Device Modeling Report

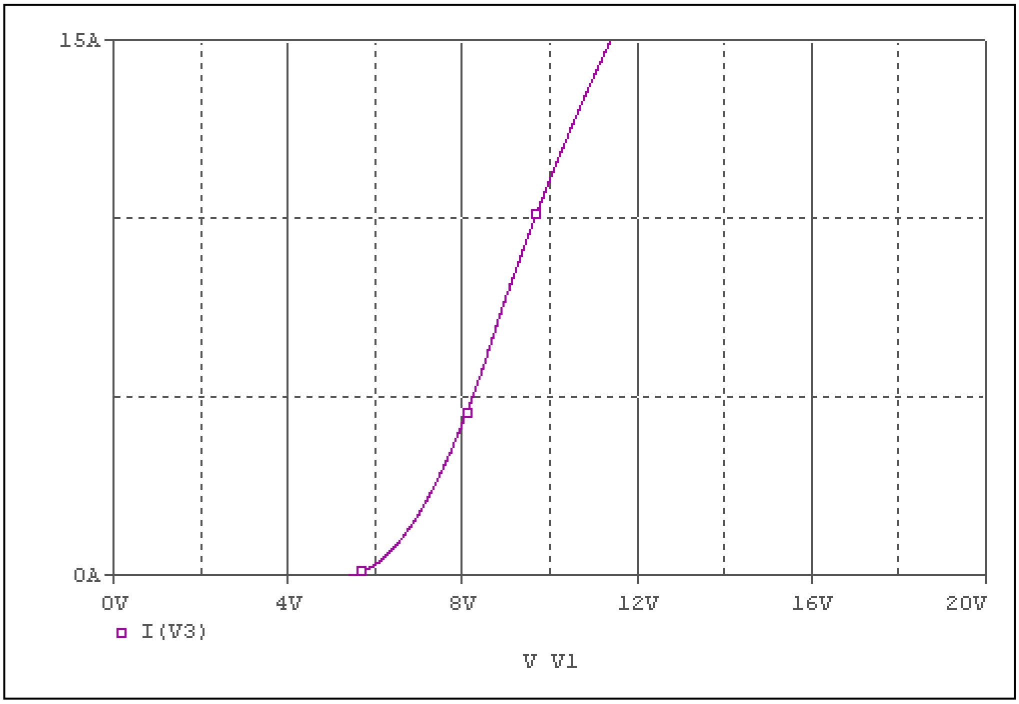
COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: GT15J101
MANUFACTURER: TOSHIBA

Bee Technologies Inc.

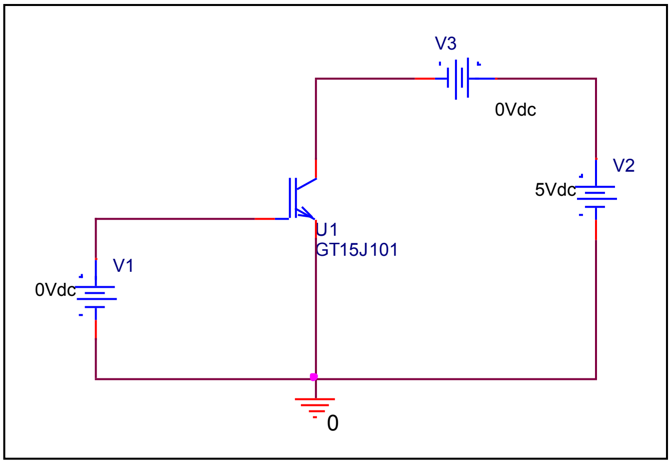
PSpice model parameter	Model description
TAU	Ambipolar Recombination Lifetime
KP	MOS Transconductance
AREA	Area of the Device
AGD	Gate-Drain Overlap Area
WB	Metallurgical Base Width
VT	Threshold Voltage
KF	Triode Region Factor
CGS	Gate-Source Capacitance per Unit Area
COXD	Gate-Drain Oxide Capacitance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

