

Device Modeling Report

COMPONENTS: Light-Emitting Diode (LED) STANDARD
PART NUMBER: FY3863X
MANUFACTURER: STANLEY

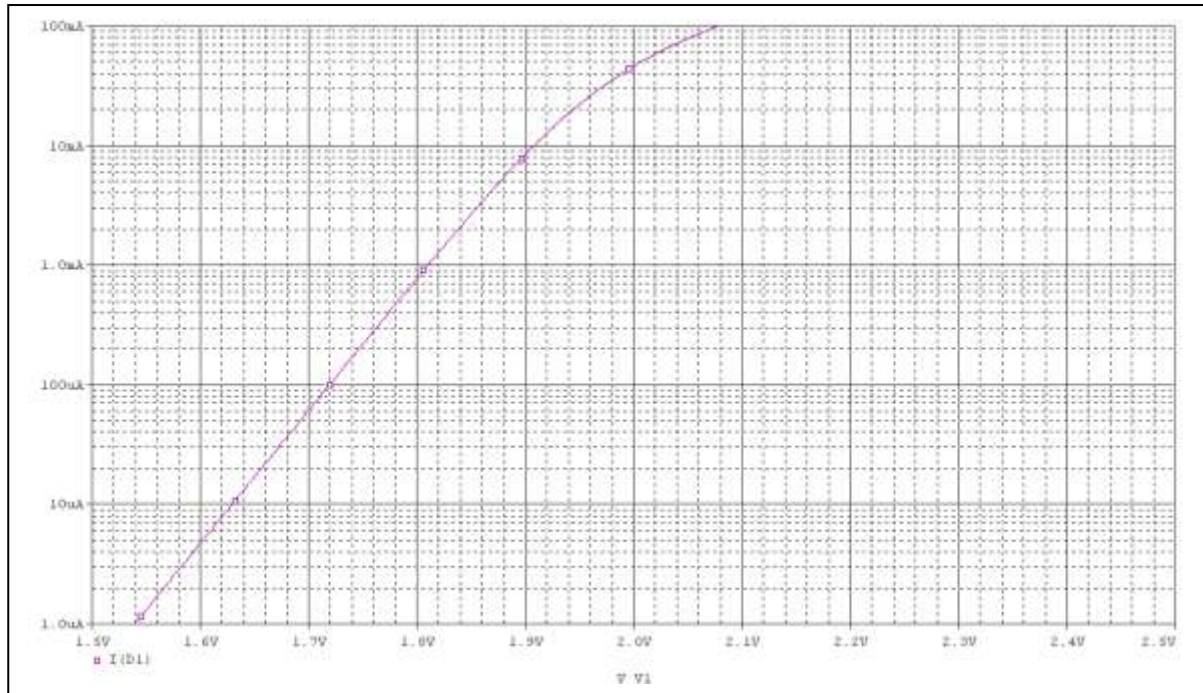


Bee Technologies Inc.

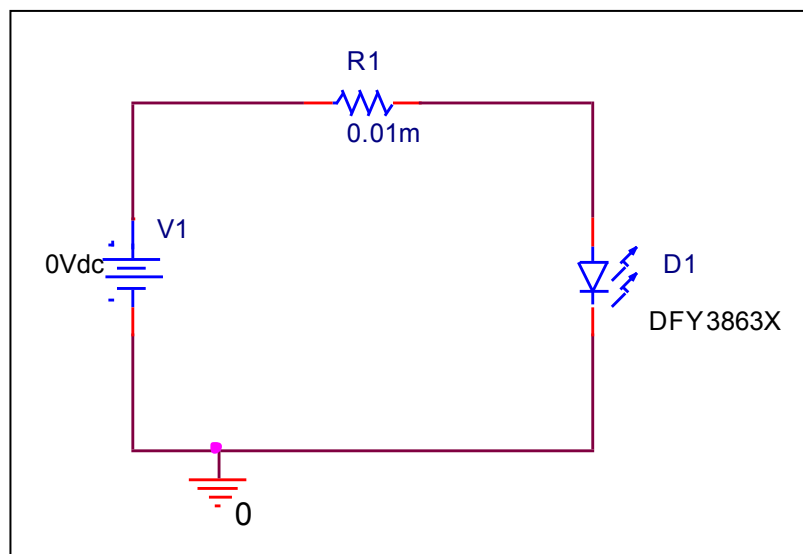
PSpice model parameter	Model description
IS	Saturation Current
N	Emission Coefficient
RS	Series Resistance
IKF	High-injection Knee Current
CJO	Zero-bias Junction Capacitance
M	Junction Grading Coefficient
VJ	Junction Potential
ISR	Recombination Current Saturation Value
BV	Reverse Breakdown Voltage(a positive value)
IBV	Reverse Breakdown Current(a positive value)
TT	Transit Time

Forward Current Characteristic

Circuit simulation result

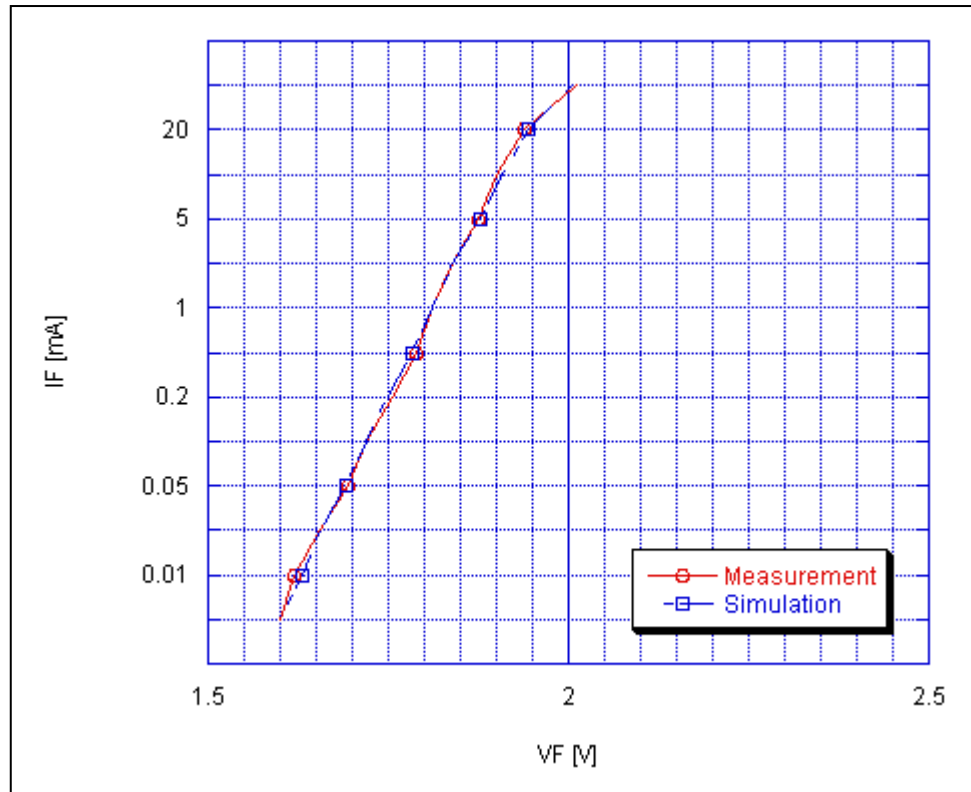


Evaluation circuit



Comparison graph

Circuit simulation result

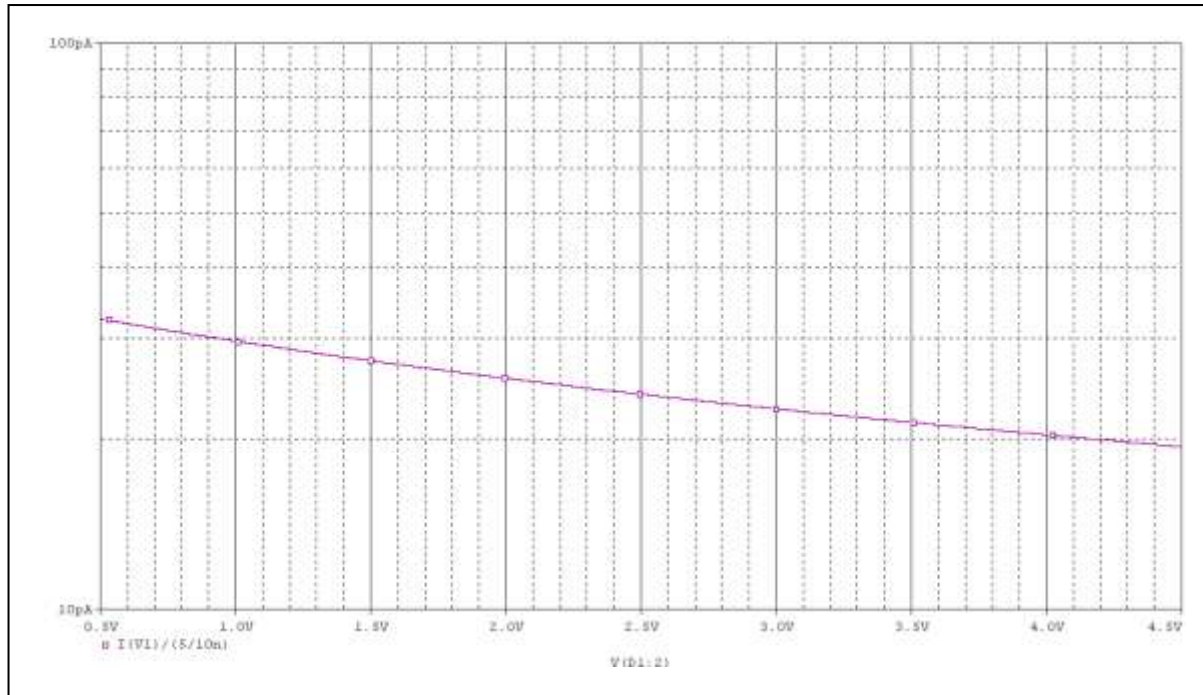


Simulation Result

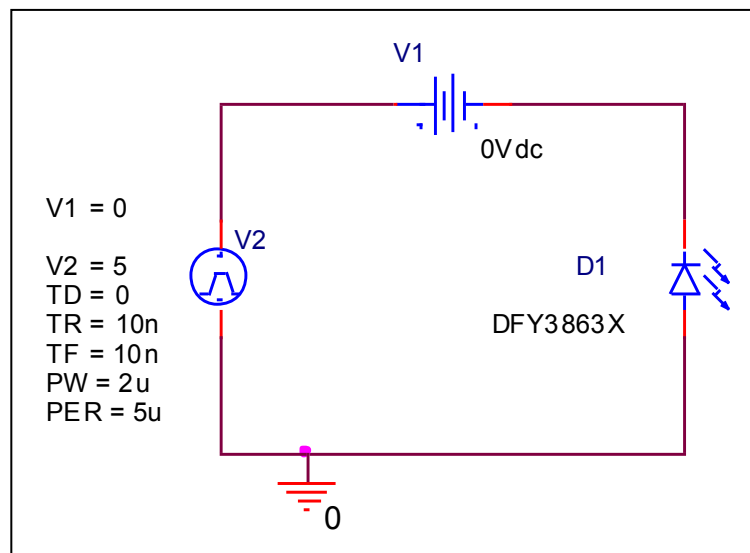
IF(A)	VF(V)		
	Measurement	Simulation	Error (%)
10u	1.62	1.6299	0.611111
20u	1.655	1.6563	0.07855
50u	1.695	1.6931	0.112094
100u	1.72	1.7191	0.052326
200u	1.755	1.7471	0.450142
500u	1.79	1.7828	0.402235
1m	1.81	1.8103	0.016575
2m	1.84	1.8391	0.048913
5m	1.875	1.877	0.106667
10m	1.9	1.9081	0.426316
20m	1.94	1.9437	0.190722
50m	2.01	2.0069	0.154229

Junction Capacitance Characteristic

Circuit simulation result

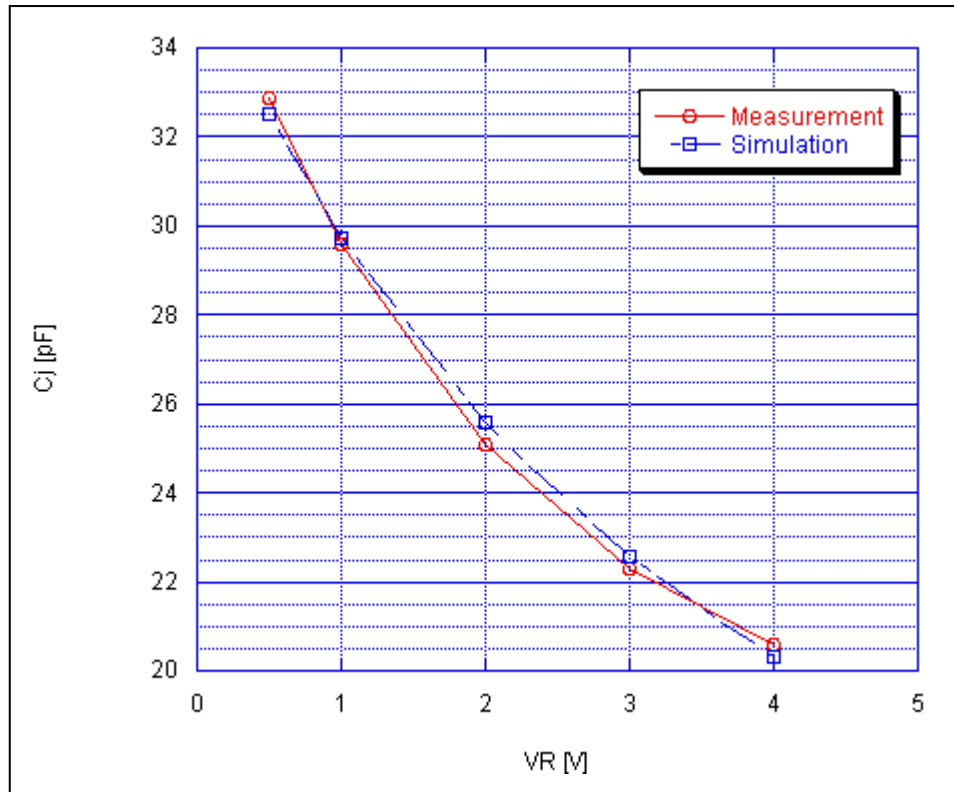


Evaluation circuit



Comparison graph

Circuit simulation result

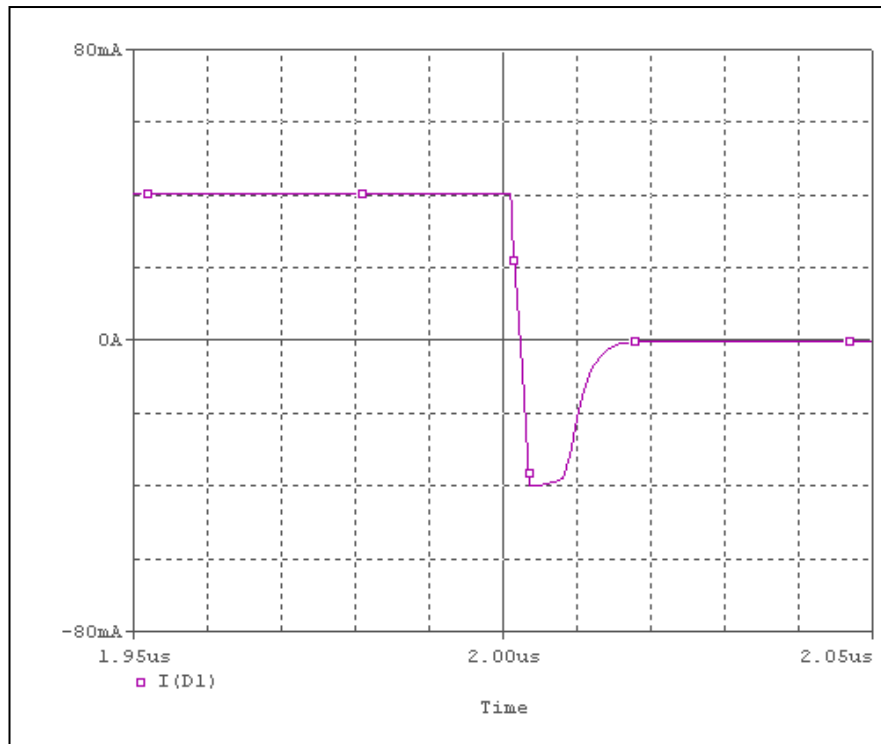


Simulation Result

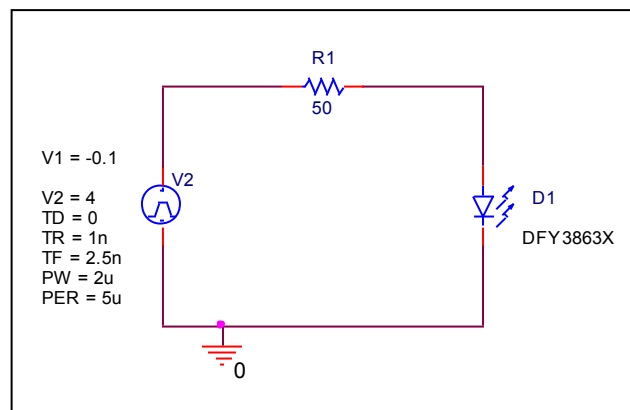
Vrev(V)	Cj(pF)		
	Measurement	Simulation	Error (%)
0.5	32.899	32.539	1.094258
1	29.587	29.725	0.466421
2	25.1	25.578	1.904382
3	22.309	22.567	1.156484
4	20.6	20.302	1.446602

Reverse Recovery Characteristic

Circuit simulation result



Simulation Result

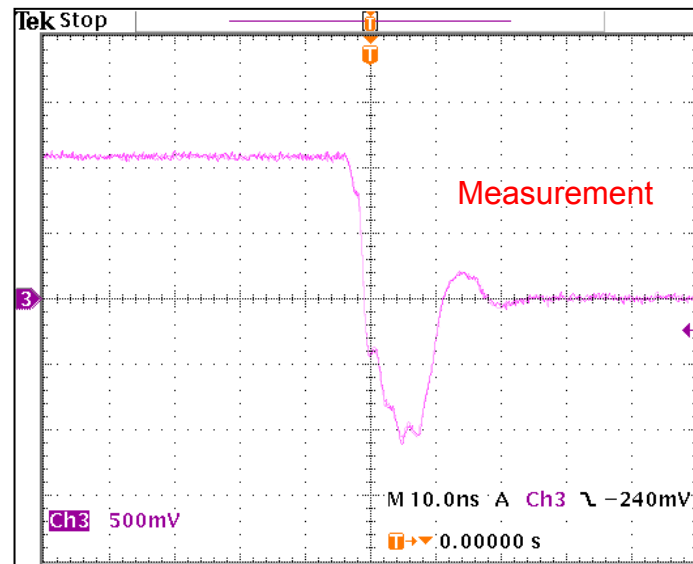


Compare Measurement VS. Simulation

Symbol	Measurement	Unit	Simulation	Unit	%Error
trj+trb	11.7	ns	11	ns	- 4.347

Reverse Recovery Characteristic

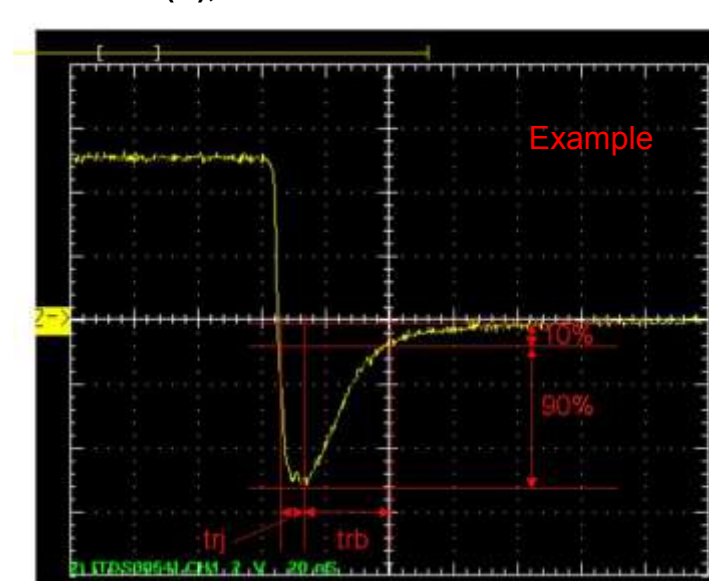
Reference



$tr_j = 7.1(\text{ns})$

$tr_b = 3.6(\text{ns})$

Conditions: $I_{fwd} = I_{rev} = 0.04(\text{A})$, $R_I = 50$



Relation between tr_j and tr_b