

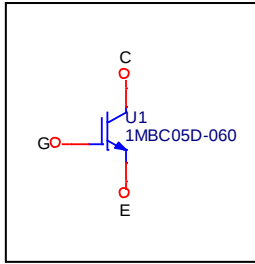
Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: 1MBC05D-060
MANUFACTURER: Fuji Electric
* REMARK: Free-Wheeling Diode Special Model



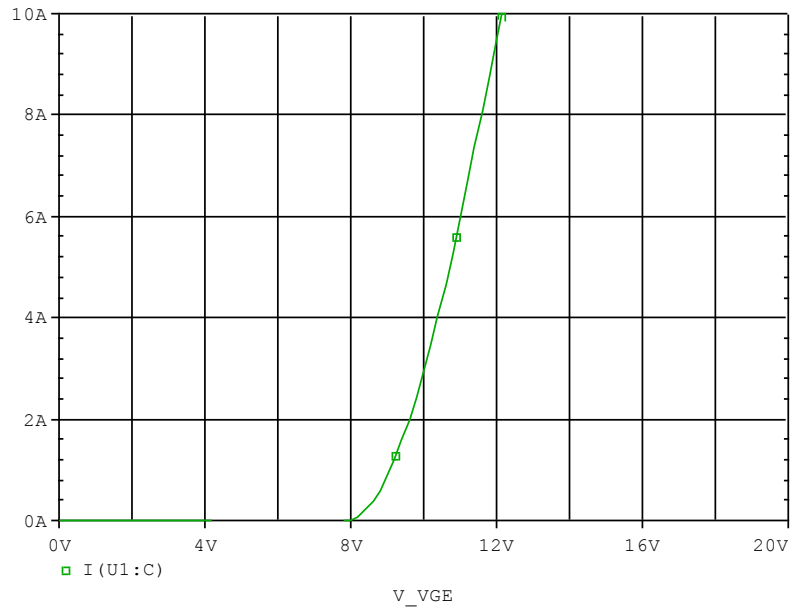
Bee Technologies Inc.

