ESD0P2RF_02LS and ESD0P2RF_02LRH

SPICE3 Model Documentation

Technical Report

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Author: Peter Schicketanz

RF and Protection Devices

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Revision History

ESD0P2RF_02LS and ESD0P2RF_02LRH

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Previous Version:

Page	Subjects (major changes since last revision)
All	Creation of document.

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Last Trademarks Update 2009-10-19

1 Model Description

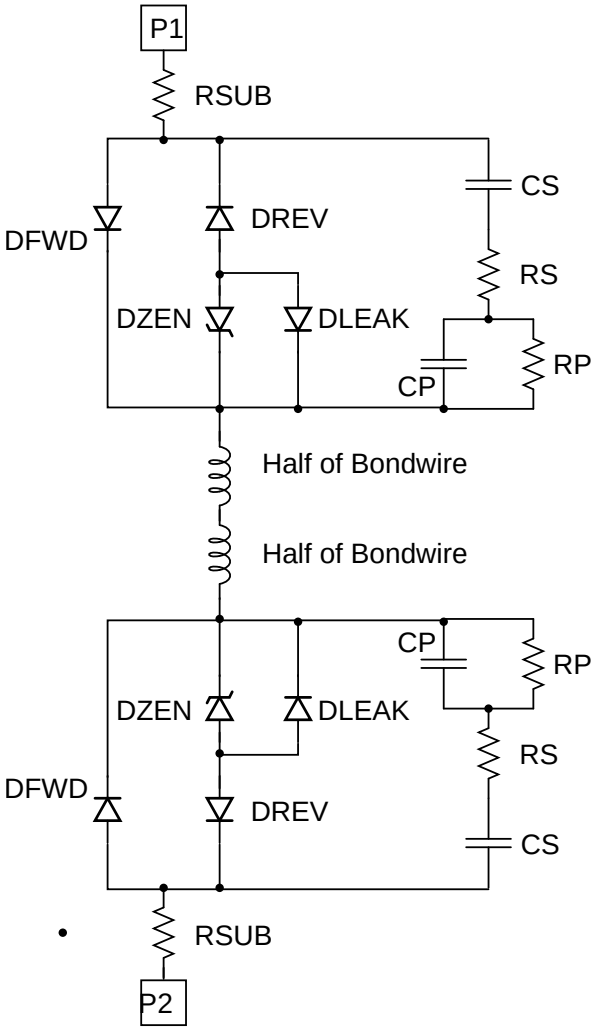

Figure 1: Subcircuit of ESD diode

2 Model Performance

The results of parameter extraction are shown in this chapter. Red boxes indicate measurement data. Blue lines indicate simulated data. Measurement and simulation temperature was 27 degC.

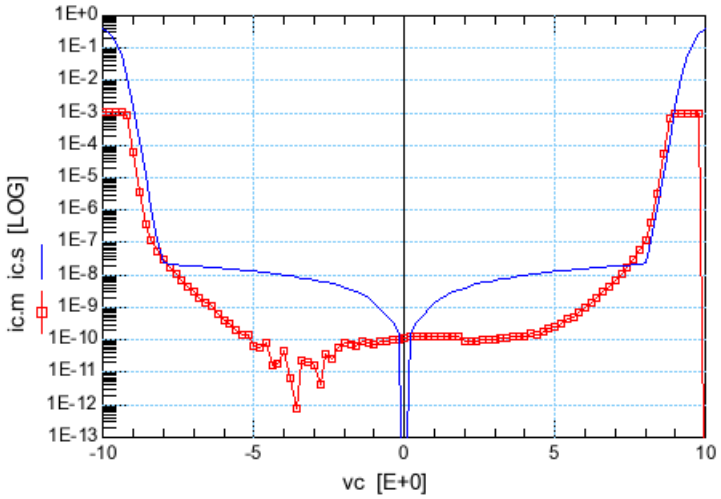

Figure 2: Leakage current

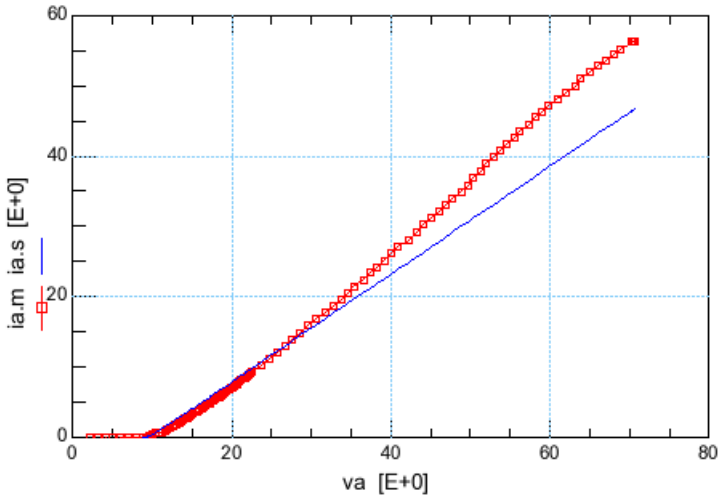

Figure 3: Forward TLP characteristics

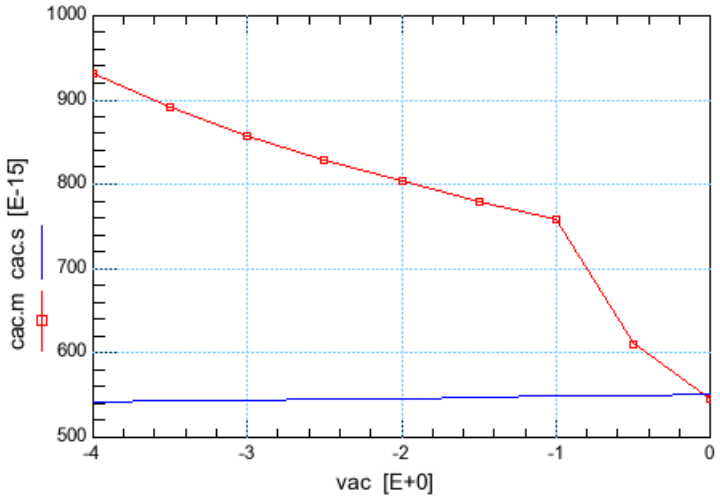

Figure 4: CV curve

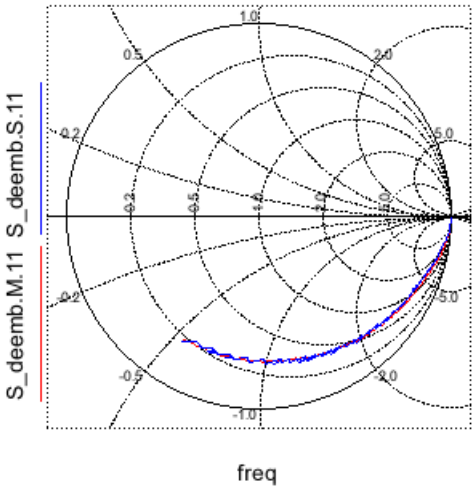

Figure 5: S11, VC=-8V (VC=voltage at cathode)

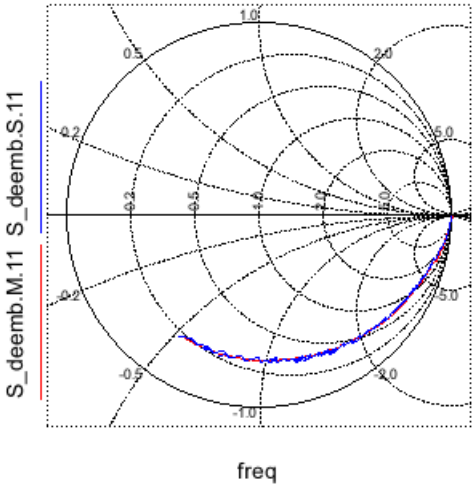

Figure 6: S11, VC=0V (VC=voltage at cathode)

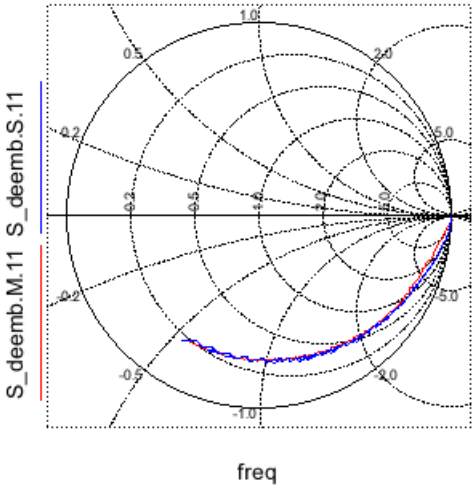

Figure 7: S11, VC=8V (VC=voltage at cathode)

3 Model Code

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.options
+ gmin=1.0e-09
+ TNOM = 27
+ TEMP = 27

.SUBCKT ESD0P2RF_02LRH 1 2
X1 1   11 ESD0P2RF_SINGLE
X2 11  12 BondwireModel_ESD0P2RF_02LRH
X3 12  13 BondwireModel_ESD0P2RF_02LRH
X4 2   13 ESD0P2RF_SINGLE
.ENDS

.SUBCKT ESD0P2RF_02LS 1 2
X1 1   11 ESD0P2RF_SINGLE
X2 11  12 BondwireModel_ESD0P2RF_02LS
X3 12  13 BondwireModel_ESD0P2RF_02LS
X4 2   13 ESD0P2RF_SINGLE
.ENDS

.SUBCKT ESD0P2RF_SINGLE 1 2
.MODEL DFWD D
+ TNOM = 27
+ IS = 2.159E-14
+ N = 1.228
+ CJO = 2.799E-13
+ M = 0.1067
+ VJ = 10.6
+ FC = 0.5
+ TT = 1E-10
.MODEL DREV D
+ TNOM = 27
+ IS = 3E-16
+ N = 1
+ CJO = 0
+ M = 0
+ VJ = 0.7
+ FC = 0.5
+ TT = 1E-10
.MODEL DZEN D
+ TNOM = 27
+ IS = 1E-16
+ N = 1
+ BV = 7.5
+ IBV = 0.01
+ CJO = 0
+ M = 0
+ VJ = 0.7
+ FC = 0.5
+ TT = 1E-10
.MODEL DLEAK D
+ TNOM = 27
+ IS = 1E-10
+ N = 10
+ BV = 8
+ IBV = 1E-6
+ CJO = 0
+ M = 0
+ VJ = 0.7
+ FC = 0.5
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+ TT = 1E-10
D1 11 2
+ DFWD
D2 91 11
+ DREV
D3 91 2
+ DZEN
D4 91 2
+ DLEAK
RSUB 11 1 0.65
CS 1 51 2.716E-13
RS 51 52 125.9
CP 52 2 2.841E-13
RP 52 2 127.8
.ENDS

.SUBCKT BondwireModel_ESD0P2RF_02LS 1 2
* bond wire resistor
RBOND 1 21 0.0001869
* bond wire inductor
LBOND 21 22 9.159E-11
* skin effekt
LSKIN 22 2 1.737E-09
RSKIN 22 2 0.05127
.ENDS

.SUBCKT BondwireModel_ESD0P2RF_02LRH 1 2
* bond wire resistor
RBOND 1 21 0.0001869
* bond wire inductor
LBOND 21 22 18.4E-11
* skin effekt
LSKIN 22 2 1.737E-09
RSKIN 22 2 0.05127
.ENDS
```

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