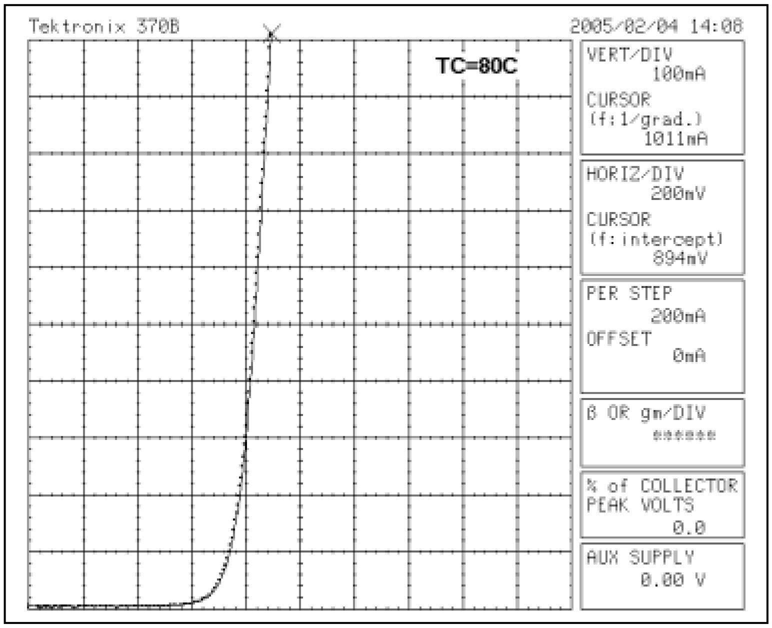
Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER / STANDARD
PART NUMBER: 1SR154-600
MANUFACTURER: ROHM
REMARK: TC=80C

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) 894mV

PER STEP 200mA
OFFSET 0mA

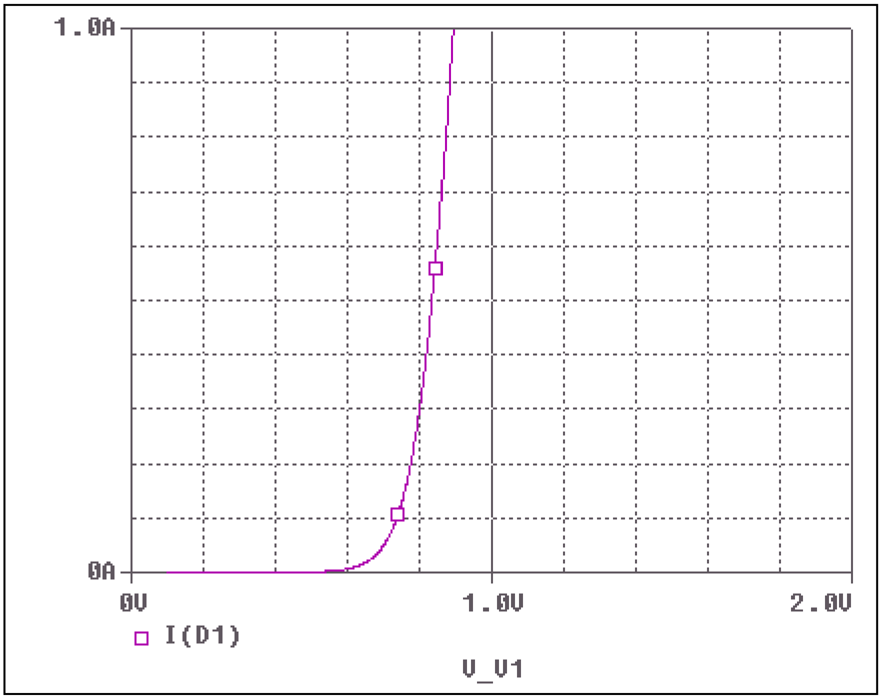
β OR gm/DIV ******

% of COLLECTOR PEAK VOLTS 0.0

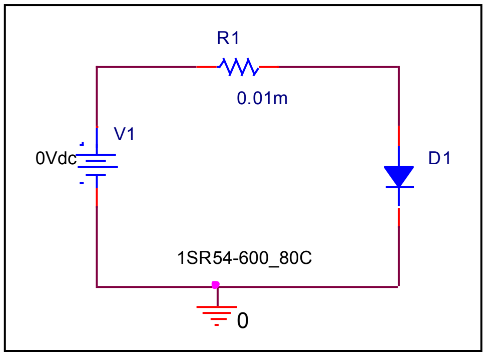
AUX SUPPLY 0.00 V

Forward Current Characteristic

Circuit Simulation Result

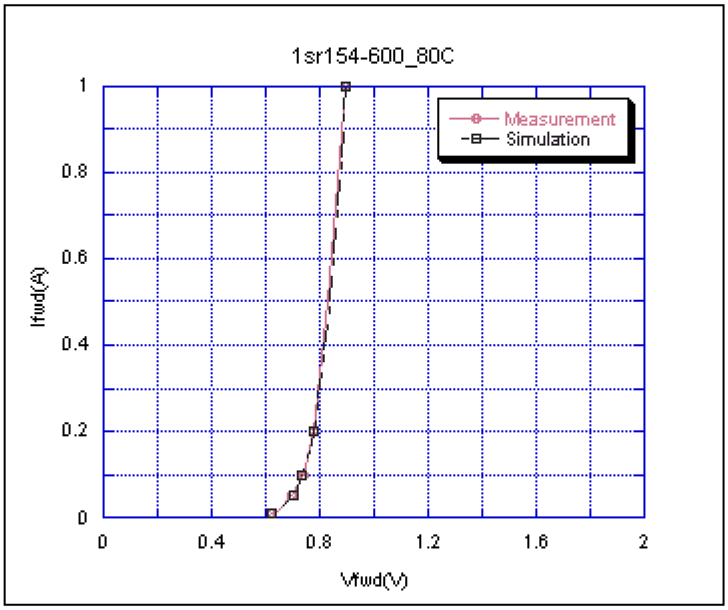


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

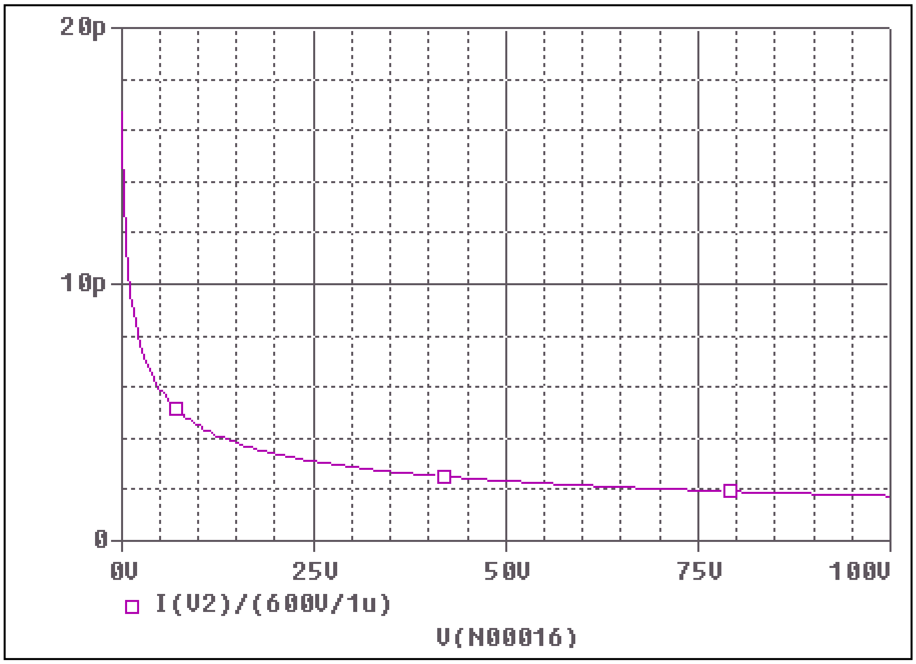


Simulation Result

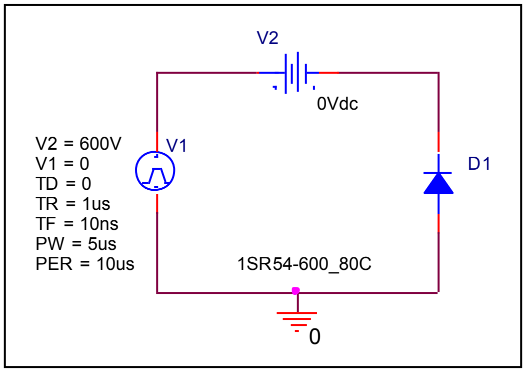
Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.01	0.620	0.620	0.00
0.02	0.655	0.654	0.15
0.05	0.700	0.701	-0.14
0.1	0.740	0.737	0.41
0.2	0.776	0.775	0.13
0.5	0.832	0.834	-0.24
1	0.894	0.893	0.11

