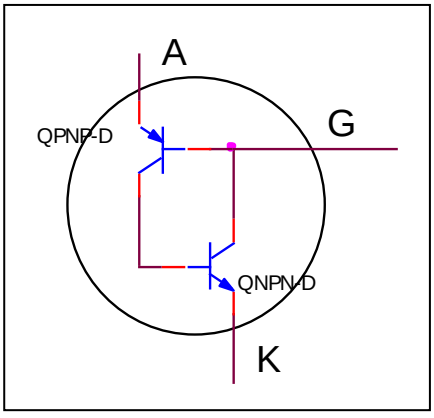
# Device Modeling Report

COMPONENTS: Programmable Unijunction Transistor
PART NUMBER: TN41B
MANUFACTURER: TOSHIBA

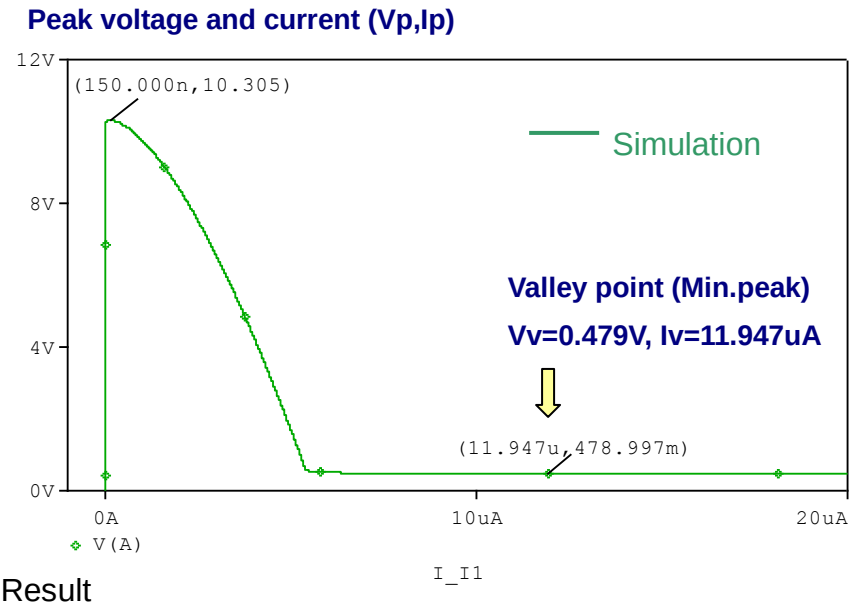

**Bee Technologies Inc.**

| Pspice model parameter | Model description |
|---|---|
| IS | Saturation Current |
| ISE | Non-ideal Base-Emitter Diode Saturation Current |
| RC | Series Collector Resistance |
| TR | Reverse transit time |
| TF | Forward Transit Time |

**Equivalent circuit**



## Peak Voltage (Vp) and Peak Current (Ip) Characteristics

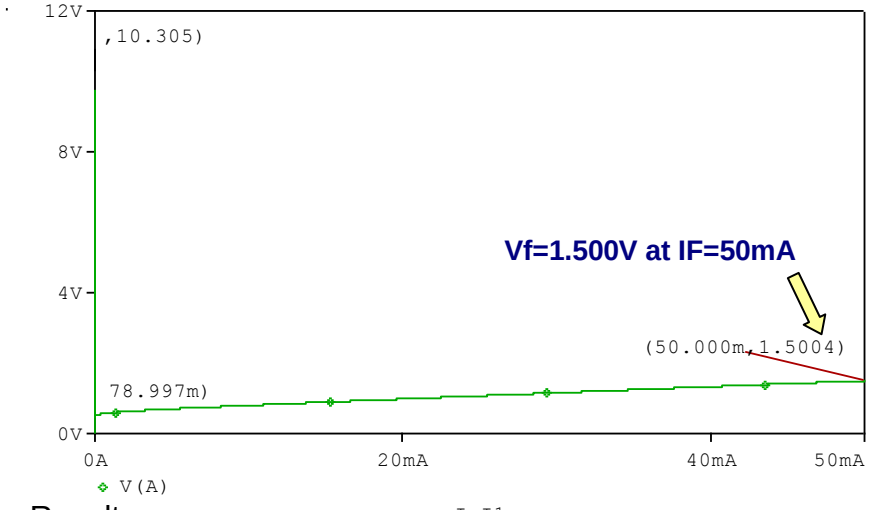



Simulation Result

Vp=10.305(V) at Ip=0.15u(A)

SPEC: Vp=10.2(V) to 10.6(V) at Ip(max.)=0.15u(A)

## Forward Voltage Characteristics

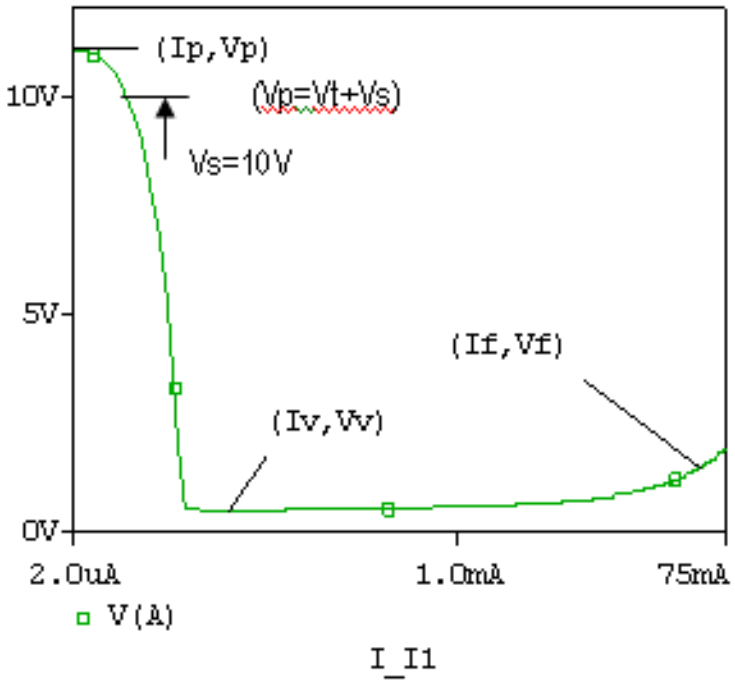



Simulation Result

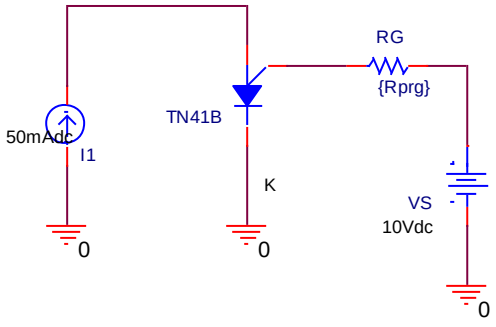
Vf=1.5(V) at If=50m(A)

SPEC: Vf=1.5(V)MAX. at If=50m(A)

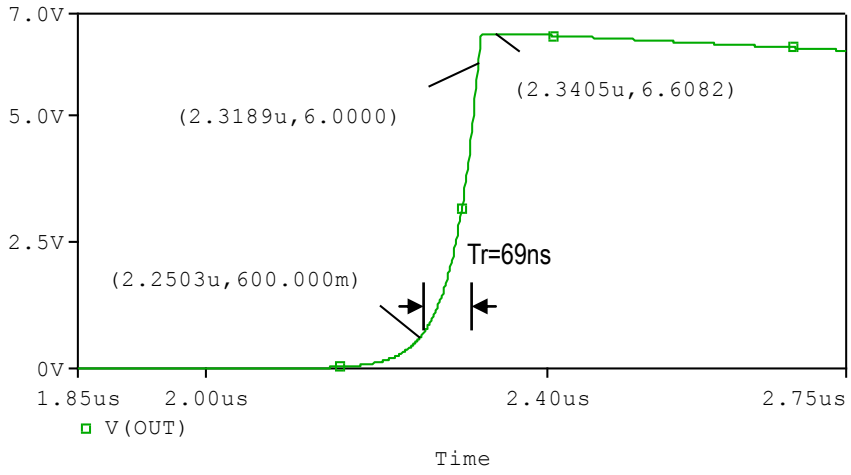
## Voltage and Current Characteristics Reference




Evaluation Circuit



## Pulse Output Voltage and Pulse Output Rise Time




Vo=6.608(V) at Vi=20(V), Ct=0.2u(F)

SPEC: Vo=6(V) to 10(V) at Vi=20(V), Ct=0.2u(F)

tr=69(ns) at Vi=20(V), Ct=0.2u(F)

SPEC: tr ≤ 70(ns)[Typ.] to 80(ns)[Max.] at Vi=20(V), Ct=0.2u(F)

Evaluation circuit