

Device Modeling Report

COMPONENTS: THYRISTOR
PART NUMBER: 5P4SMA
MANUFACTURER: NEC



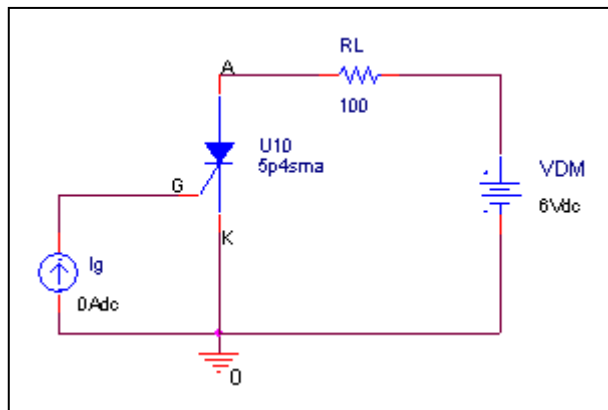
Bee Technologies Inc.

DIODE MODEL

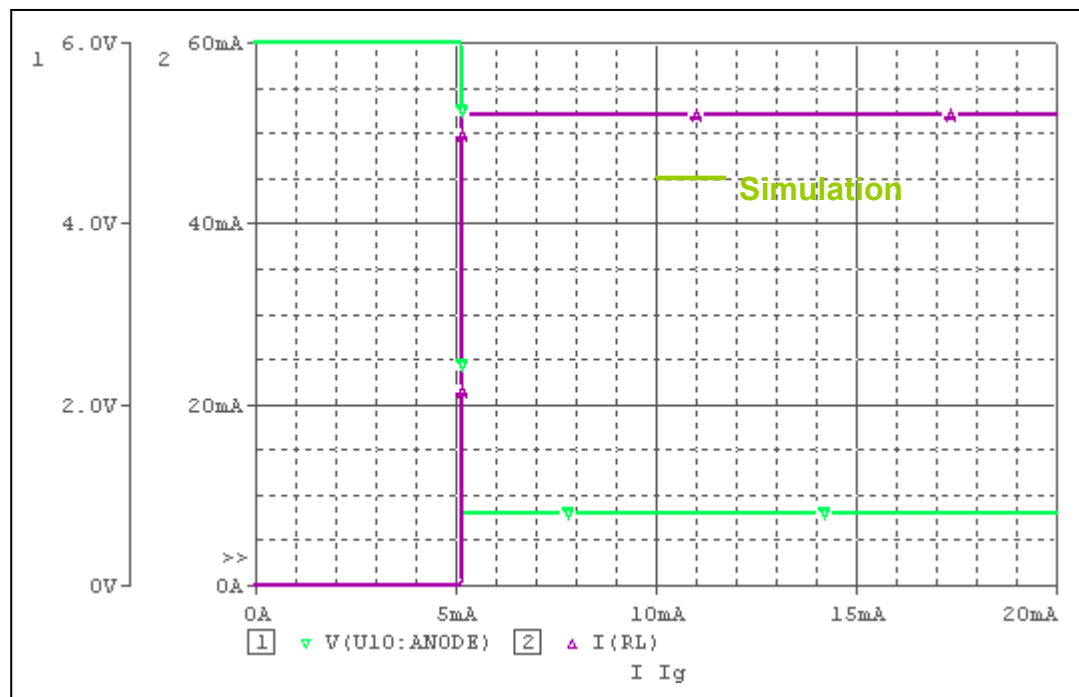
Pspice model Parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a positive value)
IBV	Reverse Breakdown Current(a positive value)
TT	Transit Time

IG-VT Characteristic

Evaluation Circuit



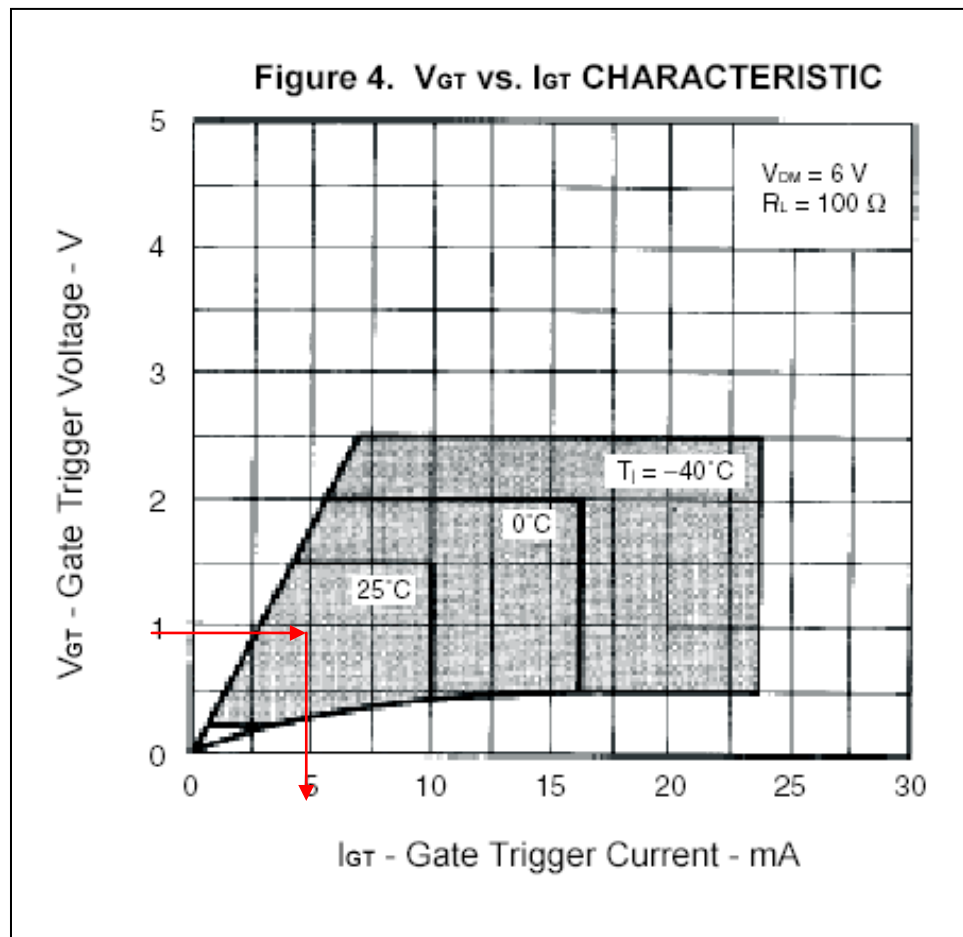
Simulation result



Comparison Table

	Measurement	Simulation	% Error
I_{GT} (mA)	5	5.0952	-1.9040
V_{GT} (V)	0.8	0.795039	0.6201

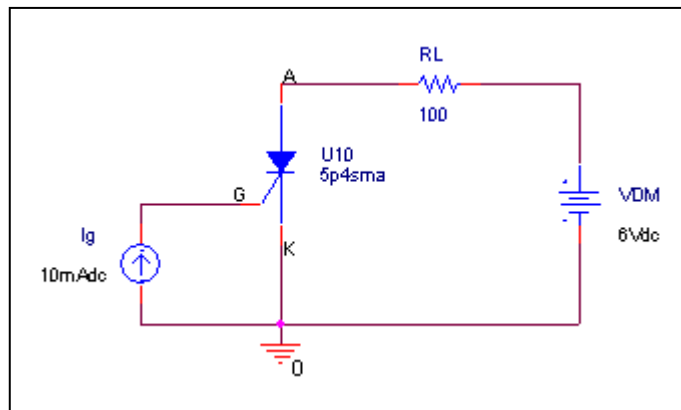
Reference



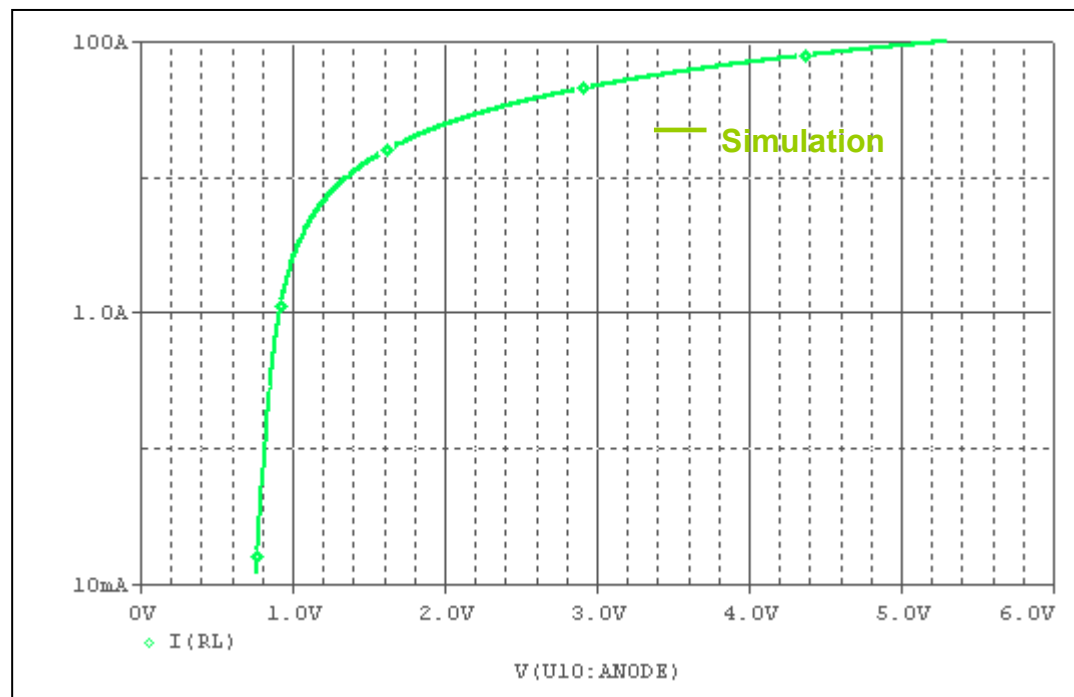
$$I_{GT} = 5\text{ mA} \quad V_{GT} = 0.8\text{V}$$

ITM-VTM Characteristic

Evaluation Circuit



Simulation result

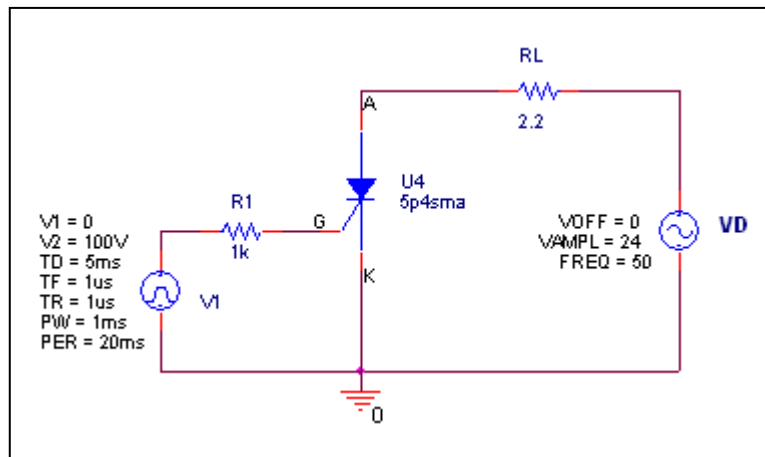


Comparison Table

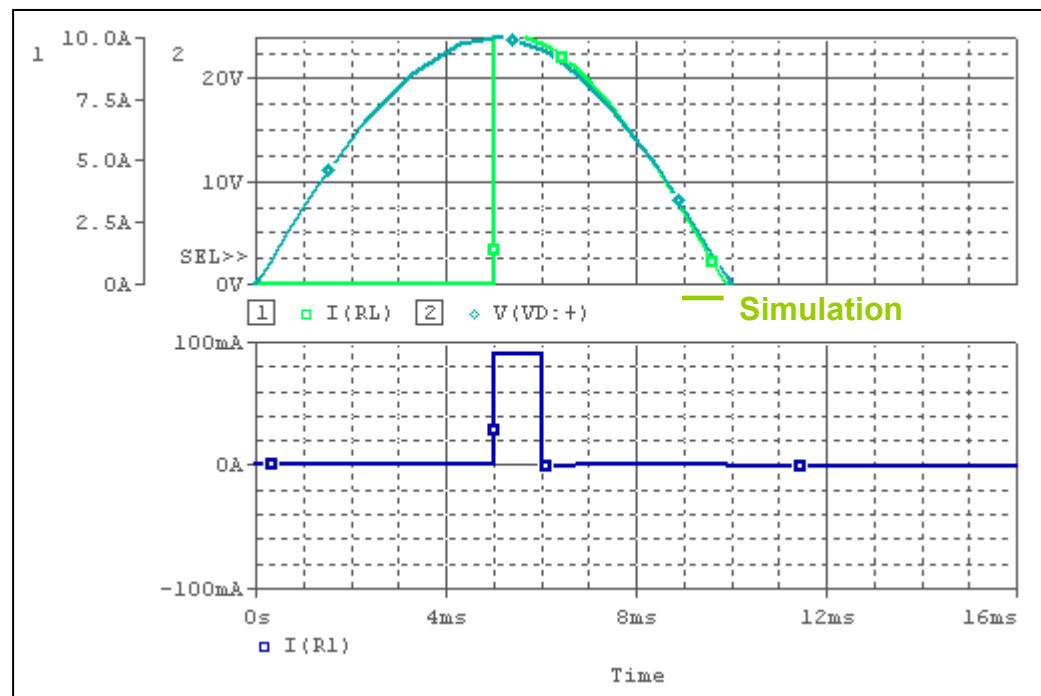
At ITM=10A	Measurement	Simulation	% Error
VTM(V)	1.4(max)	1.3596	2.8857

Holding Characteristic (IH)

Evaluation Circuit



Simulation result

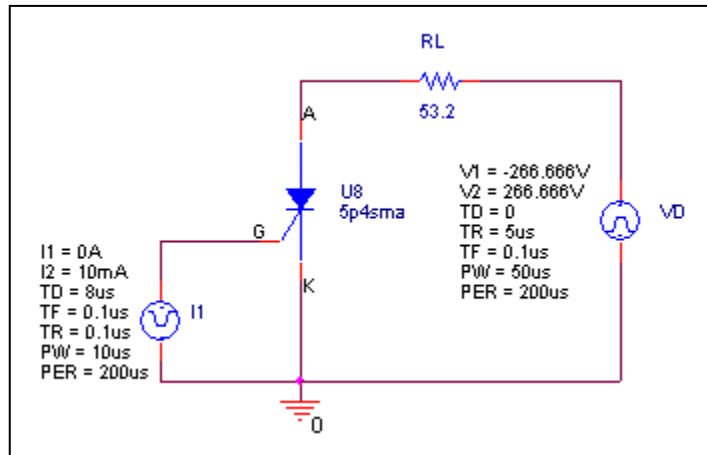


Comparison Table

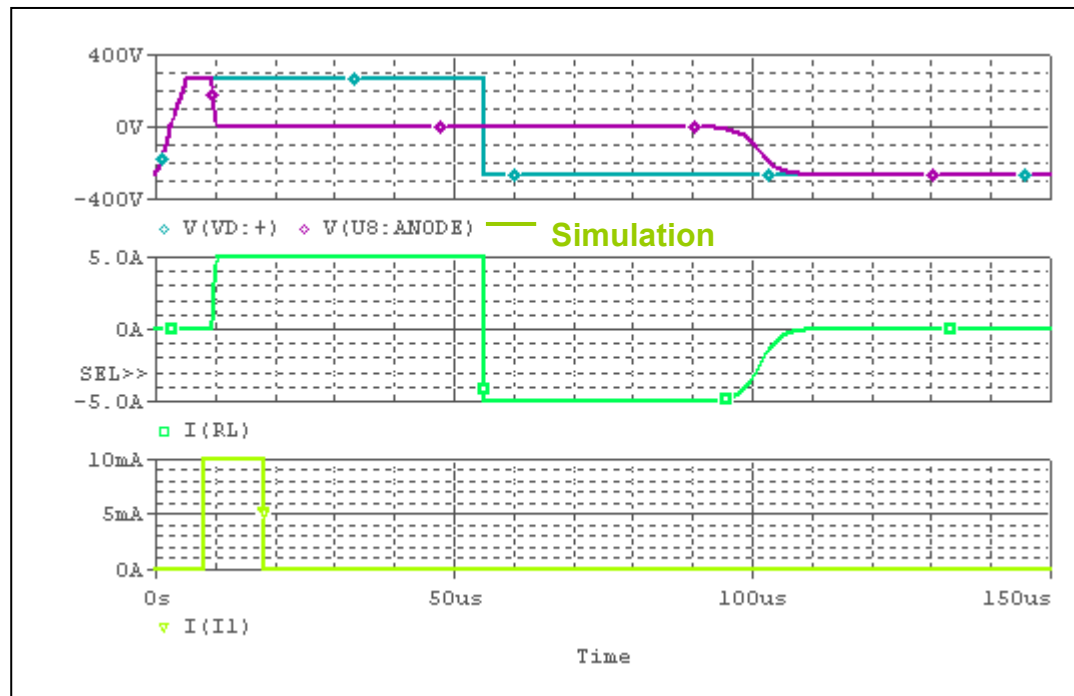
$V_{DM}=24V, I_{TM}=10A$	Measurement	Simulation	% Error
$I_H(mA)$	6	6.0143	-0.2383

Switching Time Characteristic

Evaluation Circuit



Simulation result



Comparison Table

	Measurement	Simulation	%Error
Toff(us)	50	49.867	0.2660