

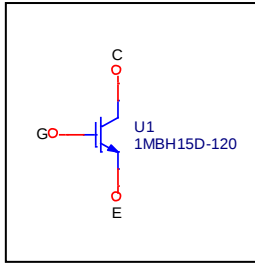
Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: 1MBH15D-120
MANUFACTURER: FUJI ELECTRIC
* REMARK: Free-Wheeling Diode Special Model



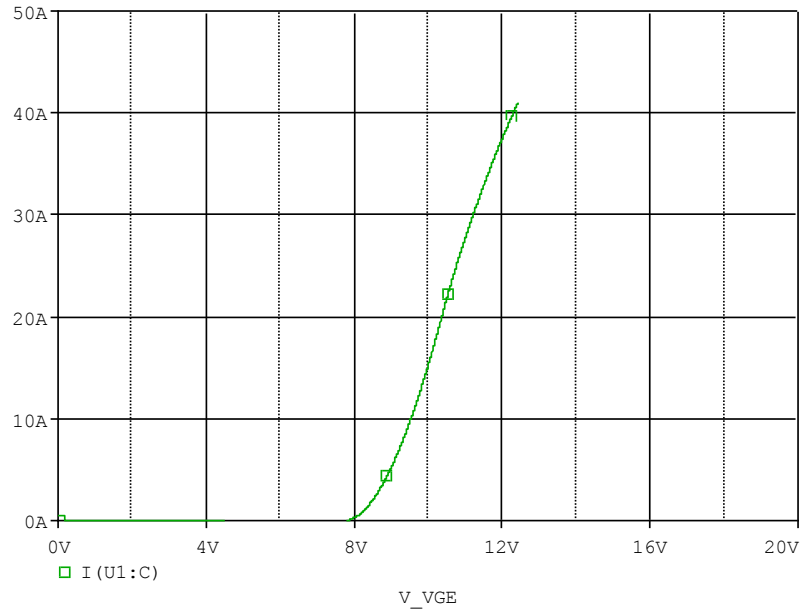
Bee Technologies Inc.

Circuit Configuration

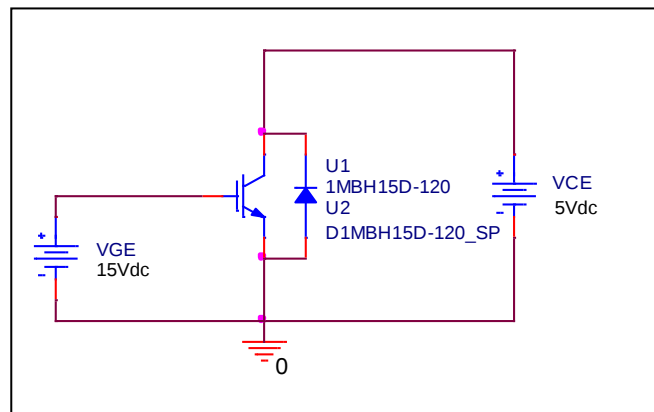


Transfer Characteristics

Circuit Simulation result

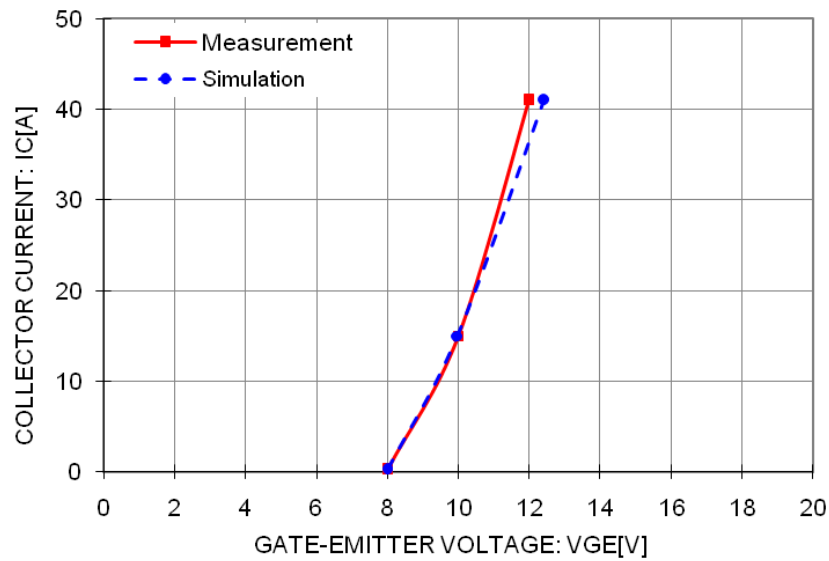


Evaluation circuit



Comparison Graph

Simulation result



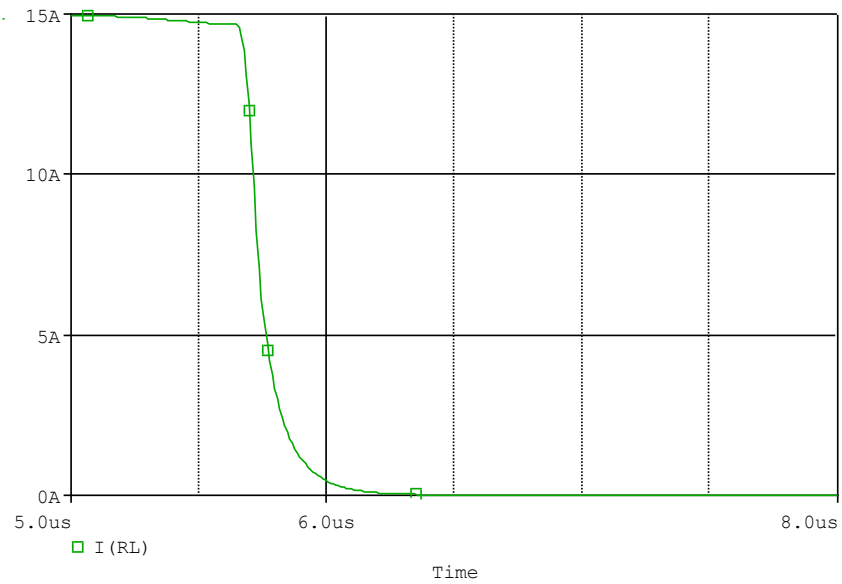
Comparison table

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

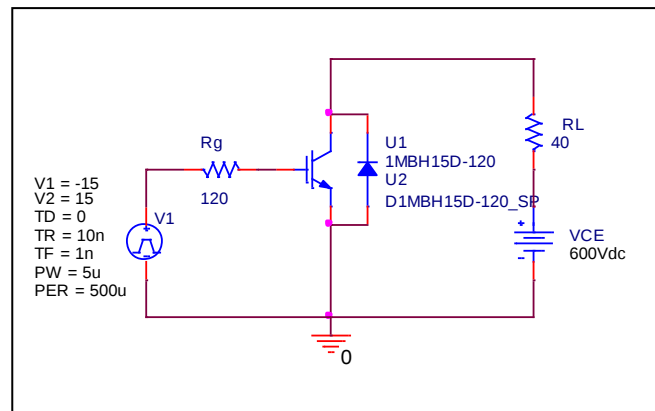
IC (A)	VGE (V)		%Error
	Measurement	Simulation	
0.250	8.000	7.997	-0.04
15.000	10.000	9.984	-0.16
41.000	12.000	12.430	3.58

