

Device Modeling Report

COMPONENTS: Insulated Gate Bipolar Transistor (IGBT)
PART NUMBER: GT8J101
MANUFACTURER: TOSHIBA

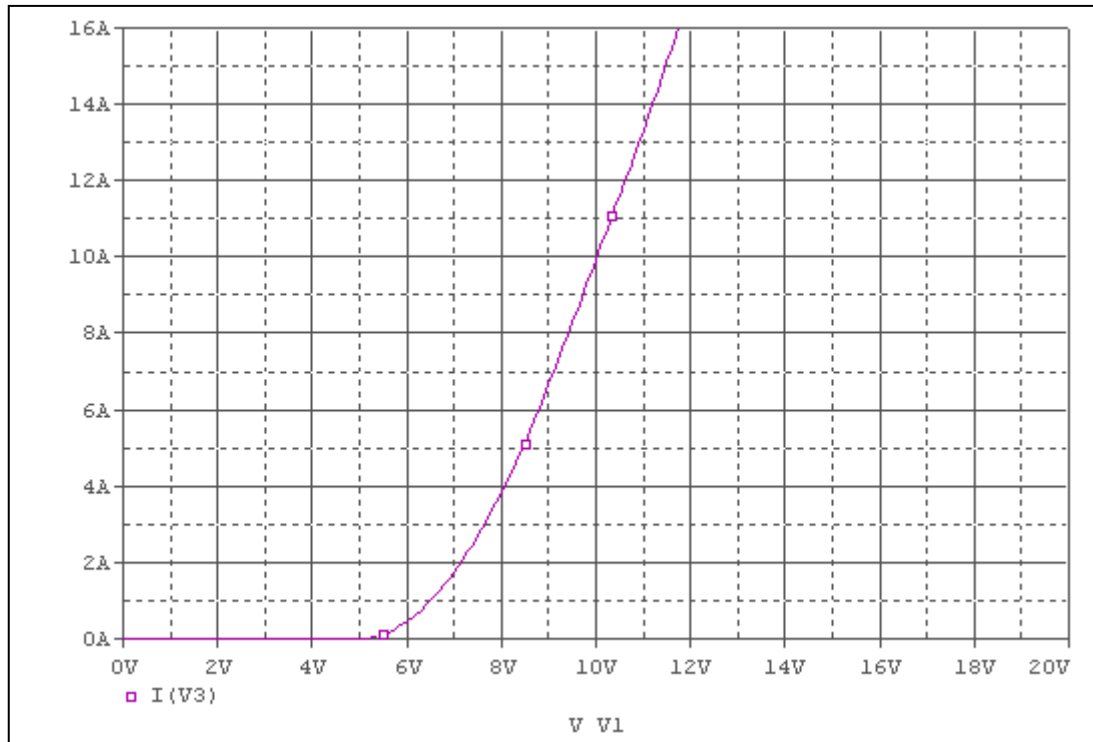


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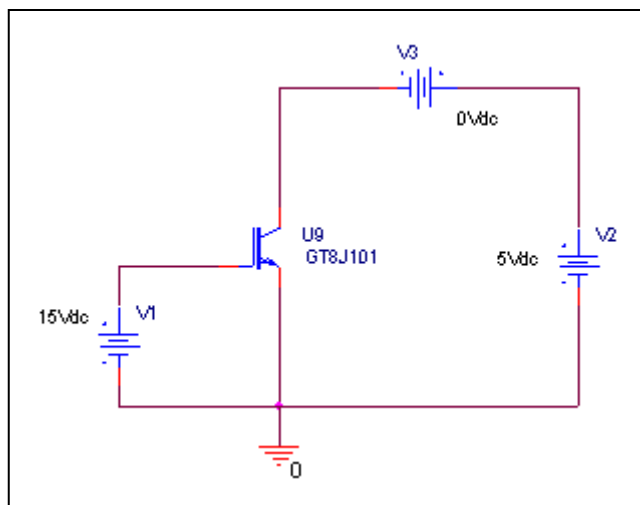
PSpice model parameter	Model description
TAU	Ambipolar Recombination Lifetime
KP	MOS Transconductance
AREA	Area of the Device
AGD	Gate-Drain Overlap Area
WB	Metallurgical Base Width
VT	Threshold Voltage
KF	Triode Region Factor
CGS	Gate-Source Capacitance per Unit Area
COXD	Gate-Drain Oxide Capacitance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

Transfer Characteristics

Circuit Simulation result

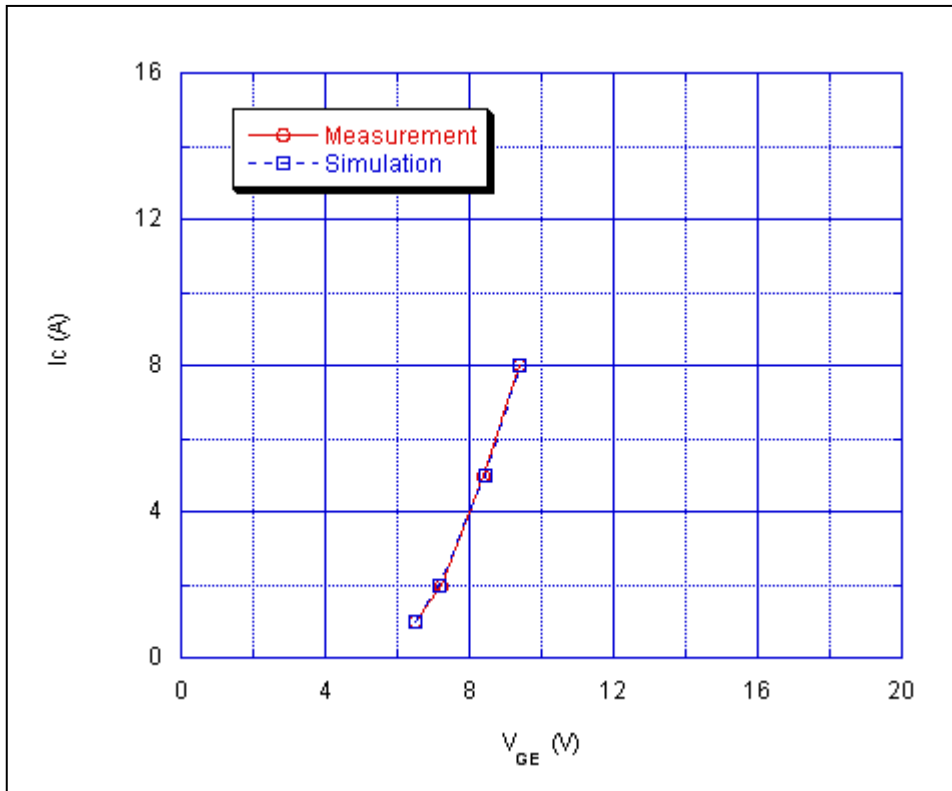


Evaluation circuit



Comparison Graph

Circuit Simulation Result



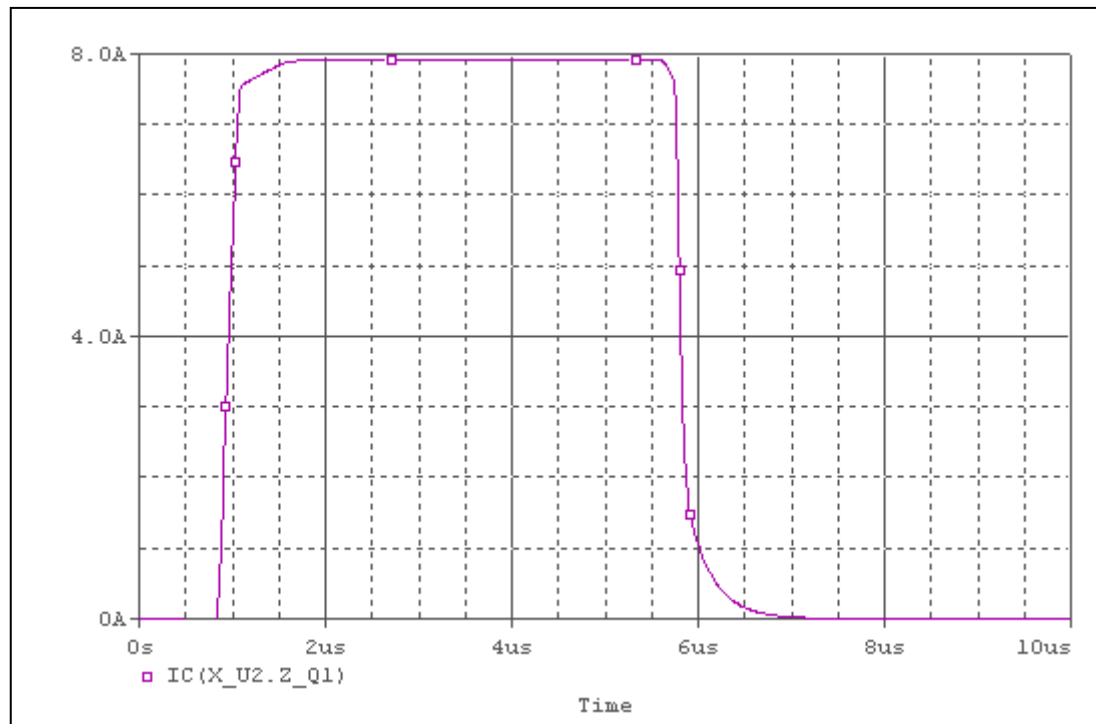
Simulation Result

Test condition : $V_{ce} = 5$ V

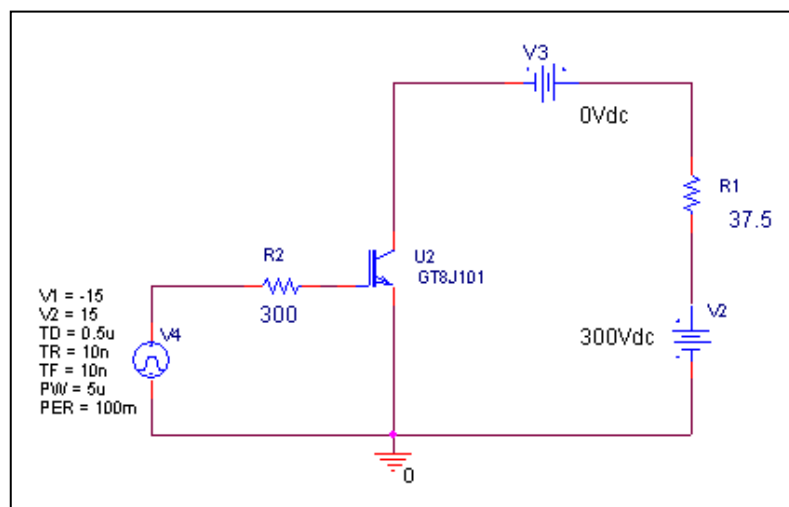
Ic(A)	Vge(V)		Error (%)
	Measurement	Simulation	
1	6.5	6.5090	0.13846
2	7.2	7.1436	-0.78333
5	8.4	8.4511	0.60833
8	9.4	9.4159	0.16915

Fall Time Characteristics

Circuit Simulation result



Evaluation circuit

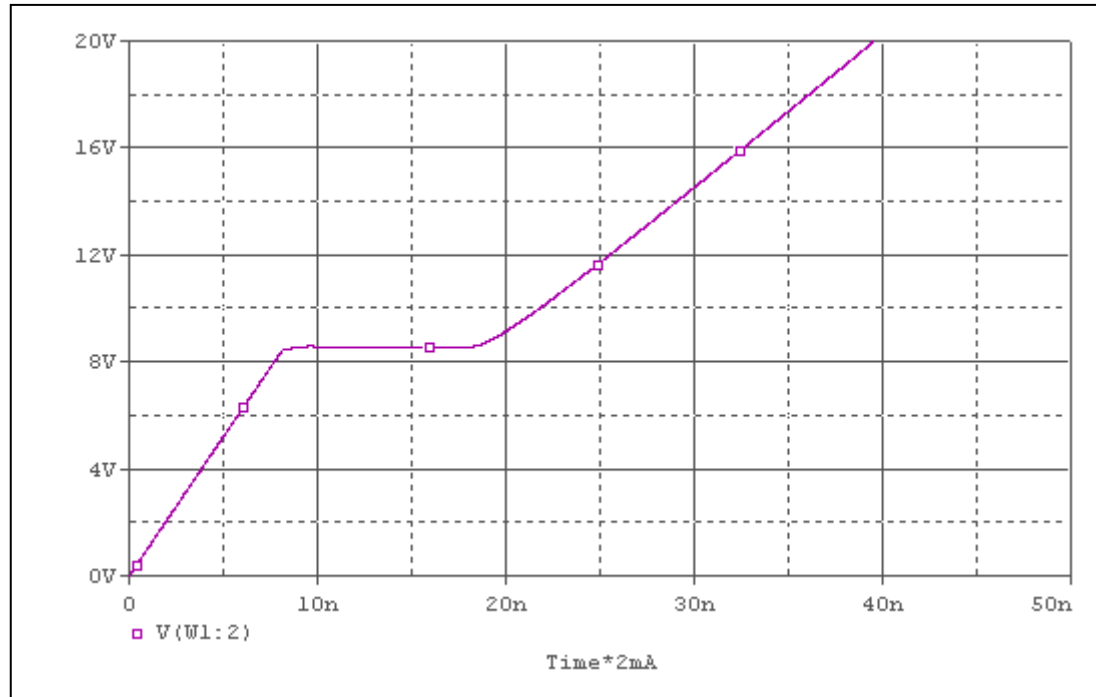


Test condition $I_C=8(A)$, $V_{ce}=300(V)$

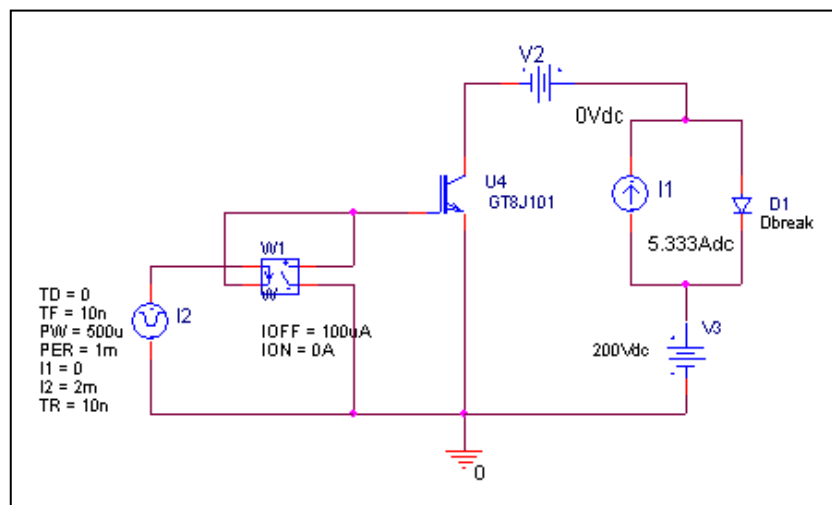
tf	Measurement		Simulation		Error
	0.15-0.35	us	0.31277	us	0

Gate Charge Characteristics

Circuit Simulation result



Evaluation circuit

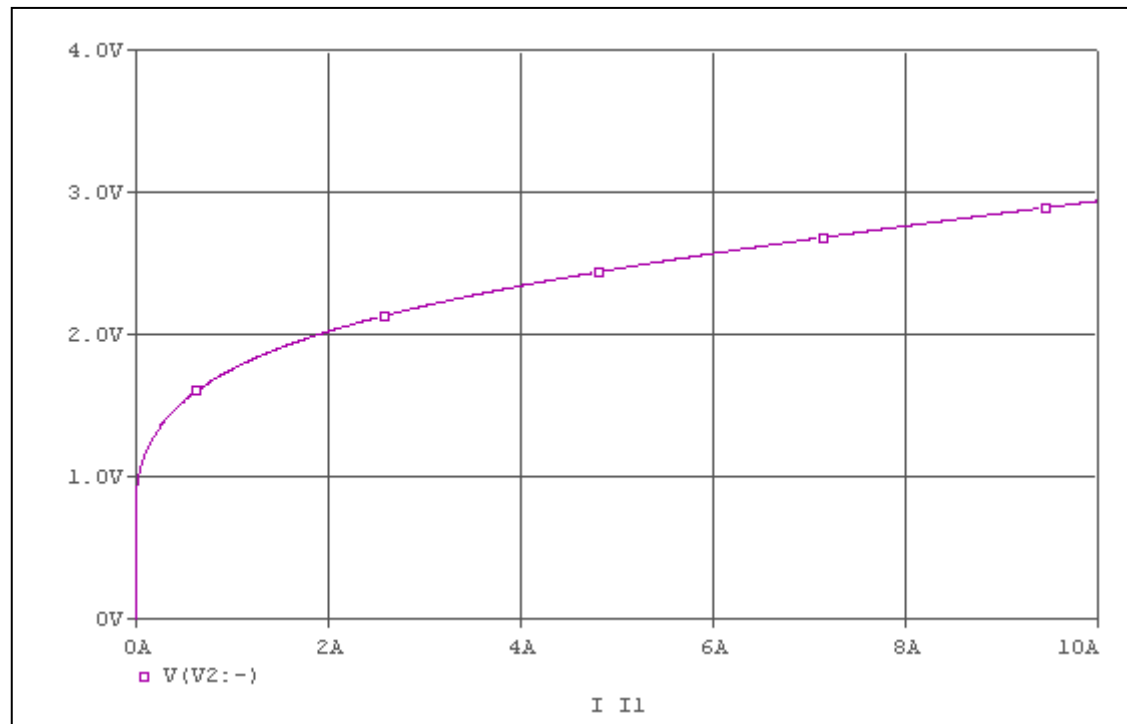


Test condition : $V_{cc}=200(V)$, $I_c=5.333(A)$, $V_{ge}=16(V)$

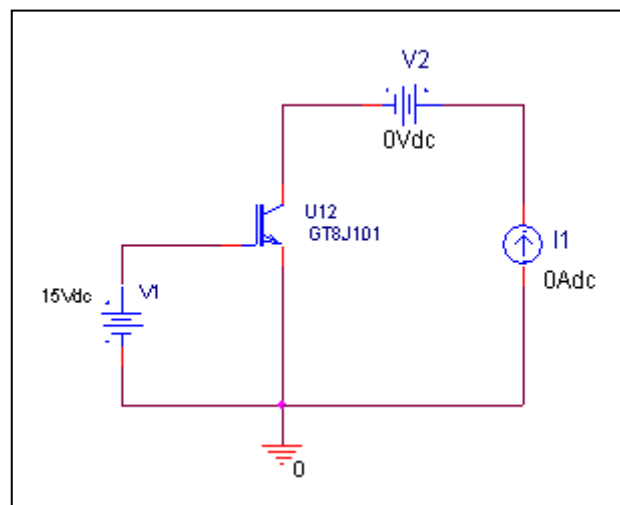
	Measurement		Simulation		Error(%)
Qge	8	nc	8.0337	nc	0.42125
Qgc	11	nc	10.618	nc	-3.47273
Qg	33	nc	32.584	nc	-1.26061

Saturation Characteristics

Circuit Simulation result

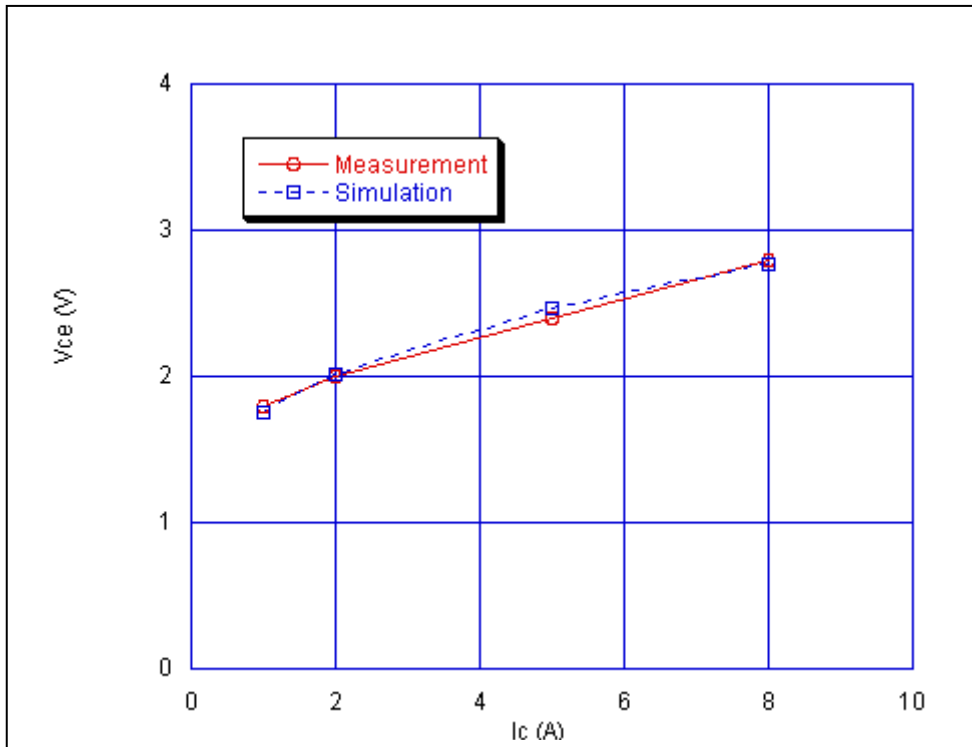


Evaluation circuit



Comparison Graph

Circuit Simulation Result



Simulation Result

Ic(A)	Vce(sat)(V)		Error (%)
	Measurement	Simulation	
1	1.8	1.7555	-2.47222
2	2	2.0210	1.05000
5	2.4	2.4617	2.57083
8	2.8	2.7618	-1.36429