

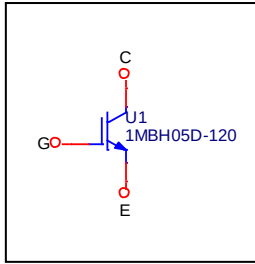
Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: 1MBH05D-120
MANUFACTURER: Fuji Electric
*REMARK: Free-Wheeling Diode Professional Model



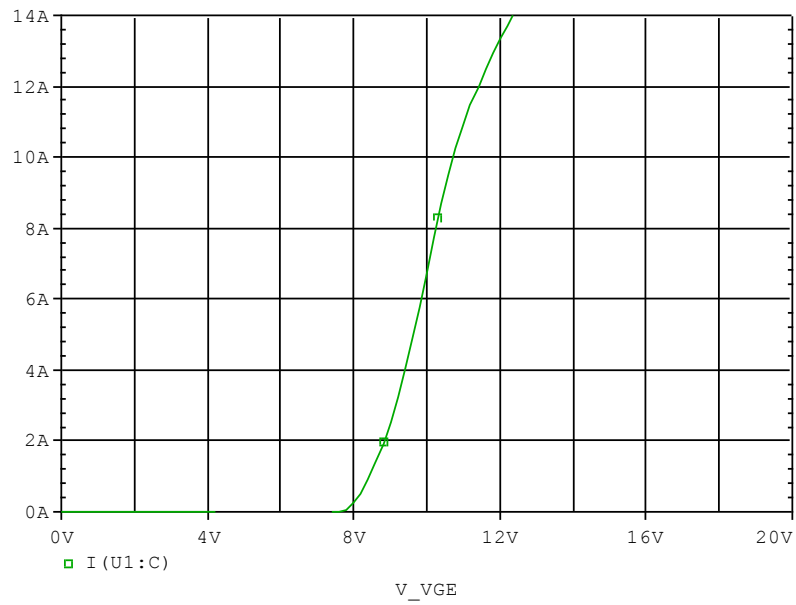
Bee Technologies Inc.