Capacitance Characteristic

Circuit Simulation Result

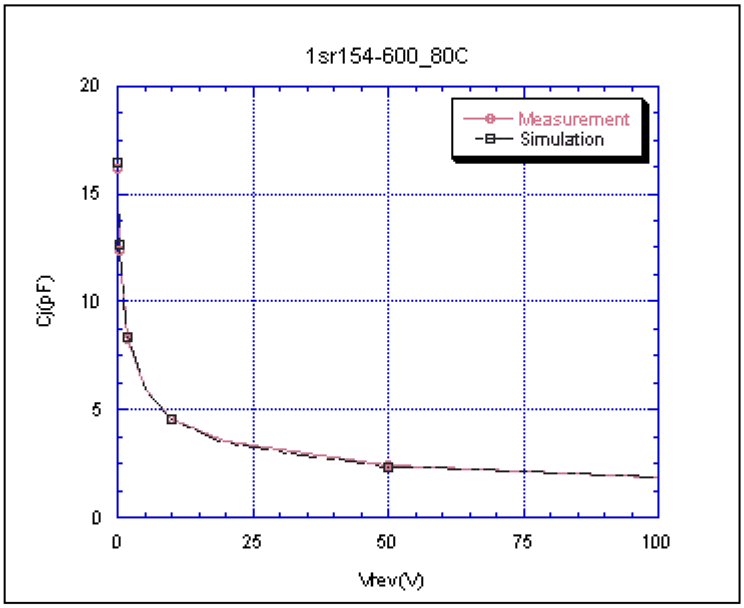


Evaluation Circuit



Comparison Graph

Circuit Simulation Result

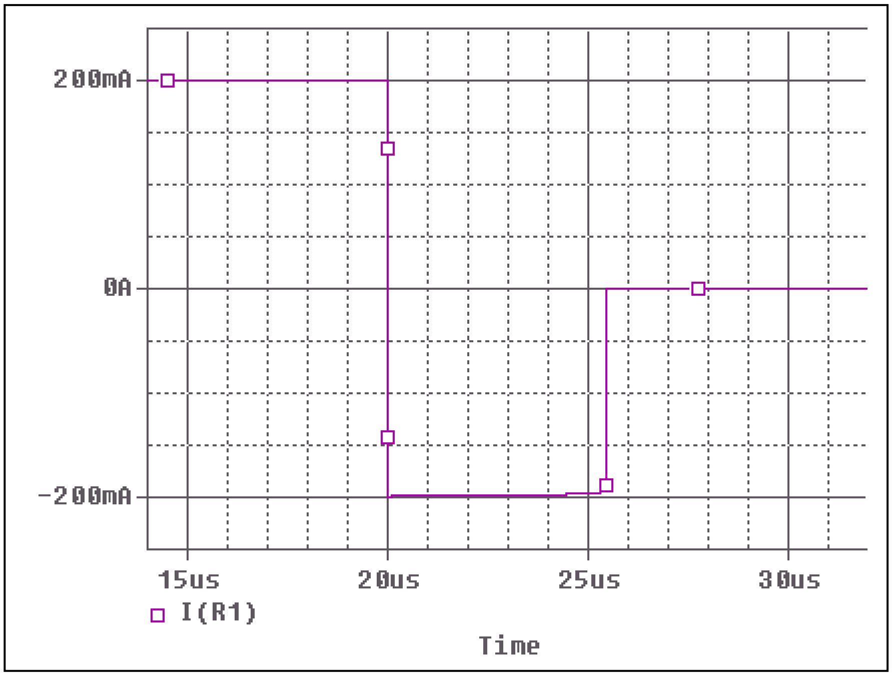


Simulation Result

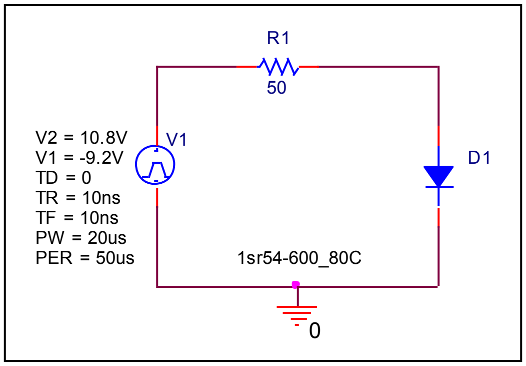
Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	17.905	17.905	0.00
0.1	16.129	16.418	-1.79
0.2	14.792	14.997	-1.39
0.5	12.361	12.597	-1.91
1	10.336	10.477	-1.36
2	8.275	8.348	-0.88
5	5.960	5.905	0.92
