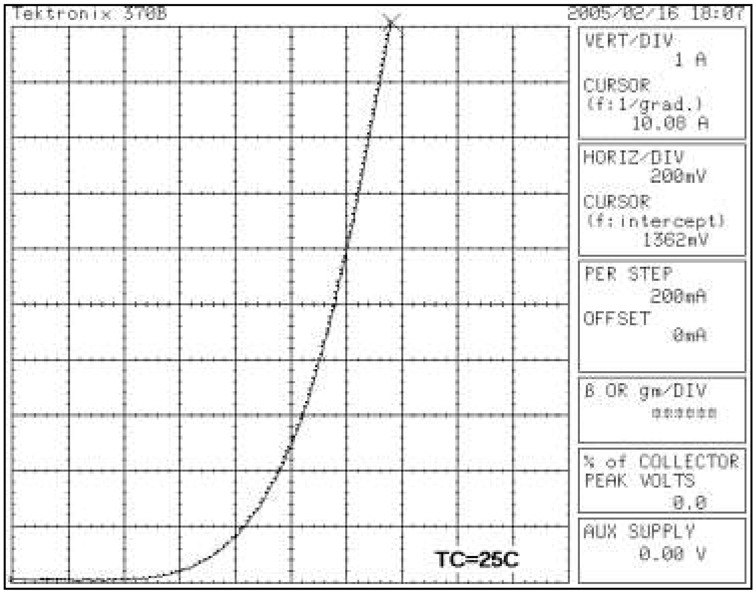
Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / STANDARD
PART NUMBER: RHRG50120
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

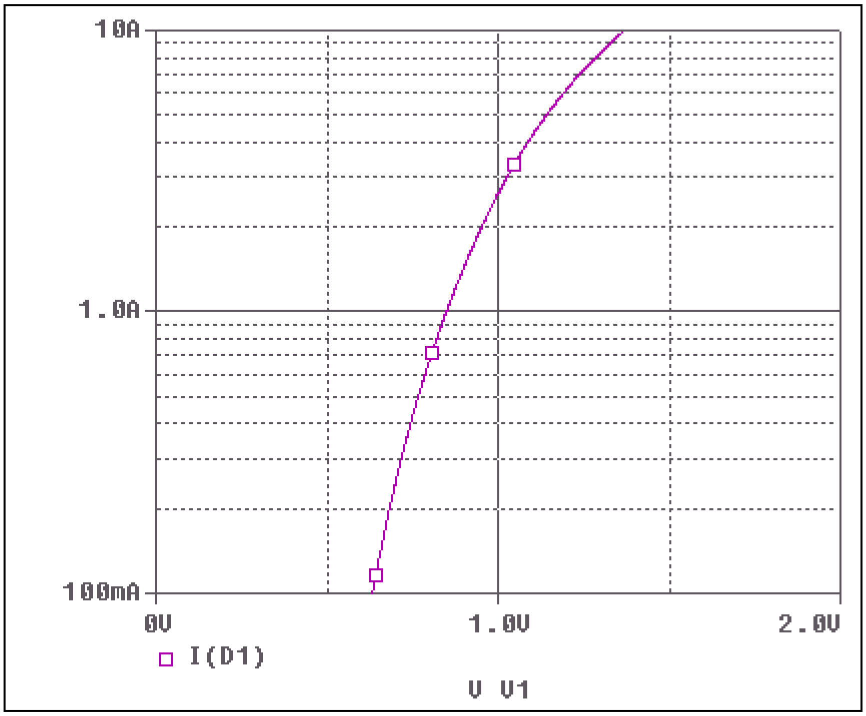
Forward Current Characteristic Reference



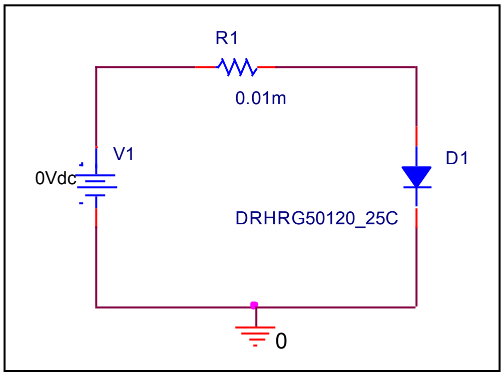
```
VERT/DIV
        1 A
CURSOR
(f:1/grad.)
     10.08 A

HORIZ/DIV
      200mV
CURSOR
(f:intercept)
     1362mV

PER STEP
      200mA
OFFSET
        0mA

β OR gm/DIV
      ******

% of COLLECTOR
PEAK VOLTS
        0.0

AUX SUPPLY
     0.00 V
```

Forward Current Characteristic

Circuit Simulation Result

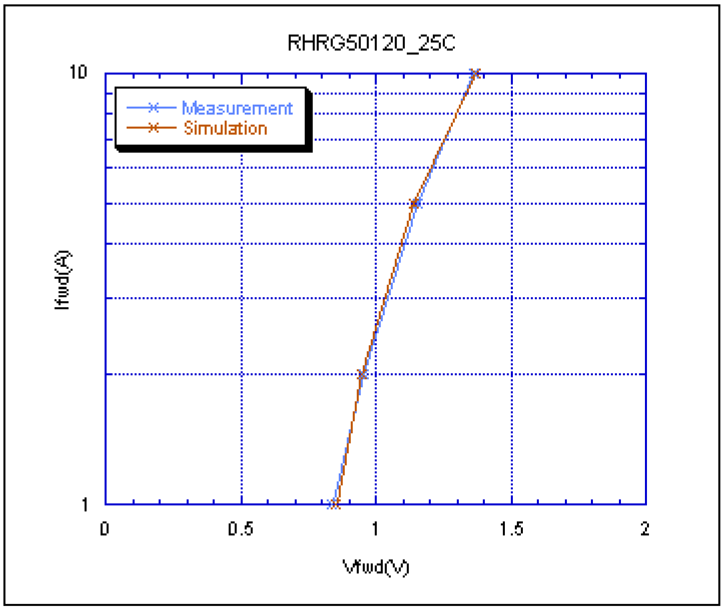


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

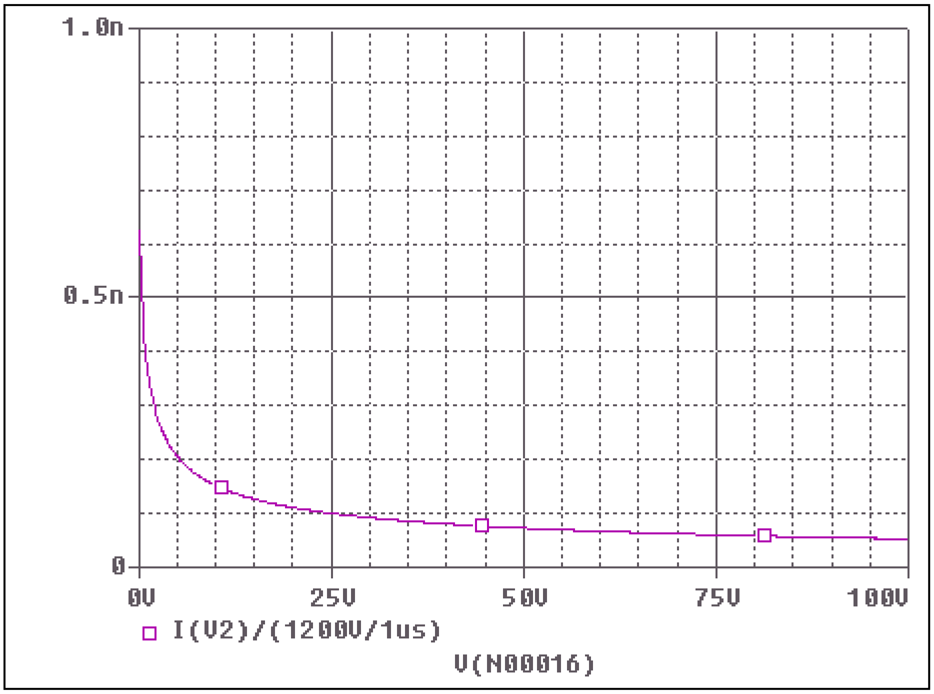


Simulation Result

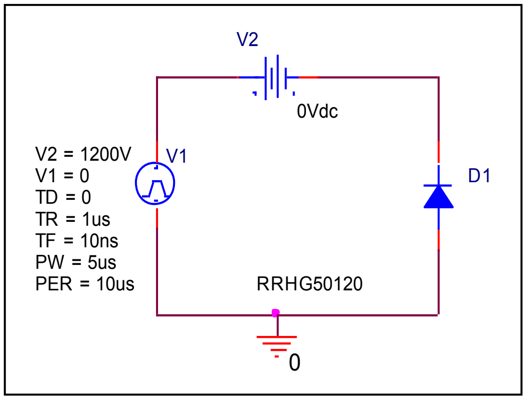
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
1	0.834	0.849	-1.81
2	0.958	0.951	0.73
5	1.156	1.141	1.30
10	1.362	1.368	-0.44

Capacitance Characteristic

Circuit Simulation Result

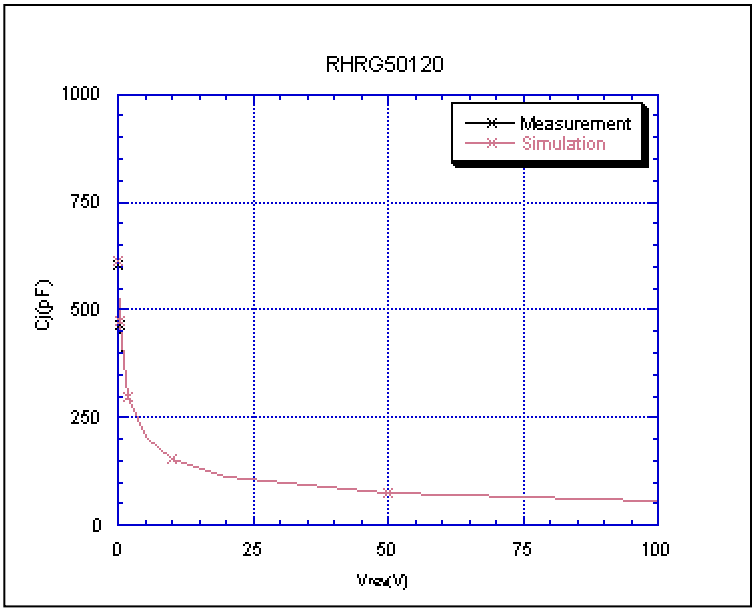


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

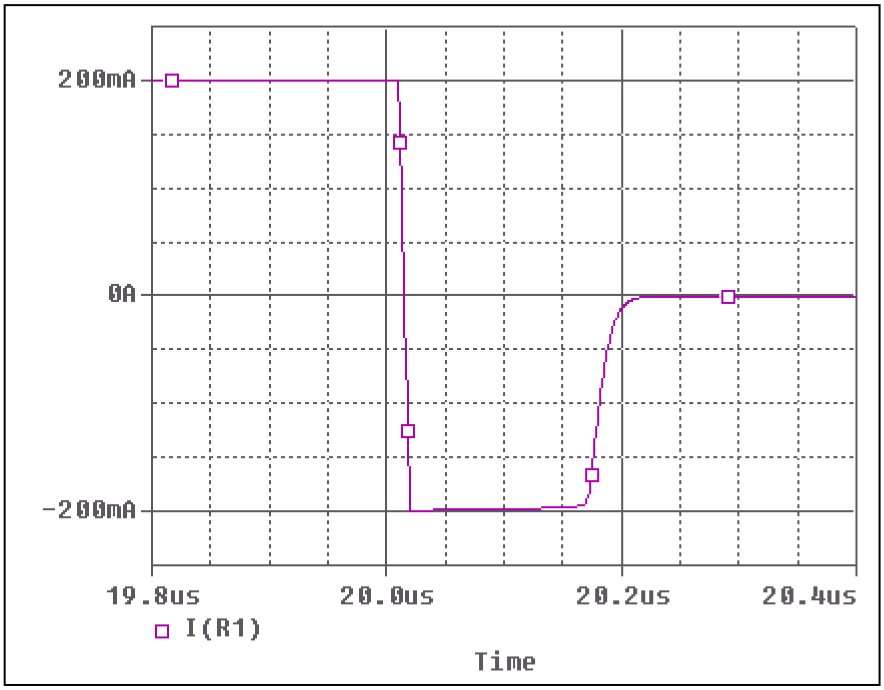


Simulation Result

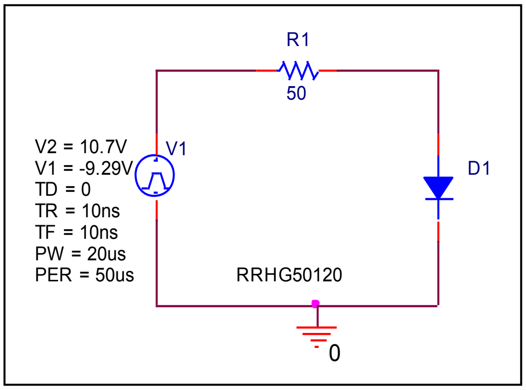
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	664.160	644.158	3.01
0.1	604.880	615.100	-1.69
0.2	560.900	579.121	-3.25
0.5	465.330	474.200	-1.91
1	382.770	383.222	-0.12
2	298.290	300.001	-0.57
5	205.900	206.101	-0.10
10	152.110	151.867	0.16
20	111.220	110.943	0.25
50	73.024	74.842	-2.49
100	53.020	52.873	0.28

Reverse Recovery Characteristic

Circuit Simulation Result



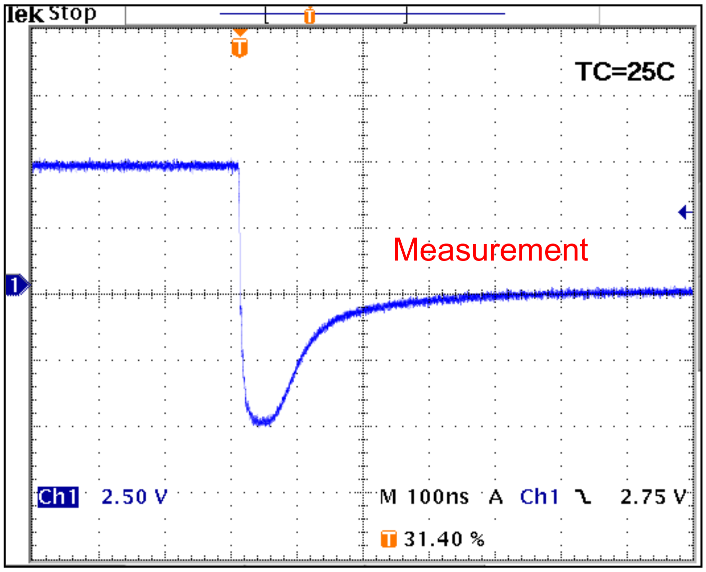
Evaluation Circuit



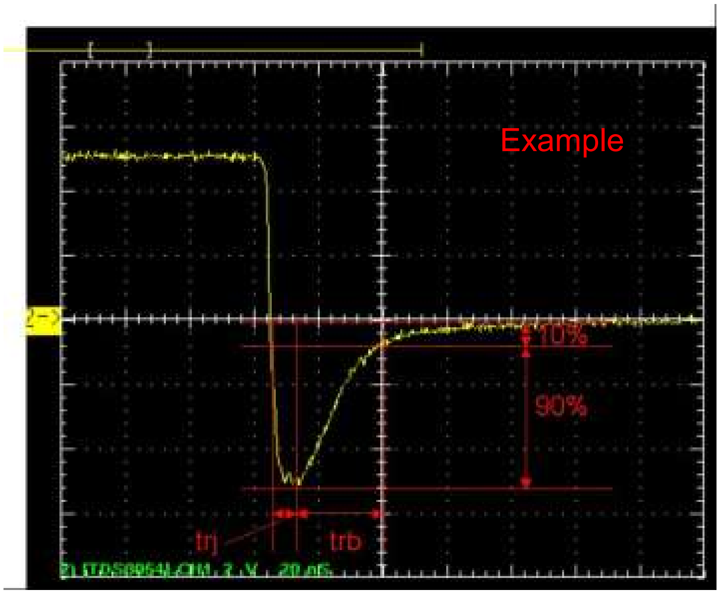
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trr	**182.000**	**ns**	**180.486**	**ns**	**0.846**

Reverse Recovery Characteristic   Reference



Trj =48(ns)
Trb=134(ns)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb