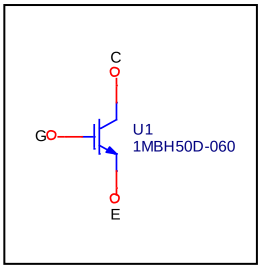
Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: 1MBH50D-060
MANUFACTURER: FUJI ELECTRIC

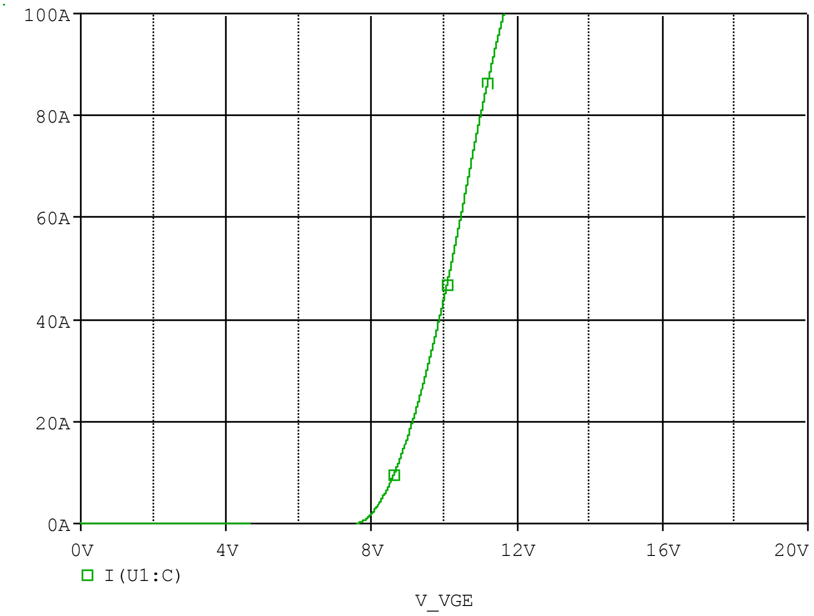
Bee Technologies Inc.

Circuit Configuration

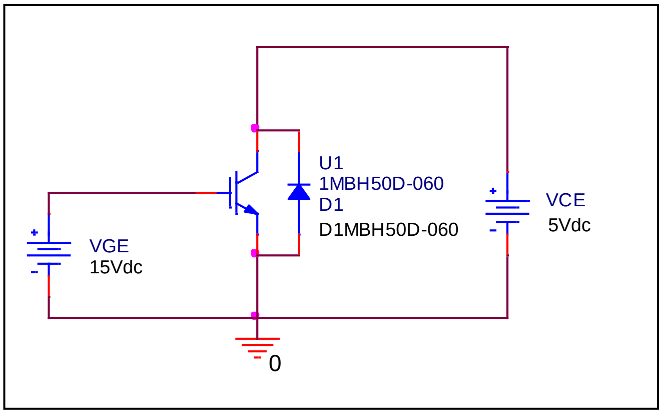


Transfer Characteristics

Circuit Simulation result

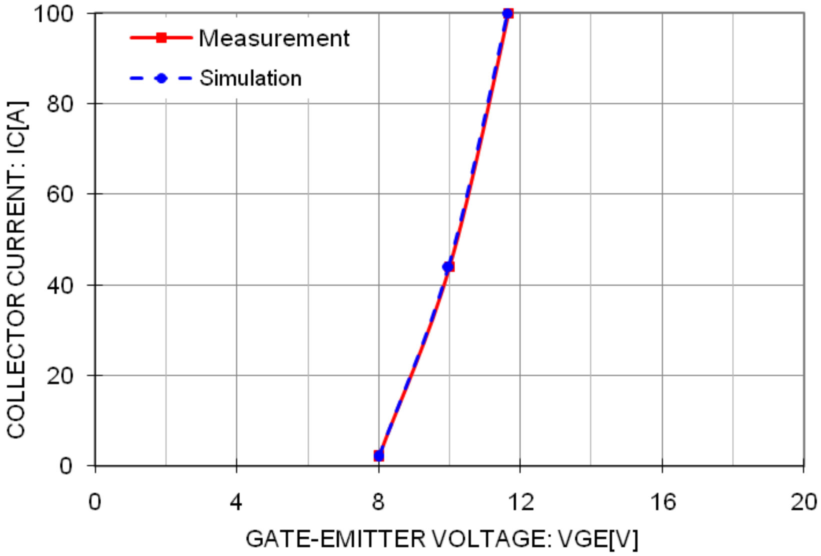


Evaluation circuit



Comparison Graph

Simulation result



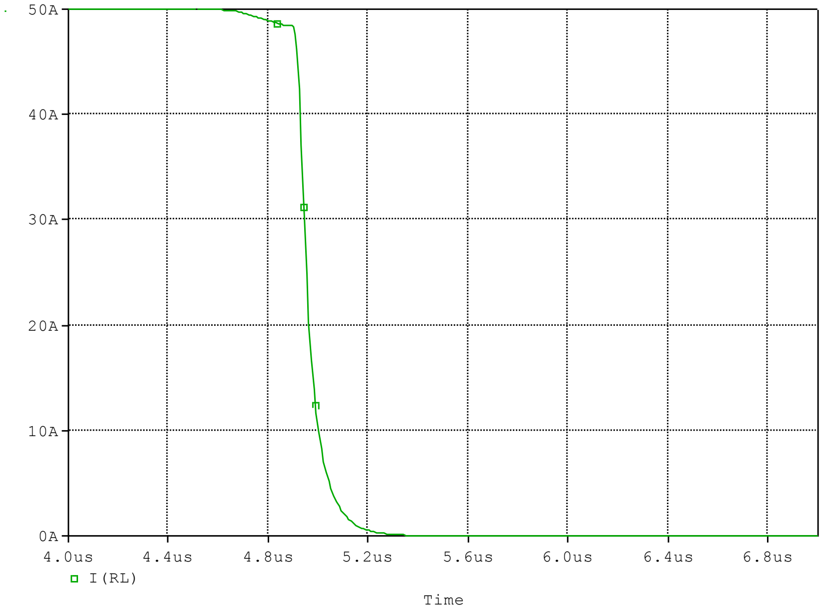
Comparison table

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

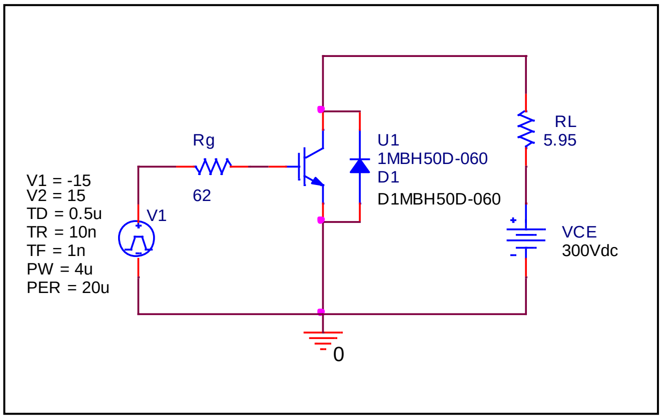
IC (A)	VGE (V)		%Error
	Measurement	Simulation	
2	8.000	8.003	0.04
44	10.000	9.985	-0.15
100	11.665	11.642	-0.20

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

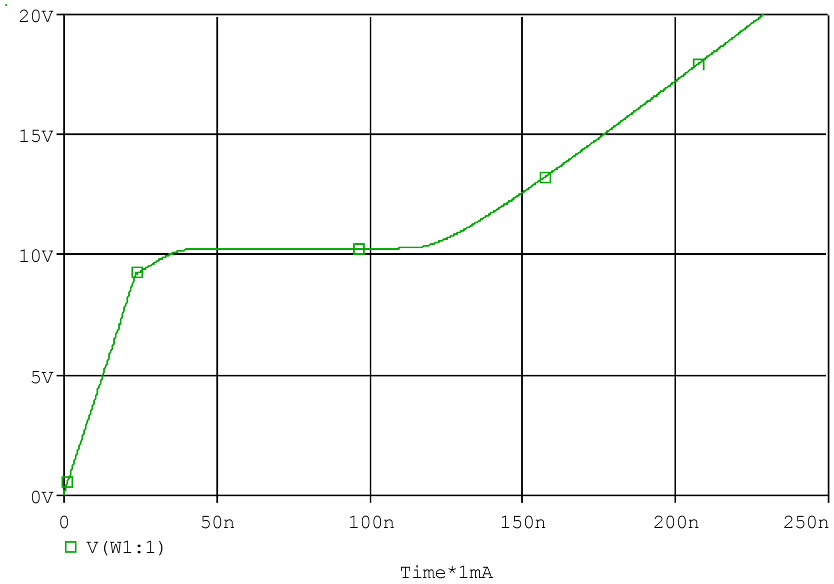


Test condition: IC=50 (A), VCC=300 (V)

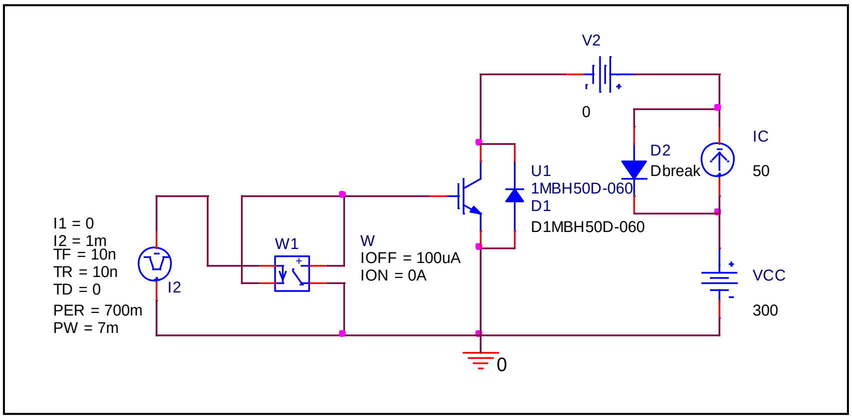
Parameter	Unit	Measurement	Simulation	%Error
tf	us	0.130	0.129	-0.77

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

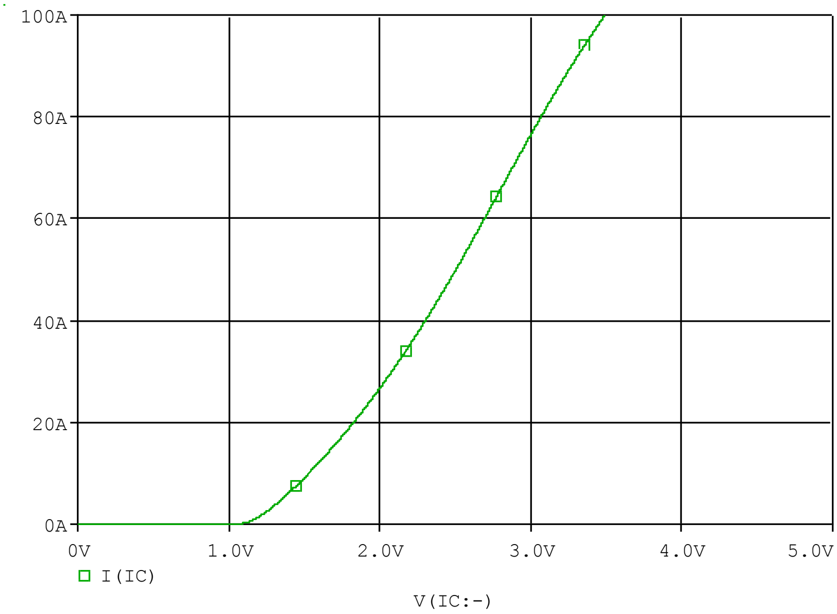


Test condition: V_{CC}=300 (V), I_C=50 (A), V_{GE}=15 (V)

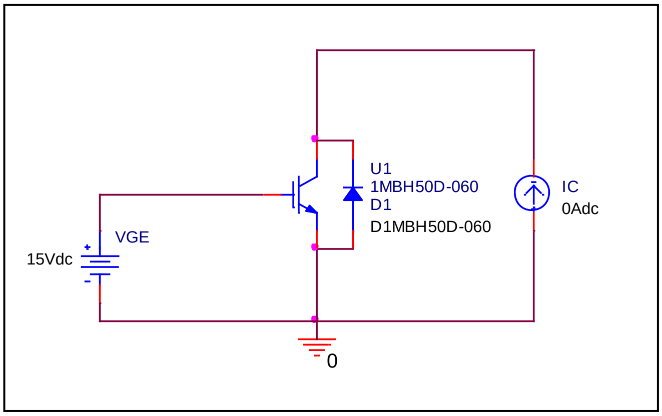
Parameter	Unit	Measurement	Simulation	%Error
Qge	nc	30.000	30.822	2.74
Qgc	nc	85.000	86.301	1.53
Qg	nc	178.000	177.364	-0.36

Saturation Characteristics

Circuit Simulation result

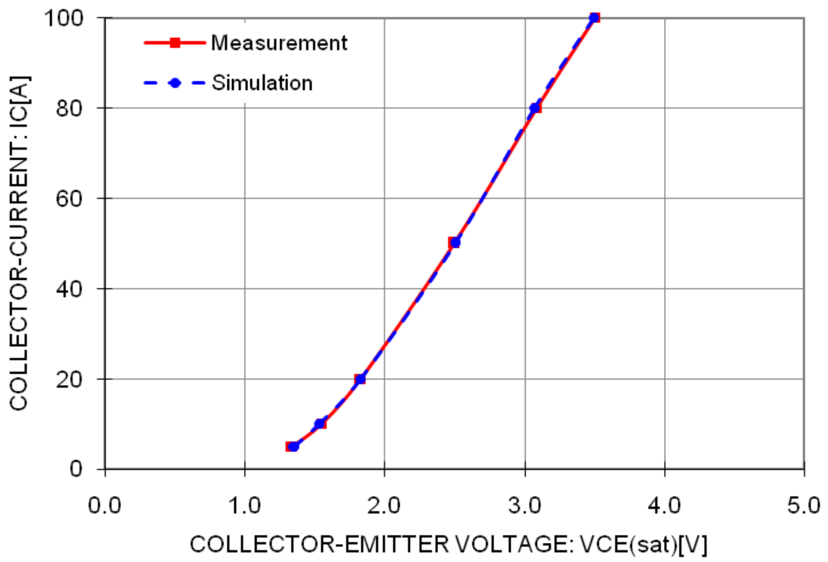


Evaluation circuit



Comparison Graph

Simulation result



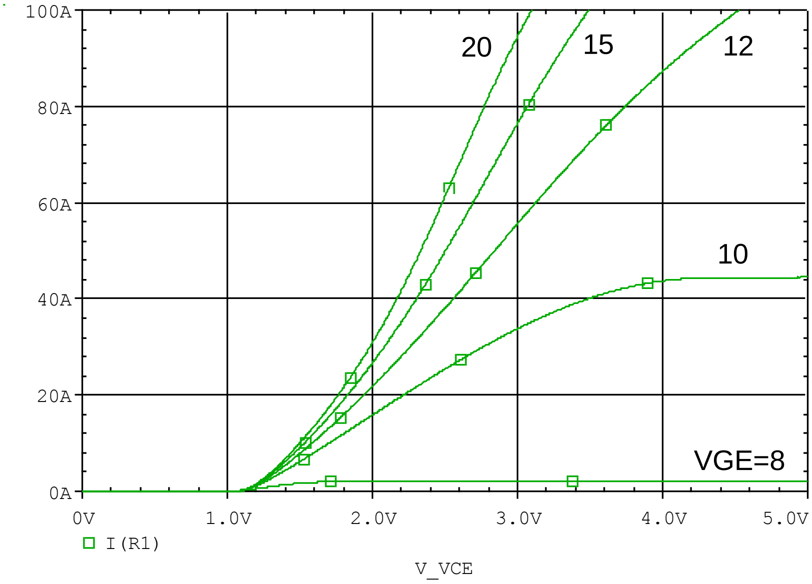
Comparison table

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

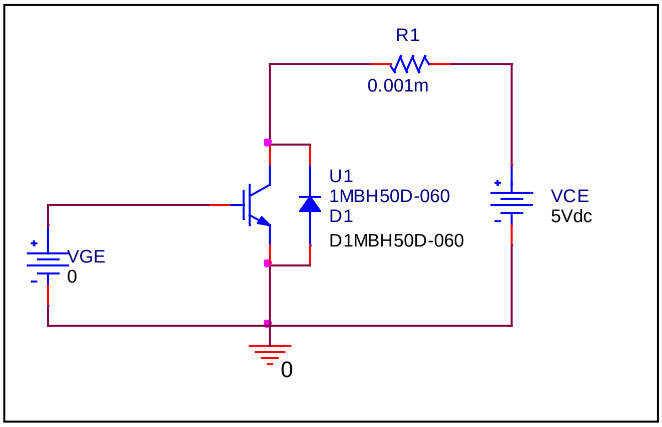
IC(A)	VCE (V)		%Error
	Measurement	Simulation	
5	1.340	1.355	1.11
10	1.550	1.530	-1.29
20	1.830	1.827	-0.16
50	2.500	2.505	0.20
80	3.085	3.068	-0.54
100	3.500	3.492	-0.23

Output Characteristics

Circuit Simulation result

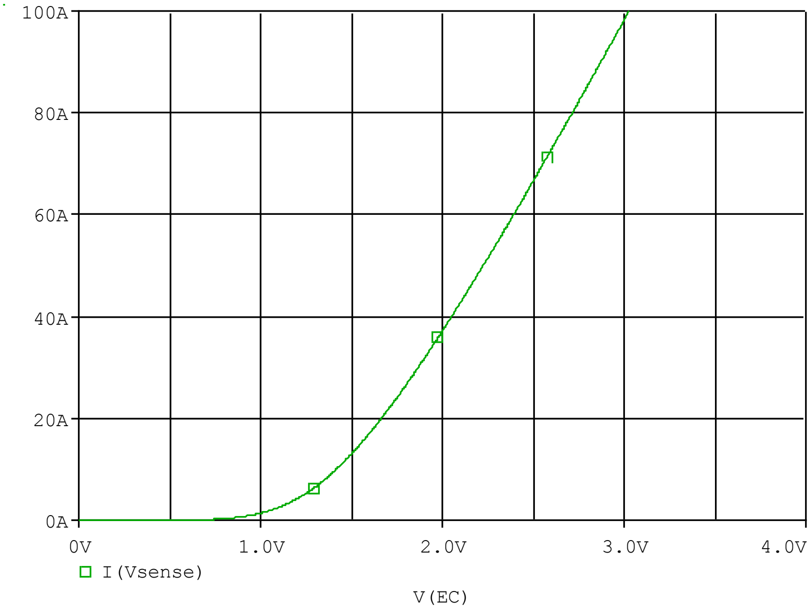


Evaluation circuit

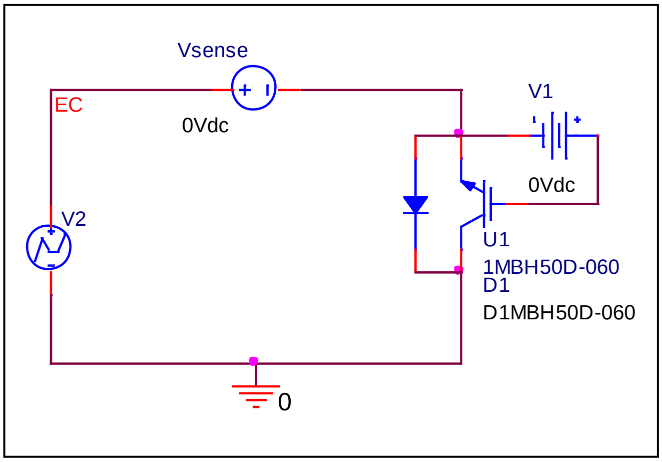


FWD Forward Current Characteristics

Circuit Simulation result



Evaluation circuit



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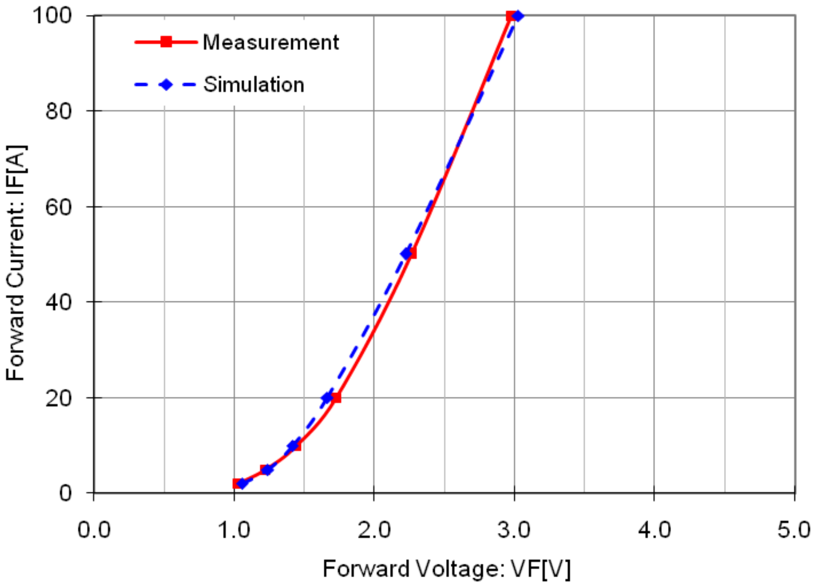
Comparison Graph

Simulation result

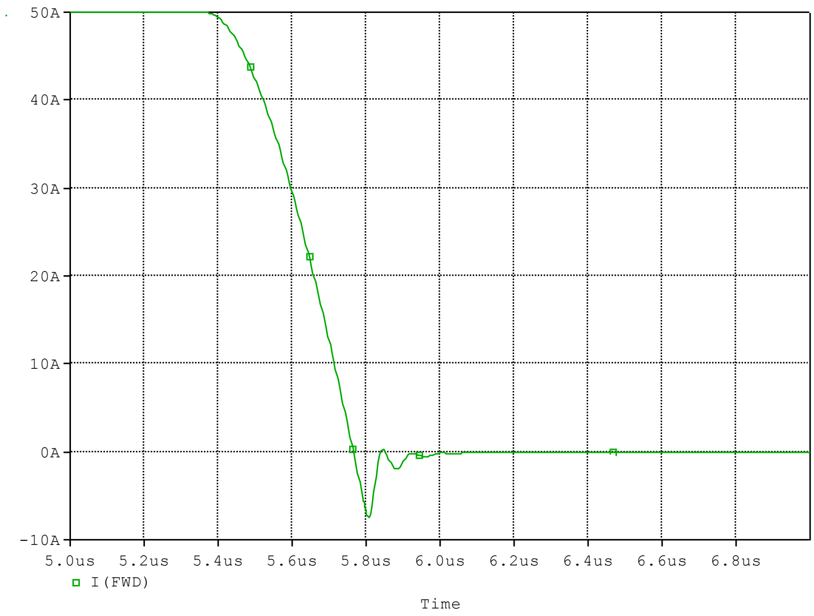


Comparison table

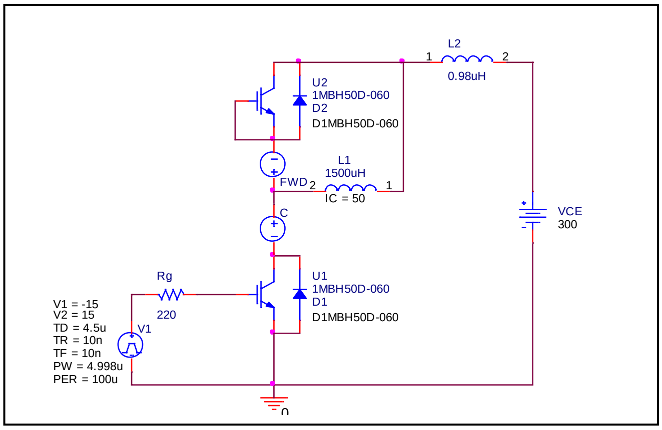
IF(A)	VF (V)		%Error
	Measurement	Simulation	
2	1.025	1.058	3.22
5	1.220	1.239	1.56
10	1.440	1.417	-1.60
20	1.725	1.665	-3.50
50	2.265	2.225	-1.77
100	2.975	3.028	1.77

Reverse Recovery Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: VCC=300 (V), IC=50 (A), -di/dt=150 (A/us)

Parameter	Unit	Measurement	Simulation	%Error
trr	ns	155.000	68.422	-55.86
Irr	A	7.500	7.494	-0.08