10	4.551	4.517	0.75
20	3.576	3.483	2.60
50	2.400	2.337	2.62
100	1.800	1.757	2.39

Reverse Recovery Characteristic

Circuit Simulation Result



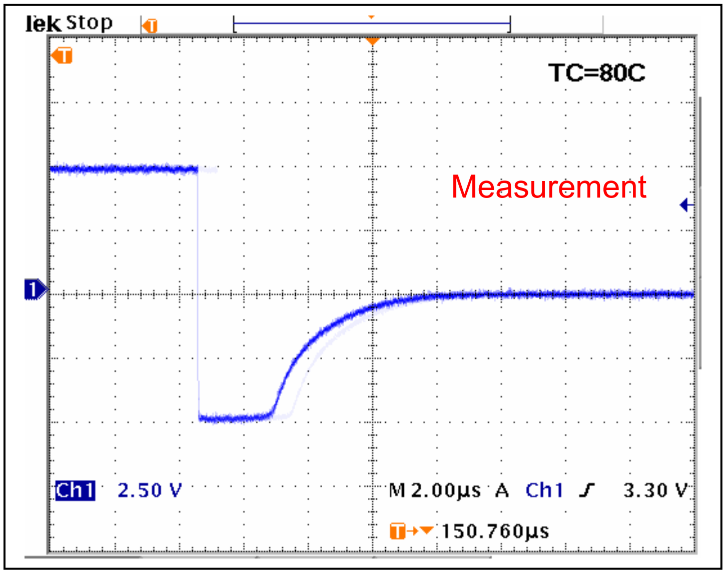
Evaluation Circuit



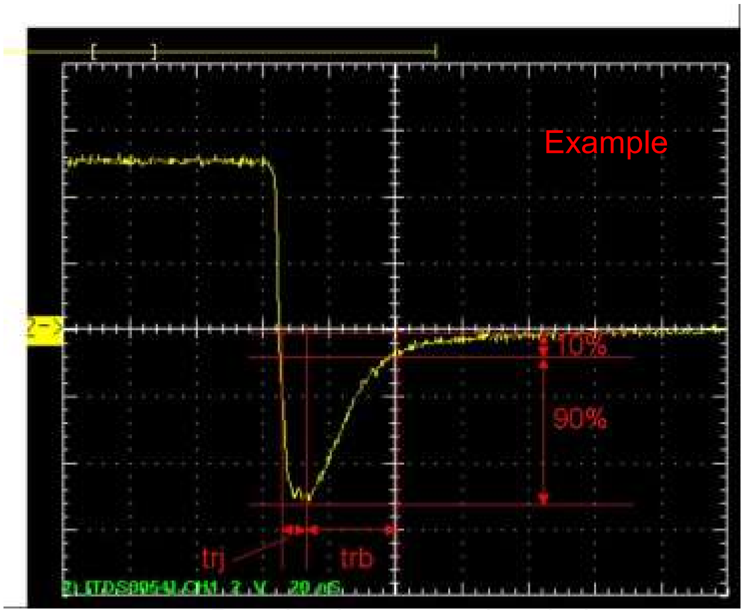
Compare Measurement vs. Simulation

	Measurement		Simulation		%Error
trr	**5.40**	**us**	**5.41**	**us**	**0.185**

Reverse Recovery Characteristic Reference



Trj =2.24(us)
Trb=3.16(us)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb