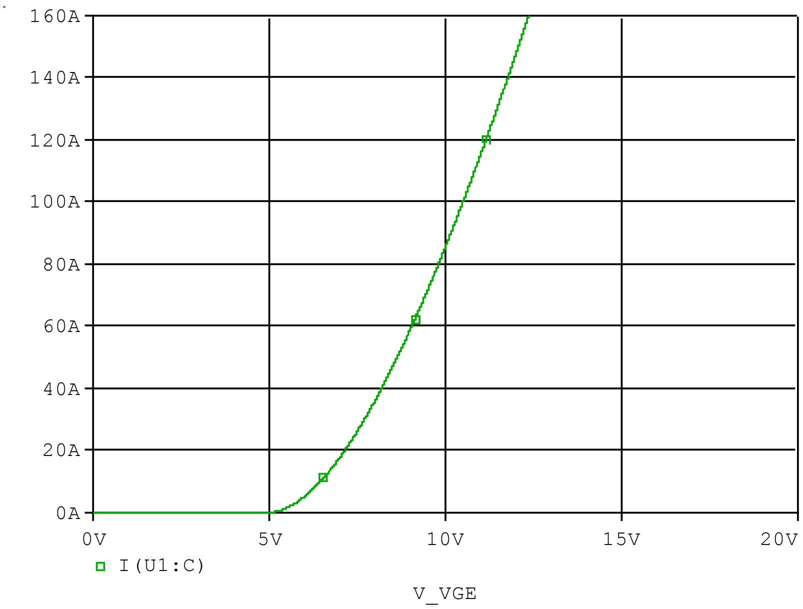
Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: KGH25N120NDA
MANUFACTURER: KEC

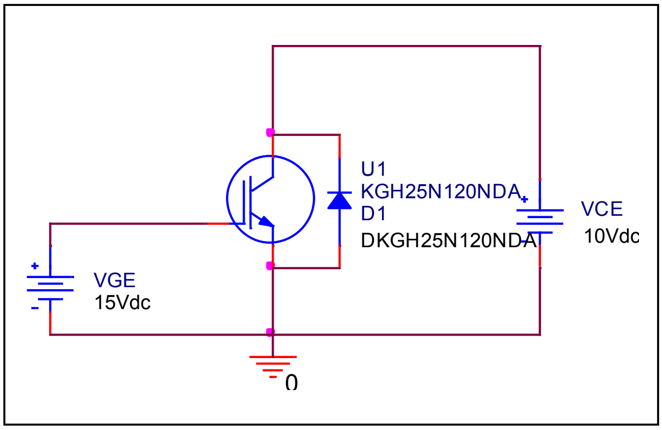
Bee Technologies Inc.