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

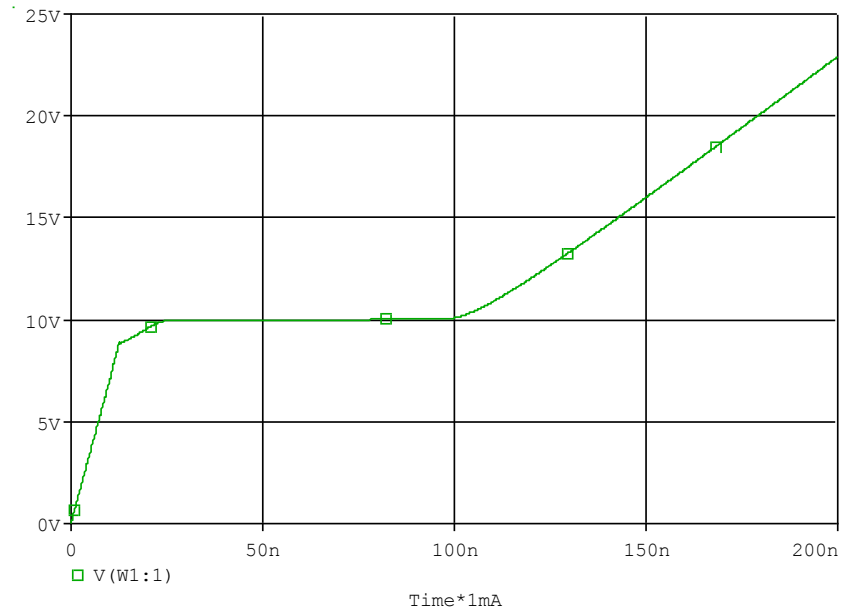


Test condition: $I_C=15$ (A), $V_{CC}=600$ (V)

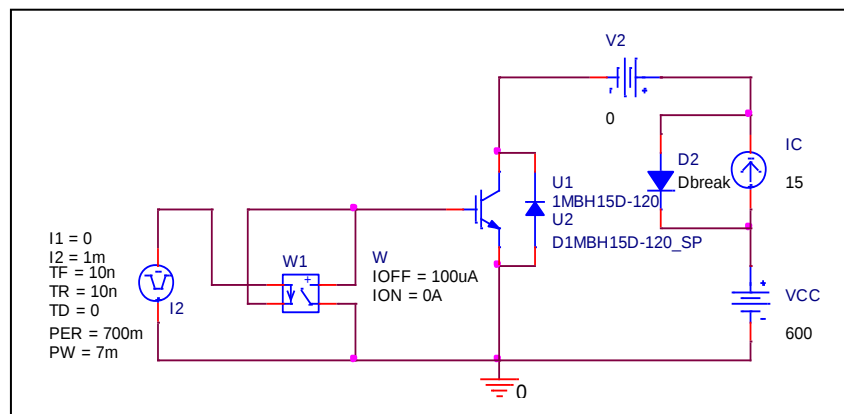
Parameter	Unit	Measurement	Simulation	%Error
tf	us	0.190	0.191	0.74

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

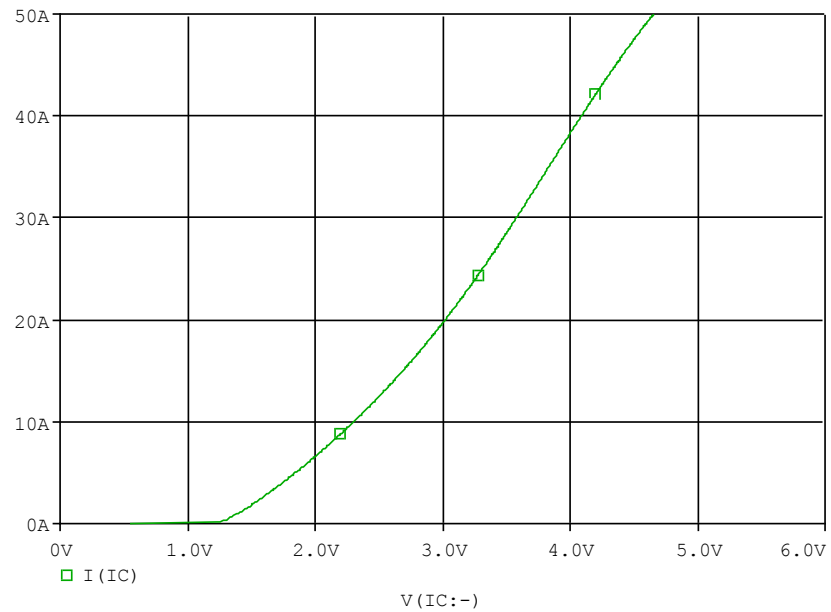


Test condition: VCC=600 (V), IC=15 (A), VGE=15 (V)

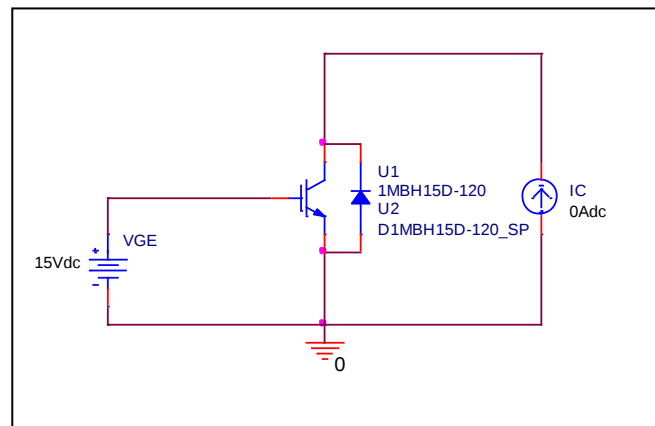
Parameter	Unit	Measurement	Simulation	%Error
Qge	nc	18.000	18.182	1.01
Qgc	nc	80.000	81.091	1.36
Qg	nc	140.000	142.677	1.91

Saturation Characteristics

Circuit Simulation result

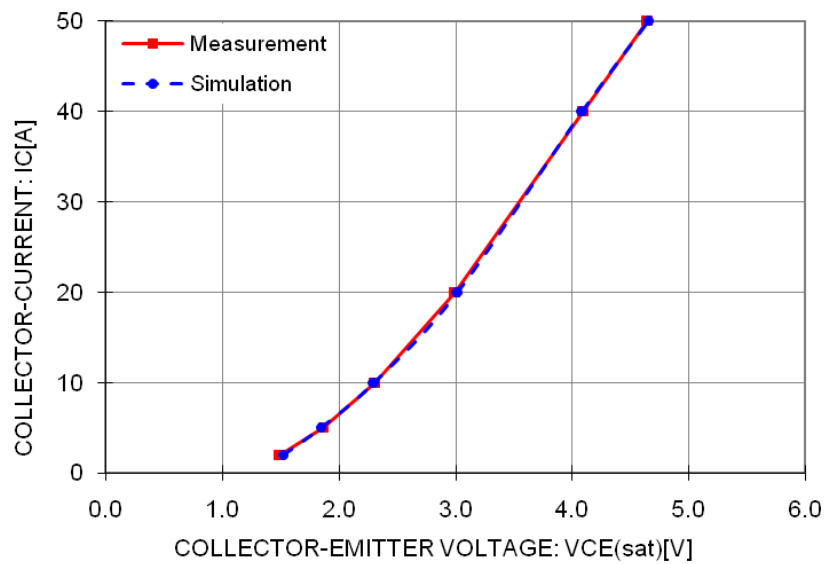


Evaluation circuit



Comparison Graph

Simulation result



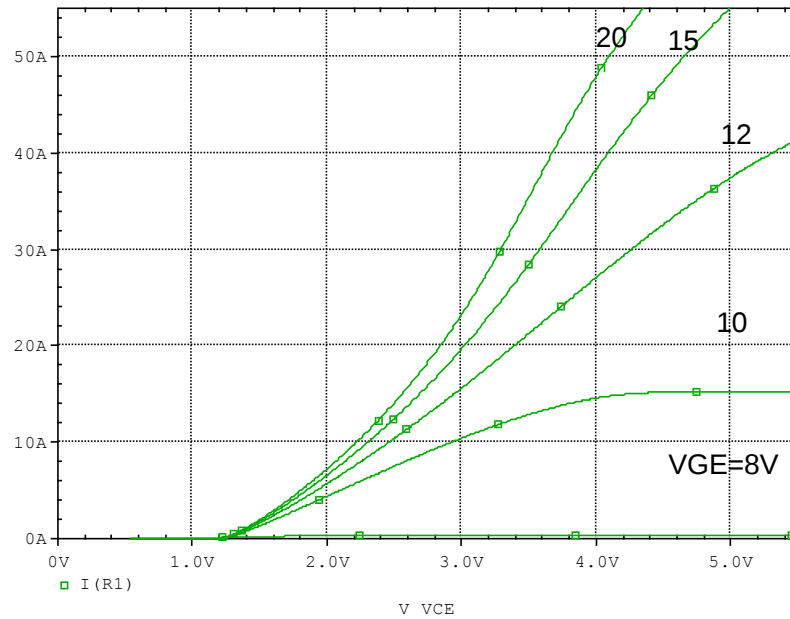
Comparison table

Test condition: VGE =15 (V)

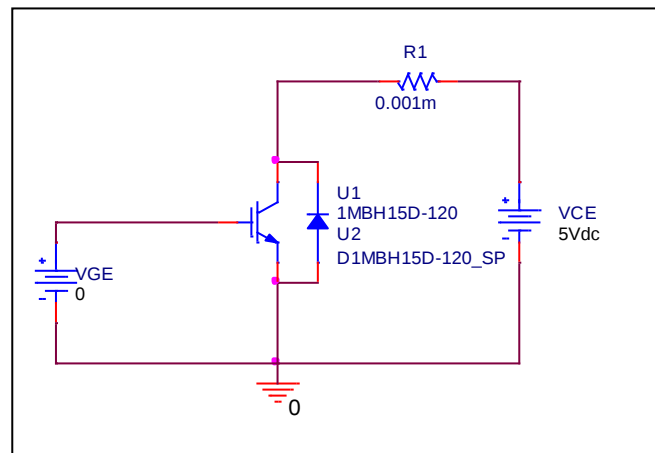
Ic(A)	VCE (V)		%Error
	Measurement	Simulation	
2	1.500	1.521	1.42
5	1.870	1.846	-1.26
10	2.315	2.303	-0.51
20	3.000	3.020	0.67
40	4.100	4.089	-0.28
50	4.650	4.654	0.09

