Device Modeling Report

COMPONENTS:
DIODE/ GENERAL PURPOSE RECTIFIER/ STANDARD
PART NUMBER: 5GLZ47A
MANUFACTURER: TOSHIBA
REMARK: TC=110C

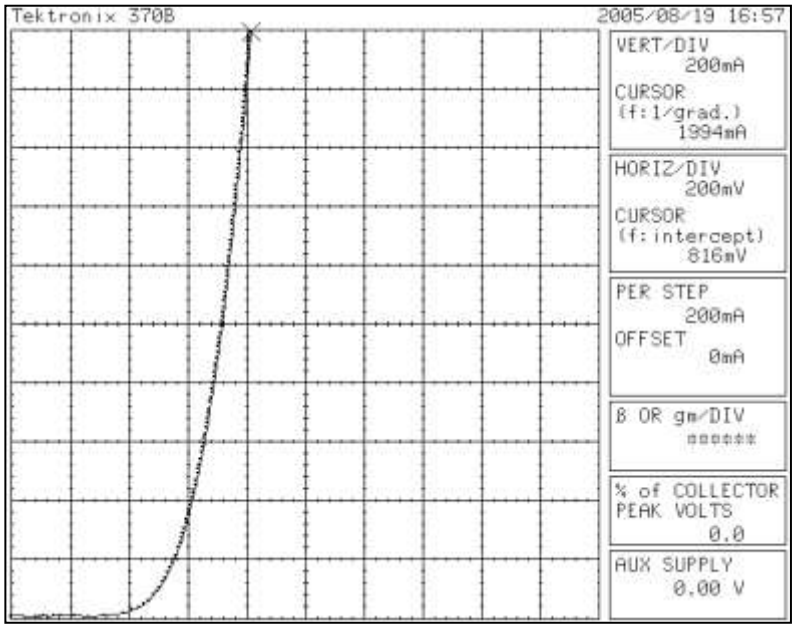
Bee Technologies Inc.

All Rights Reserved Copyright (C) Bee Technologies Inc. 2005

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

All Rights Reserved Copyright (C) Bee Technologies Inc. 2005

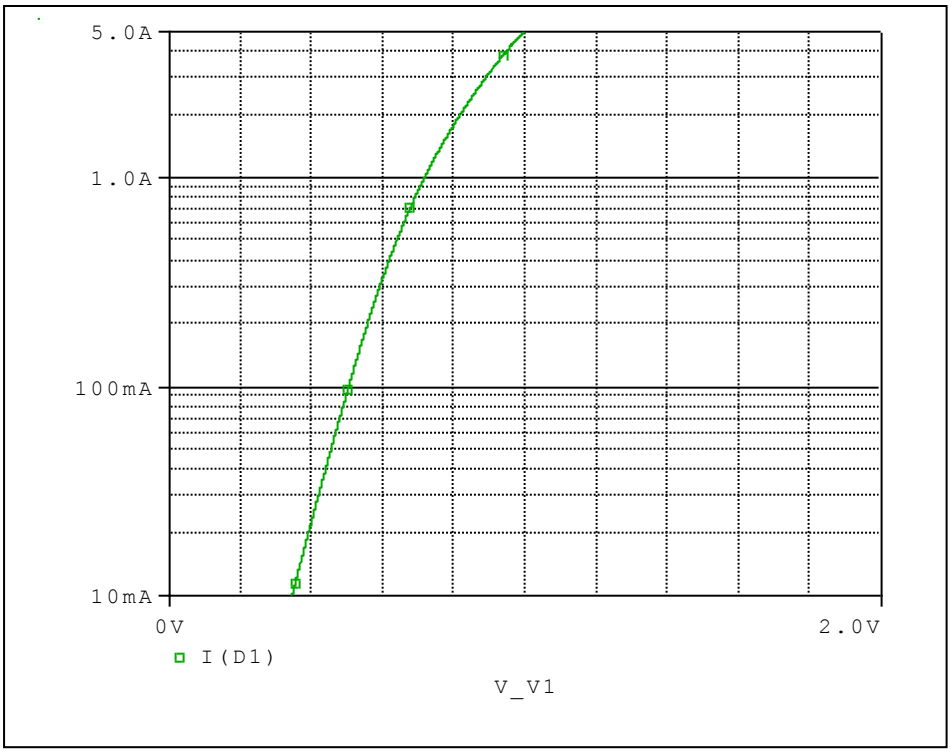
Forward Current Characteristic Reference



