Device Modeling Report

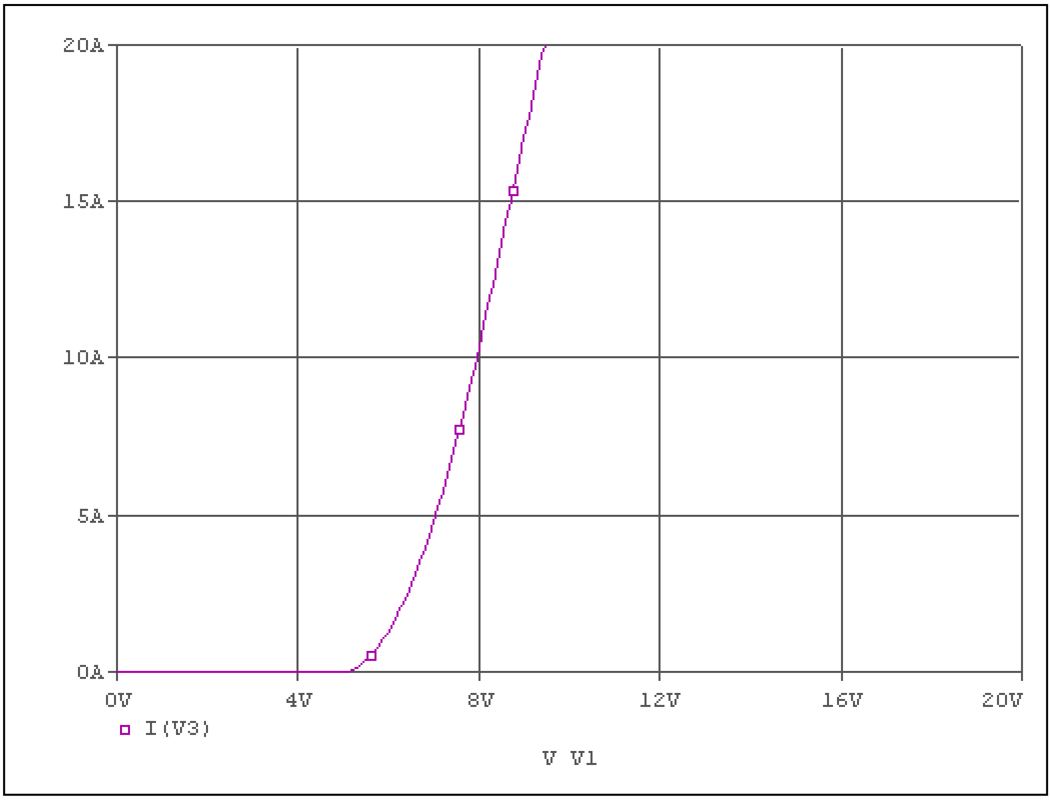
COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: GT15Q101
MANUFACTURER: TOSHIBA

Bee Technologies Inc.

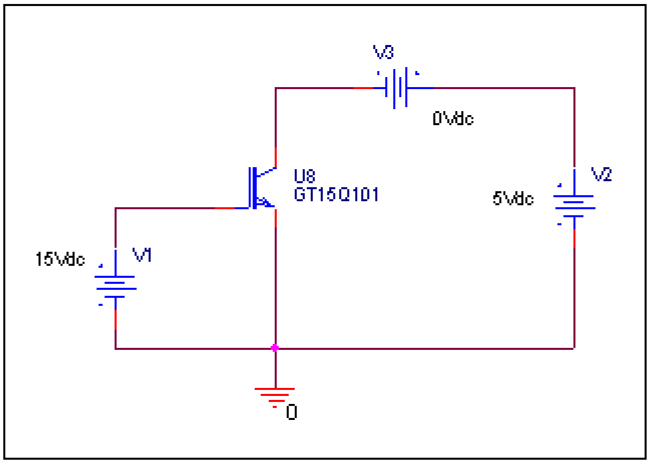
PSpice model parameter	Model description
TAU	Ambipolar Recombination Lifetime
KP	MOS Transconductance
AREA	Area of the Device
AGD	Gate-Drain Overlap Area
WB	Metallurgical Base Width
VT	Threshold Voltage
KF	Triode Region Factor
CGS	Gate-Source Capacitance per Unit Area
COXD	Gate-Drain Oxide Capacitance per Unit Area
VTD	Gate-Drain Overlap Depletion Threshold

