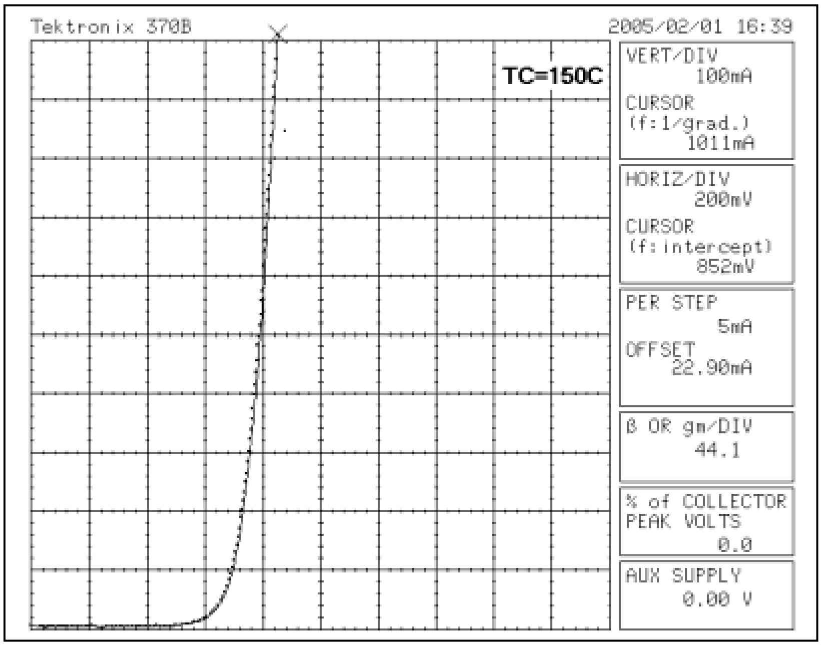
Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / STANDARD
PART NUMBER: 1SR154-400
MANUFACTURER: ROHM
REMARK: TC=150C

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
100mA
CURSOR
(f:1/grad.)
1011mA