Transfer Characteristics

Circuit Simulation result

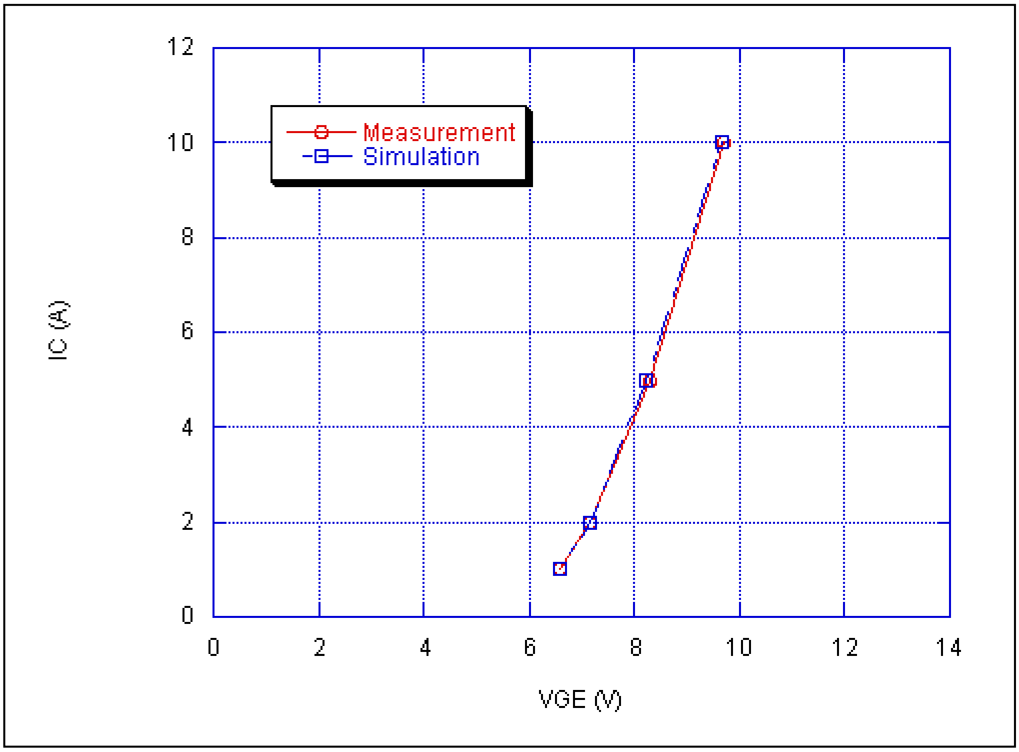


Evaluation circuit



Comparison Graph

Circuit Simulation Result



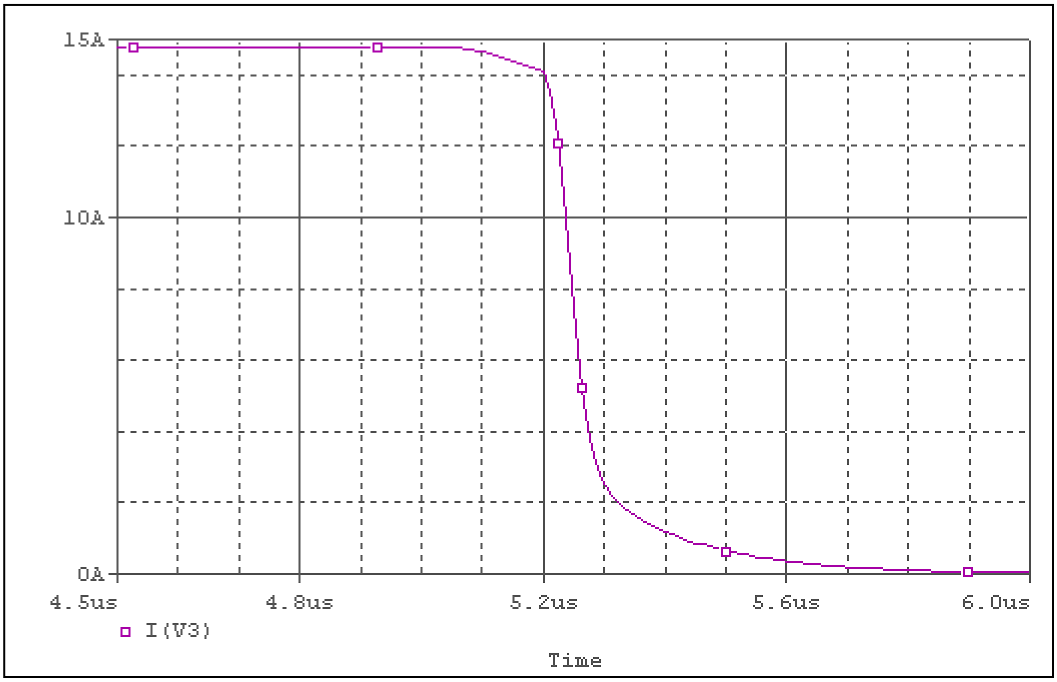
Simulation Result

Test condition : Vce = 5 V

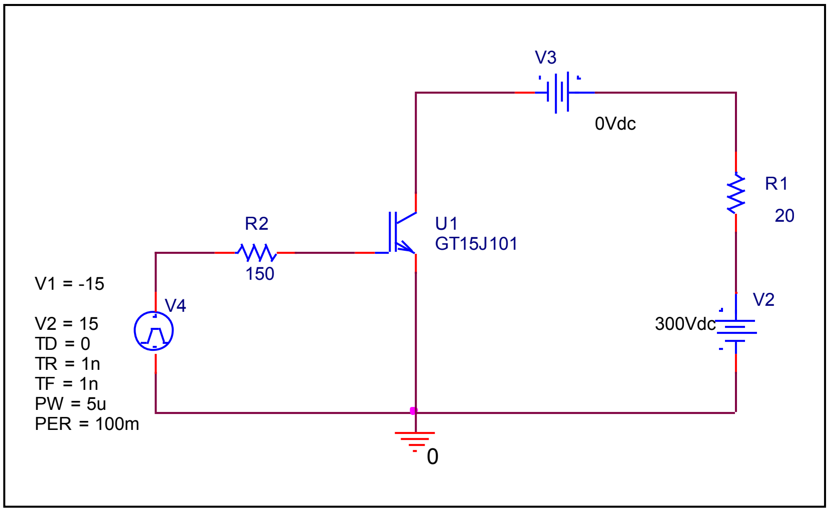
Ic(A)	Vge(V)		Error (%)
	Measurement	Simulation	
1	6.6	6.6067	0.10152
2	7.15	7.1461	-0.05455
5	8.3	8.2247	-0.90723
10	9.7	9.506	-2.00000

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

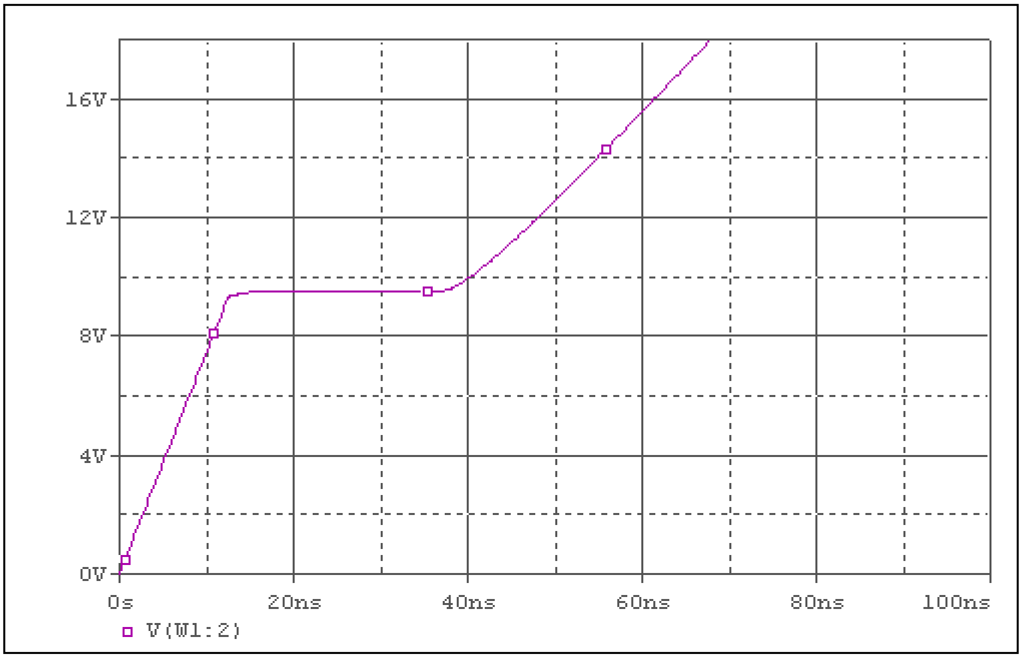


Test condition Ic=15(A) ,Vce=300(V)

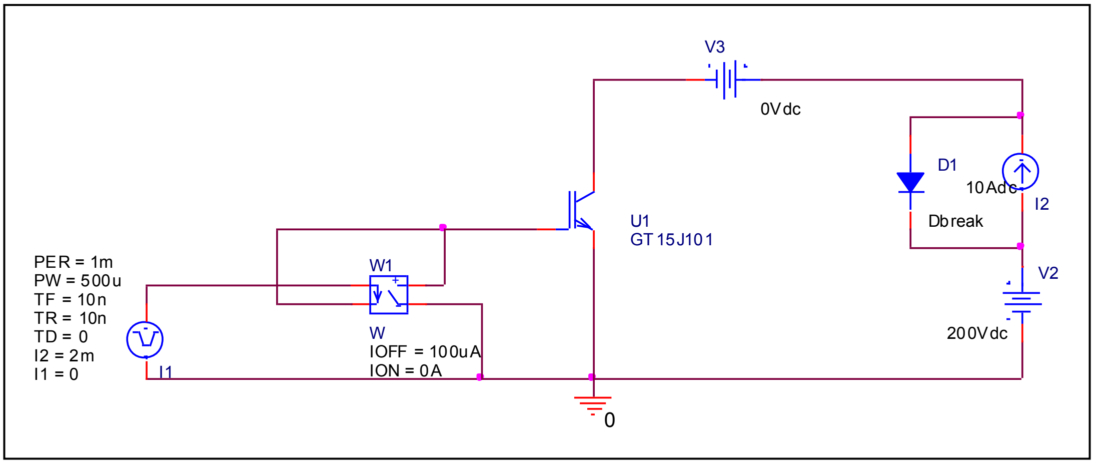
tf	Measurement		Simulation		Error
	150	ns	149.839	ns	-0.10733

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

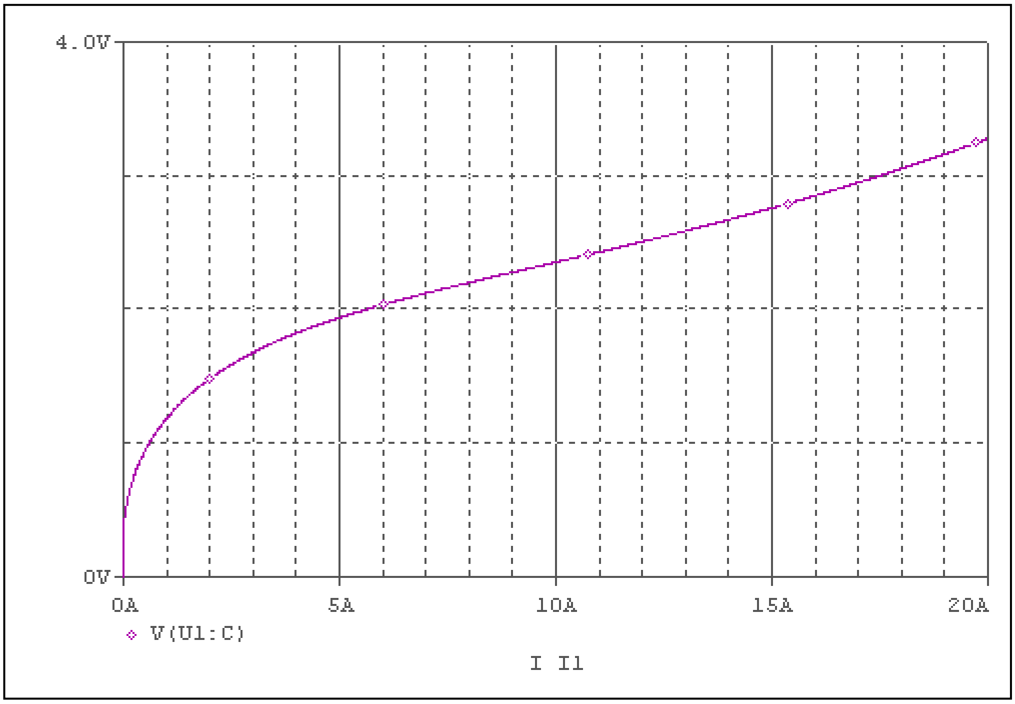


Test condition : Vcc=200(V) ,Ic=20(A) ,Vge=16(V)

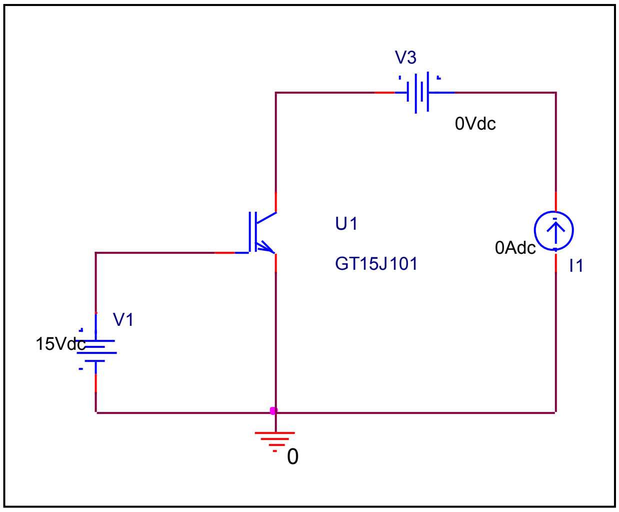
	Measurement		Simulation		Error(%)
Qge	**12.5**	**nc**	**12.644**	**nc**	**1.15200**
Qgc	**24**	**nc**	**23.908**	**nc**	**-0.38333**
Qg	**61.5**	**nc**	**61.15**	**nc**	**-0.56911**

Saturation Characteristics

Circuit Simulation result

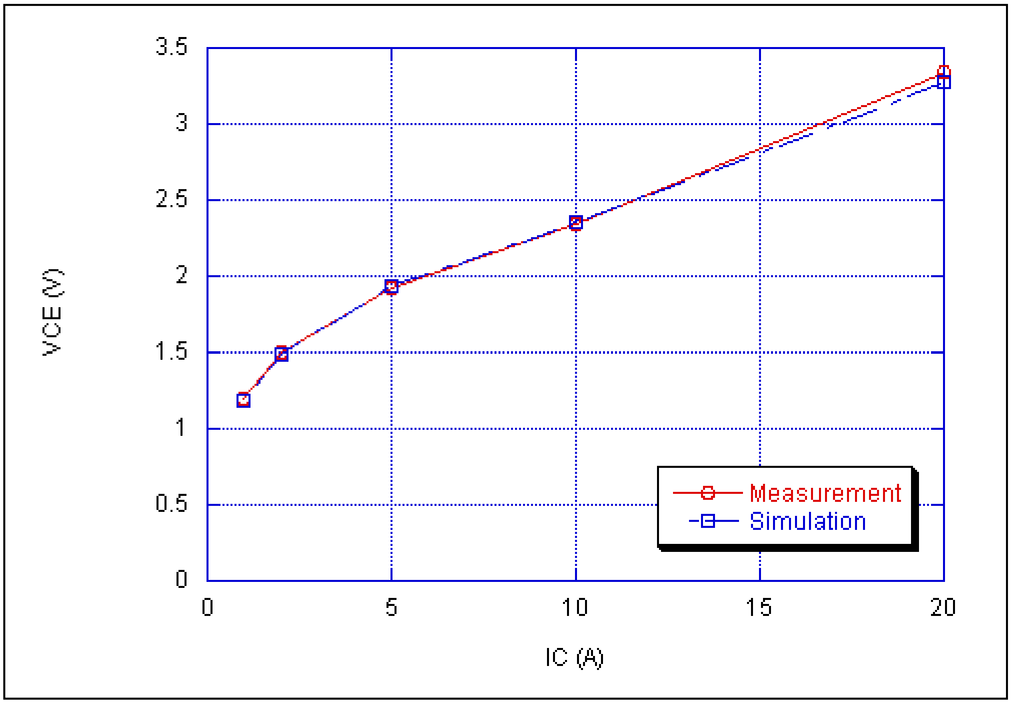


Evaluation circuit



Comparison Graph

Circuit Simulation Result



Simulation Result

Ic(A)	Vce(sat)(V)		Error (%)
	Measurement	Simulation	
1	**1.2**	**1.1853**	**-1.22500**
2	**1.5**	**1.4835**	**-1.10000**
5	**1.925**	**1.9355**	**0.54545**
10	**2.35**	**2.3515**	**0.06383**
20	**3.35**	**3.2773**	**-2.17015**