Circuit Configuration

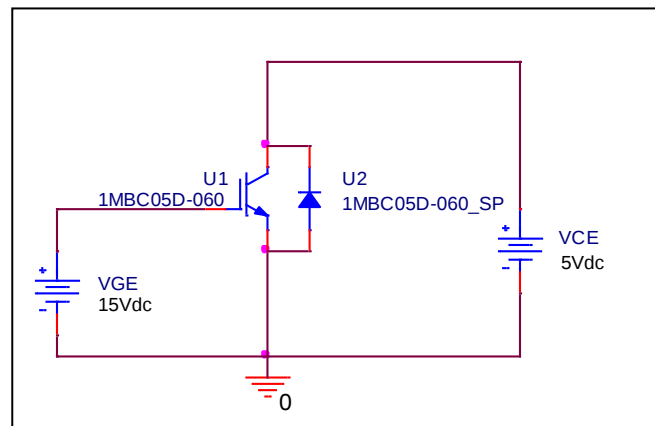


Transfer Characteristics

Circuit Simulation result

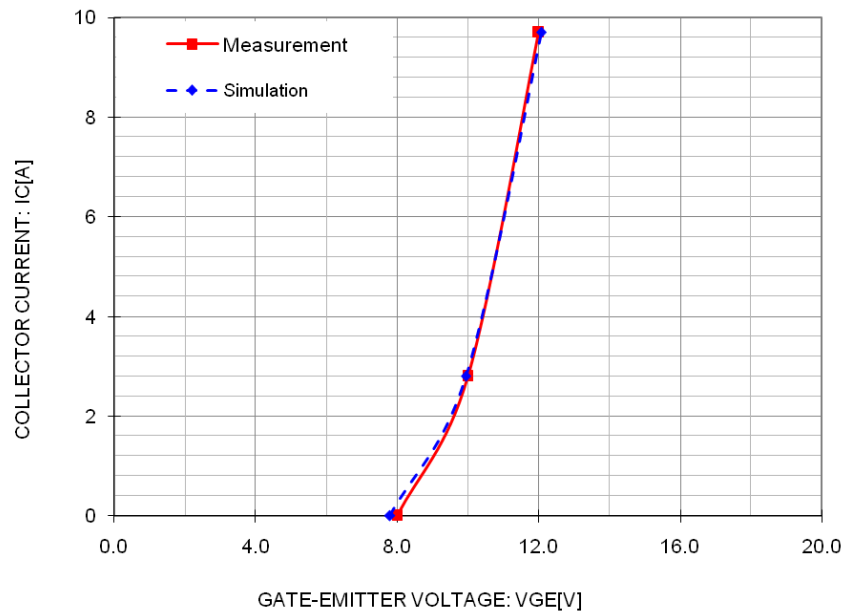


Evaluation circuit



Comparison Graph

Simulation result



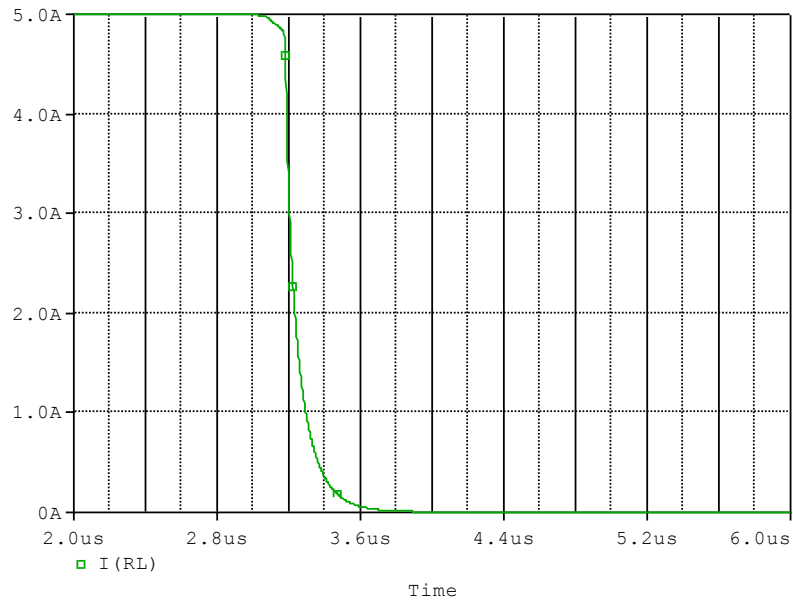
Comparison table

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

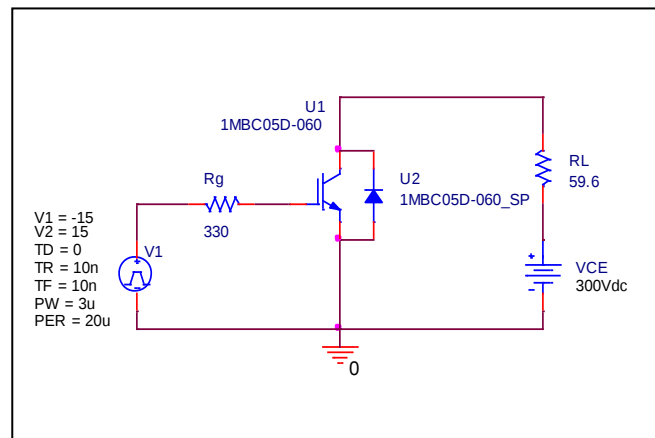
IC (A)	VGE (V)		%Error
	Measurement	Simulation	
0.000	8.000	7.800	-2.50
2.800	10.000	9.944	-0.56
9.700	12.000	12.068	0.57

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

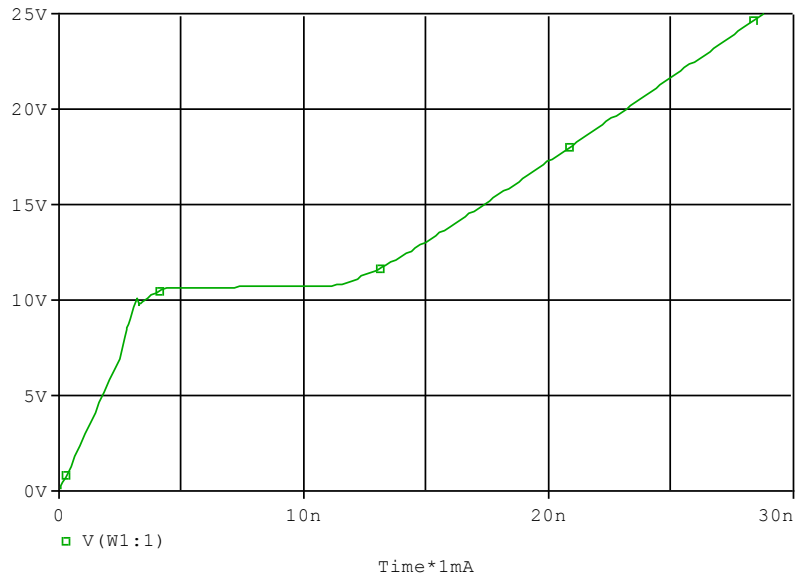


Test condition: $I_C=5$ (A), $V_{CC}=300$ (V)

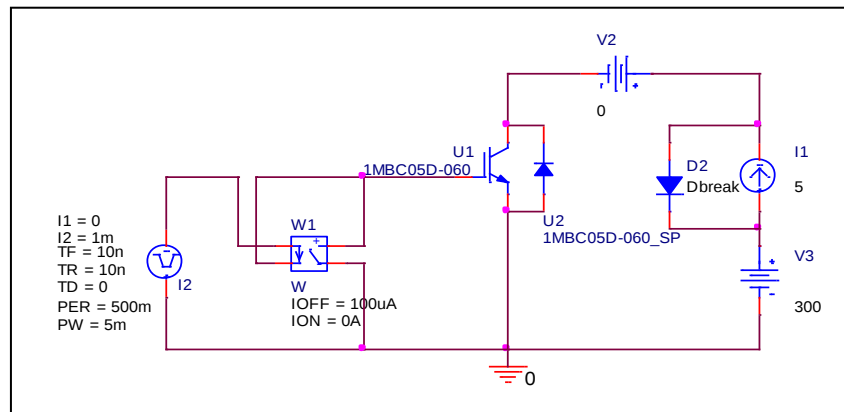
Parameter	Unit	Measurement	Simulation	%Error
tf	us	0.180	0.182	1.384

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

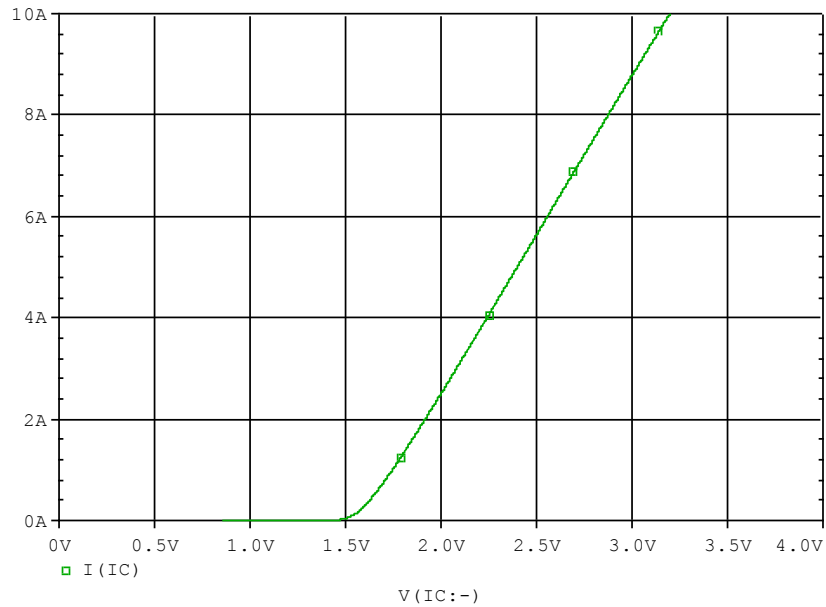


Test condition: $V_{CC}=300$ (V), $I_C=5$ (A), $V_{GE}=15$ (V)

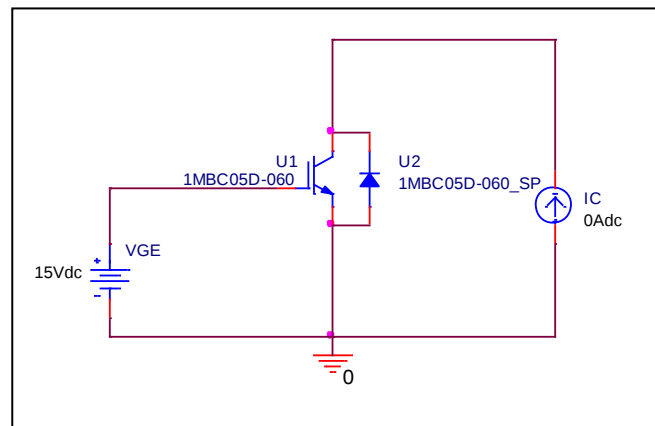
Parameter	Unit	Measurement	Simulation	%Error
Qge	nc	3.500	3.516	0.446
Qgc	nc	8.000	7.995	-0.065
Qg	nc	17.500	17.311	-1.080

Saturation Characteristics

Circuit Simulation result

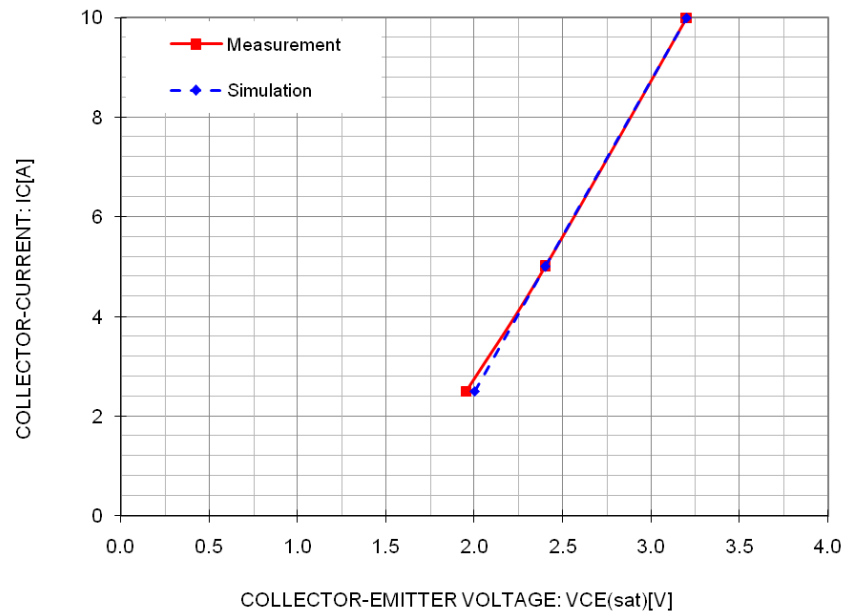


Evaluation circuit



Comparison Graph

Simulation result



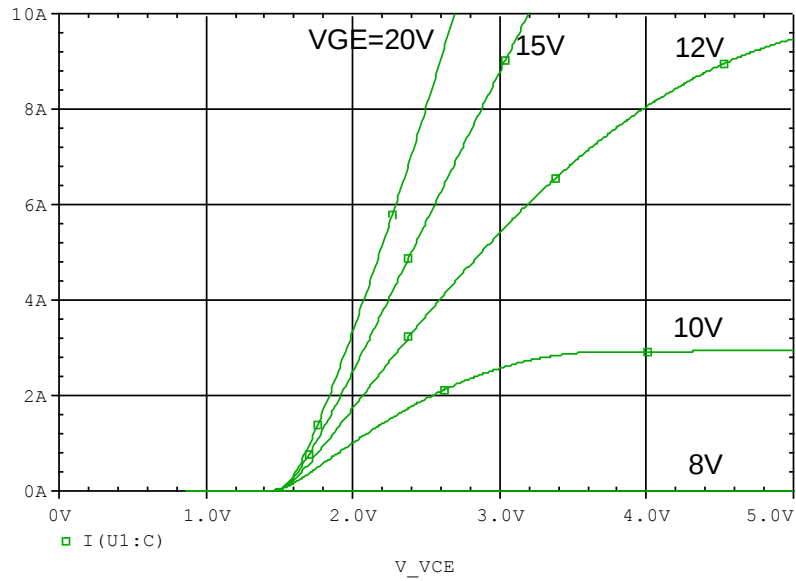
Comparison table

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

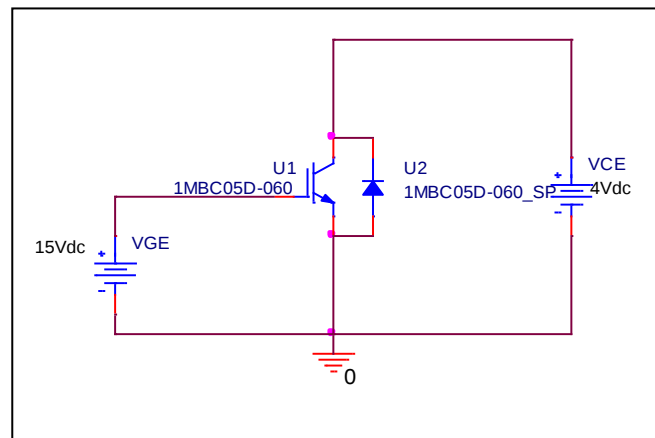
IC (A)	VCE (V)		%Error
	Measurement	Simulation	
2.5	1.950	2.000	2.55
5.0	2.400	2.399	-0.03
10.0	3.200	3.199	-0.04

Output Characteristics

Circuit Simulation result

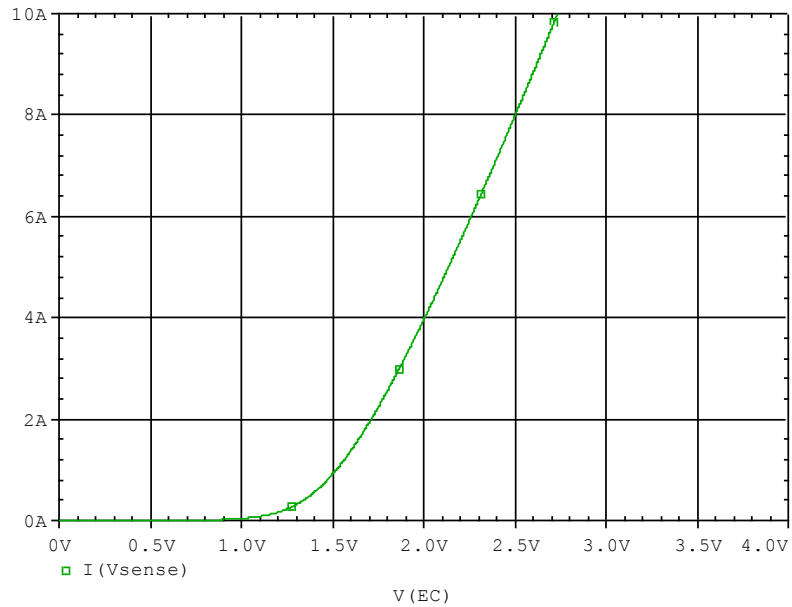


Evaluation circuit

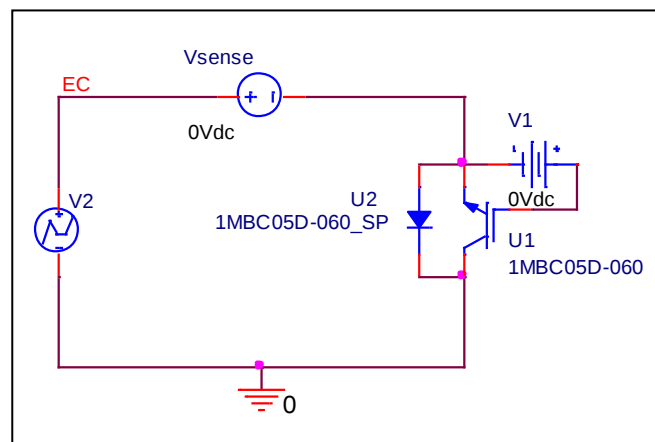


FWD Forward Current Characteristics

Circuit Simulation result

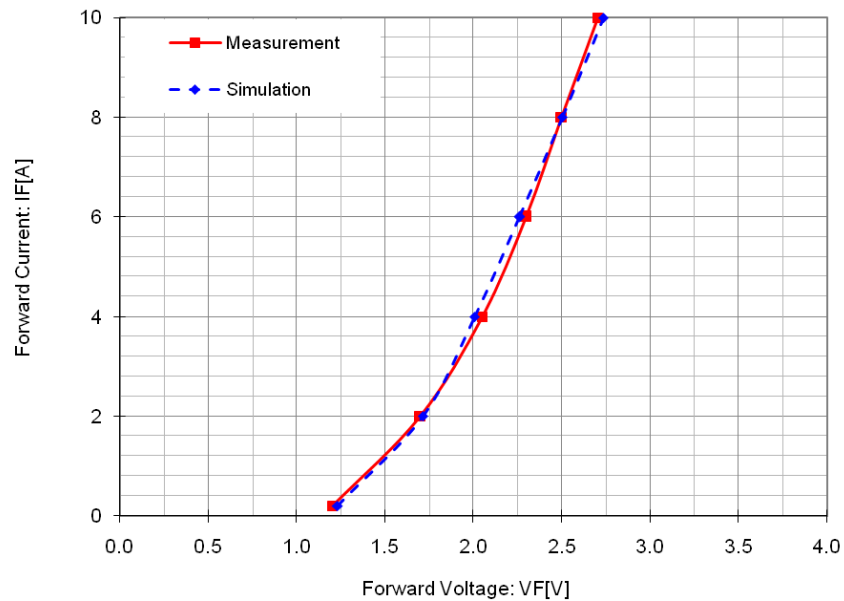


Evaluation circuit



Comparison Graph

Simulation result

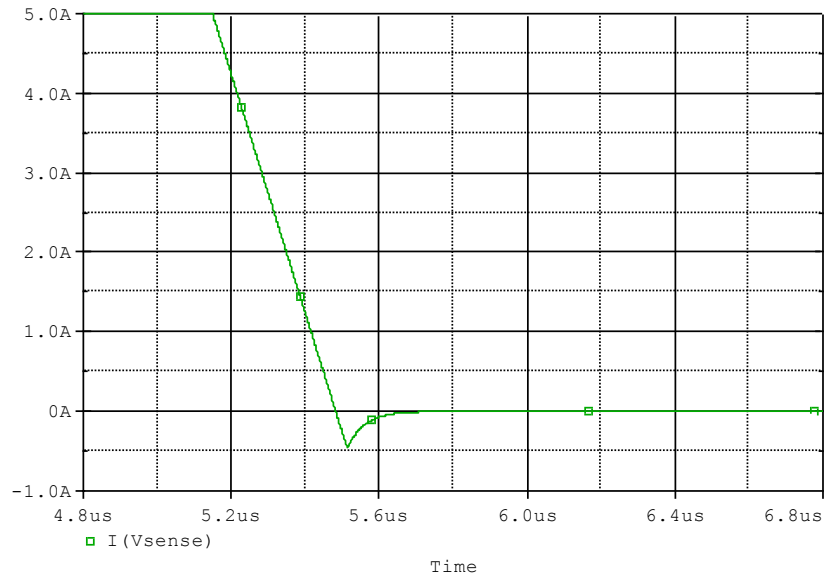


Comparison table

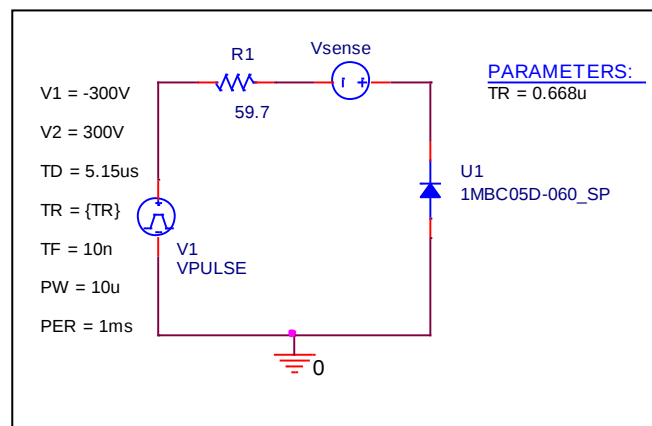
IF(A)	VF (V)		%Error
	Measurement	Simulation	
0.2	1.200	1.232	2.65
2	1.700	1.713	0.74
4	2.050	2.006	-2.16
6	2.300	2.262	-1.66
8	2.500	2.503	0.11
10	2.700	2.735	1.30

Reverse Recovery Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: $V_{CC}=300$ (V), $I_C=5$ (A), $-di/dt=15$ (A/us)

Parameter	Unit	Measurement	Simulation	%Error
trr	nsec	140.000	140.137	0.10
Irr	A	0.460	0.460	-0.01