Output Characteristics

Circuit Simulation result

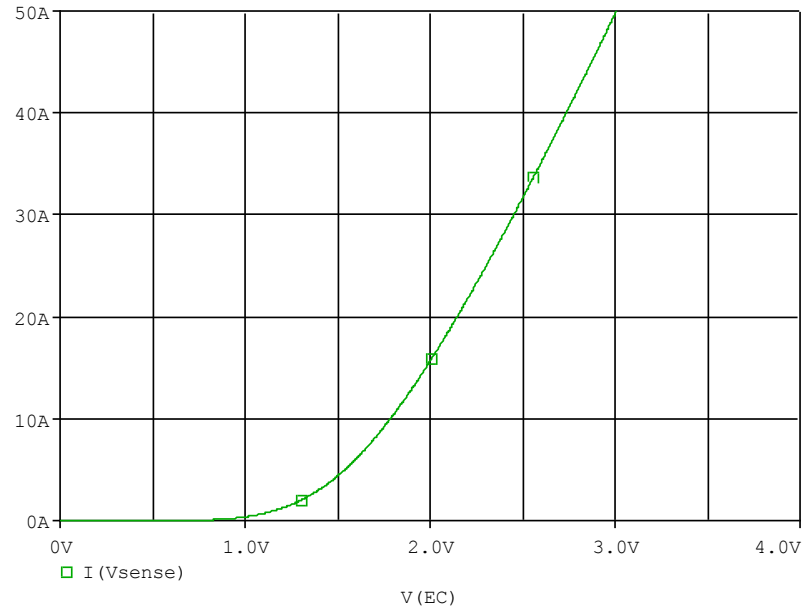


Evaluation circuit

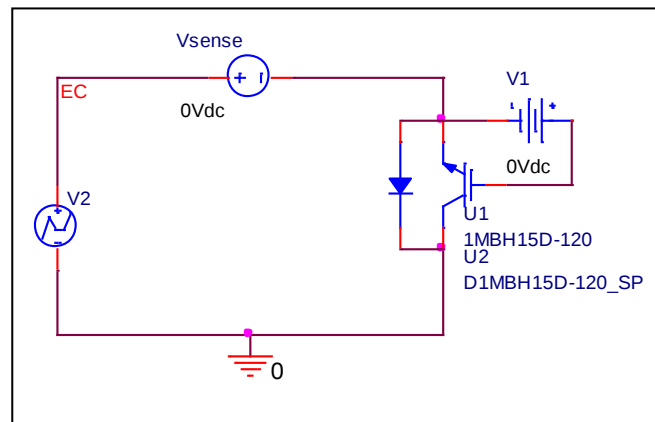


FWD Forward Current Characteristics

Circuit Simulation result

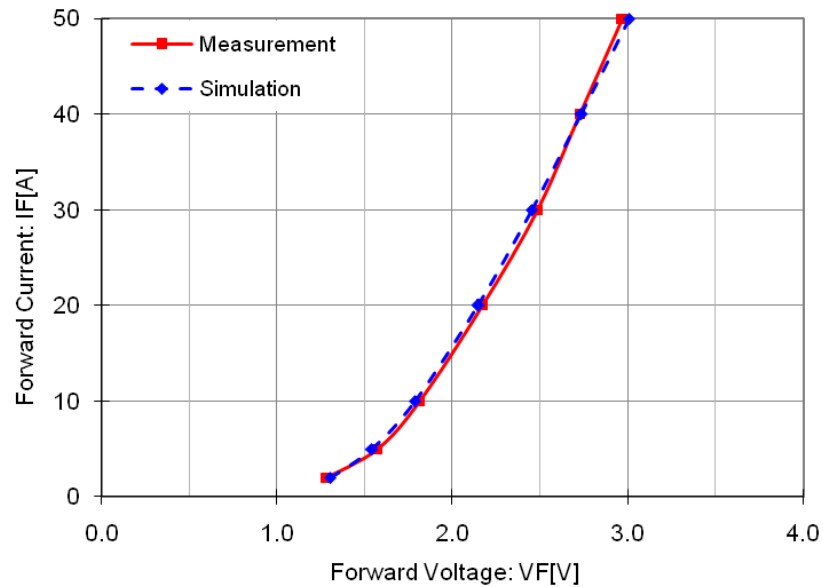


Evaluation circuit



Comparison Graph

Simulation result

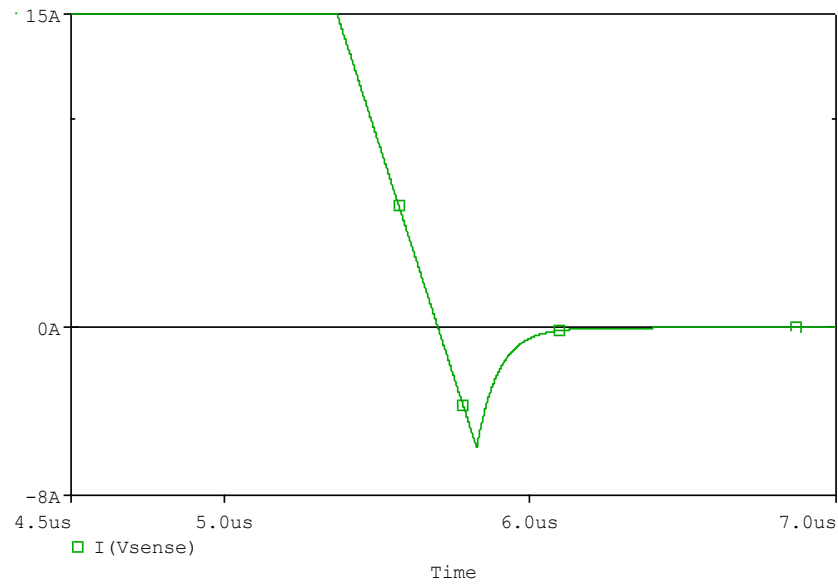


Comparison table

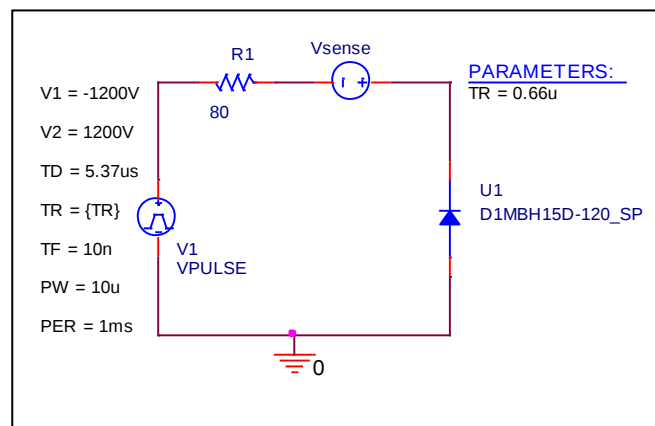
IF(A)	VF (V)		%Error
	Measurement	Simulation	
2	1.275	1.302	2.09
5	1.570	1.540	-1.93
10	1.815	1.786	-1.63
20	2.175	2.146	-1.32
30	2.485	2.453	-1.31
40	2.725	2.736	0.41
50	2.970	3.008	1.27

Reverse Recovery Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: $V_{CC}=1200$ (V), $I_C=15$ (A), $-di/dt=45$ (A/us)

Parameter	Unit	Measurement	Simulation	%Error
trr	nsec	290.000	290.507	0.17
Irr	A	5.700	5.700	0.01