Transfer Characteristics

Circuit Simulation result

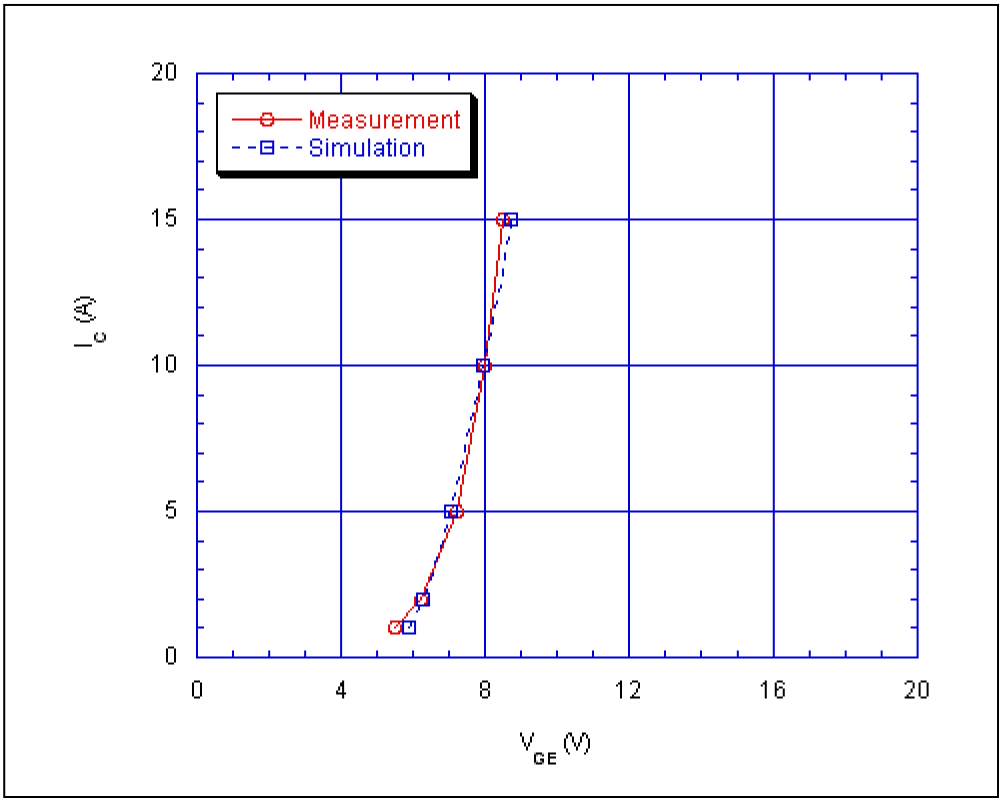


Evaluation circuit



Comparison Graph

Circuit Simulation Result



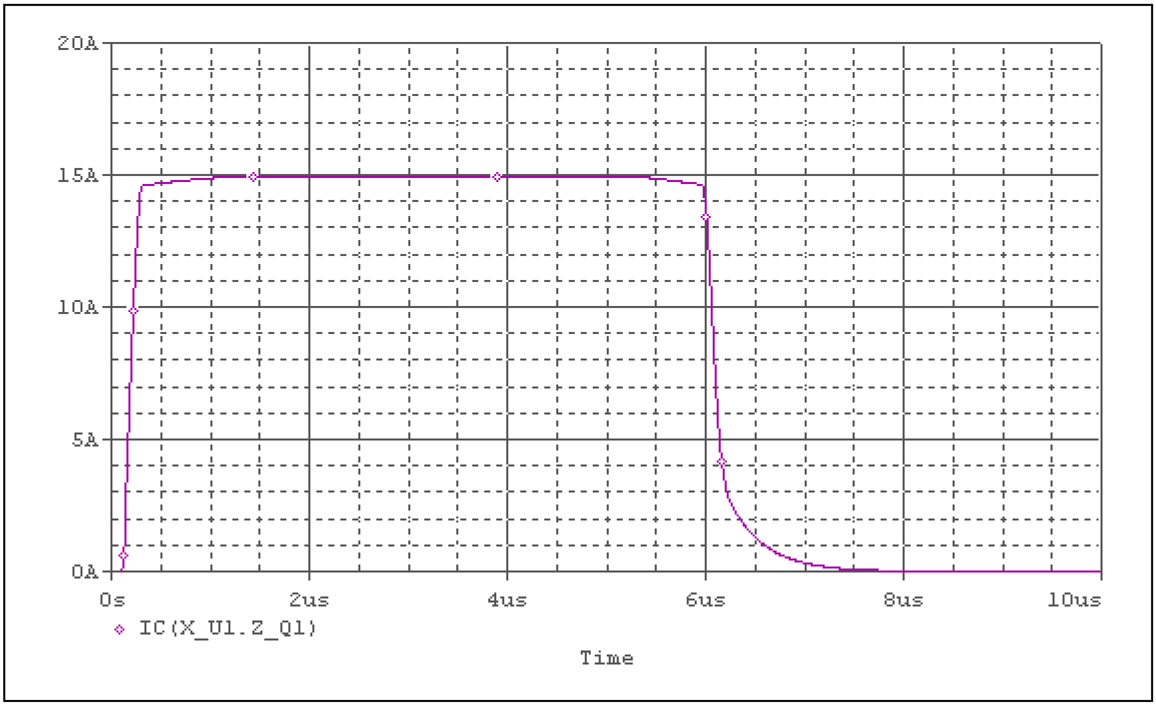
Simulation Result

Test condition : Vce = 5 V

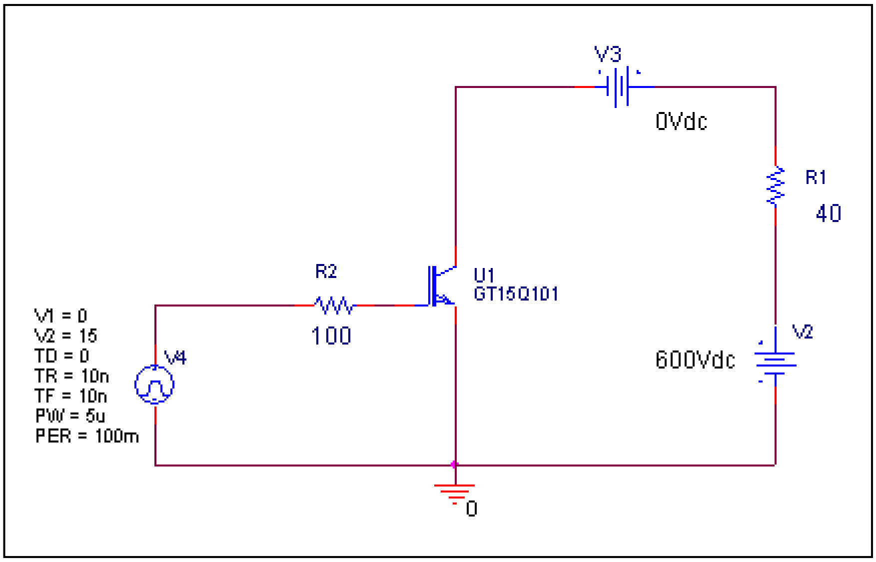
Ic(A)	Vge(V)		Error (%)
	Measurement	Simulation	
1	5.7	5.8652	2.89825
2	6.2	6.2562	0.90645
5	7.1	7.0431	-0.80141
10	8.0	7.9527	-0.59125
15	8.6	8.7756	2.04186

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

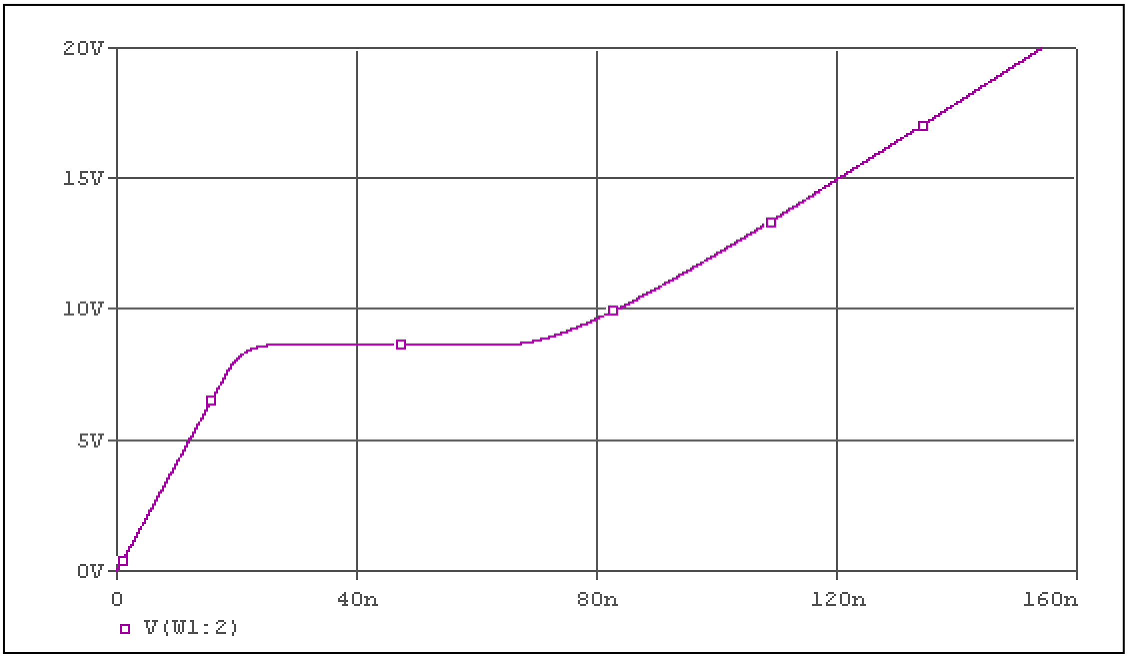


Test condition Ic=15(A) ,Vce=600(V)

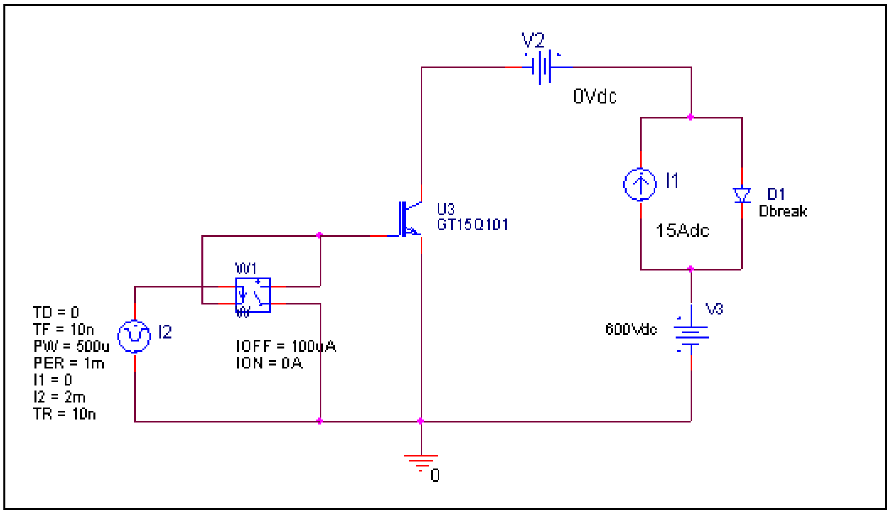
tf	Measurement		Simulation		Error
	0.25-0.5	**us**	**0.445254**	**us**	**0**

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

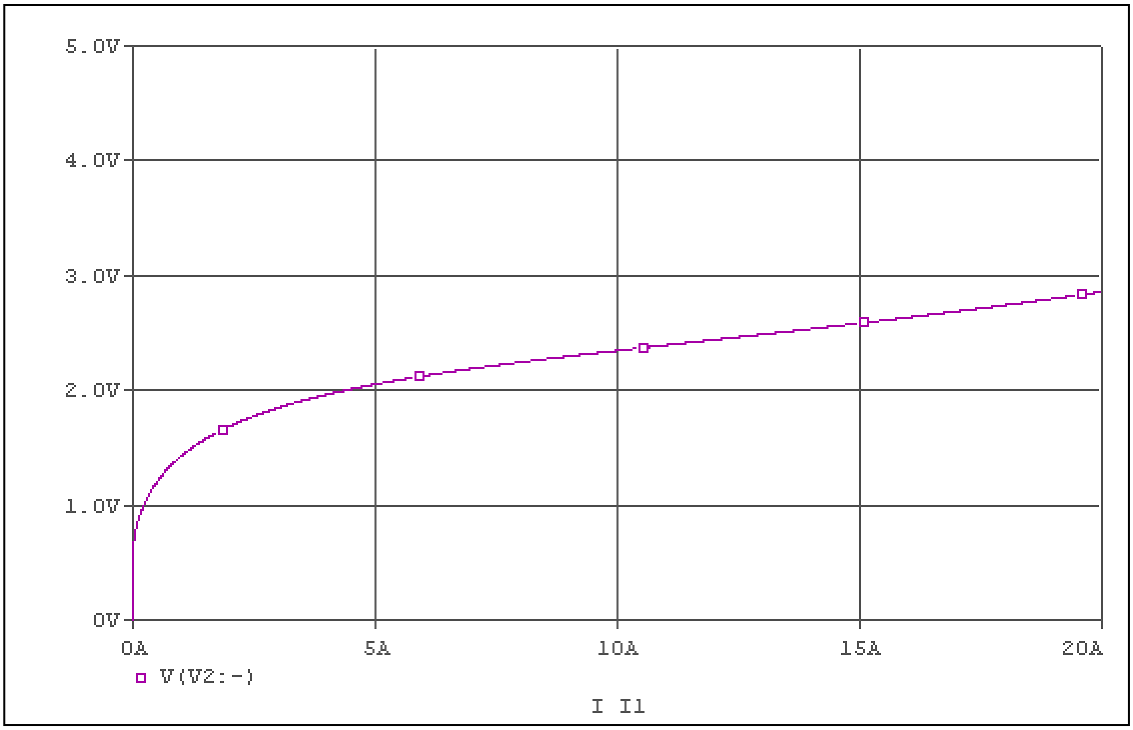


Test condition : Vcc=600(V) ,Ic=15(A) ,Vge=20(V)

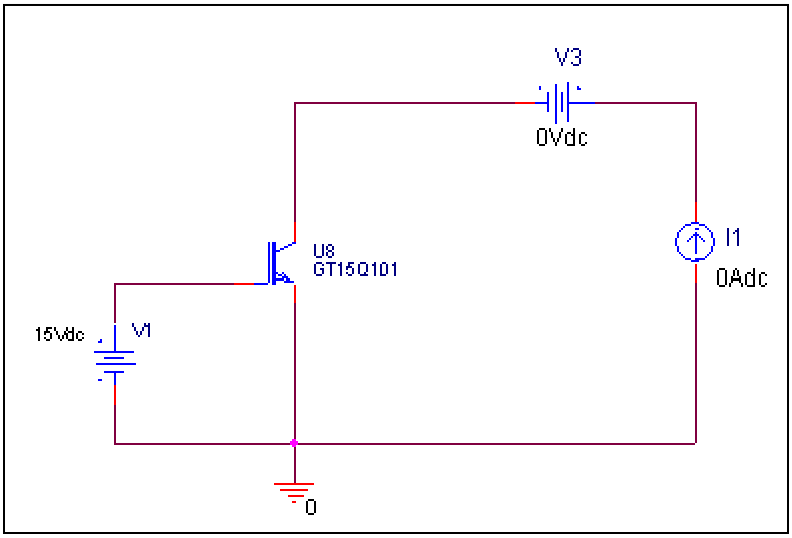
	Measurement		Simulation		Error(%)
Qge	**20**	**nc**	**19.999**	**nc**	**-0.00500**
Qgc	**54**	**nc**	**52.5672**	**nc**	**-2.65333**
Qg	**152**	**nc**	**154.2344**	**nc**	**1.47000**

Saturation Characteristics

Circuit Simulation result

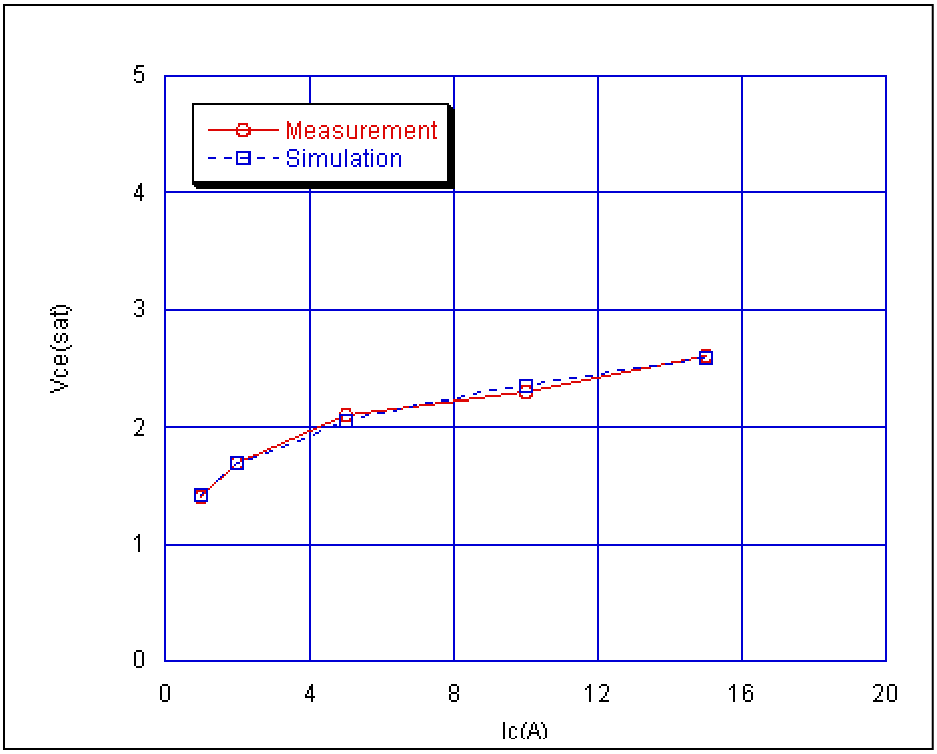


Evaluation circuit



Comparison Graph

Circuit Simulation Result



Simulation Result

Ic(A)	Vce(sat)(V)		Error (%)
	Measurement	Simulation	
1	1.4	1.4295	2.10714
2	1.7	1.6949	-0.30000
5	2.1	2.0534	-2.21905
10	2.3	2.3466	2.02609
15	2.6	2.5847	-0.58846