Transfer Characteristics

Circuit Simulation result

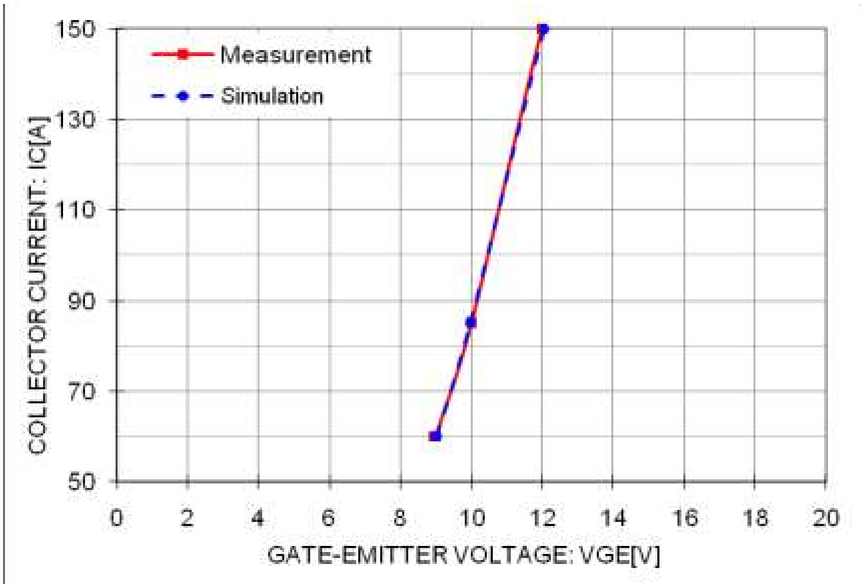


Evaluation circuit



Comparison Graph

Simulation result



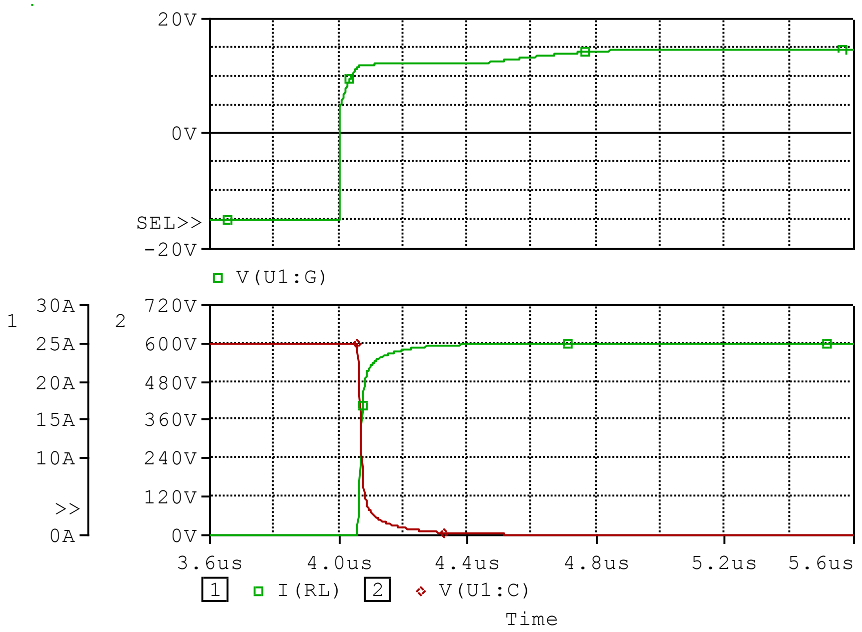
Comparison table

Test condition: V_{CE} =10 (V)

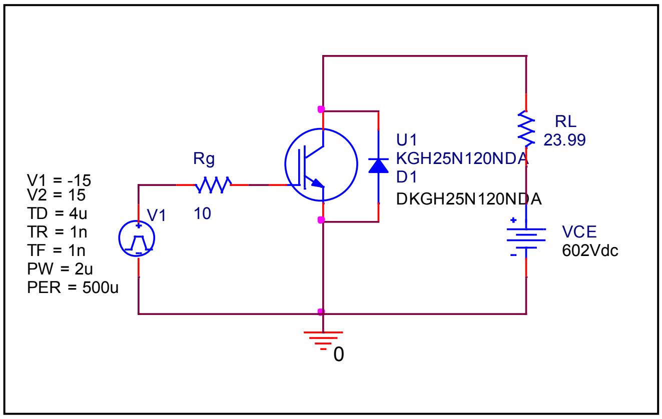
IC (A)	VGE (V)		%Error
	Measurement	Simulation	
60	9.000	9.041	0.46
85	10.000	9.977	-0.23
150	12.000	12.067	0.56