HORIZ/DIV
200mV
CURSOR
(f:intercept)
852mV

PER STEP
5mA
OFFSET
22.90mA

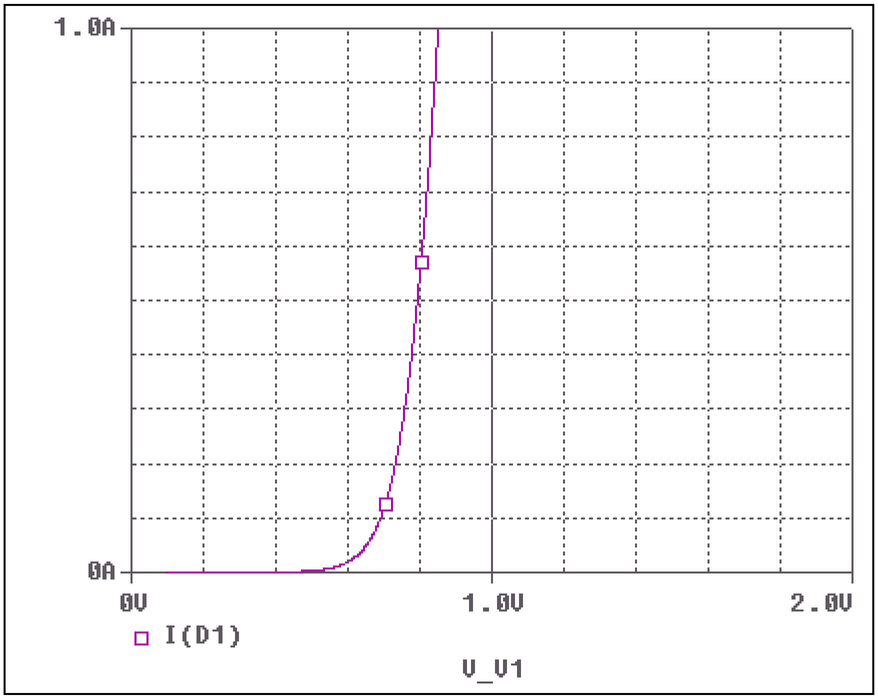
β OR gm/DIV
44.1

% of COLLECTOR
PEAK VOLTS
0.0

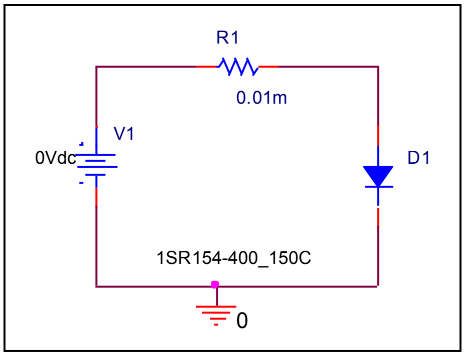
AUX SUPPLY
0.00 V

Forward Current Characteristic

Circuit Simulation Result

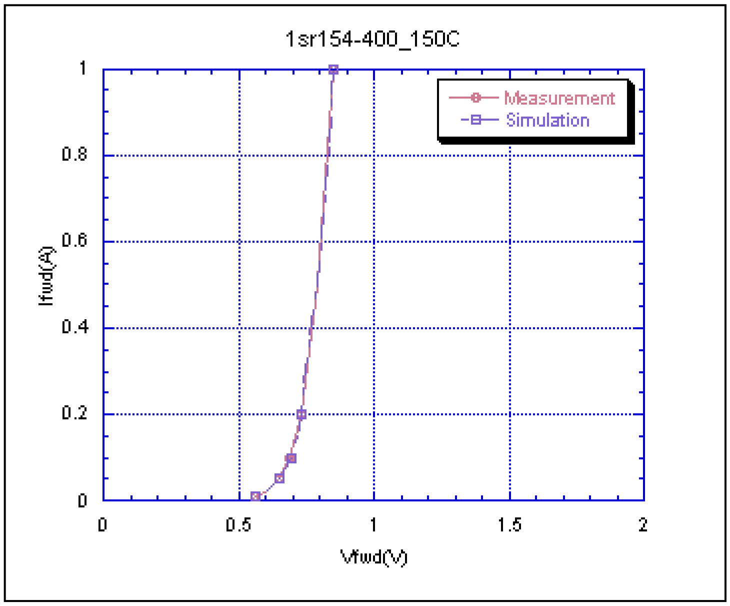


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

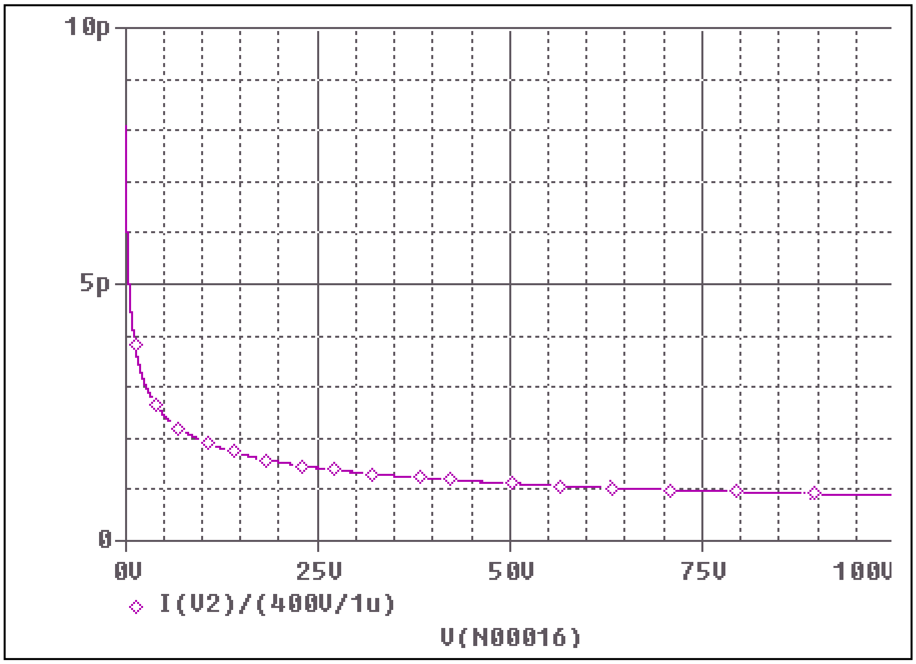


Simulation Result

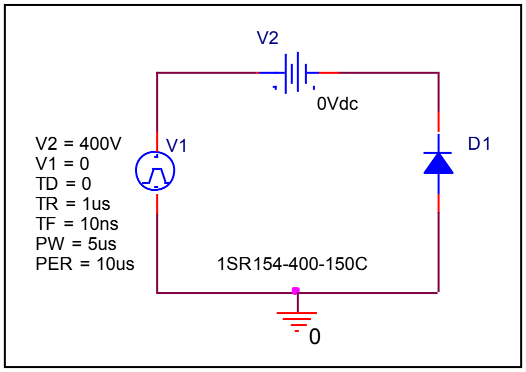
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	**0.565**	**0.563**	**0.35**
0.02	**0.600**	**0.601**	**-0.17**
0.05	**0.650**	**0.651**	**-0.15**
0.1	**0.692**	**0.693**	**-0.14**
0.2	**0.734**	**0.732**	**0.27**
0.5	**0.790**	**0.793**	**-0.38**
1	**0.852**	**0.851**	**0.12**

Capacitance Characteristic

Circuit Simulation Result

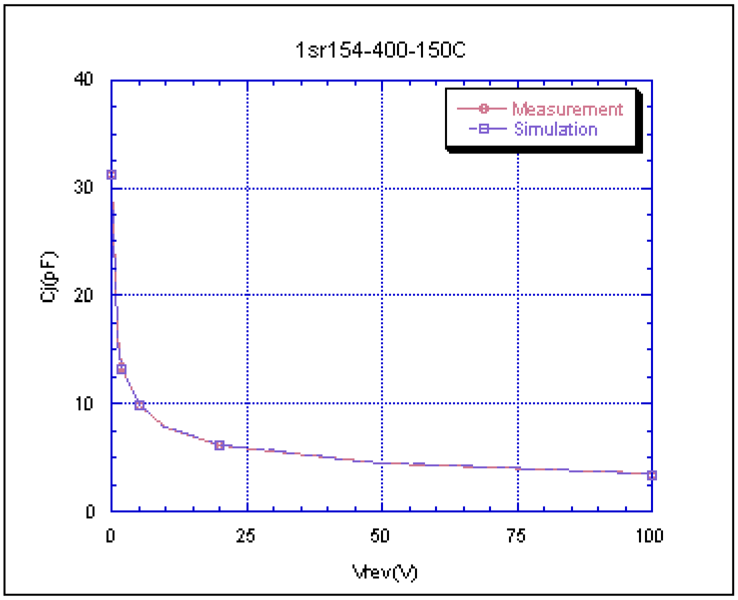


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

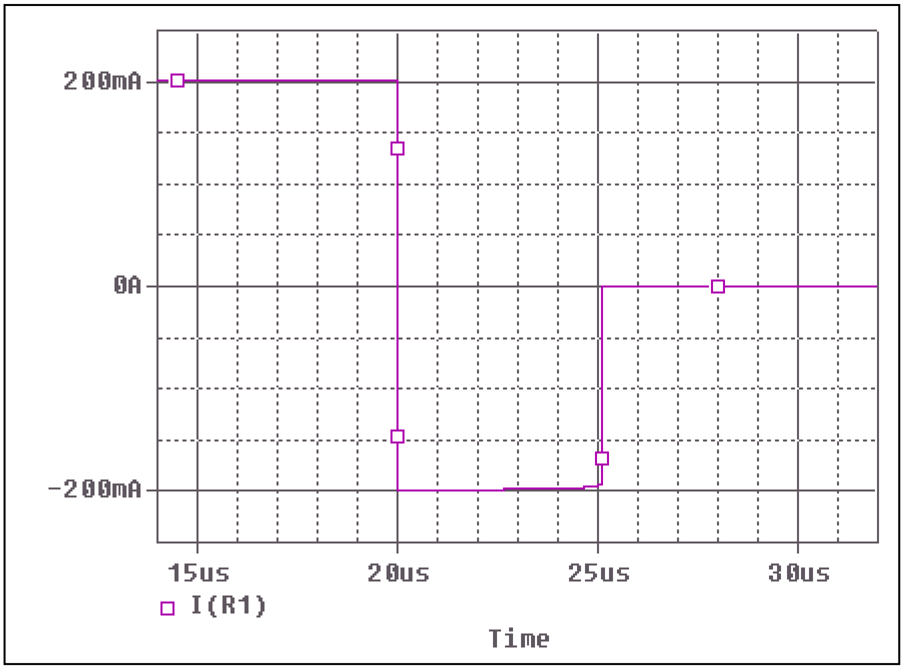


Simulation Result

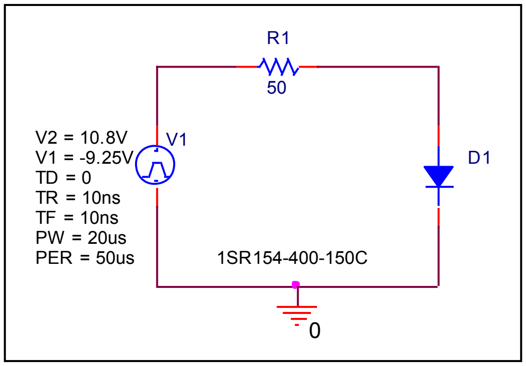
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	31.299	31.299	0.00
1	16.474	16.413	0.37
2	13.327	13.278	0.37
5	9.918	9.847	0.72
10	7.816	7.793	0.29
20	6.120	6.150	-0.49
50	4.409	4.486	-1.75
100	3.460	3.372	2.54

Reverse Recovery Characteristic

Circuit Simulation Result



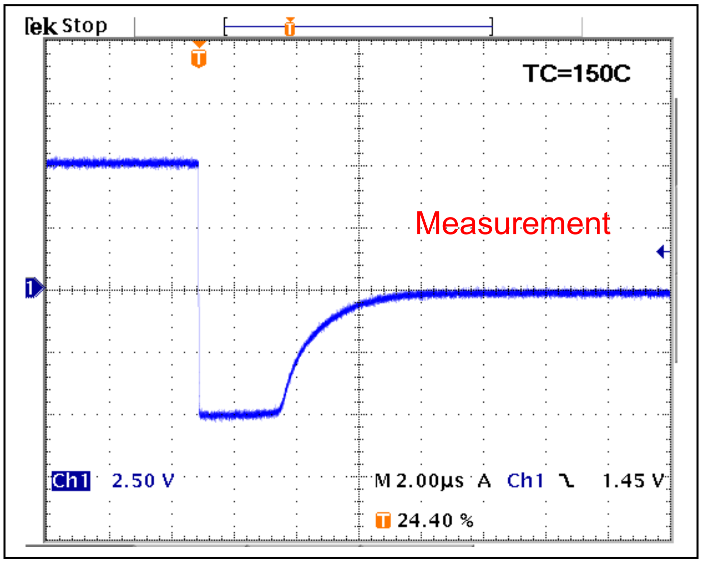
Evaluation Circuit



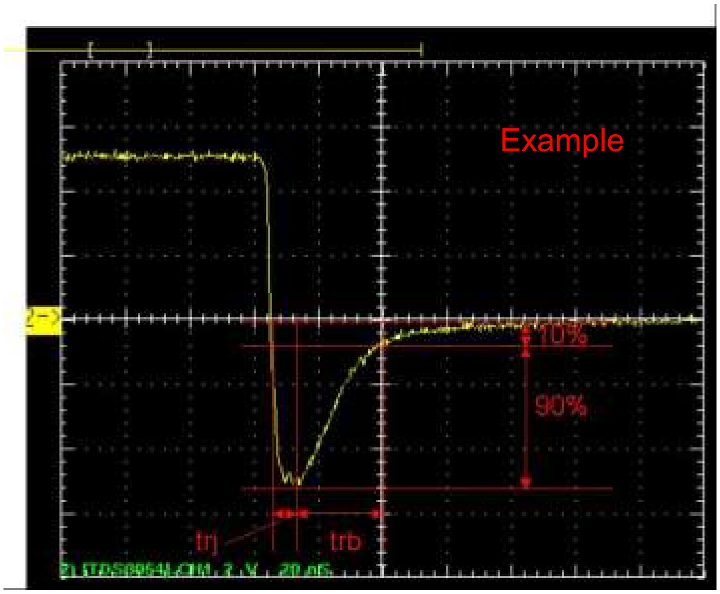
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trr	**5.08**	**us**	**5.08**	**us**	**0.00**

Reverse Recovery Characteristic Reference



Trj =2.64(us)
Trb=2.44(us)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb