

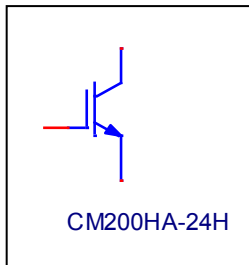
Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: CM200HA-24H
MANUFACTURER: MITSUBISHI
*REMARK: Free-Wheeling Diode Professional Model

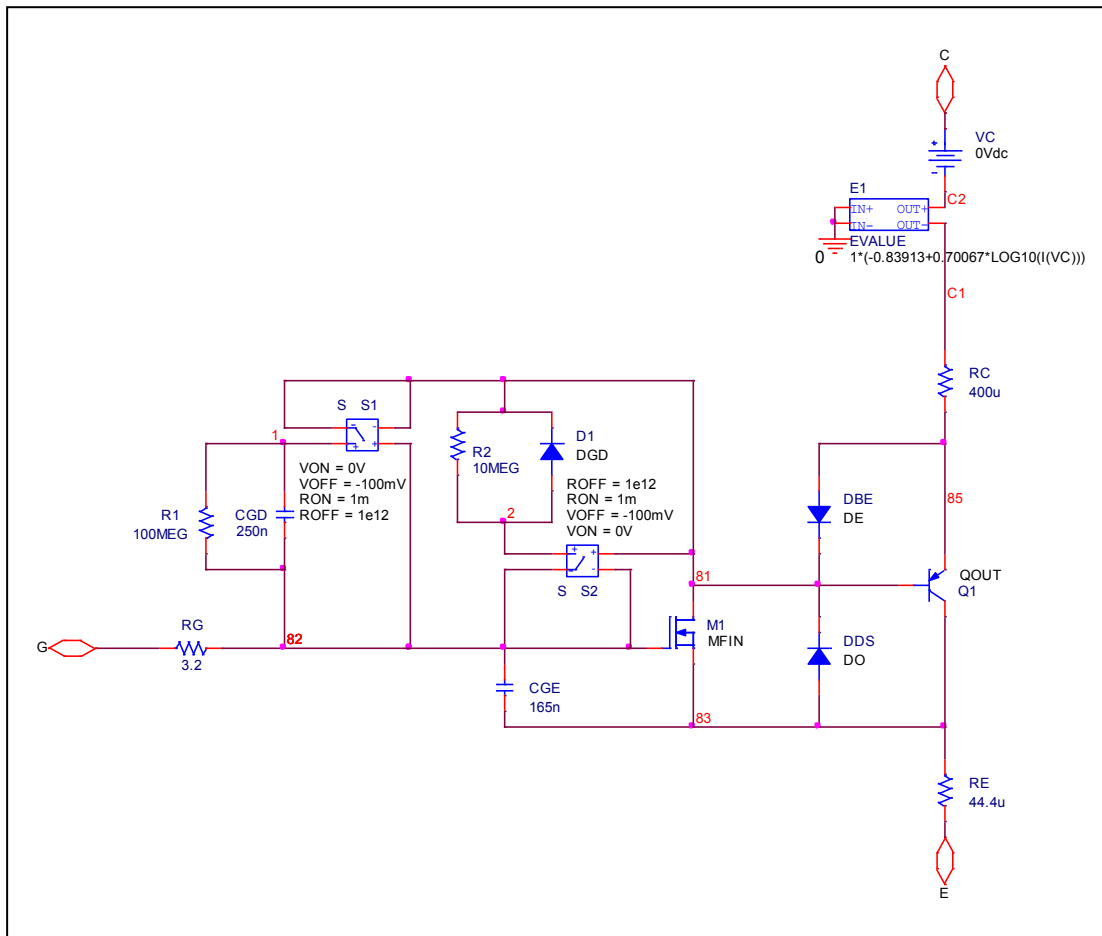


Bee Technologies Inc.

Circuit Configuration

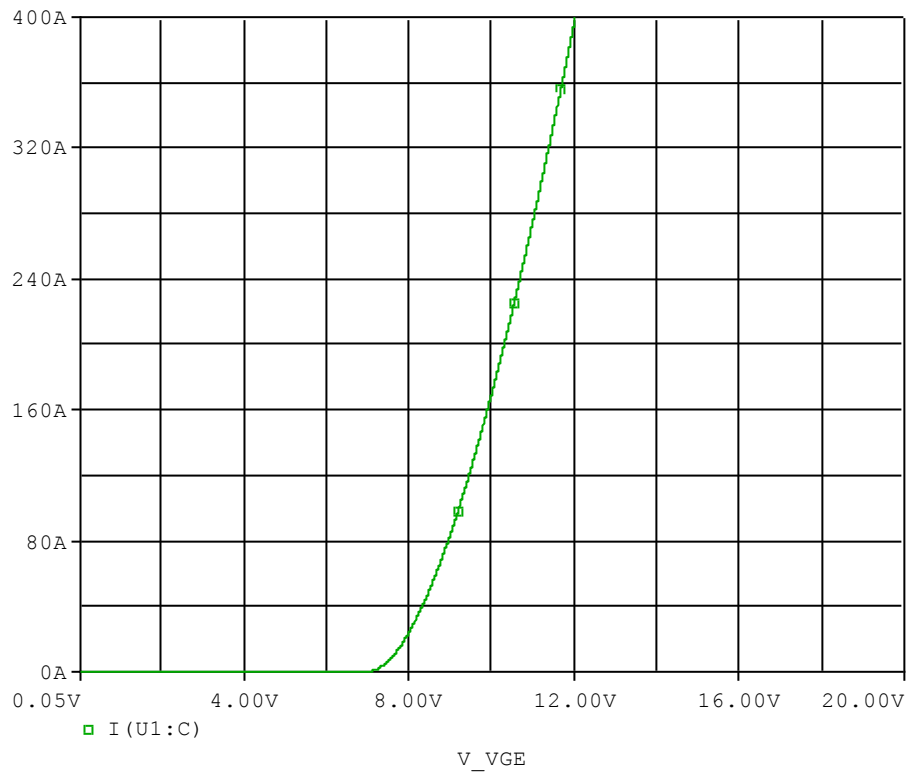


IGBT Subcircuit

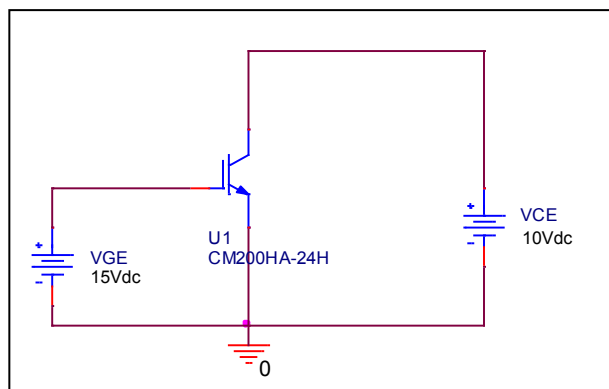


Transfer Characteristics

Circuit Simulation result

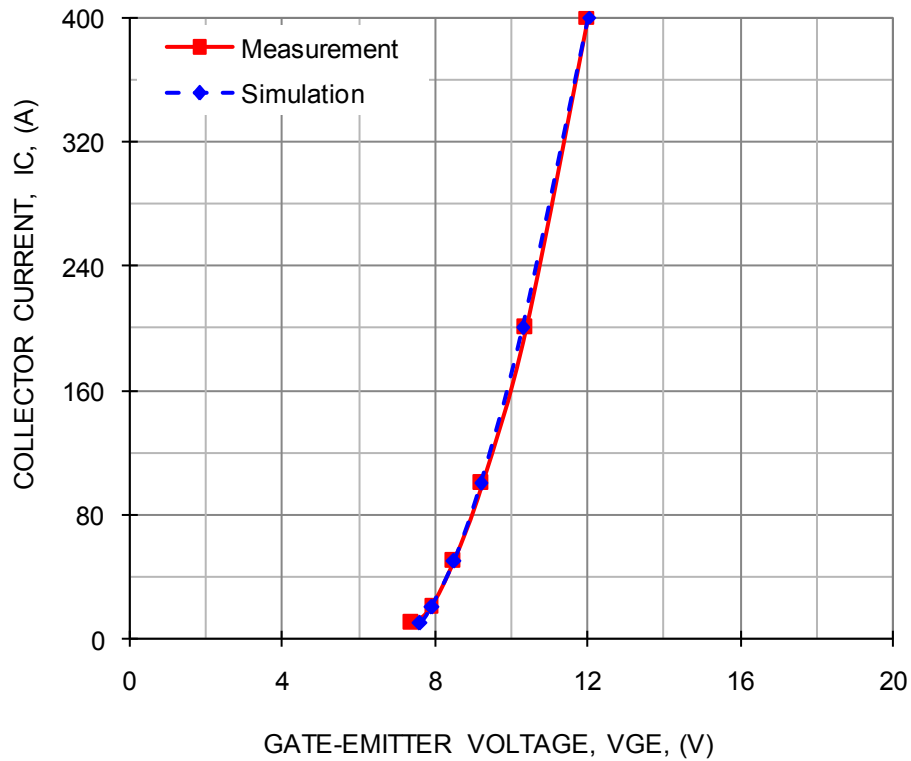


Evaluation circuit



Comparison Graph

Circuit Simulation Result



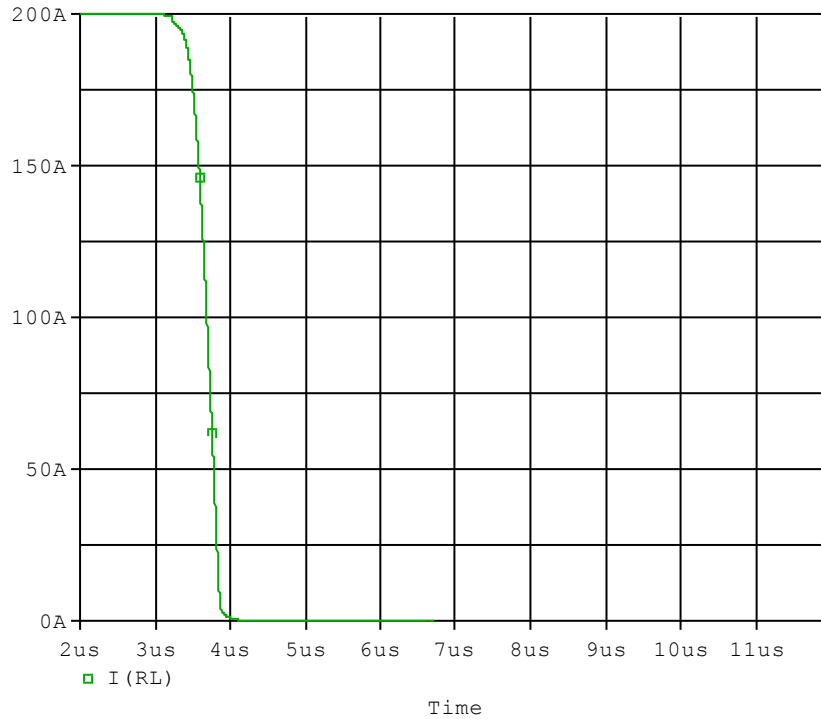
Simulation Result

Test condition: $V_{CE} = 10\text{ V}$

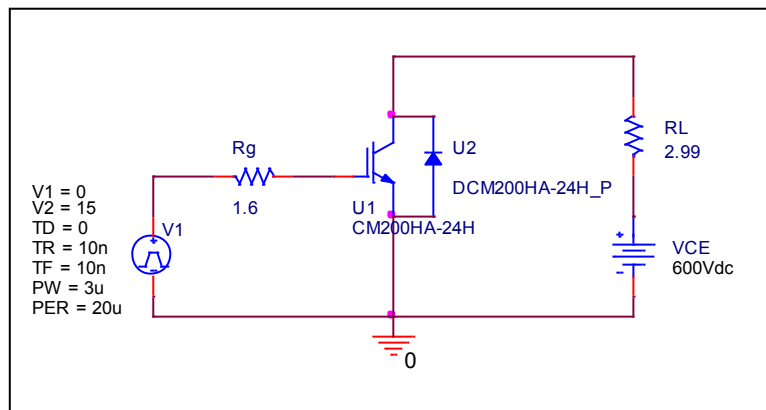
IC (A)	VGE (V)		Error (%)
	Measurement	Simulation	
10	7.400	7.628	3.08
20	7.900	7.912	0.15
50	8.500	8.503	0.03
100	9.250	9.215	-0.37
200	10.400	10.309	-0.88
400	12.000	12.032	0.27

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

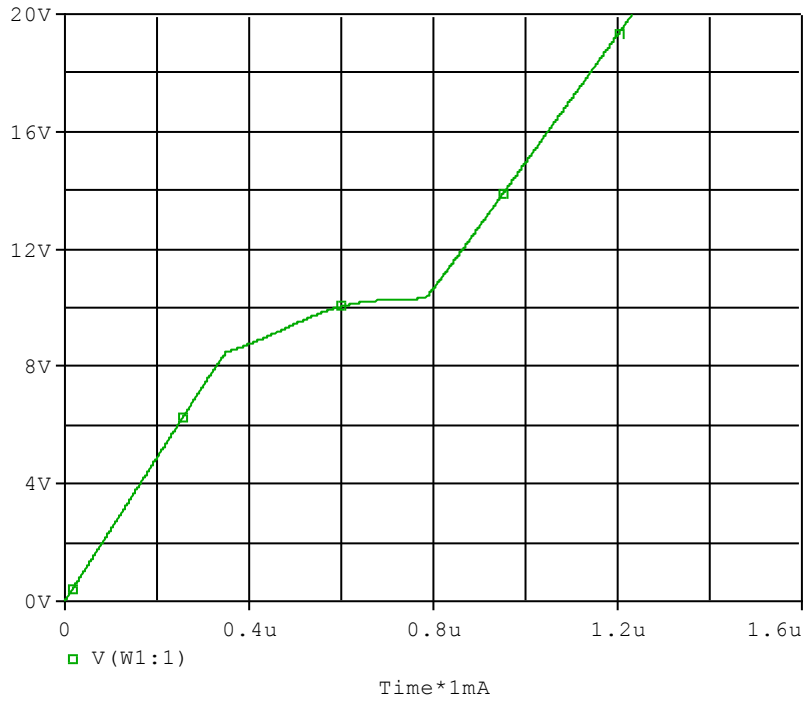


Test condition $I_c=200$ (A), $V_{cc}=600$ (V)

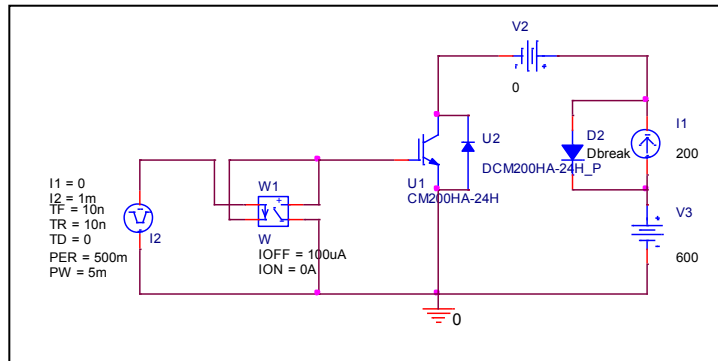
Parameter	Unit	Measurement	Simulation	Error
tf	ns	350.000	351.600	0.457

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

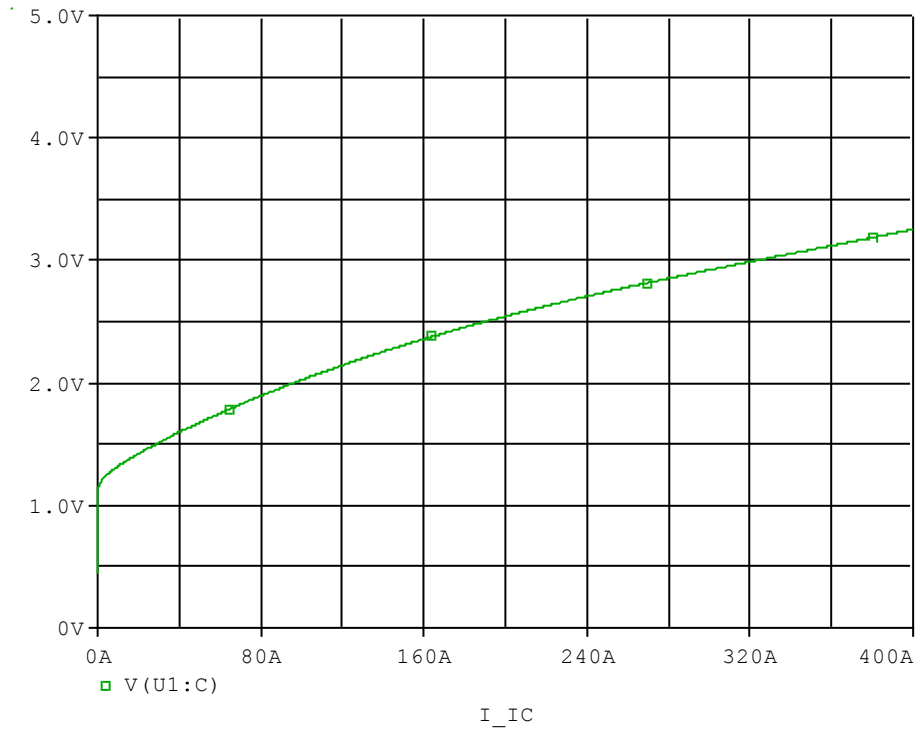


Test condition: $V_{CC}=600$ (V), $I_c=200$ (A) , $V_{GE}=15$ (V)

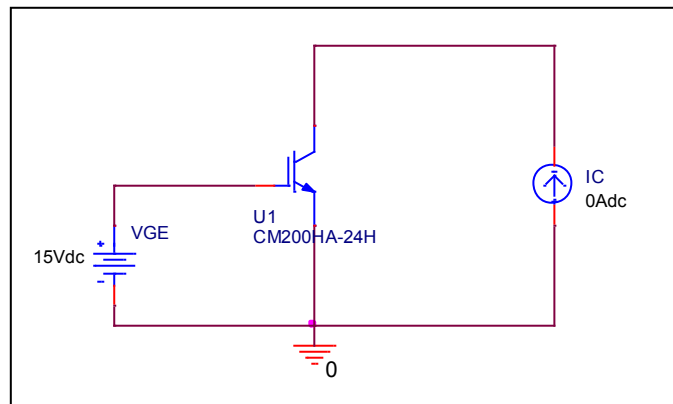
Parameter	Unit	Measurement	Simulation	Error(%)
Qge	nc	360.000	358.864	-0.316
Qgc	nc	470.000	460.717	-1.975
Qg	nc	1000.000	1002.700	0.270

Saturation Characteristics

Circuit Simulation result

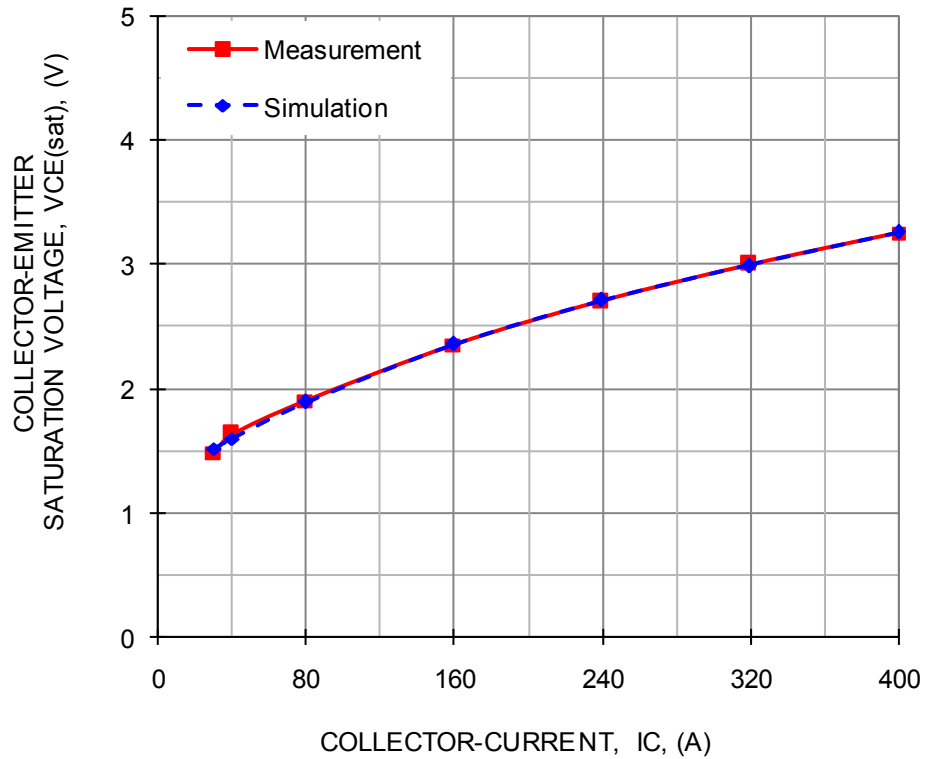


Evaluation circuit



Comparison Graph

Circuit Simulation Result



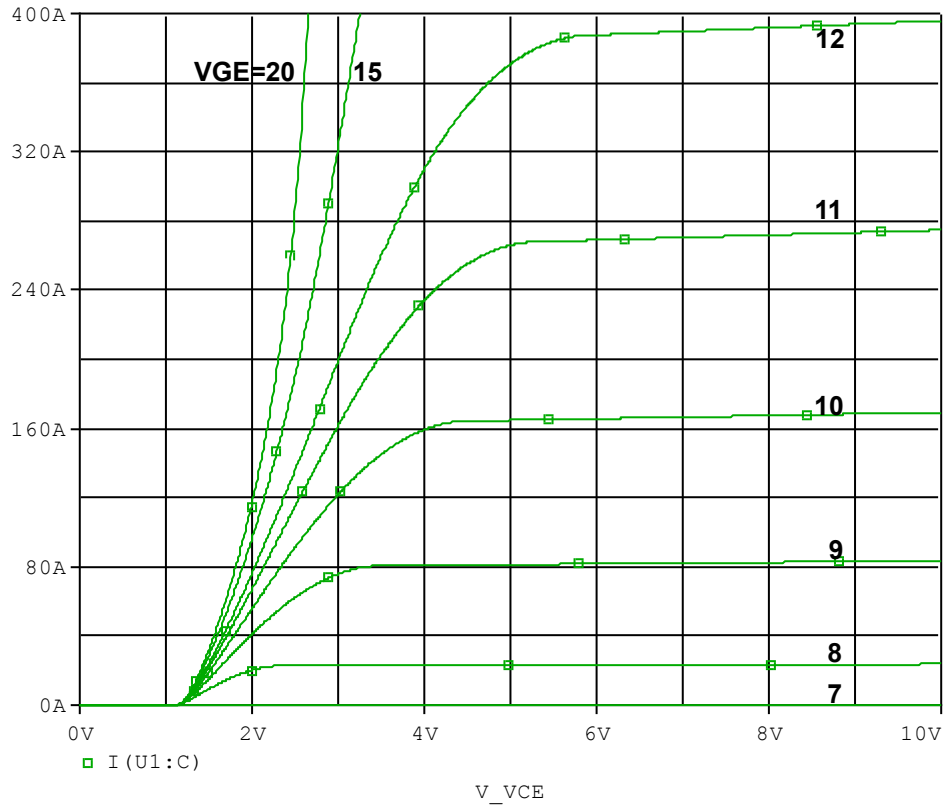
Simulation Result

Test condition: $V_{GE} = 15\text{ V}$

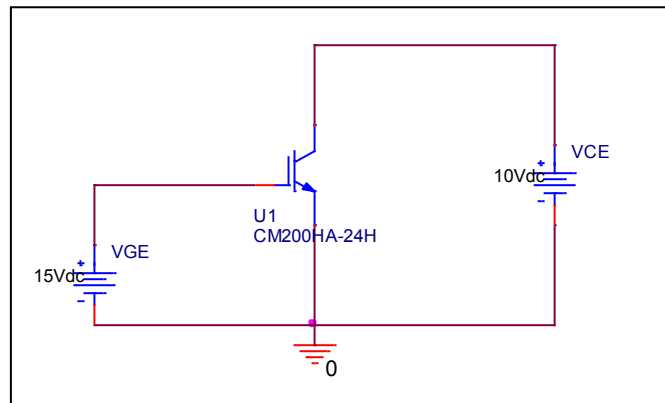
Ic(A)	VCE (V)		Error (%)
	Measurement	Simulation	
30	1.480	1.512	2.19
40	1.630	1.597	-2.05
80	1.900	1.893	-0.35
160	2.350	2.358	0.34
240	2.700	2.707	0.25
320	3.000	2.989	-0.36
400	3.250	3.254	0.11

Output Characteristics

Circuit Simulation result

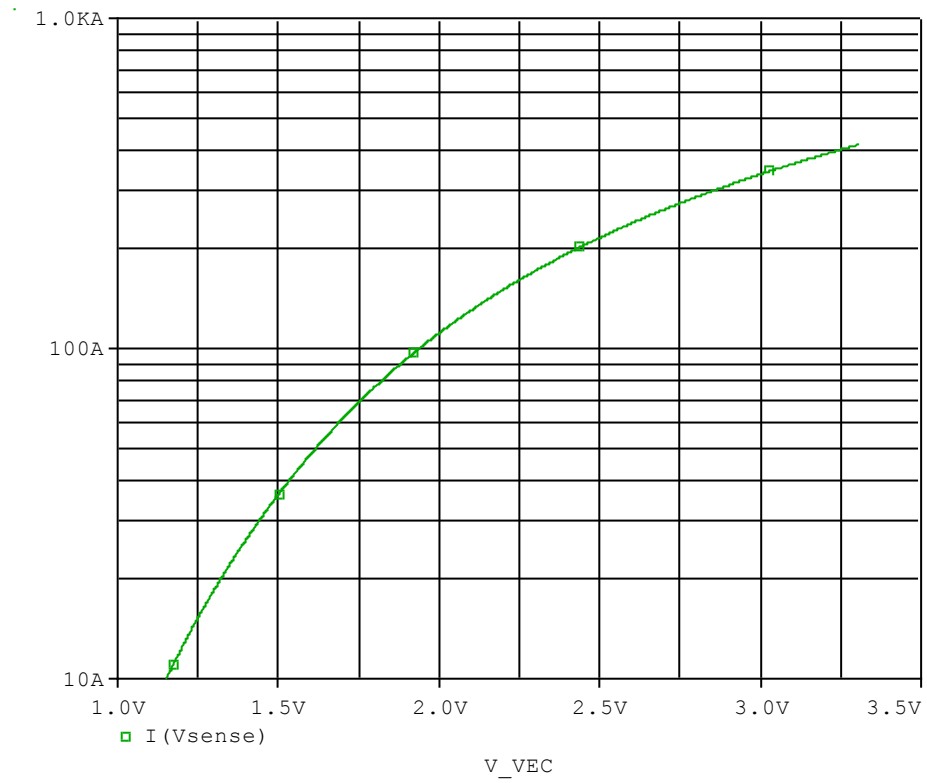


Evaluation circuit

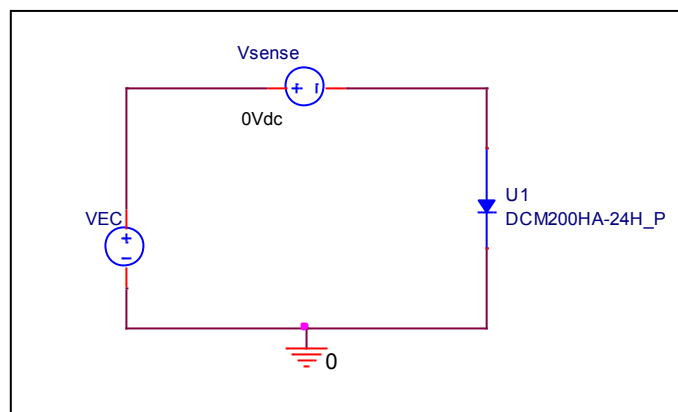


Forward Current Characteristic

Circuit Simulation Result

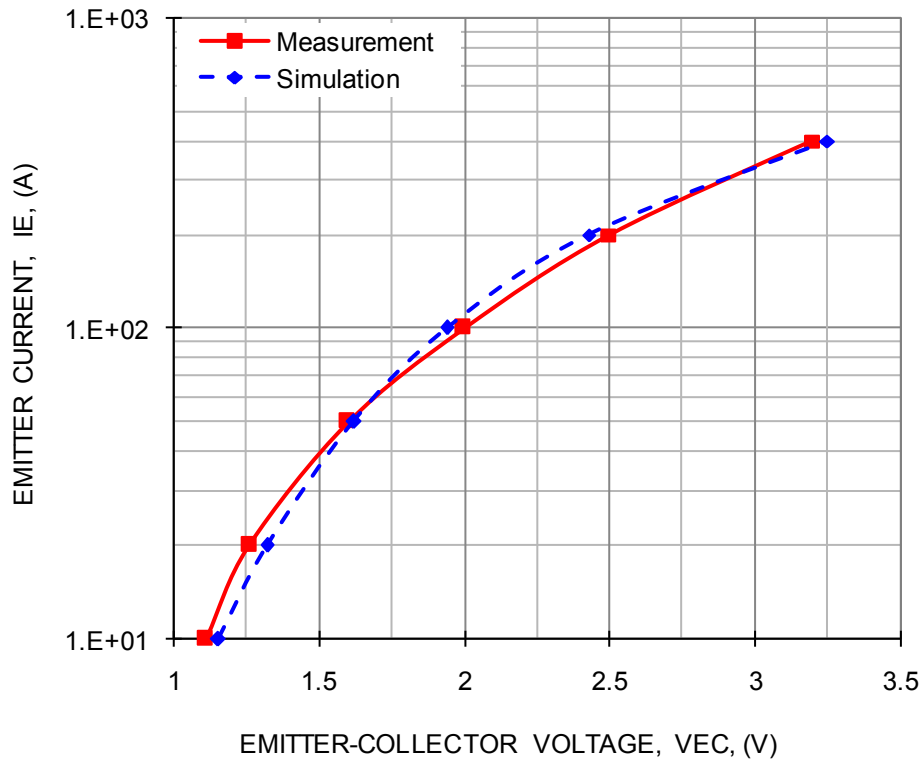


Evaluation Circuit



Comparison Graph

Circuit Simulation Result



Simulation Result

IE(A)	VEC(V)		%Error
	Measurement	Simulation	
10	1.110	1.151	3.73
20	1.260	1.320	4.76
50	1.600	1.618	1.11
100	2.000	1.939	-3.05
200	2.500	2.428	-2.89
400	3.200	3.250	1.55