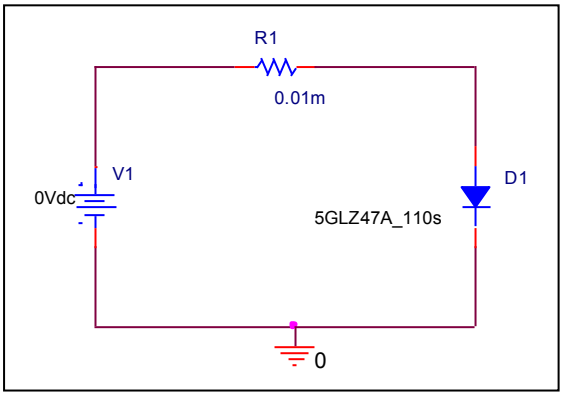
All Rights Reserved Copyright (C) Bee Technologies Inc. 2005

Forward Current Characteristic

Circuit Simulation Result



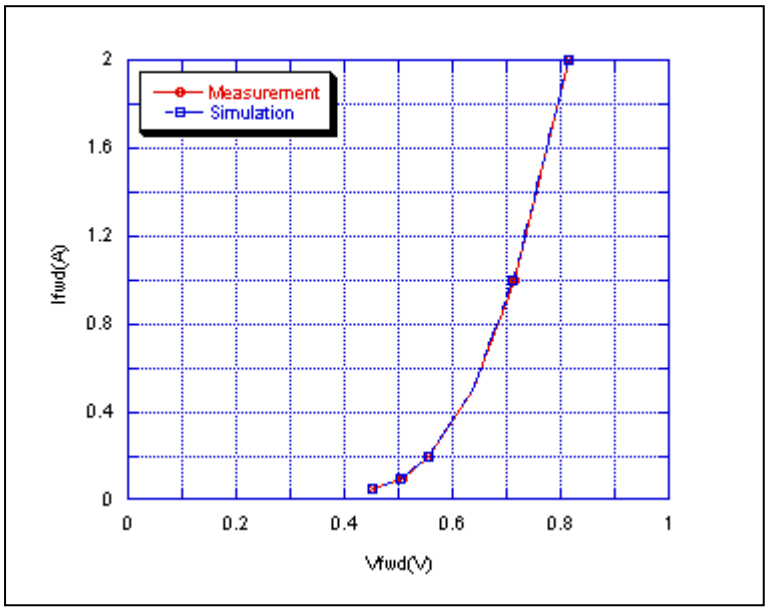
Evaluation Circuit



All Rights Reserved Copyright (C) Bee Technologies Inc. 2005

Comparison Graph

Circuit Simulation Result



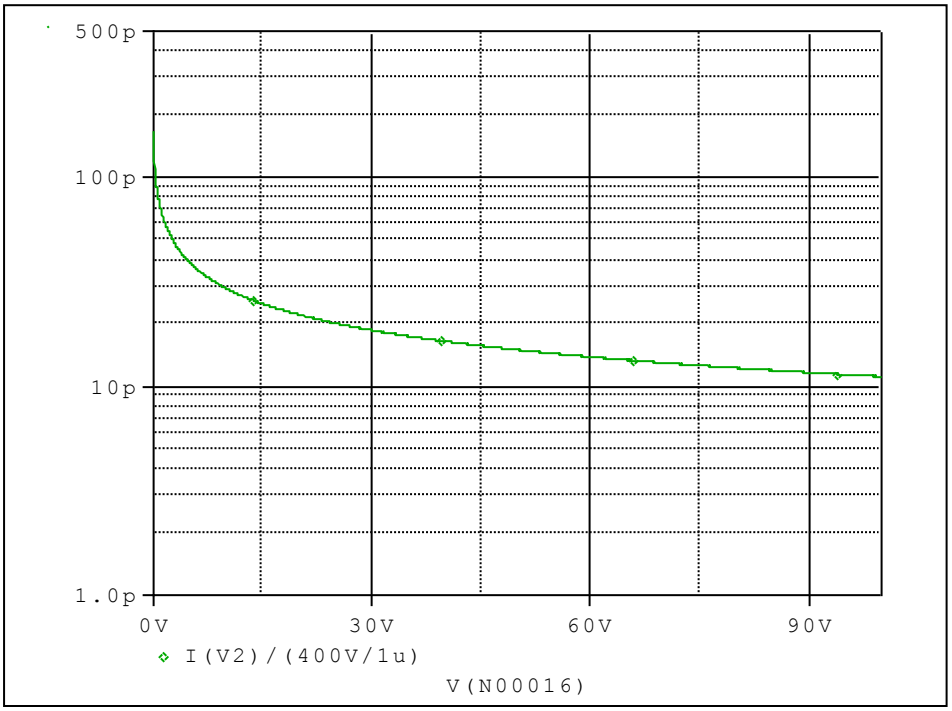
Simulation Result

Ifwd(A)	Vfwd(V) Measurement	Vfwd(V) Simulation	%Error
0.05	0.452	0.451	0.221
0.1	0.506	0.503	0.593
0.2	0.554	0.556	-0.361
0.5	0.638	0.637	0.157
1	0.716	0.712	0.559
2	0.816	0.815	0.123

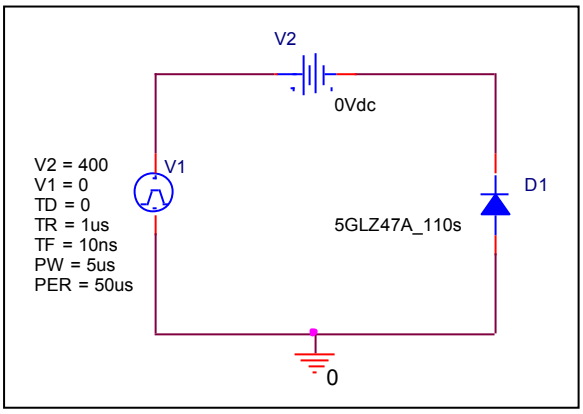
All Rights Reserved Copyright (C) Bee Technologies Inc. 2005

Capacitance Characteristic

Circuit Simulation Result



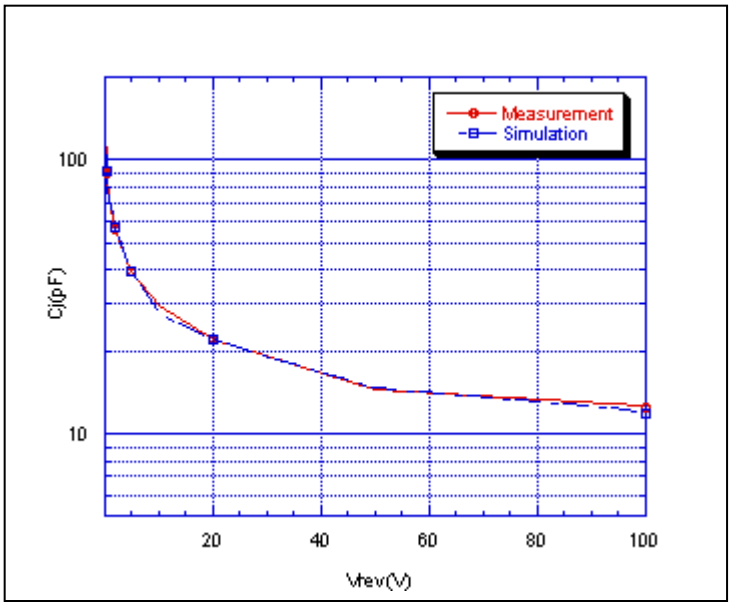
Evaluation Circuit



All Rights Reserved Copyright (C) Bee Technologies Inc. 2005

Comparison Graph

Circuit Simulation Result



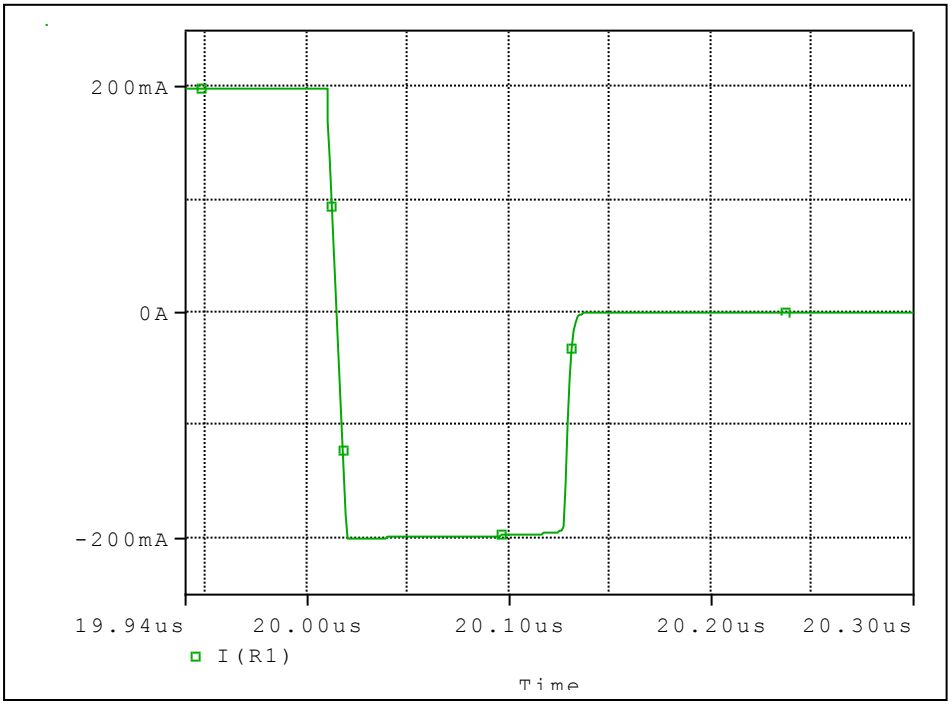
Simulation Result

Vrev(V)	Cj(pF) Measurement	Cj(pF) Simulation	%Error
0	143.500	143.500	0.000
0.5	89.800	90.200	-0.445
1	72.100	72.600	-0.693
2	55.600	56.400	-1.439
5	38.900	39.000	-0.257
10	29.300	29.000	1.024
20	22.000	22.000	0.000
50	14.600	14.900	-2.055
100	12.500	11.900	4.800