Circuit Configuration

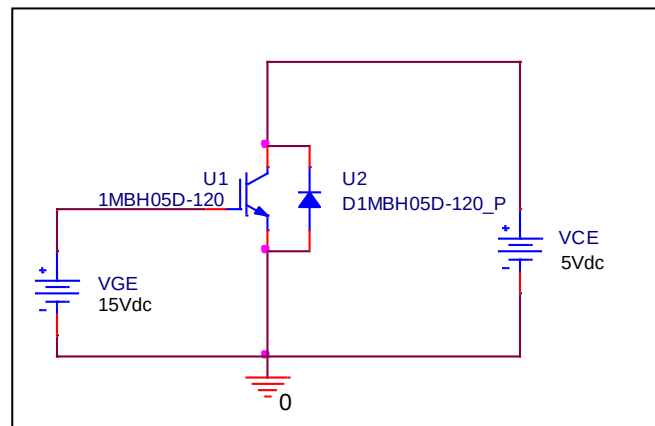


Transfer Characteristics

Circuit Simulation result

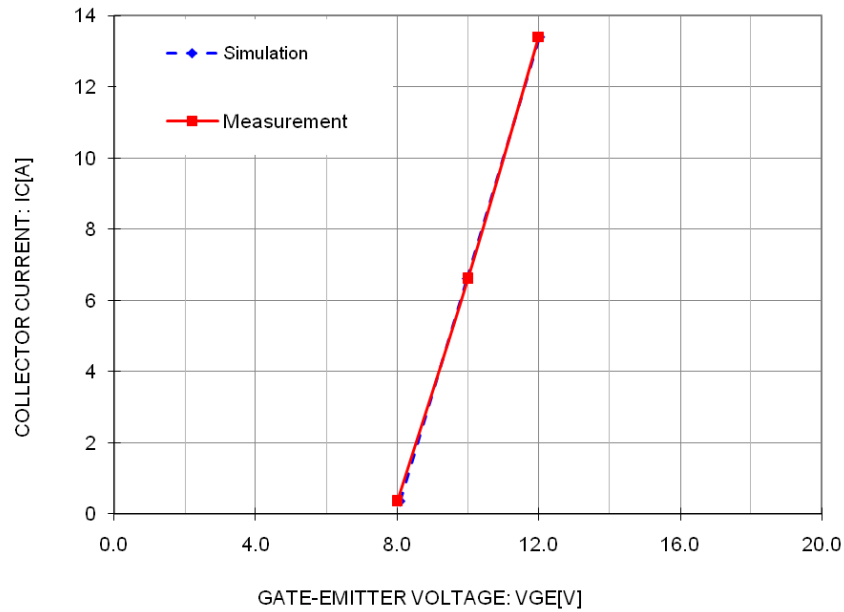


Evaluation circuit



Comparison Graph

Simulation result



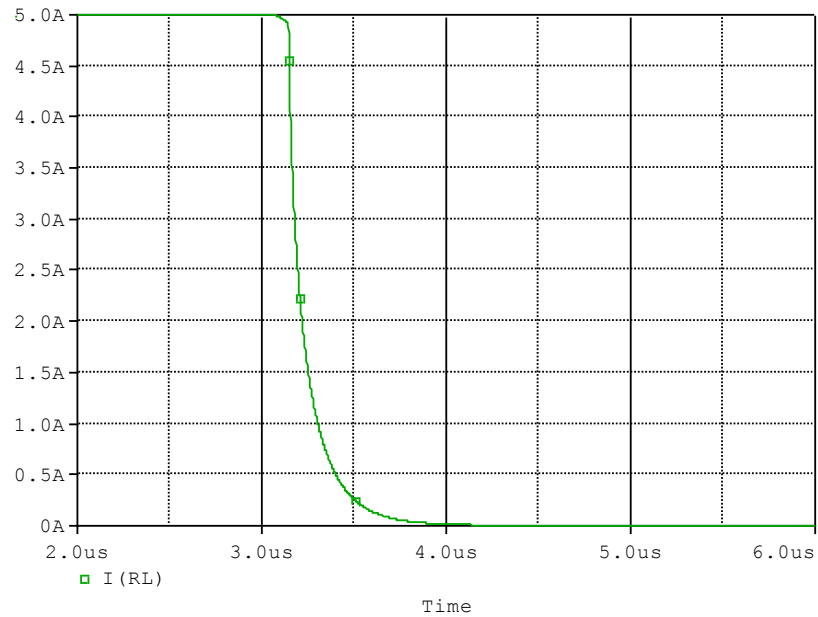
Comparison table

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

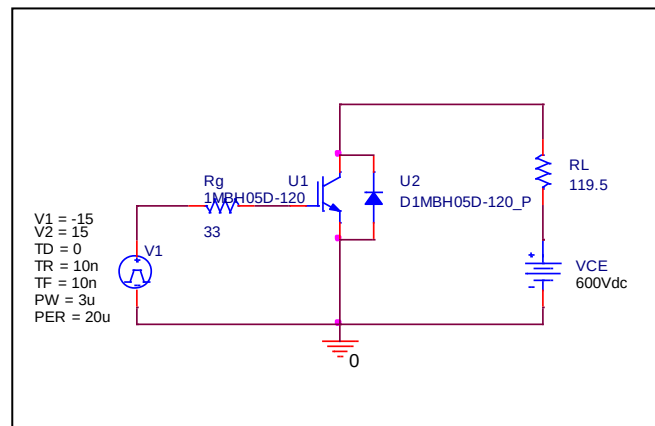
IC (A)	VGE (V)		%Error
	Measurement	Simulation	
0.350	8.000	8.082	1.02
6.600	10.000	9.970	-0.30
13.400	12.000	12.037	0.31

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

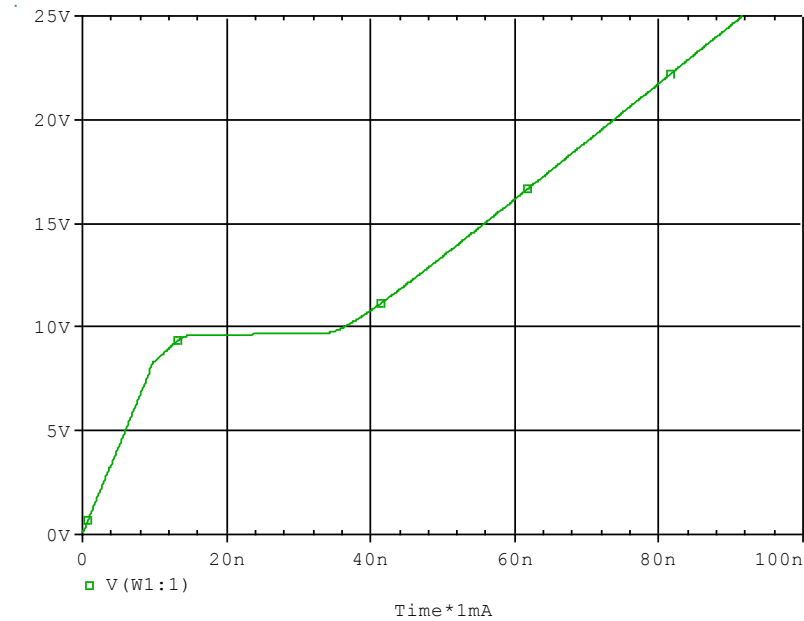


Test condition: $I_C=5$ (A), $V_{CC}=600$ (V)

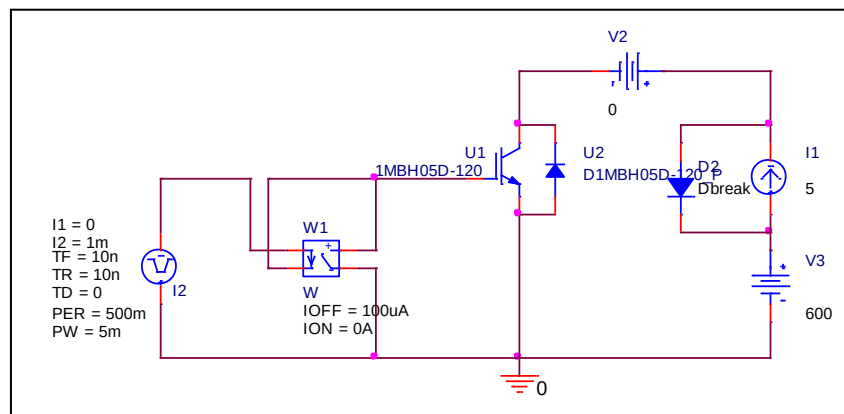
Parameter	Unit	Measurement	Simulation	%Error
tf	μs	0.250	0.252	0.78

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

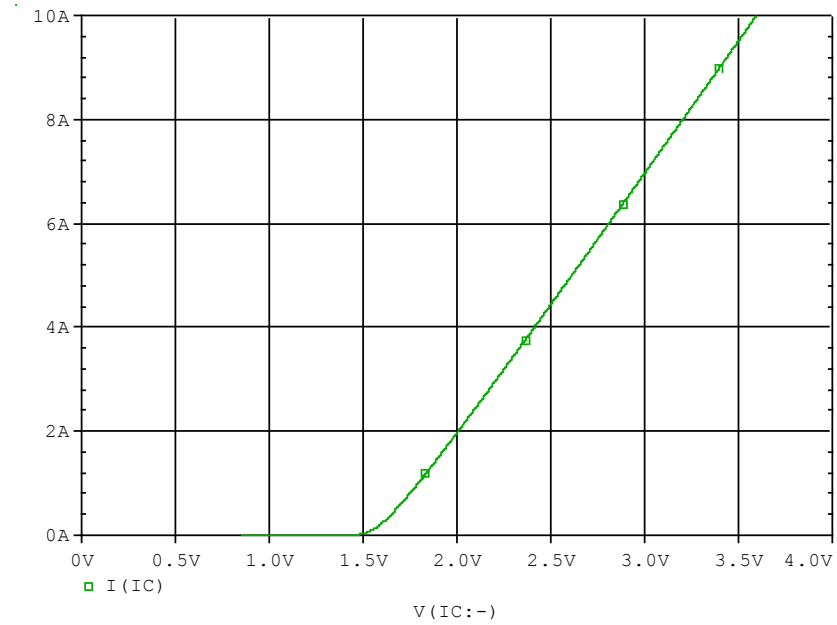


Test condition: $V_{CC}=600$ (V), $I_C=5$ (A), $V_{GE}=15$ (V)

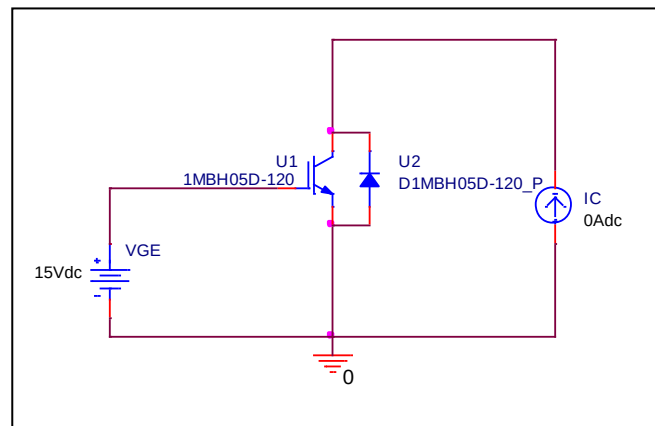
Parameter	Unit	Measurement	Simulation	%Error
Qge	nc	12.000	12.000	0.00
Qgc	nc	26.000	25.565	-1.67
Qg	nc	55.000	55.822	1.49

Saturation Characteristics

Circuit Simulation result

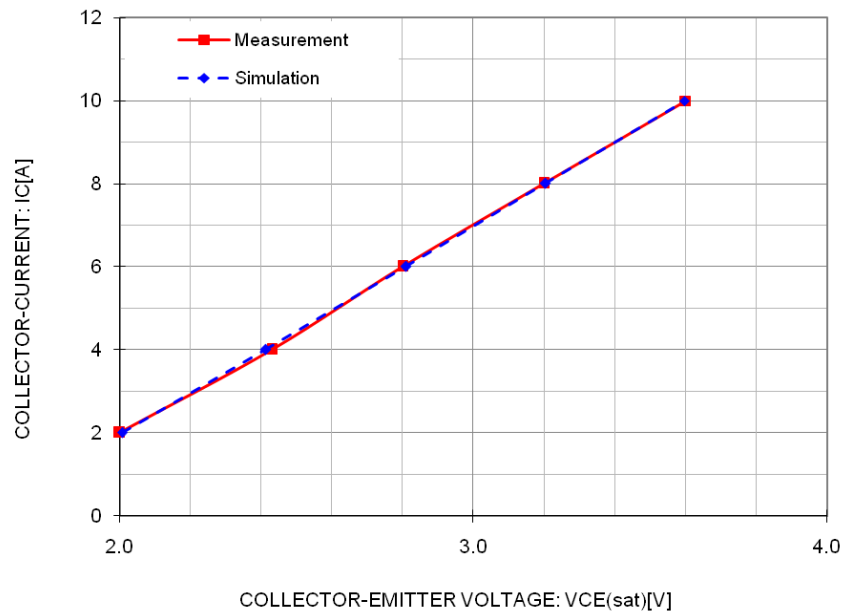


Evaluation circuit



Comparison Graph

Simulation result



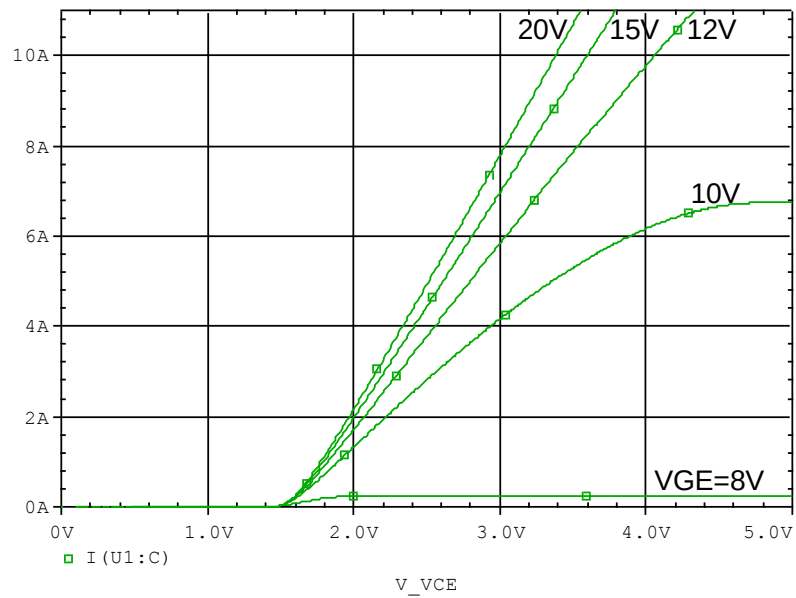
Comparison table

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

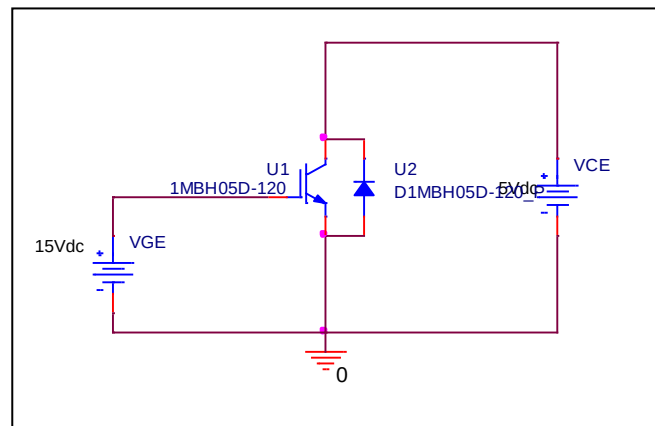
Ic(A)	VCE (V)		%Error
	Measurement	Simulation	
2.0	2.000	2.01	0.35
4.0	2.430	2.41	-0.71
6.0	2.800	2.81	0.35
8.0	3.200	3.20	0.12
10.0	3.600	3.60	-0.09

Output Characteristics

Circuit Simulation result

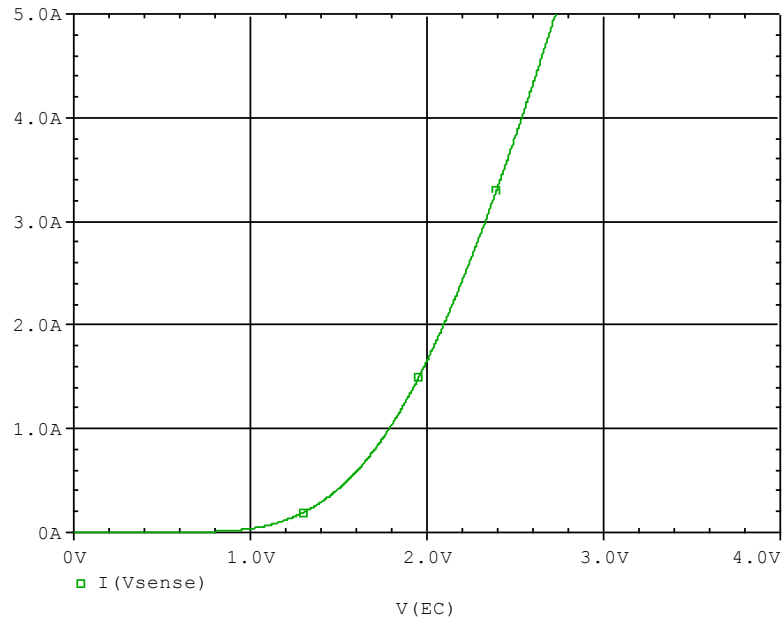


Evaluation circuit

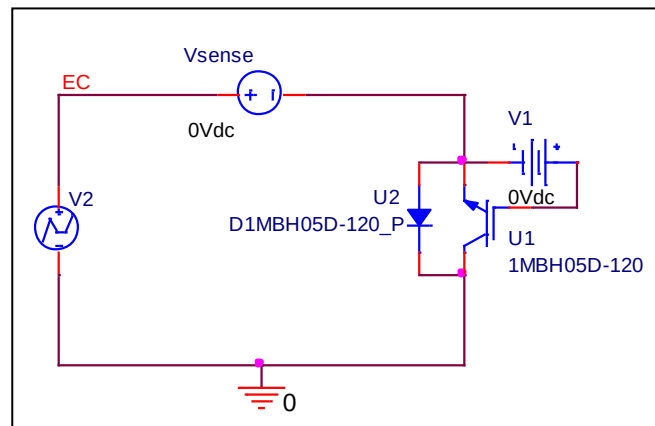


FWD Forward Current Characteristics

Circuit Simulation result

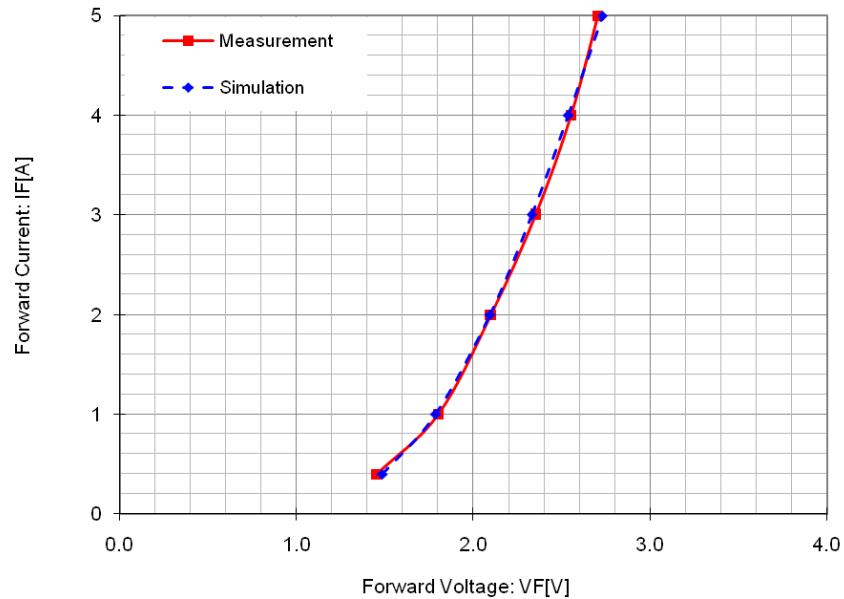


Evaluation circuit



Comparison Graph

Simulation result

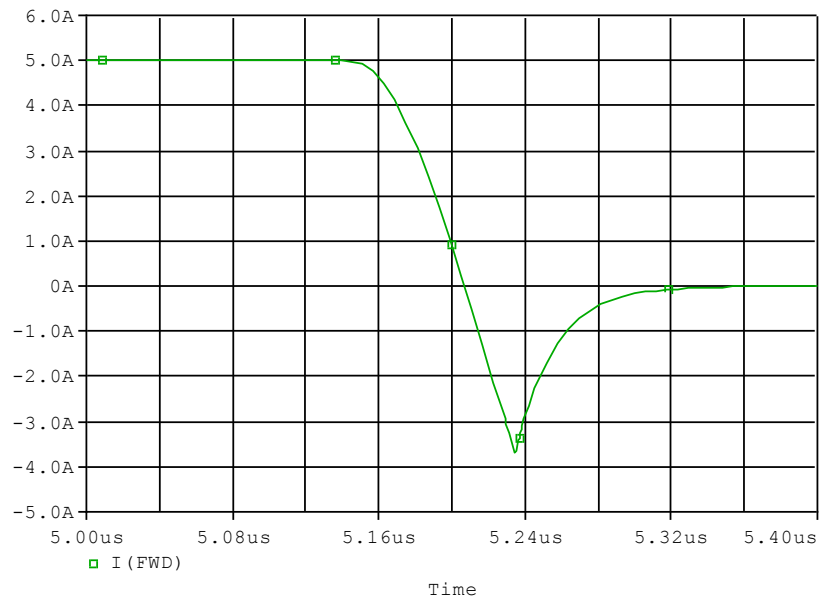


Comparison table

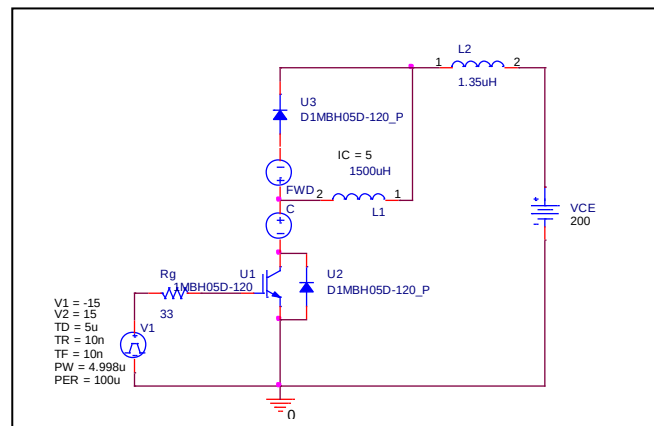
IF(A)	VF (V)		%Error
	Measurement	Simulation	
0.4	1.450	1.485	2.41
1	1.800	1.786	-0.77
2	2.100	2.094	-0.31
3	2.350	2.330	-0.86
4	2.550	2.537	-0.52
5	2.700	2.728	1.02

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	77.000	76.846	-0.20
Irr	A	3.700	3.675	-0.67