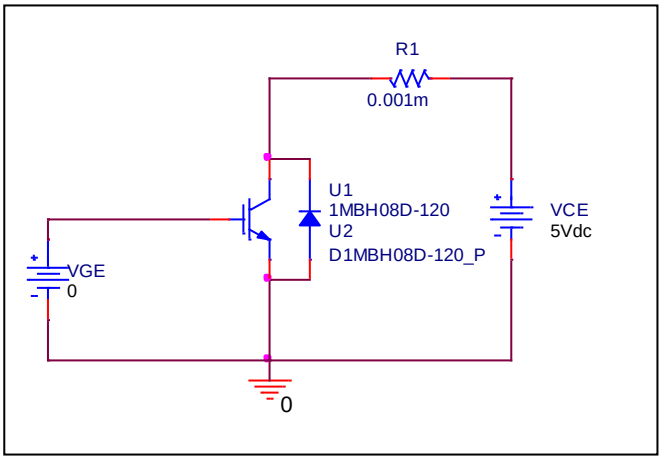
Ic(A)	VCE (V)		%Error
	Measurement	Simulation	
1	1.650	1.656	0.39
2	1.950	1.945	-0.25
5	2.600	2.610	0.39
10	3.300	3.309	0.26
20	4.500	4.502	0.04

Output Characteristics

Circuit Simulation result

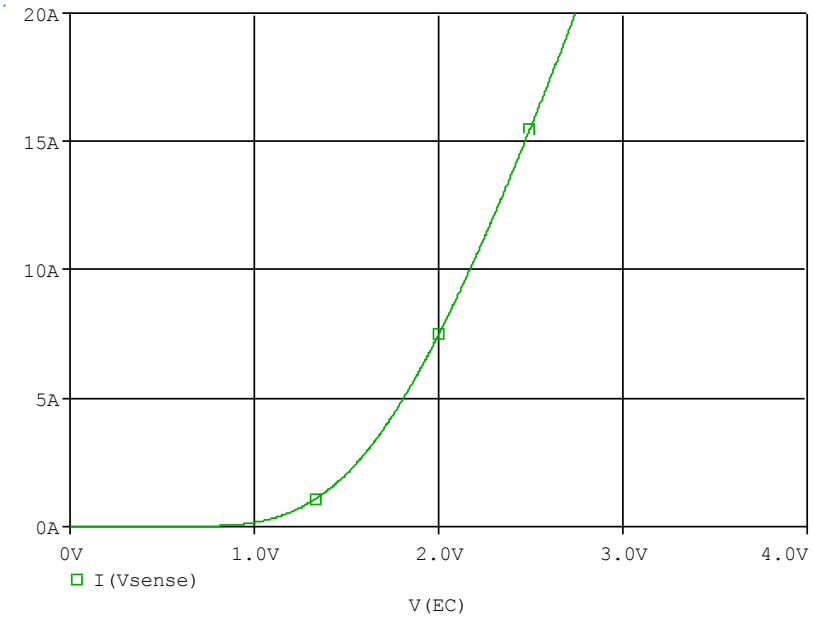


Evaluation circuit

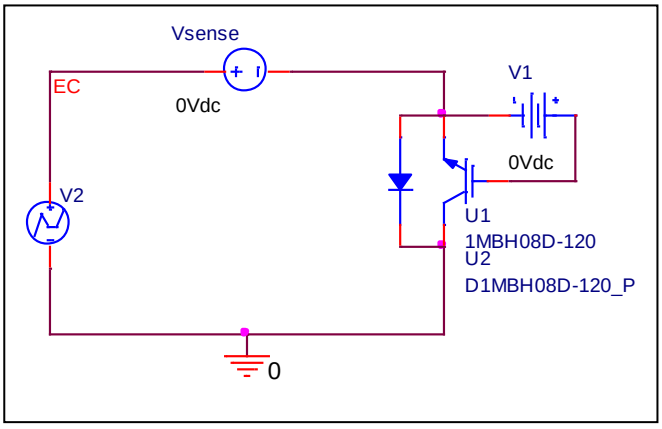


FWD Forward Current Characteristics

Circuit Simulation result

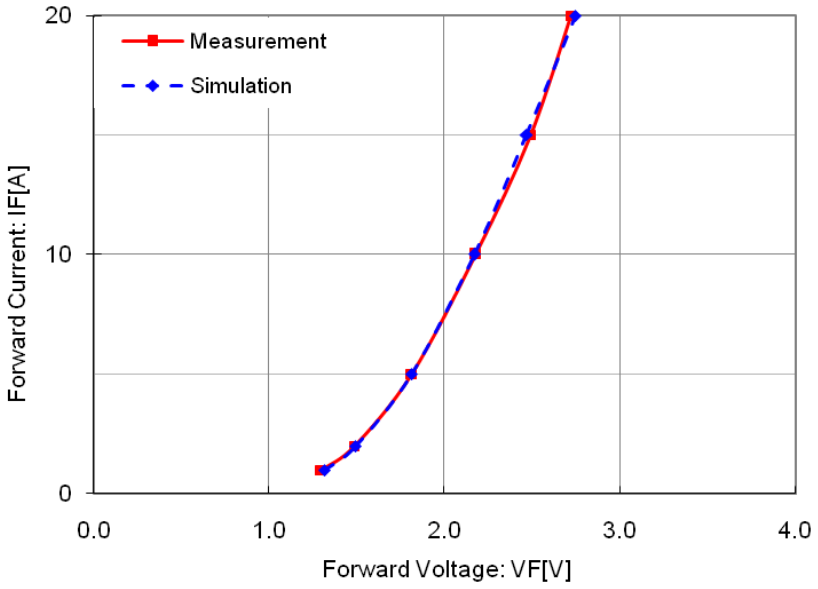


Evaluation circuit



Comparison Graph

Simulation result

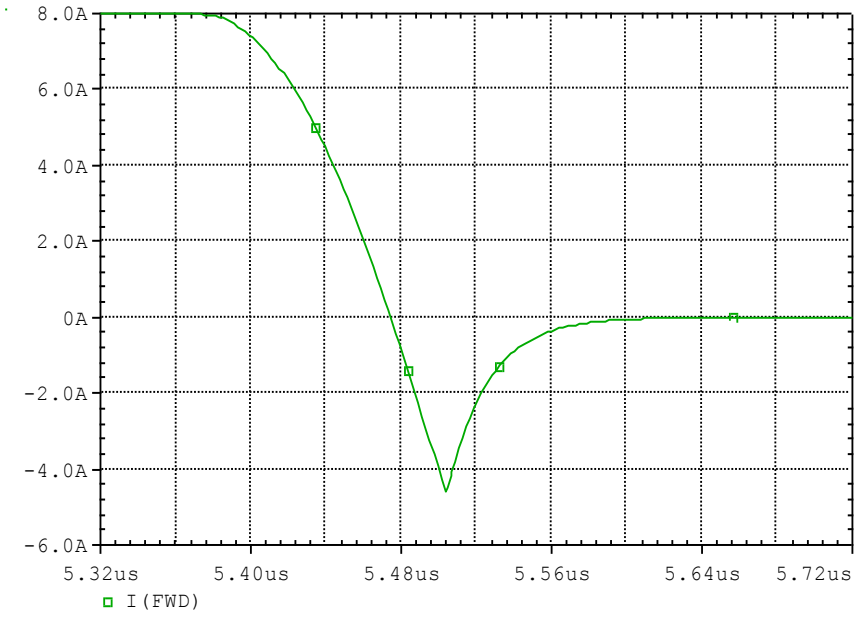


Comparison table

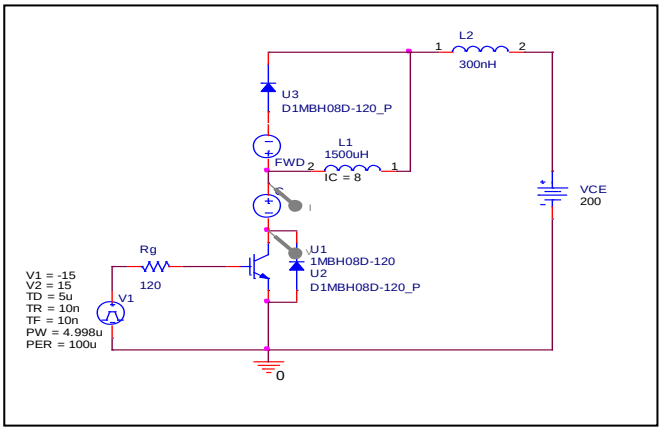
IF(A)	VF (V)		%Error
	Measurement	Simulation	
1	1.300	1.315	1.12
2	1.485	1.492	0.48
5	1.815	1.810	-0.30
10	2.180	2.169	-0.50
15	2.490	2.469	-0.86
20	2.720	2.744	0.87

Reverse Recovery Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: VCC=200 (V), IC=8 (A), -di/dt= 100 (A/us)

Parameter	Unit	Measurement	Simulation	%Error
trr	nsec	82.000	80.285	-2.09
Irr	A	4.600	4.605	0.11