

Keysight Technologies

TC611 Diode Model

Technical Overview

Description

This product note provides a Spice model and a Libra model of the TC611 discrete beam lead GaAs diode. This diode is a modified barrier Schottky diode which features very low forward voltage and a soft reverse breakdown characteristic. The forward characteristics are modeled using a standard diode model (DMOD1). The reverse characteristics are best modeled using an anti parallel diode with modified characteristic (DMOD2). The 11 femto-farad parallel capacitor represents the parasitic capacitance of the bond pads.

Spice Model

```

- VSOURCE 1 0
- VMON 1 2 DC 0
- D1 2 0 DMOD1
- D2 0 2 DMOD2
- C1 2 0 .011P
- TEMP 25 65
- MODEL DMOD1 D IS = 12U
  RS=50 CJO=30F EG=1.42 N=1.2 PB=.26
- MODEL DMOD2 D IS = .084M
  RS=10 CJO=30F EG=1.42 N=40 PB=.26
- DCV VSOURCE -4 1 .1
- PLOT DC I(VMON)
- END
    
```

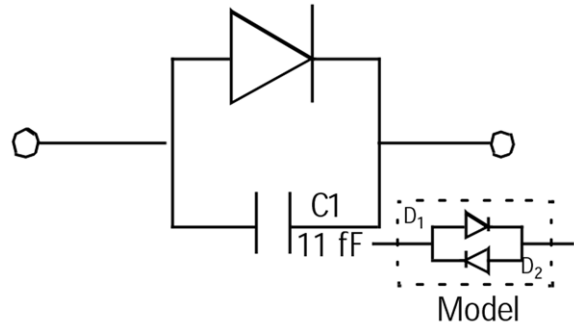


Figure 1. Simplified schematic diagram

Libra DCTR Model

DIM

IND NH
CAP PF
FREQ GHZ
PWR DBM
CUR MA

CKT

```

RES_1 1 2 R=0.1 !current measuring element
DIODE_D1 2 0 [MODEL=DMOD1]
DIODE_D2 0 2 [MODEL=DMOD2]
CAP_1 2 0 c=0.011
DEF1P 1 HPD
    
```

MODEL

```

DMOD1 D IS=12E-6 RS =50 CJO=30E-15
EG=1.42 N=1.2 VJ=0.26
DMOD2 D IS=84E-6 RS =10 CJO=30E-15
EG=1.42 N=40 VJ=0.26
    
```

SOURCE

```
HPD VS_D1 1 0 DC=1
```

DCTR

```
DCTR1 VS_D1
SWEEP -4 1 0.1
```

OUT

```
HPD I_HP9161 RES_1 GR1
```

GRID

```
DCTR1 -4 1 1
GR1 -10 25 5
```

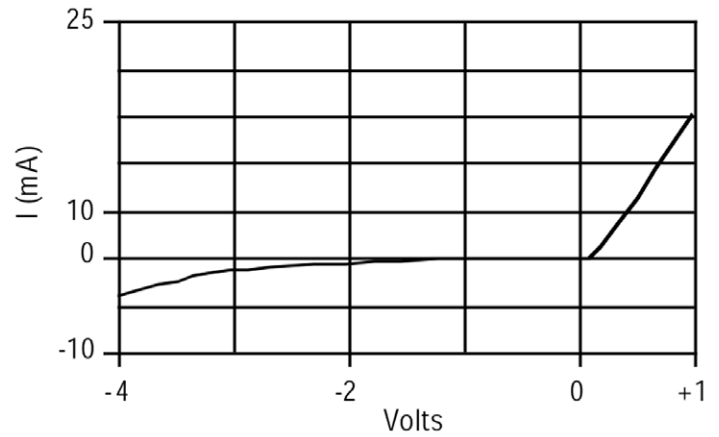


Figure 2. Libra DCTR simulation - result

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