

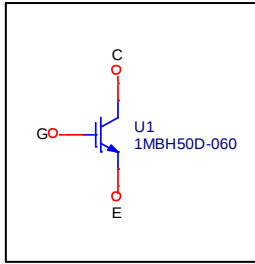
Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: 1MBH50D-060
MANUFACTURER: FUJI ELECTRIC
*REMARK: Free-Wheeling Diode Professional Model



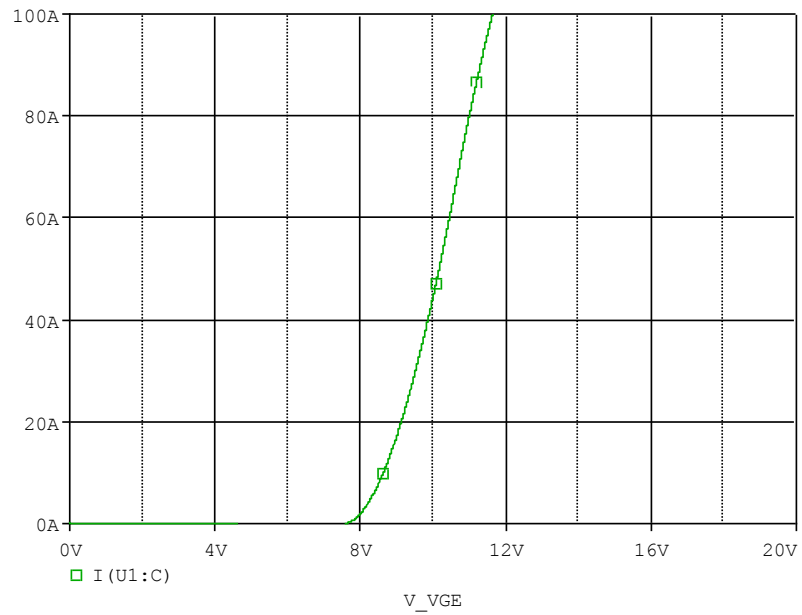
Bee Technologies Inc.

Circuit Configuration

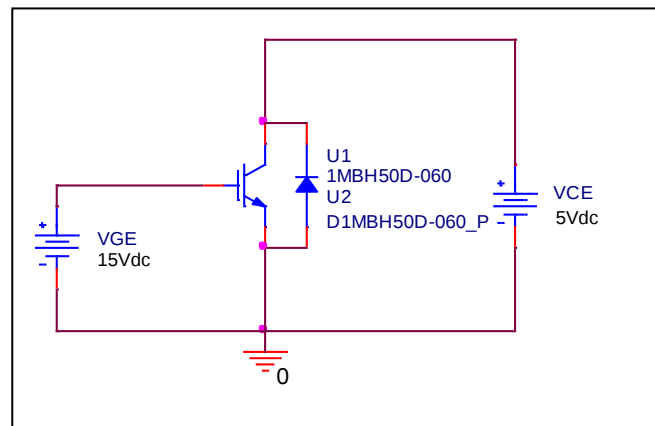


Transfer Characteristics

Circuit Simulation result

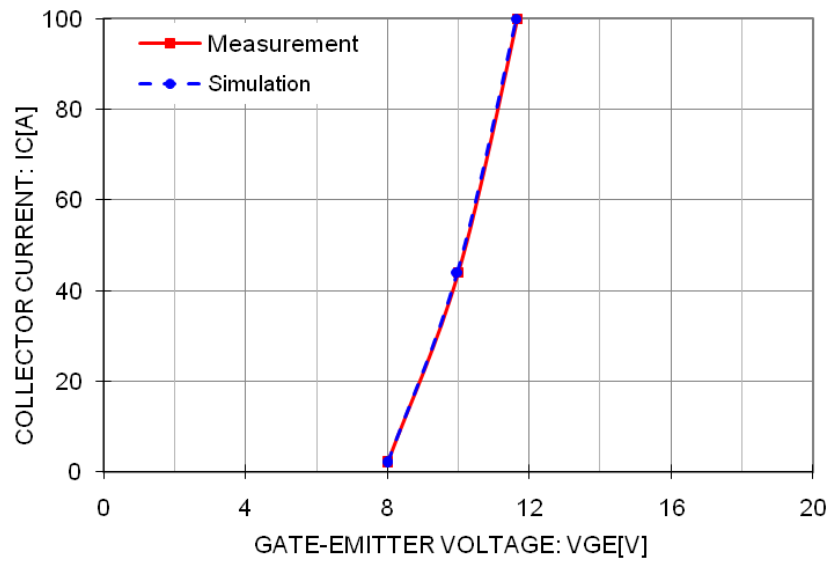


Evaluation circuit



Comparison Graph

Simulation result



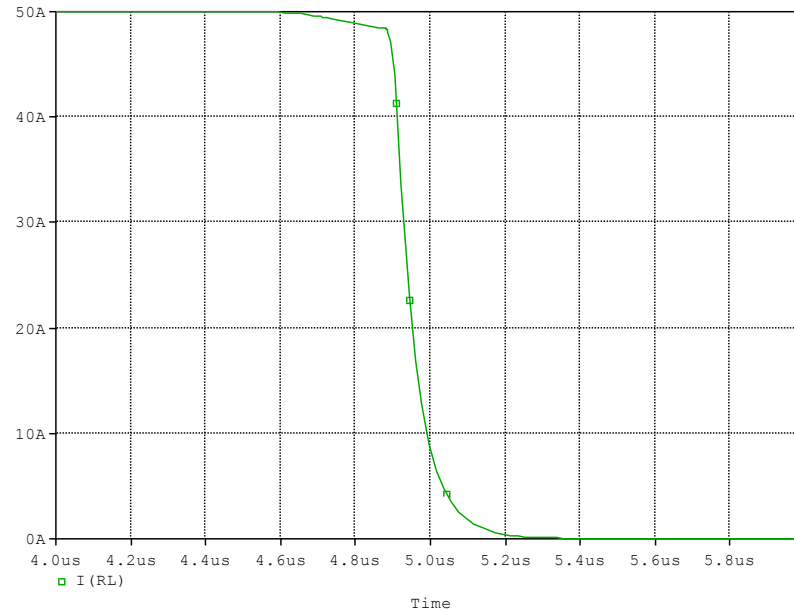
Comparison table

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

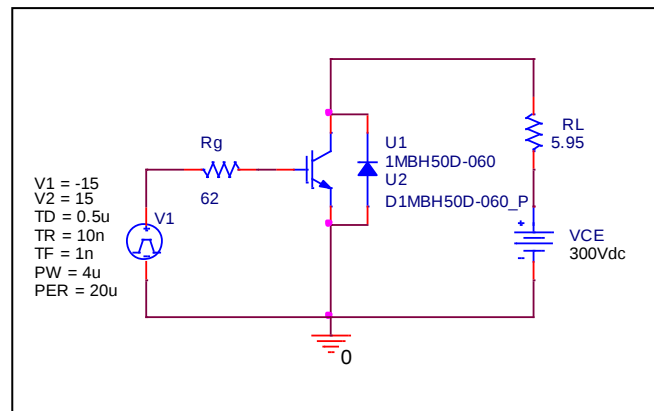
IC (A)	VGE (V)		%Error
	Measurement	Simulation	
2	8.000	8.003	0.04
44	10.000	9.985	-0.15
100	11.665	11.642	-0.20

