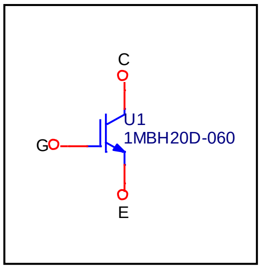
Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: 1MBH20D-060
MANUFACTURER: Fuji Electric

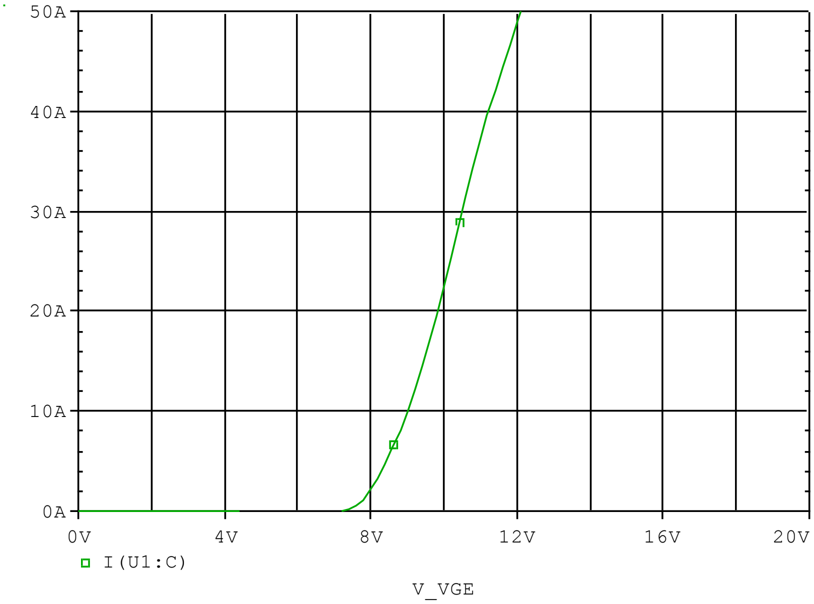
Bee Technologies Inc.

Circuit Configuration

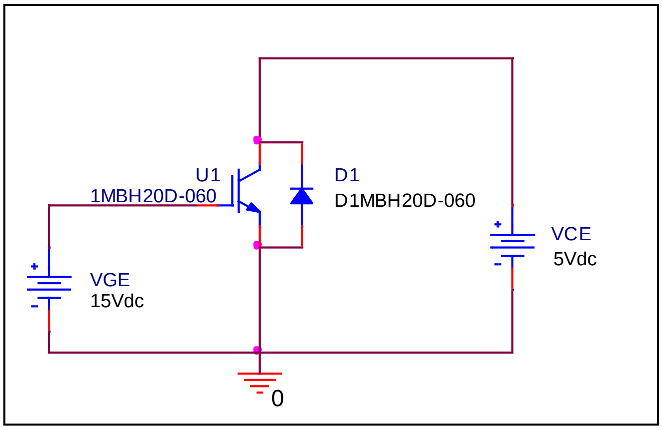


Transfer Characteristics

Circuit Simulation result

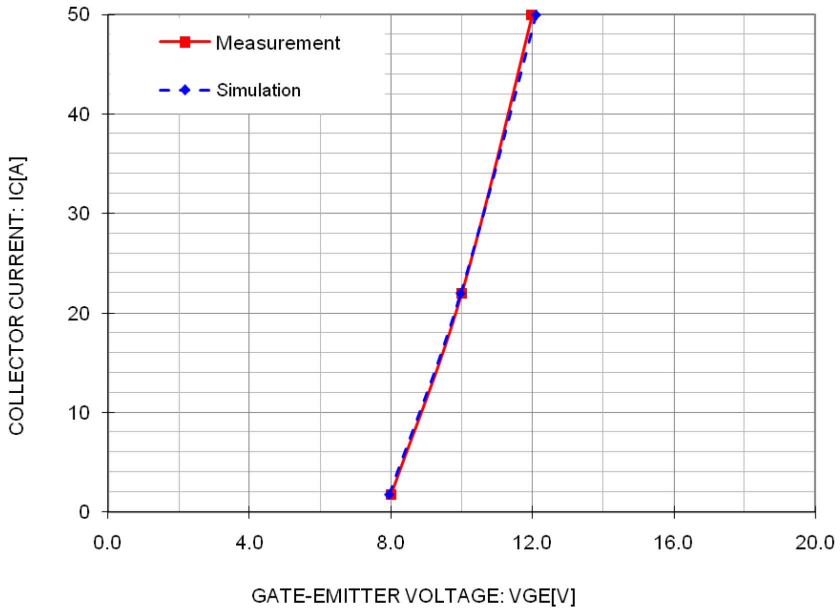


Evaluation circuit



Comparison Graph

Simulation result



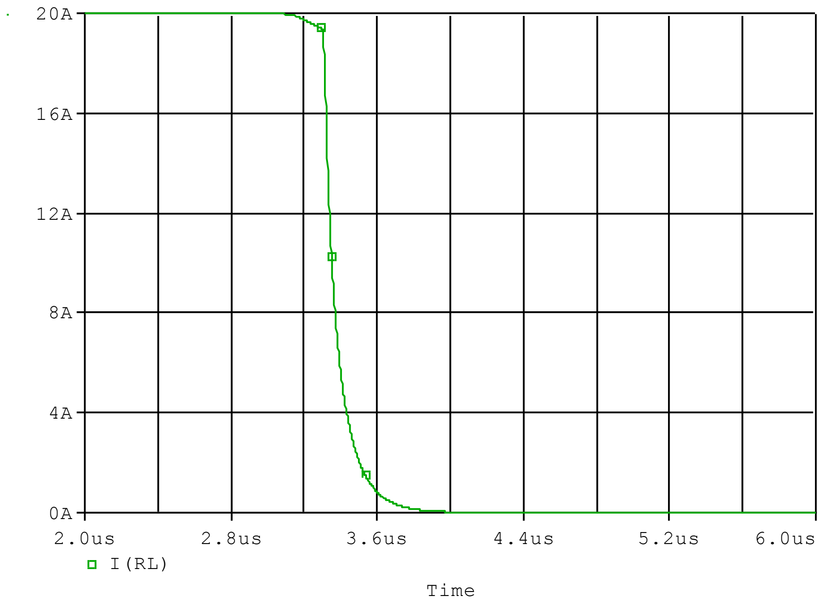
Comparison table

Test condition: VCE =5 (V)

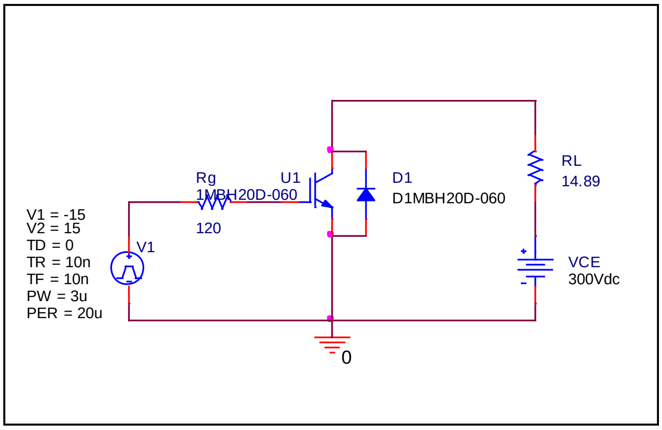
IC (A)	VGE (V)		%Error
	Measurement	Simulation	
1.800	8.000	7.943	-0.71
22.000	10.000	9.972	-0.28
50.000	12.000	12.107	0.89

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

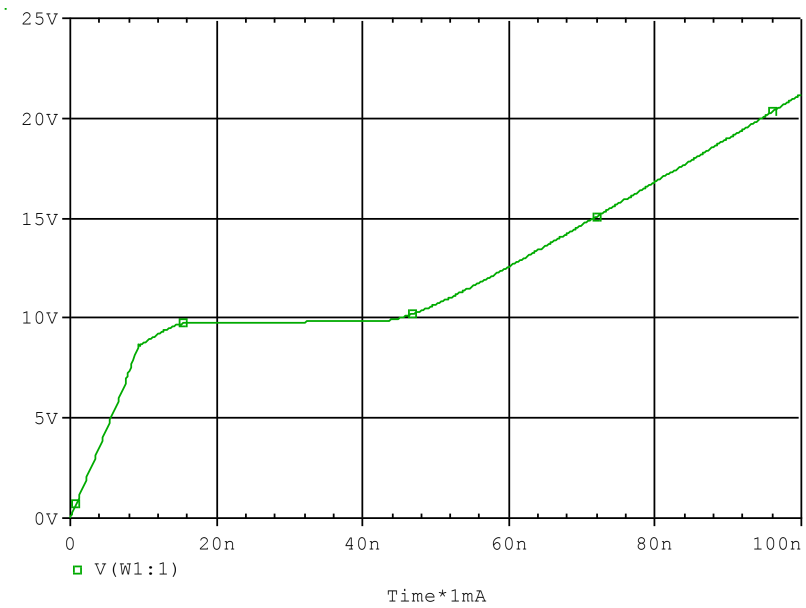


Test condition: IC=20 (A), VCC=300 (V)

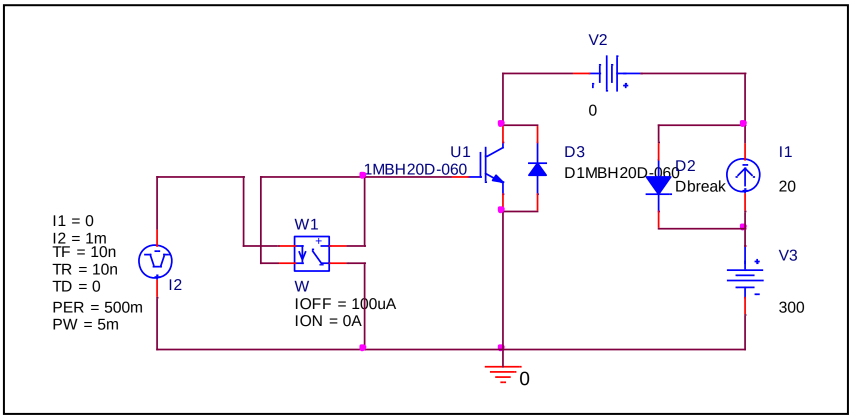
Parameter	Unit	Measurement	Simulation	%Error
tf	us	0.190	0.191	0.708

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

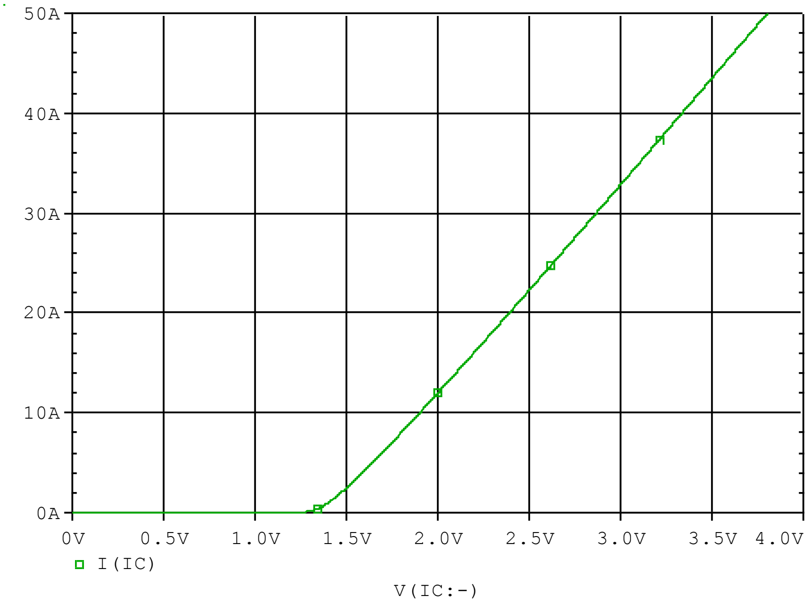


Test condition: VCC=300 (V), IC=20 (A), VGE=15 (V)

