

v(tline\_input)

---- v(tline\_output)

 $\mathsf{mV}$ 

100.0

0.0

4.0

2.0

6.0

time

8.0

10.0

12.0

ns

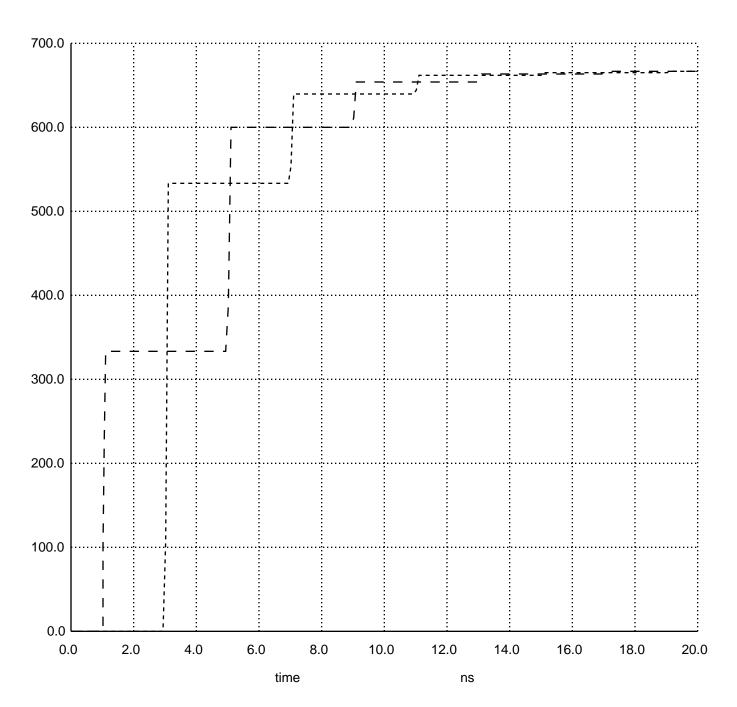
14.0

16.0

18.0

20.0





## original.sp Jan 19, 16 14:44 Page 1/1 Simple T-line \*PULSE source parameters initial pulse delay trise tfall pulse period width 2e-9 10p 10p 20e-9 80e-9) value value 1.0 PULSE ( \*1.0v square wave source; lns delay, 100pS edges, 20ns pulse width, 40ns cycle t Vin vin 0 1.0 PULSE(0 1.0 1e-9 100p 100p 20e-9 80e-9) \*source output impedance rsrc vin tline\_input 50 \*transmission line, 50 ohm, 2ns electrical length t1 tline\_input 0 tline\_output 0 z0=50 td=2ns \*termaination at end of T-line rload tline\_output 0 100 .control set hcopydevtype=postscript color0 is background color color is background color color1 is the grid and text color color2-15 are for the vectors if you want to specify them uncomment next three lines to plot colors on white background set hcopypscolor=true set color0=rgb:f/f/f set color1=rgb:0/0/0\* to print the results directly to a printer uncomment the following line set hcopydev=kec3112 \* run DC operating point simulation first \*run transient simulation for 20ns with timesteps of 100ps tran 100ps 20ns \*plot nodes tline\_input and tline\_output every lns for 20ns plot $V(tline_input) \ V(tline_output) \ xl \ lns \ 20ns$ \*plot to .ps file nodes tline\_input and tline\_output every lns for 45ns hardcopy original.ps V(tline\_input) V(tline\_output) xl 0.lns 20ns .endc .end

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                                                         q1.sp
                                                                                                 Page 1/1
Simple T-line
*PULSE source parameters
* initial pu
                               pulse delay trise tfall pulse period
       PULSE( 0
                                          width
2e-9 10p 10p 20e-9 80e-9)
                                value
1.0
*1.0v square wave source; 1ns delay, 100pS edges, 20ns pulse width, 40ns cycle t
Vin vin 0 1.0 PULSE(0 1.0 1e-9 100p 100p 20e-9 80e-9)
*source output impedance
rsrc vin tline_input 80
*transmission line, 50 ohm, 2ns electrical length t1 tline_input 0 tline_output 0 z0=50 td=2ns
*termaination at end of T-line rload tline_output 0 20
.control
  set hcopydevtype=postscript
  color0 is background color
  color0 is background color color1 is the grid and text color colors 2-15 are for the vectors if you want to specify them uncomment next three lines to plot colors on white background
   set hcopypscolor=true
set color0=rgb:f/f/f
set color1=rgb:0/0/0
  to print the results directly to a printer uncomment the following line set hcopydev=kec3l12 \,
* run DC operating point simulation first
*run transient simulation for 20ns with timesteps of 100ps tran 100ps 20ns
*plot nodes tline_input and tline_output every 1ns for 20ns plot V(tline_input) V(tline_output) xl 1ns 20ns
*plot to .ps file nodes tline_input and tline_output every lns for 45ns hardcopy ql.ps V(tline_input) V(tline_output) xl 0.lns 20ns
.endc
.end
```

## q2.sp Jan 19, 16 14:37 Page 1/1 \*PULSE source parameters value value delay trise tfall pulse period width 0 1.0 2e-9 10p 10p 20e-9 80e-9) PULSE( \*1.0v square wave source; 1ns delay, 100pS edges, 20ns pulse width, 40ns cycle t Vin vin 0 1.0 PULSE(0 1.0 1e-9 100p 100p 20e-9 80e-9) \*source output impedance rsrc vin tline\_input 20 \*transmission line, 50 ohm, 2ns electrical length t1 tline\_input 0 tline\_output 0 z0=50 td=2ns \*termaination at end of T-line rload tline\_output 0 80 .control set hcopydevtype=postscript color0 is background color color1 is the grid and text color colors 2-15 are for the vectors if you want to specify them uncomment next three lines to plot colors on white background set hcopypscolor=true set color1=rgb:7f/f set color1=rgb:0/0/0 $^{\star}$ to print the results directly to a printer uncomment the following line $^{\star}$ set hcopydev=kec3112 \* run DC operating point simulation first \*run transient simulation for 20ns with timesteps of 100ps tran 100ps 20ns \*plot nodes tline\_input and tline\_output every lns for 20ns plot $V(tline_input) \ V(tline_output) \ xl \ lns \ 20ns$ \*plot to .ps file nodes tline\_input and tline\_output every lns for 45ns hardcopy q2.ps V(tline\_input) V(tline\_output) xl 0.lns 20ns . endc

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                                                              q3.sp
                                                                                                         Page 1/1
Simple T-line
*PULSE source parameters

* initial pulse delay trise tfall pulse period

* value value

* PULSE( 0 1.0 2e-9 10p 10p 20e-9 80e-9)
*1.0v square wave source; 1ns delay, 100pS edges, 20ns pulse width, 40ns cycle t
Vin vin 0 1.0 PULSE(0 1.0 1e-9 100p 100p 20e-9 80e-9)
*source output impedance
rsrc vin tline_input 10
*transmission line, 50 ohm, 2ns electrical length t1 tline_input 0 tline_output 0 z0=50 td=2ns
*termaination at end of T-line
rload tline_output 0 25
.control set hcopydevtype=postscript
  color0 is background color
  color1 is the grid and text color colors 2-15 are for the vectors if you want to specify them uncomment next three lines to plot colors on white background set hcopypscolor=true set color1=rgb:^{1}f/f set color1=rgb:^{0}/^{0}
^\star to print the results directly to a printer uncomment the following line ^\star set hcopydev=kec3112
* run DC operating point simulation first
 *run transient simulation for 20ns with timesteps of 100ps
   tran 100ps 20ns
*plot nodes tline_input and tline_output every lns for 20ns plot V(tline_input) \ V(tline_output) \ xl \ lns \ 20ns
*plot to .ps file nodes tline_input and tline_output every ln:
hardcopy q3.ps V(tline_input) V(tline_output) xl 0.lns 20ns
                                                                                           1ns for 45ns
 . endc
```

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q4.sp
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                                                                                                              Page 1/1
Simple T-line
*PULSE source parameters

* initial pulse delay trise tfall pulse period

* value value

* PULSE( 0 1.0 2e-9 10p 10p 20e-9 80e-9)
*source output impedance rsrc vin tline_input 100
*transmission line, 50 ohm, 2ns electrical length t1 tline_input 0 tline_output 0 z0=50 td=2ns
*termaination at end of T-line rload tline_output 0 200
.control
   set hcopydevtype=postscript
* color0 is background color
* color1 is the grid and text color
* colors 2-15 are for the vectors if you want to specify them
* uncomment next three lines to plot colors on white background
set hcopypscolor=true
set color1=rgb:f/ff
set color1=rgb:0/0/0
^{\star} to print the results directly to a printer uncomment the following line ^{\star} set hcopydev=kec3112
\ensuremath{^{\star}} run DC operating point simulation first
*run transient simulation for 20ns with timesteps of 100ps tran 100ps 20ns
*plot nodes tline_input and tline_output every lns for 20ns plot V(tline_input) \ V(tline_output) \ xl \ lns \ 20ns
*plot to .ps file nodes tline_input and tline_output every lns for 45ns hardcopy q4.ps V(tline_input) V(tline_output) x1 0.lns 20ns
.endc
.end
```

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