

Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / STANDARD
PART NUMBER: RURG5060
MANUFACTURER: INTERSIL
REMARK: TC =25C

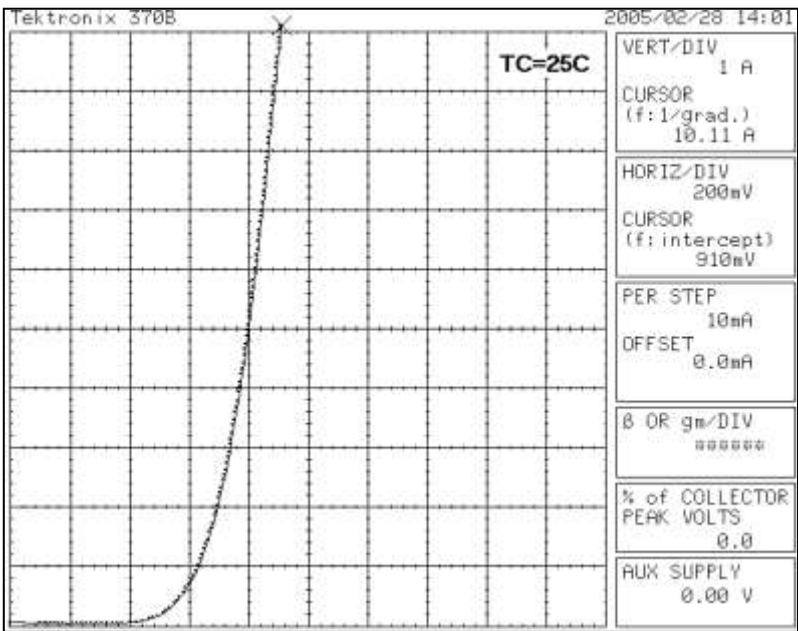


Bee Technologies Inc.

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
EG	Energy-band Gap

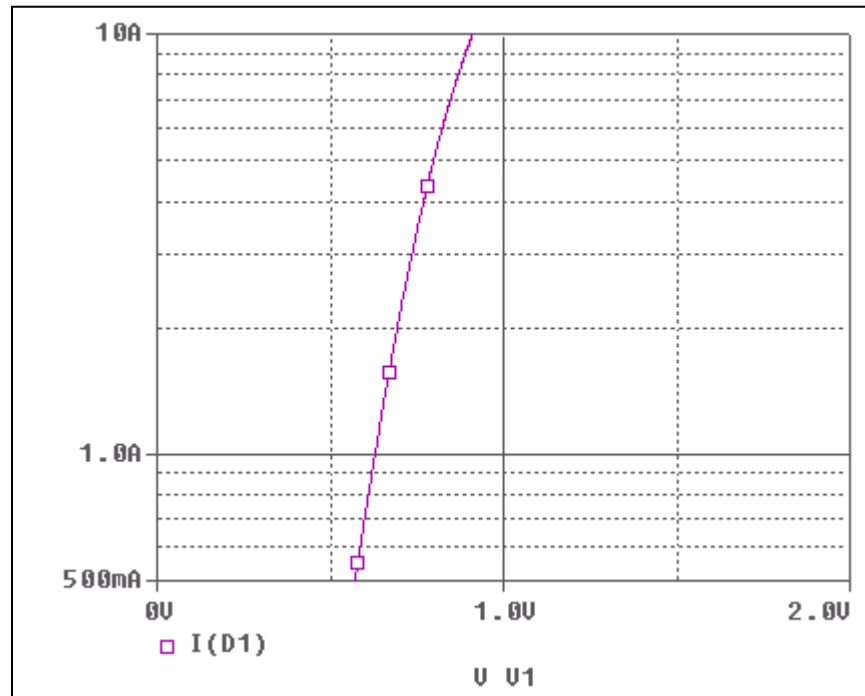
Forward Current Characteristic

Reference

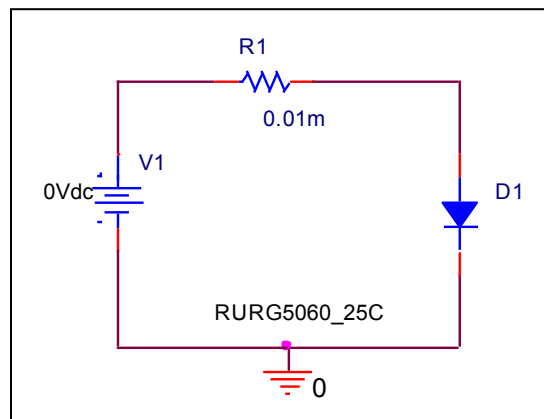


Forward Current Characteristic

Circuit Simulation Result

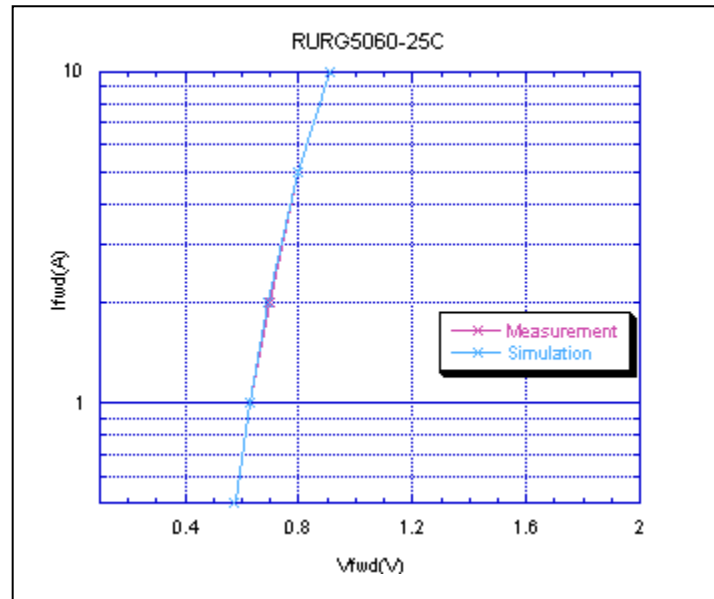


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

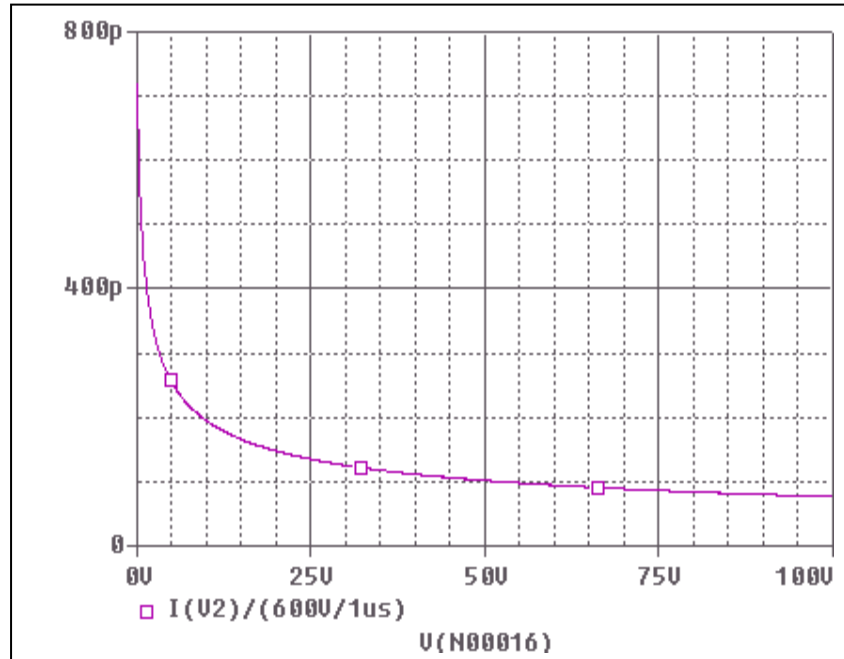


Simulation Result

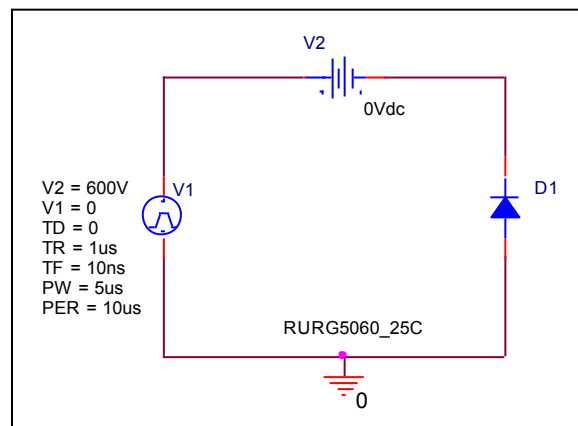
I_{fwd} (A)	V_{fwd} (V) Measurement	V_{fwd} (V) Simulation	%Error
0.5	0.570	0.571	-0.18
1	0.630	0.629	0.16
2	0.696	0.693	0.43
5	0.798	0.797	0.13
10	0.910	0.911	-0.11

Capacitance Characteristic

Circuit Simulation Result

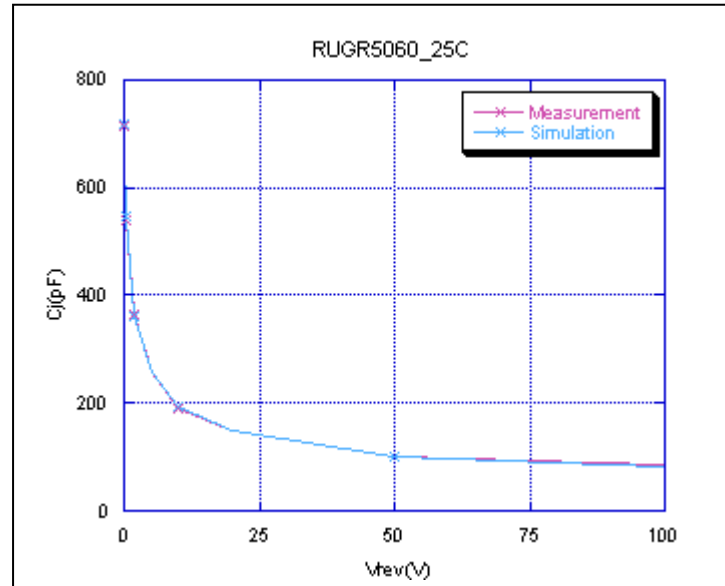


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

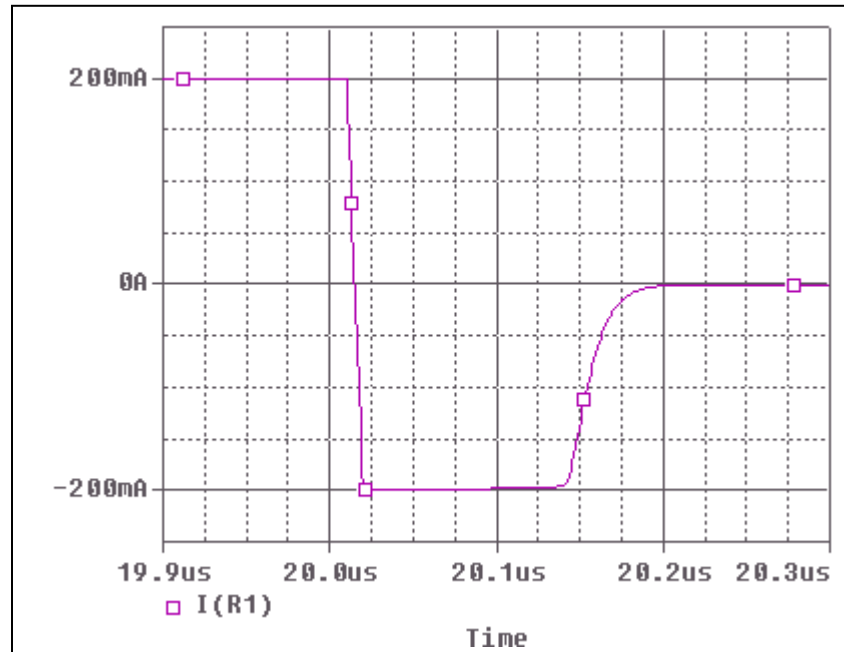


Simulation Result

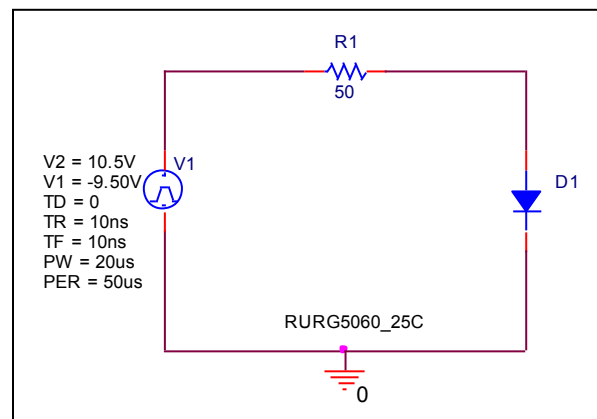
$V_{rev}(V)$	$C_j(pF)$ Measurement	$C_j(pF)$ Simulation	%Error
0	786.290	786.290	0.00
0.1	712.440	718.628	-0.87
0.2	657.560	658.667	-0.17
0.5	540.280	547.960	-1.42
1	452.030	453.055	-0.23
2	364.060	359.877	1.15
5	256.850	256.359	0.19
10	190.490	195.245	-2.50
20	148.050	147.972	0.05
50	100.600	101.853	-1.25
100	80.897	77.780	3.85

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

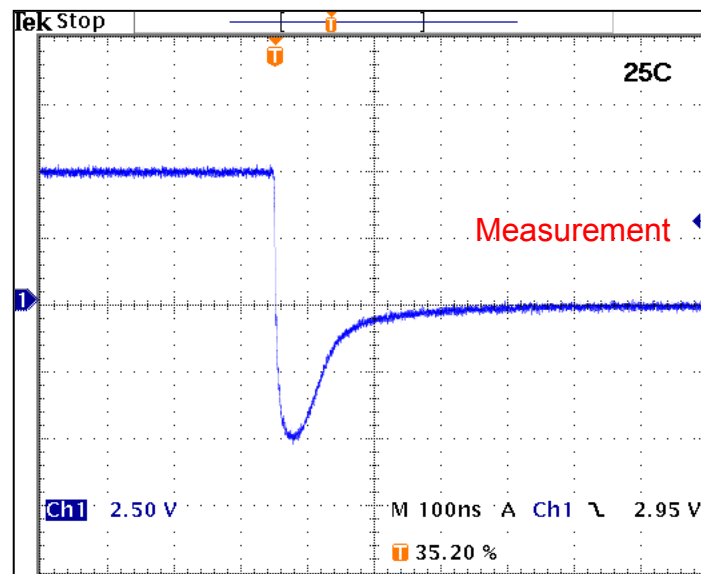


Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trr	146.00	ns	147.30	ns	-0.88

Reverse Recovery Characteristic

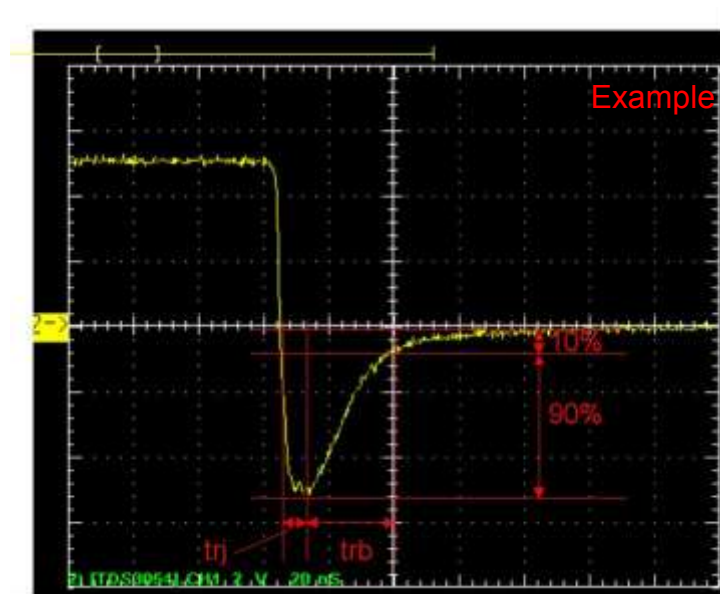
Reference



$T_{rj} = 28(\text{ns})$

$T_{rb} = 118(\text{ns})$

Conditions: $I_{fwd} = I_{rev} = 0.2(\text{A})$, $R_I = 50$



Relation between t_{rj} and t_{rb}