Device Modeling Report

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PART NUMBER : PC3Q66Q
MANUFACTURER : SHARP

Bee Technologies Inc.

DIODE MODEL

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

BIPOLAR JUNCTION TRANSISTOR MODEL

Pspice model parameter	Model description
NR	Reverse Emission Coefficient
RB	Base Resistance
RC	Series Collector Resistance
CJE	Zero-bias Emitter-Base Junction Capacitance
CJC	Zero-bias Collector-Base Junction Capacitance
TF	Forward Transit Time
TR	Reverse Transit Time

VOLTAGE CONTROLLED VOLTAGE SOURCE MODEL(VCVS)

E<Name><(+)Node><(－)Node>VALUE={Expression}

E<Name><(+)Node><(－)Node>TABLE={Expression}

VOLTAGE CONTROLLED CURRENT SOURCE MODEL(VCCS)

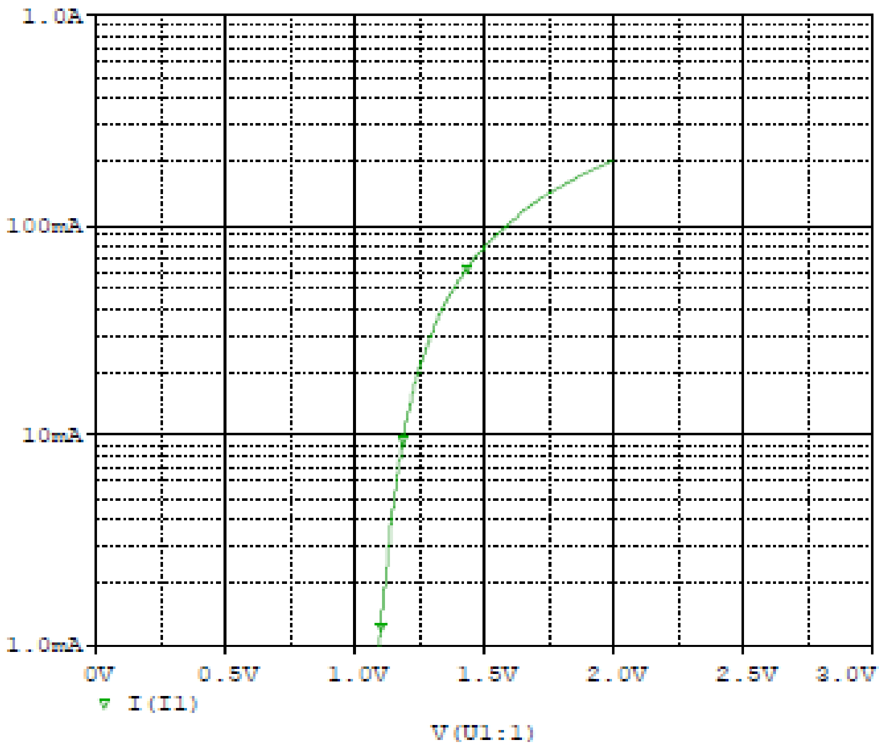
E<Name><(+)Node><(－)Node>VALUE={Expression}

CURRENT CONTROLLED MODEL(W)

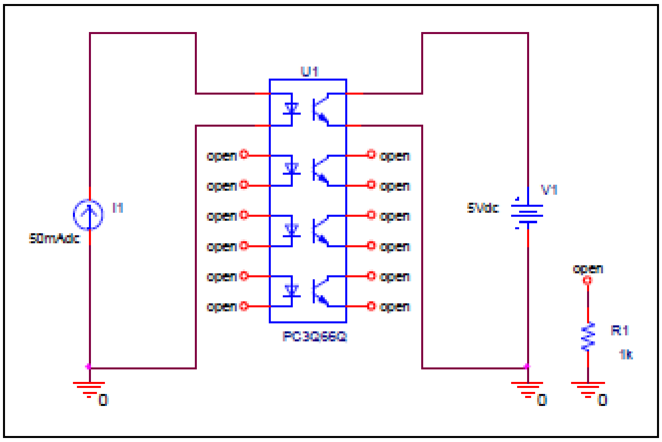
Pspice model parameter	Model description
IOFF	Controlling current to Off state
ION	Controlling current to On state
ROFF	Off Resistance
RON	On Resistance

LED IV Curve Characteristics

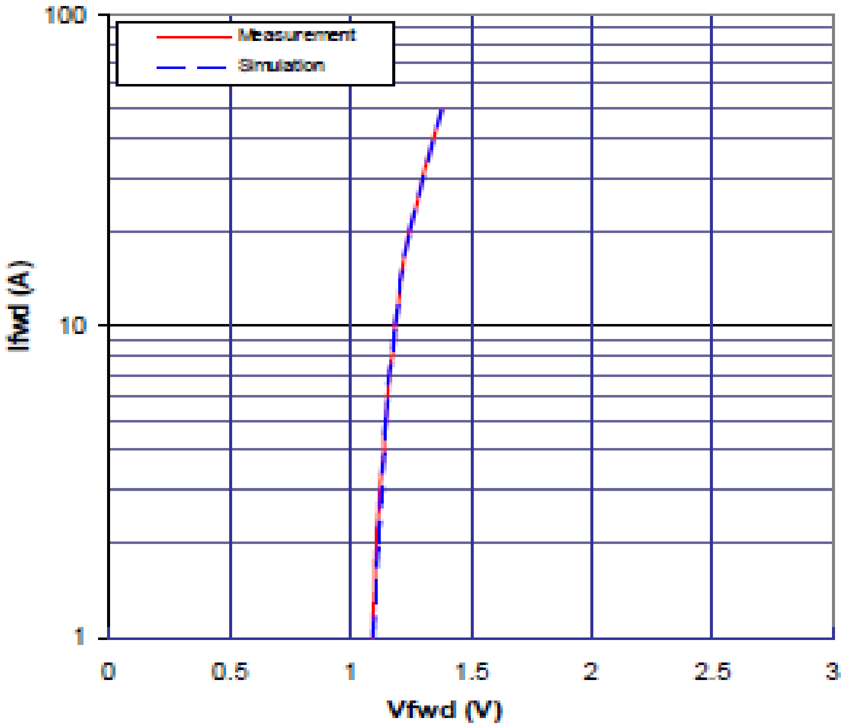
Simulation result



Evaluation Circuit



Comparison Graph

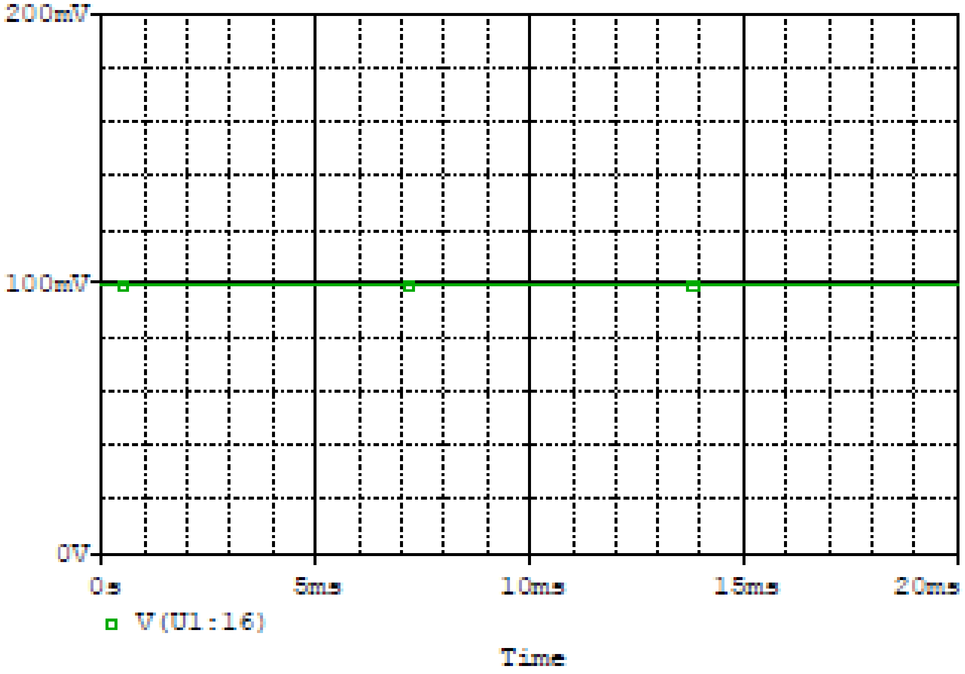


Comparison Table

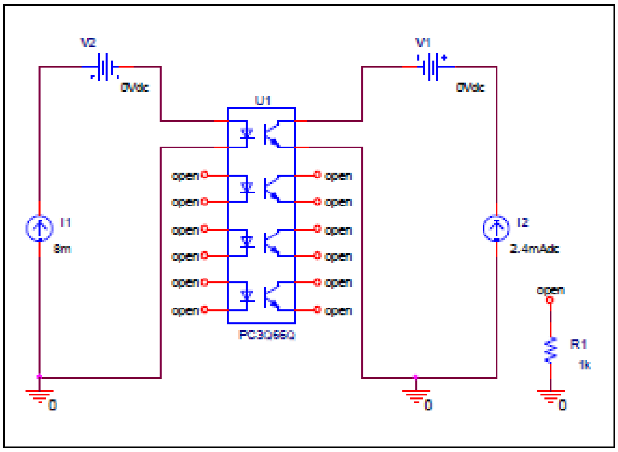
Ifwd (mA)	Vfwd(V)		% Error
	Measurement	Simulation	
1.000	1.100	1.094	-0.548
2.000	1.110	1.117	0.627
5.000	1.150	1.153	0.260
10.000	1.190	1.190	0.000
20.000	1.250	1.245	-0.402
50.000	1.380	1.384	0.289

Transistor Saturation Characteristics

Simulation result



Evaluation Circuit

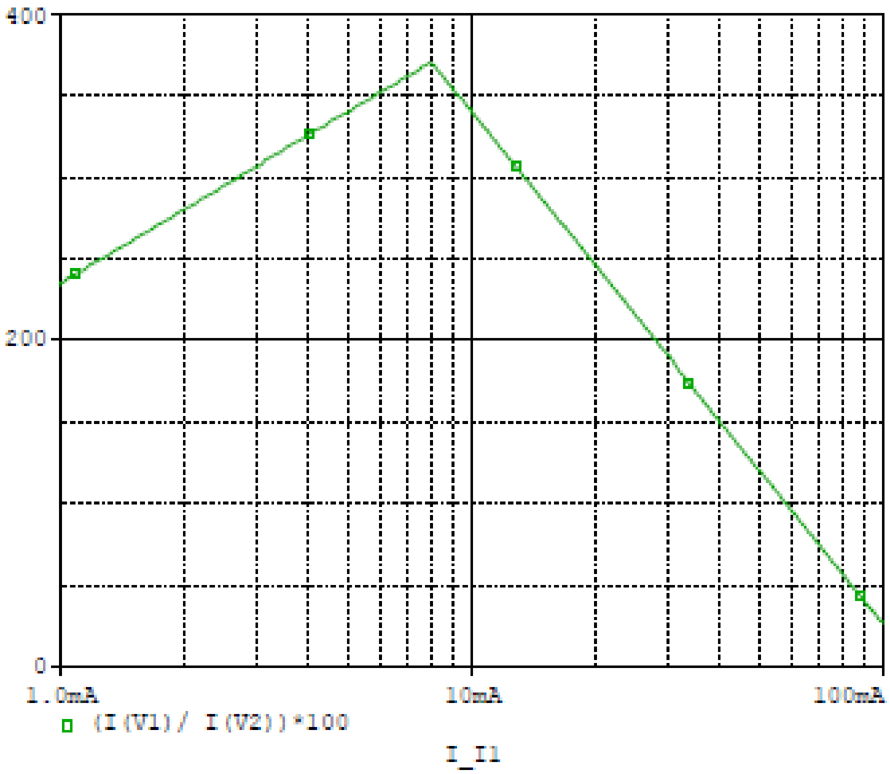


Comparison Table

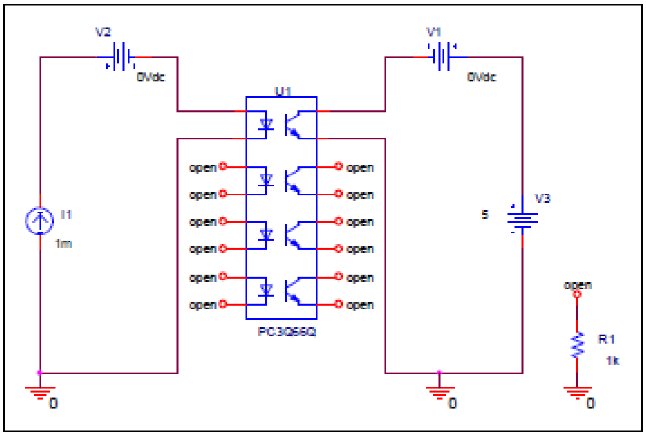
VCE(sat) (V)	Measurement	Simulation	% Error
	0.100	0.099	-1.010

CTR(Current Transfer Ratio) Characteristics

Simulation result



Evaluation Circuit



Rise Curve Table

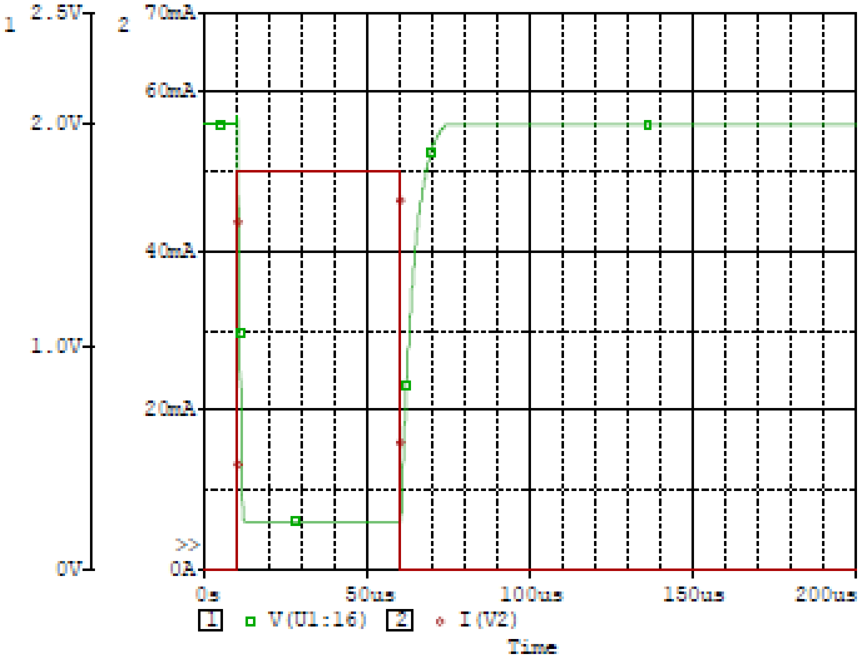
If (mA)	IO/IF		% Error
	Measurement	Simulation	
1.000	235.000	235.134	0.057
2.000	282.000	281.102	-0.319
5.000	342.000	340.595	-0.413
8.000	370.000	369.985	-0.004

Fall Curve Table

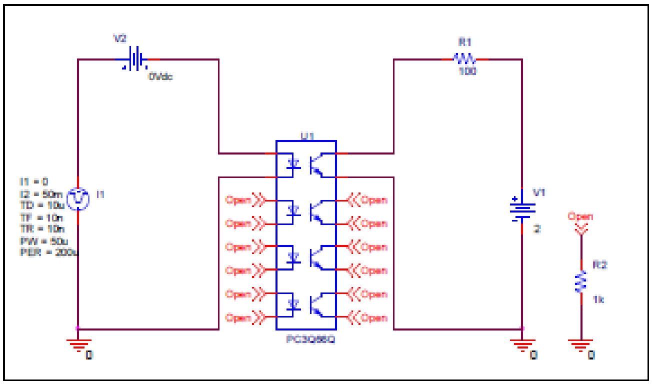
If (mA)	IO/IF		% Error
	Measurement	Simulation	
8.000	370.000	369.985	-0.004
10.000	342.000	341.015	-0.289
20.000	248.000	246.076	-0.782
50.000	120.000	120.823	0.681

Switching Time Characteristics

Simulation result



Evaluation Circuit



Comparison Table

IF=50mA, RL=100Ω	Measurement	Simulation	% Error
tS (us)	0.600	0.605	0.833
tOFF (us)	8.500	8.492	-0.094