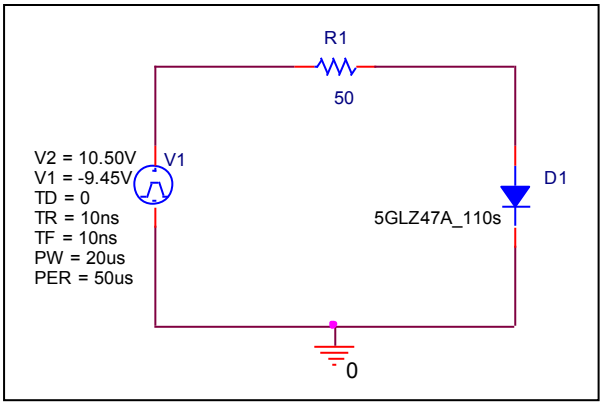
All Rights Reserved Copyright (C) Bee Technologies Inc. 2005

Reverse Recovery Characteristic

Circuit Simulation Result



Evaluation Circuit

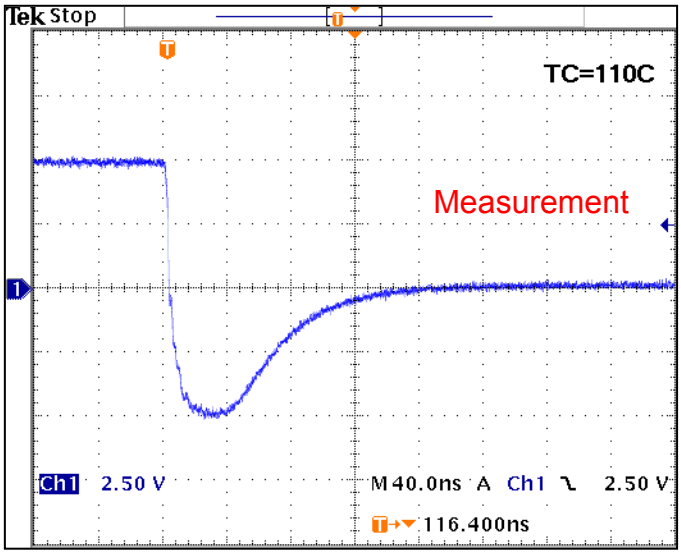


Compare Measurement vs. Simulation

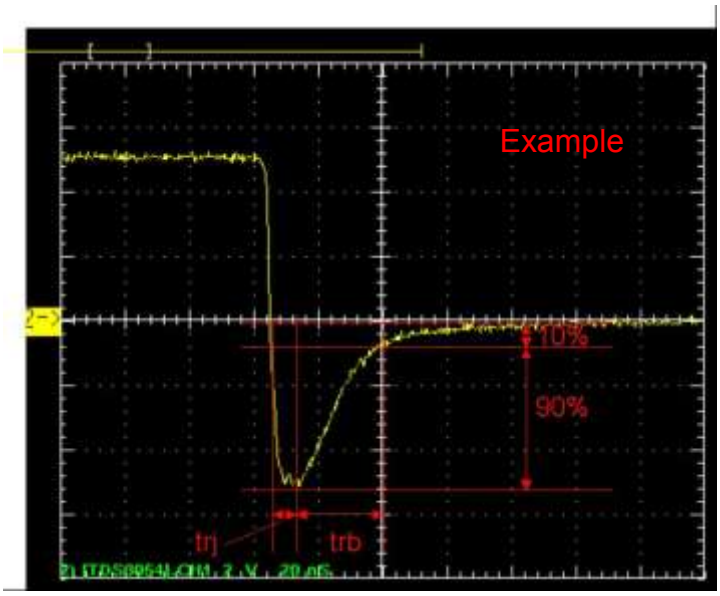
	Measurement		Simulation		%Error
trr	**116.00**	**ns**	**115.73**	**ns**	**0.233**

All Rights Reserved Copyright (C) Bee Technologies Inc. 2005

Reverse Recovery Characteristic Reference



Trj =36 (ns)
Trb= 80 (ns)
Conditions: Ifwd=Irev=0.2(A), Rl=50



Relation between trj and trb

All Rights Reserved Copyright (C) Bee Technologies Inc. 2005