Rise Time Characteristics

Circuit Simulation result



Evaluation circuit

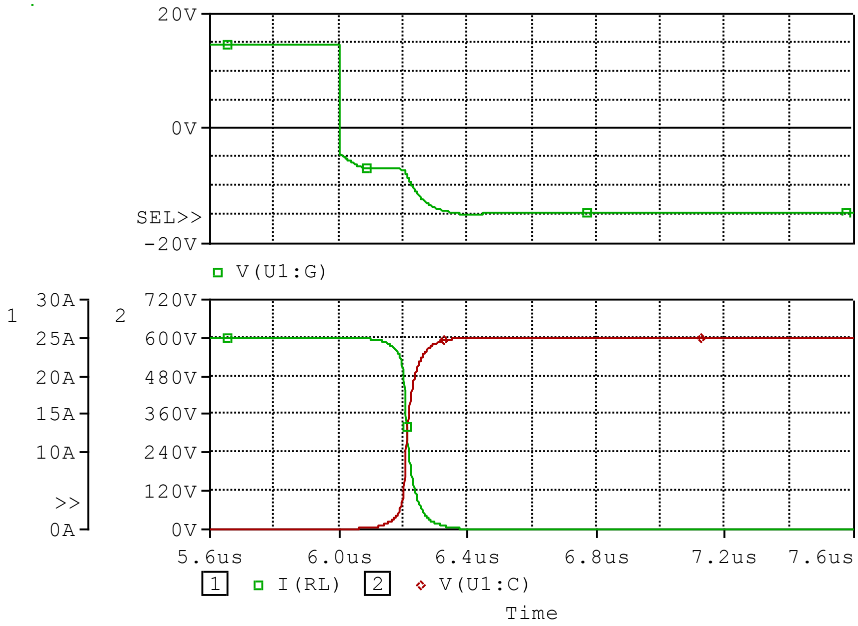


Test condition: I_C=25 (A), V_{CC}=600 (V), V_{GE}= ±15 (V), R_G=10 (Ω)

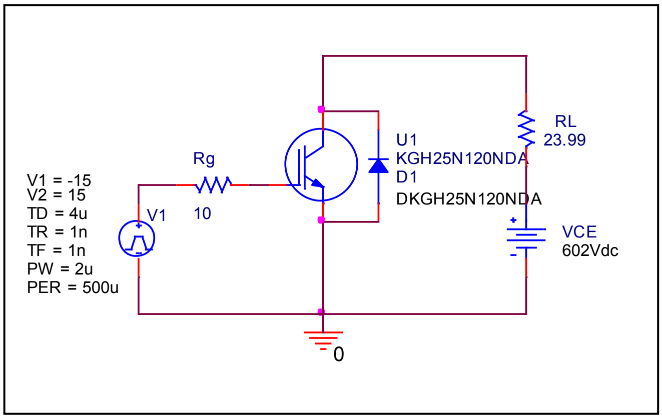
Parameter	Unit	Measurement	Simulation	%Error
tr	ns	50.000	50.010	0.02
td(on)	ns	60.000	59.300	-1.17

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

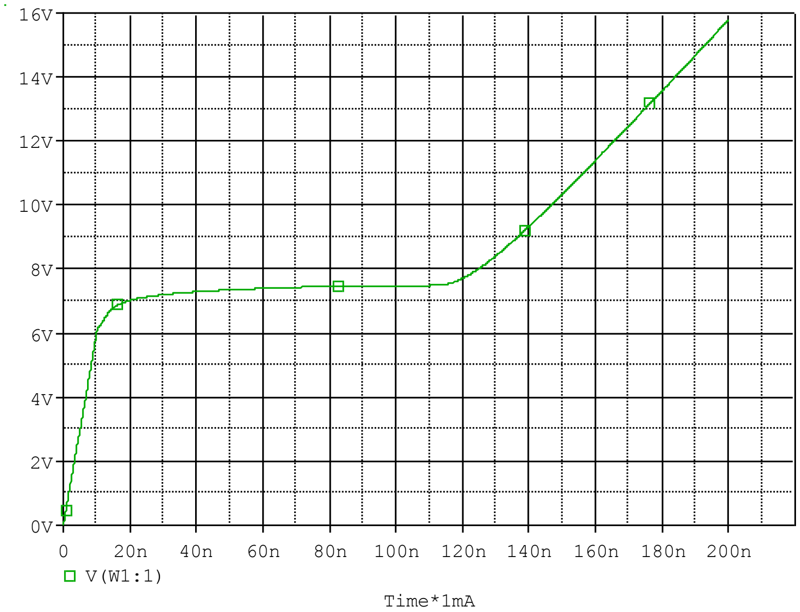


Test condition: IC=25 (A), VCC=600 (V), VGE= ±15 (V), RG=10 (Ω)

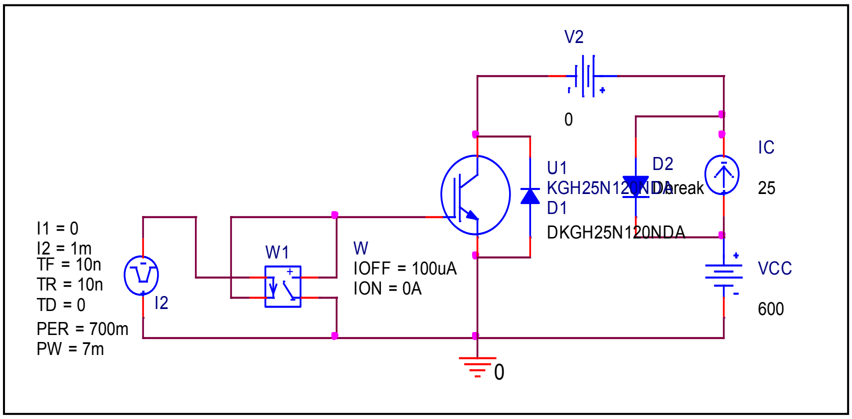
Parameter	Unit	Measurement	Simulation	%Error
tf	ns	70.000	69.229	-1.10
td(off)	ns	190.000	190.100	0.05

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

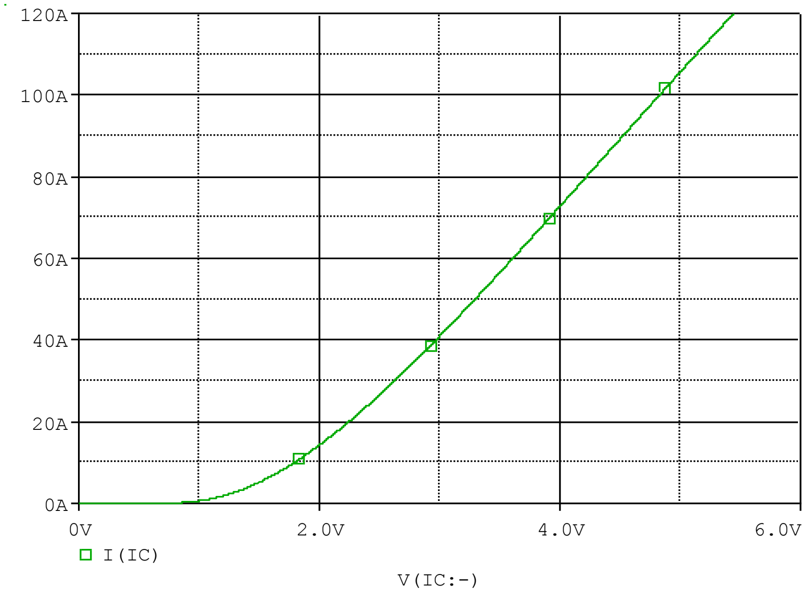


Test condition: VCC=600 (V), IC=25 (A), VGE=15 (V)

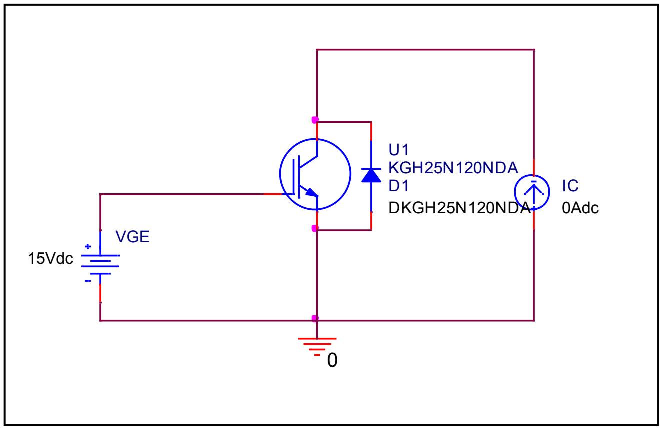
Parameter	Unit	Measurement	Simulation	%Error
Qge	nc	20.000	19.245	-3.78
Qgc	nc	100.000	97.925	-2.08
Qg	nc	200.000	192.892	-3.55

Saturation Characteristics

Circuit Simulation result

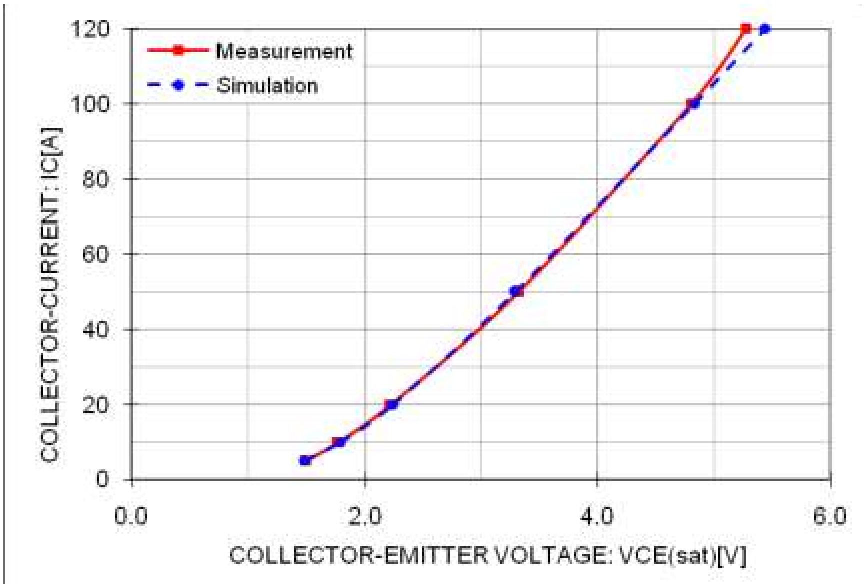


Evaluation circuit



Comparison Graph

Simulation result



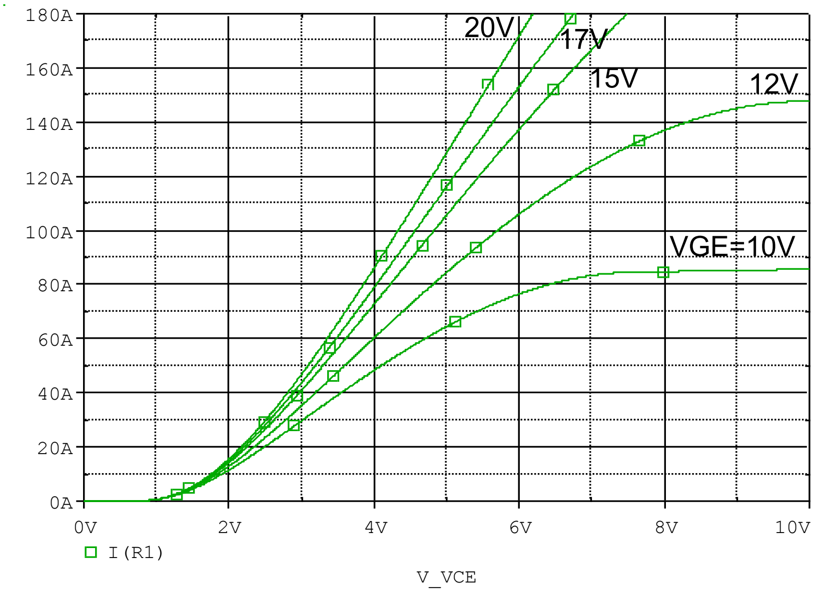
Comparison table

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

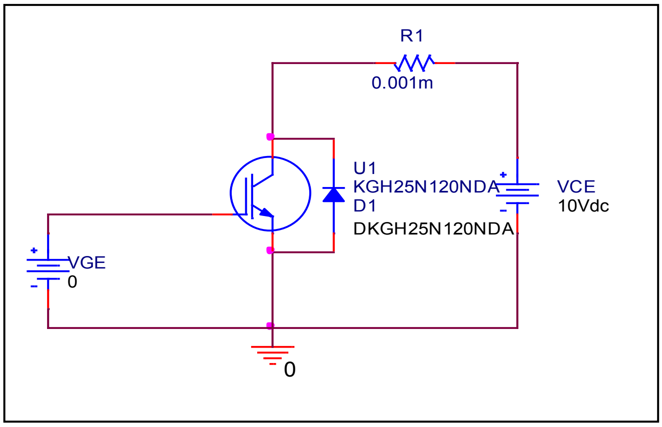
IC(A)	VCE (V)		%Error
	Measurement	Simulation	
5	1.500	1.488	-0.77
10	1.775	1.792	0.95
20	2.225	2.246	0.93
50	3.325	3.294	-0.94
100	4.800	4.828	0.59
120	5.275	5.446	3.24

Output Characteristics

Circuit Simulation result

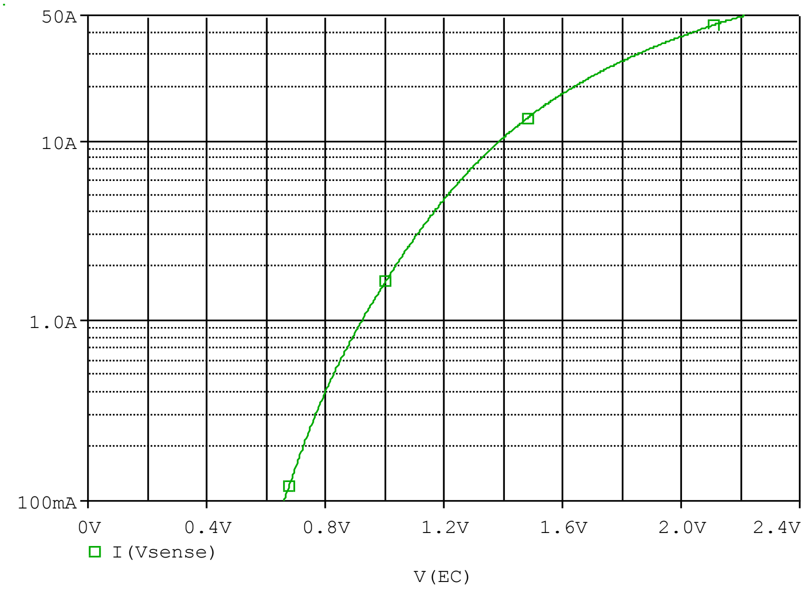


Evaluation circuit

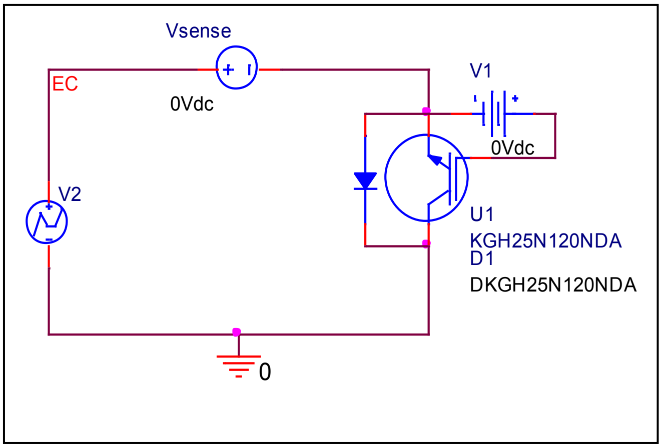


FWD Forward Current Characteristics

Circuit Simulation result

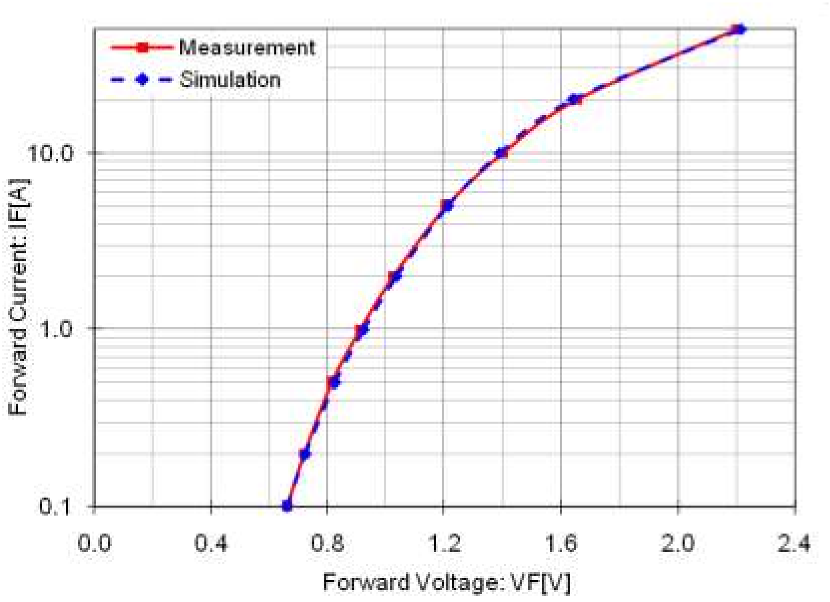


Evaluation circuit



Comparison Graph

Simulation result

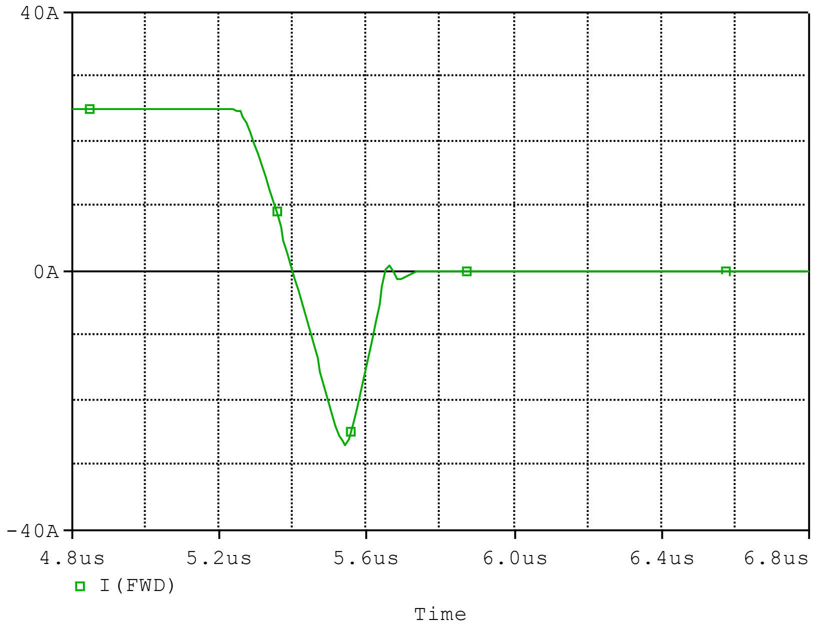


Comparison table

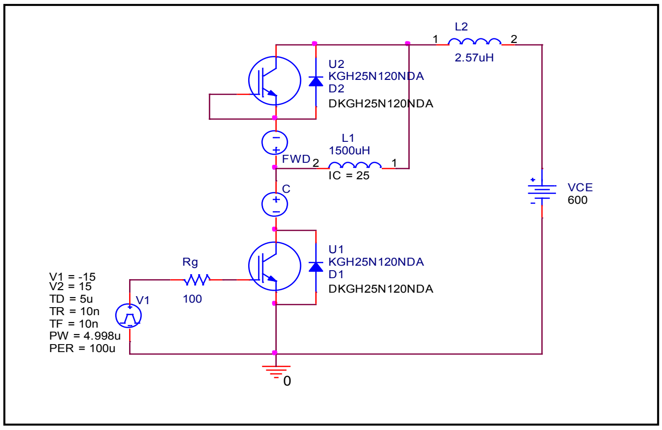
IF(A)	VF (V)		%Error
	Measurement	Simulation	
0.1	0.660	0.661	0.15
0.2	0.718	0.725	0.99
0.5	0.814	0.827	1.58
1	0.910	0.922	1.32
2	1.025	1.035	0.97
5	1.210	1.213	0.21
10	1.400	1.388	-0.84
20	1.655	1.638	-1.02
50	2.200	2.216	0.72

Reverse Recovery Characteristics

Circuit Simulation result



Evaluation circuit



Test condition: VCC=600 (V), IC=25 (A), -di/dt=200 (A/us)

Parameter	Unit	Measurement	Simulation	%Error
trr	nsec	230.000	242.096	5.26
Irr	A	27.000	27.150	0.56