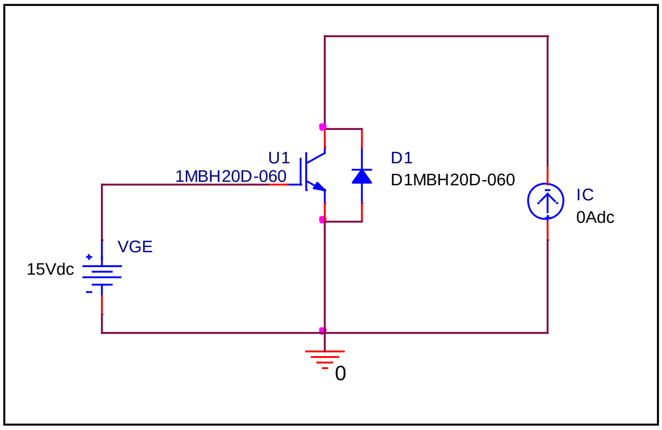
Parameter	Unit	Measurement	Simulation	%Error
Qge	nc	12.000	12.000	0.000
Qgc	nc	34.000	33.913	-0.256
Qg	nc	70.000	71.524	2.177

Saturation Characteristics

Circuit Simulation result

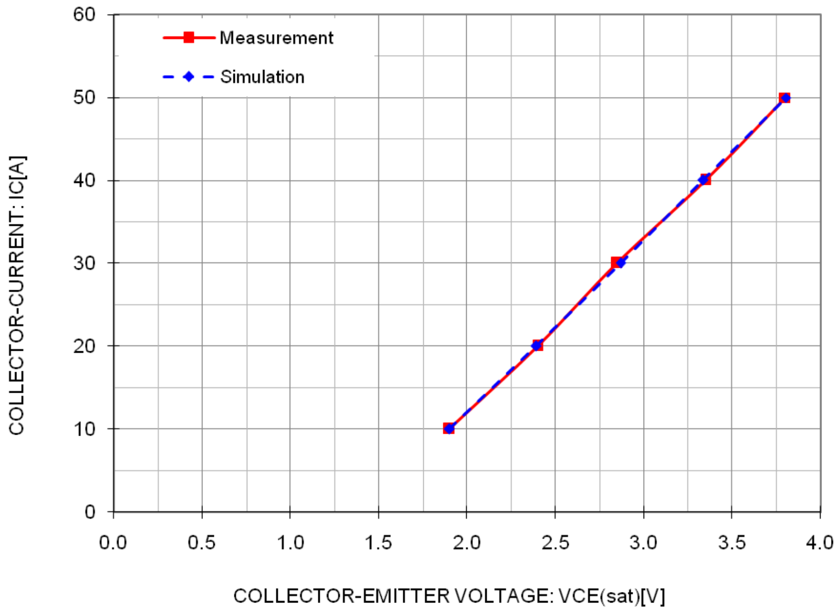


Evaluation circuit



Comparison Graph

Simulation result



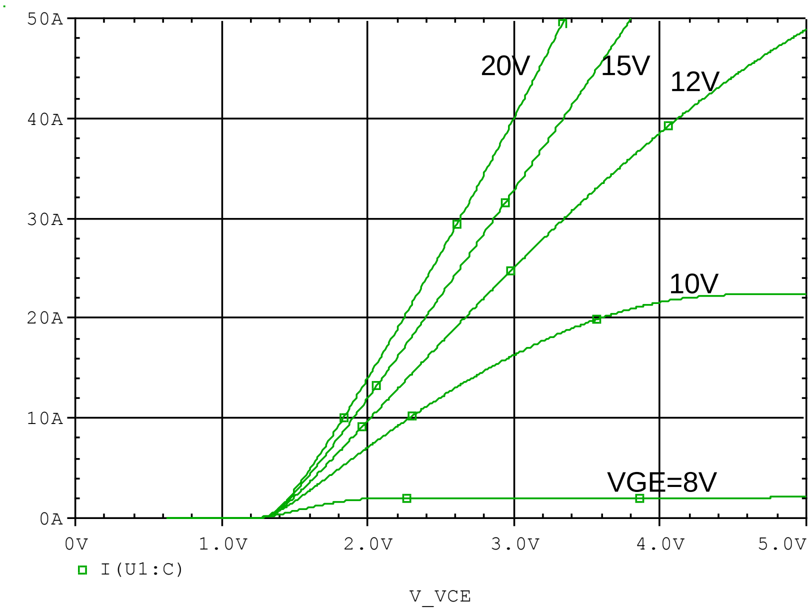
Comparison table

Test condition: VGE =15 (V)

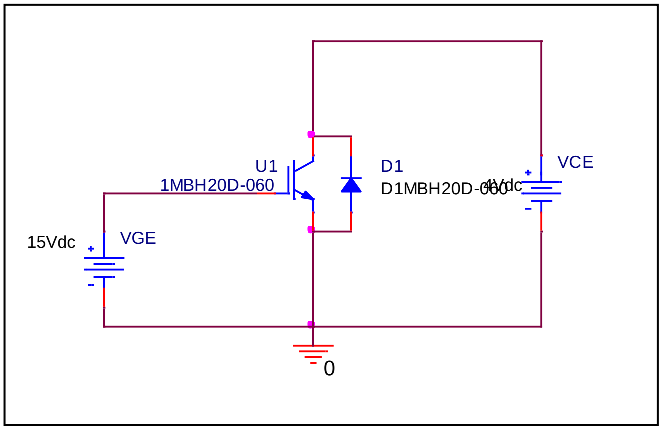
Ic(A)	VCE (V)		%Error
	Measurement	Simulation	
10.0	1.900	1.901	0.06
20.0	2.400	2.392	-0.35
30.0	2.850	2.868	0.61
40.0	3.350	3.337	-0.40
50.0	3.800	3.804	0.10

Output Characteristics

Circuit Simulation result

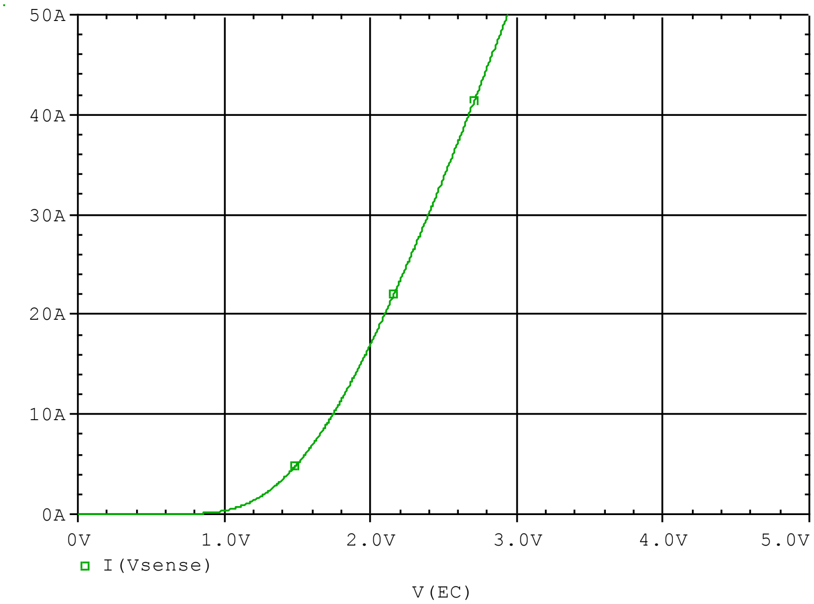


Evaluation circuit

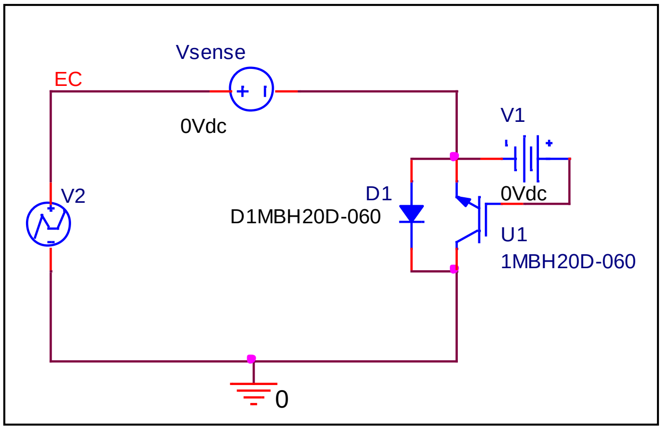


FWD Forward Current Characteristics

Circuit Simulation result

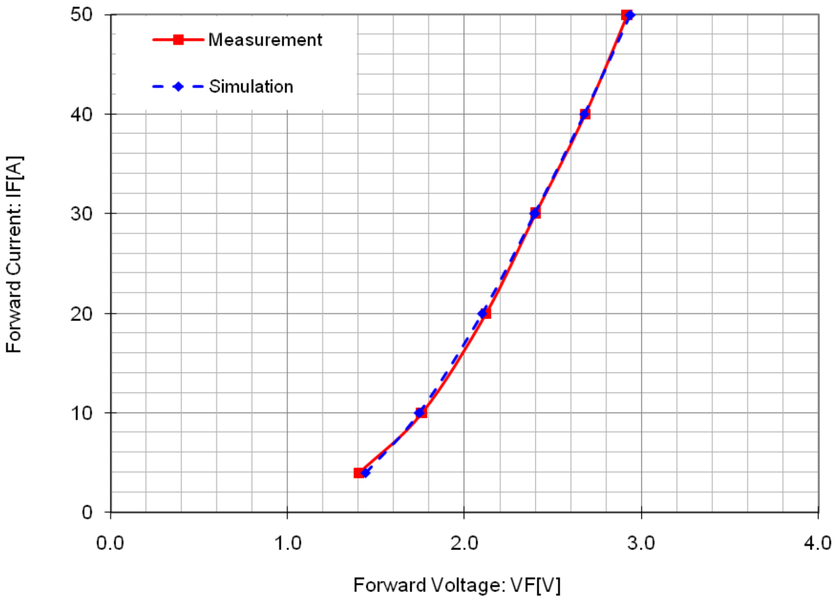


Evaluation circuit



Comparison Graph

Simulation result

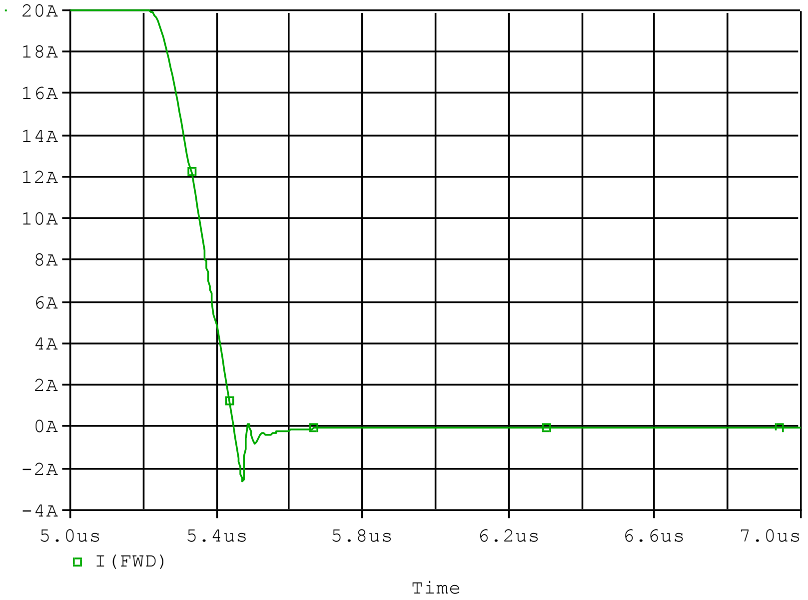


Comparison table

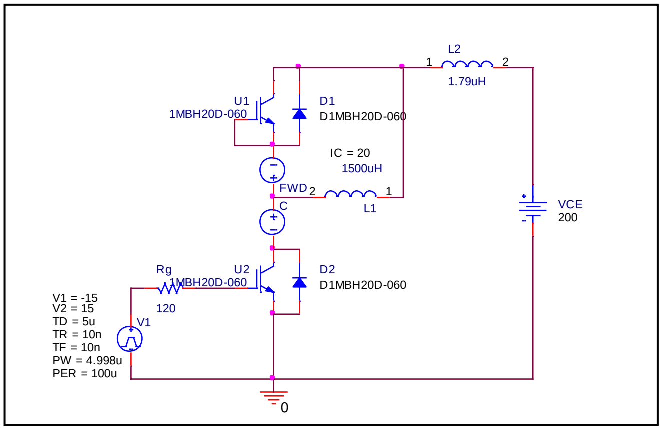
IF(A)	VF (V)		%Error
	Measurement	Simulation	
4	1.400	1.438	2.68
10	1.760	1.743	-0.98
20	2.120	2.097	-1.07
30	2.400	2.397	-0.14
40	2.680	2.673	-0.26
50	2.920	2.937	0.58

Reverse Recovery Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: VCC=200 (V), IC=20 (A), –di/dt=100 A/usec

Parameter	Unit	Measurement	Simulation	%Error
trr	nsec	80.000	36.761	-54.05
Irr	A	2.600	2.602	0.09