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

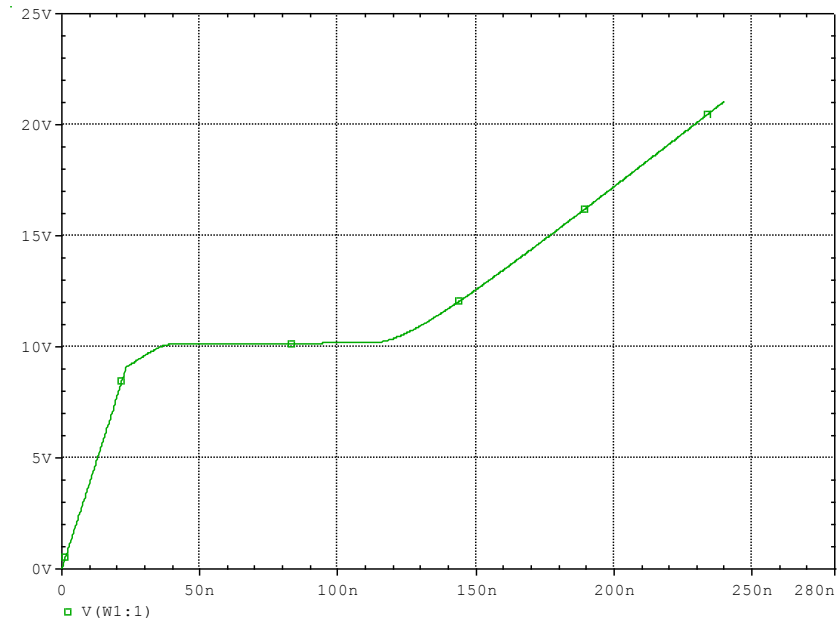


Test condition: $I_C=50$ (A), $V_{CC}=300$ (V)

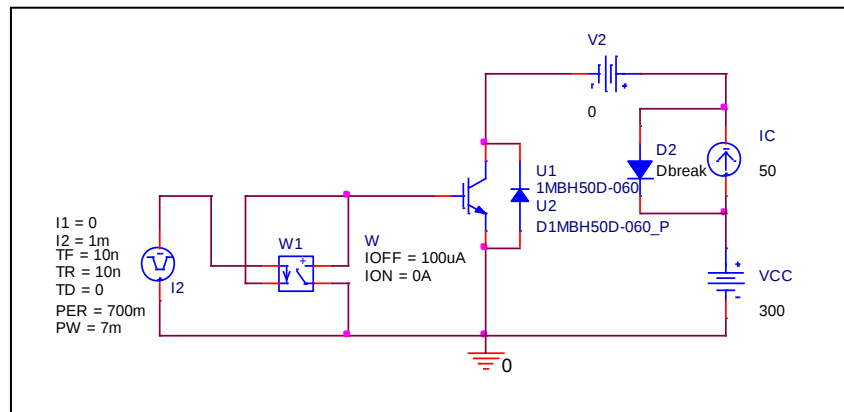
Parameter	Unit	Measurement	Simulation	%Error
tf	us	0.130	0.130	0

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

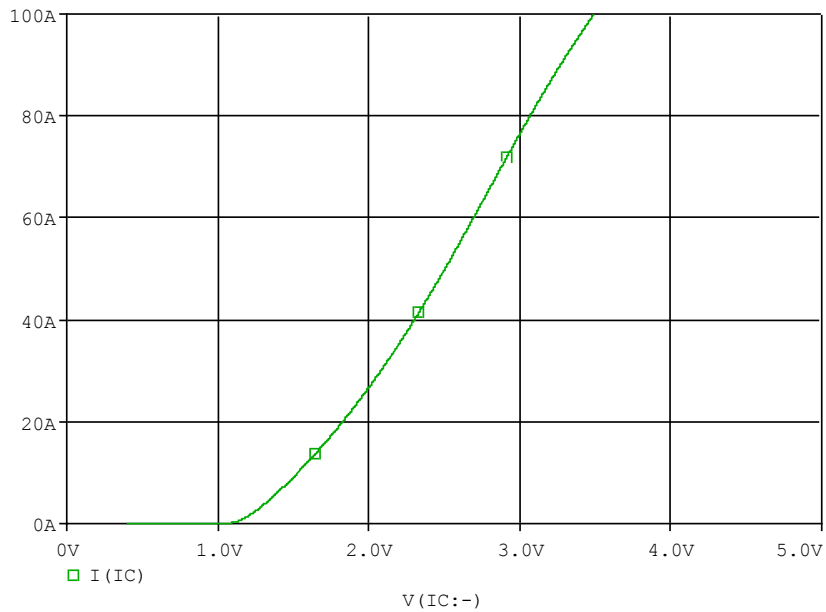


Test condition: VCC=300 (V), I_C=50 (A), V_{GE}=15 (V)

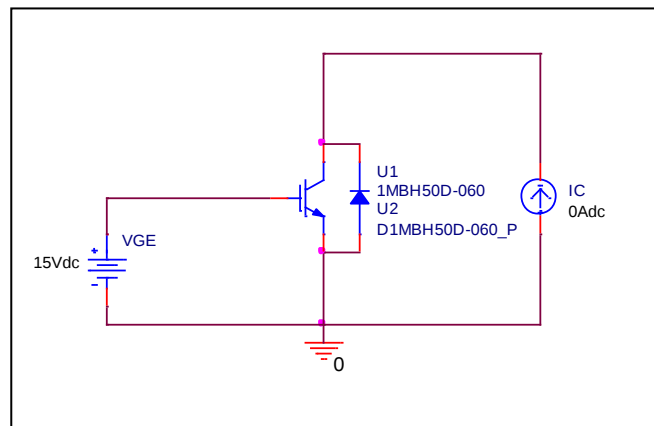
Parameter	Unit	Measurement	Simulation	%Error
Q _{ge}	nc	30.000	30.435	1.45
Q _{gc}	nc	85.000	85.652	0.77
Q _g	nc	178.000	176.658	-0.75

Saturation Characteristics

Circuit Simulation result

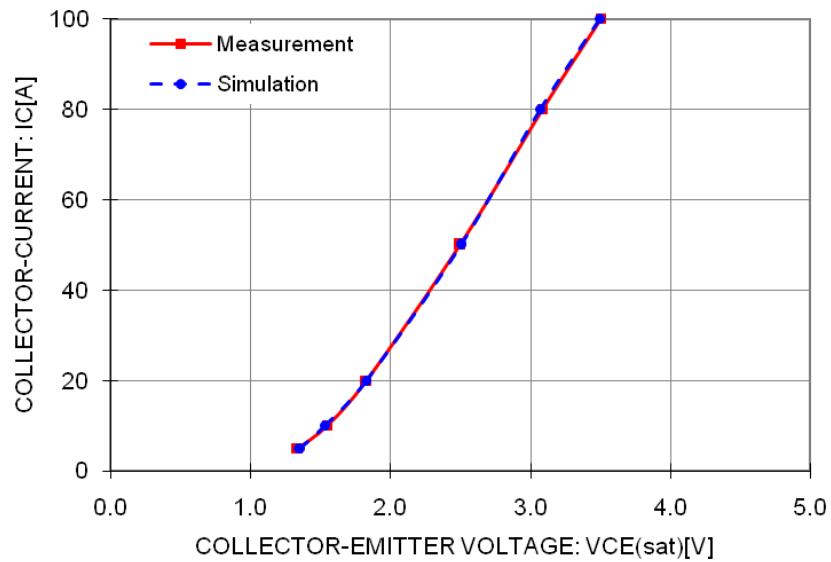


Evaluation circuit



Comparison Graph

Simulation result



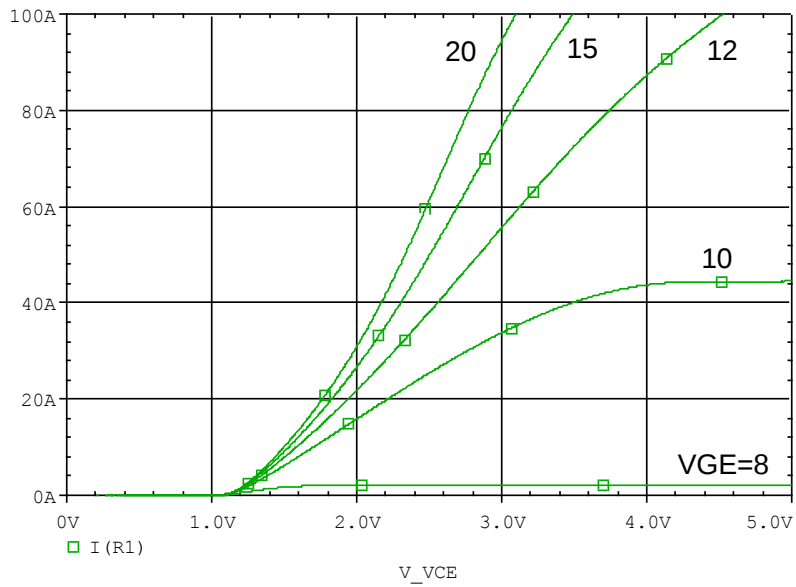
Comparison table

Test condition: VGE =15 (V)

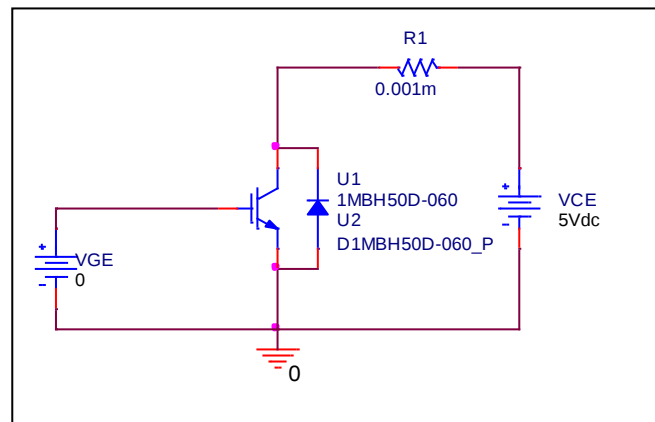
Ic(A)	VCE (V)		%Error
	Measurement	Simulation	
5	1.340	1.355	1.11
10	1.550	1.530	-1.29
20	1.830	1.827	-0.16
50	2.500	2.505	0.20
80	3.085	3.068	-0.54
100	3.500	3.492	-0.23

Output Characteristics

Circuit Simulation result

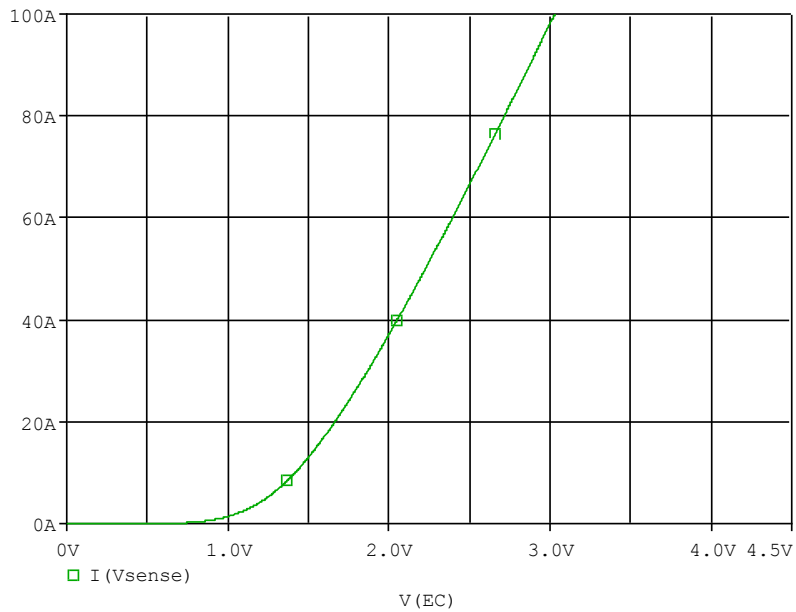


Evaluation circuit

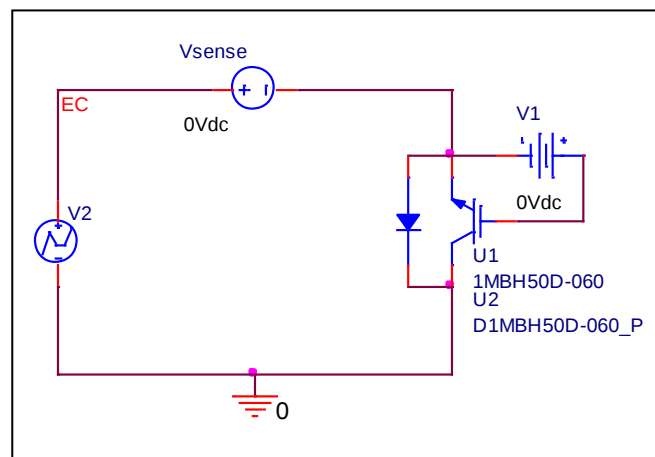


FWD Forward Current Characteristics

Circuit Simulation result

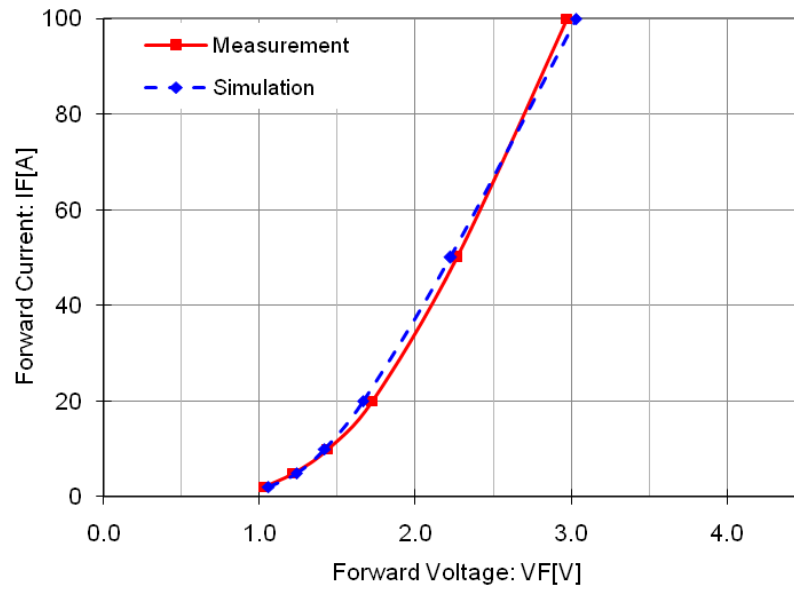


Evaluation circuit



Comparison Graph

Simulation result

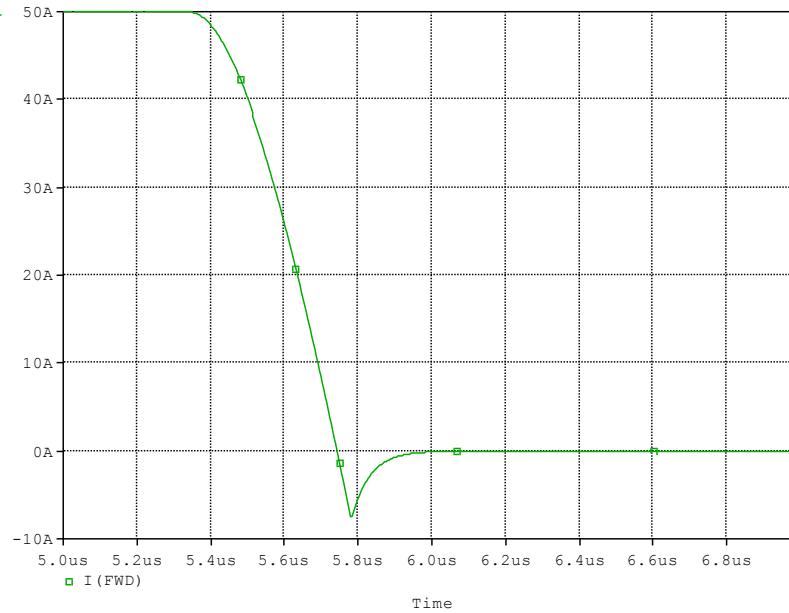


Comparison table

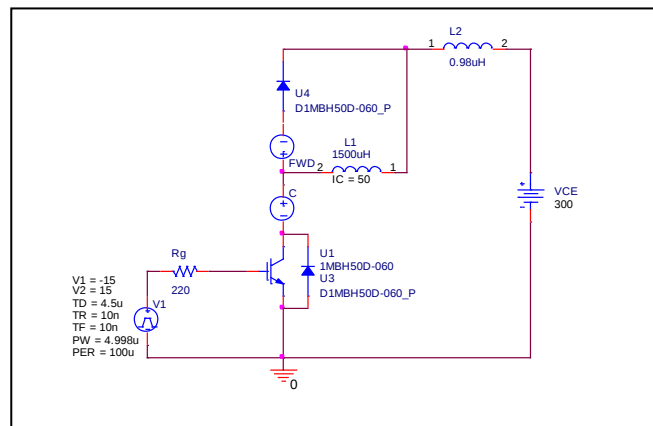
IF(A)	VF (V)		%Error
	Measurement	Simulation	
2	1.025	1.059	3.27
5	1.220	1.239	1.58
10	1.440	1.417	-1.58
20	1.725	1.665	-3.47
50	2.265	2.226	-1.72
100	2.975	3.029	1.82

Reverse Recovery Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: $V_{CC}=300$ (V), $I_C=50$ (A), $-di/dt=150$ (A/ μs)

Parameter	Unit	Measurement	Simulation	%Error
trr	nsec	155.000	155.825	0.53
Irr	A	7.500	7.548	0.64