

# ‘pst-circ’

## A PSTricks package for drawing electric circuits

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**Abstract:** ‘pst-circ’ is a PSTricks package to draw easily electric circuits. Most dipoles, tripoles and quadrupoles used in classical electrotechnic circuits are ...

### Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>	<b>4</b>	<b>Parameters</b>	<b>6</b>
<b>2</b>	<b>Usage</b>	<b>1</b>	4.1	Label parameters . . . . .	6
2.1	Parameters . . . . .	1	4.2	Intensity and tension parameters . . . . .	6
<b>3</b>	<b>Macros</b>	<b>3</b>	4.3	Parallel parameters . . . . .	8
3.1	Dipole macros . . . . .	3	4.4	Wire parameters . . . . .	9
3.2	Tripole macros . . . . .	4	4.5	Dipole style parameters . . . . .	9
3.3	Quadrupole macros . . . . .	5	4.6	Tripole style parameters . . . . .	10
3.4	Multidipole . . . . .	5	<b>5</b>	<b>Examples</b>	<b>11</b>
3.5	Wire . . . . .	5	<b>6</b>	<b>Adding new components</b>	<b>14</b>
3.6	Tension . . . . .	6	<b>7</b>	<b>Acknowledgements</b>	<b>16</b>

## 1 Introduction

## 2 Usage

### 2.1 Parameters

There are specific parameters defined to change easily the behaviour of the pst-circ objects you are drawing.

`intensity` (**boolean**): (default: *false*)

`intensitylabel` (**string**): (default: *\empty*)

`intensitylabeloffset` (**dimension**): (default: *0.5*)

`intensitycolor` (**PSTricks color**): (default: *black*)

`intensitylabelcolor` (**PSTricks color**): (default: *black*)

`intensitywidth` (**dimension**): (default: *\pslinewidth*)

`tension` (**boolean**): (default: *false*)

`tensionlabel` (**string**): (default: *\empty*)

`tensionoffset` (**dimension**): (default: *1*)

`tensionlabeloffset` (**dimension**): (default: *1.2*)

`tensioncolor` (**PSTricks color**): (default: *black*)

`tensionlabelcolor` (**PSTricks color**): (default: *black*)

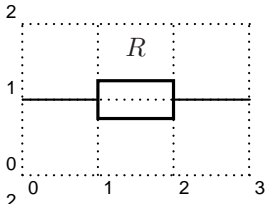
`tensionwidth` (**dimension**): (default: *\pslinewidth*)

`labeloffset` (**dimension**): (default: *0.7*)

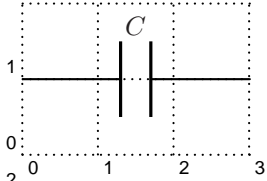
labelangle (**PSTricks label angle**): (*default: 0*)  
dipoleconvention: (*default: receptor*)  
directconvention (**boolean**): (*default: true*)  
dipolestyle (**string**): (*default: normal*)  
variable (**boolean**): (*default: false*)  
parallel (**boolean**): (*default: false*)  
parallellarm (**dimension**): (*default: 1.5*)  
parallelsep (**real**): (*default: 0*)  
parallelnode (**boolean**): (*default: false*)  
intersect (**boolean**): (*default: false*)  
intersectA (**node**):  
intersectB (**node**):  
OAinvert (**boolean**): (*default: true*)  
OApertect (**boolean**): (*default: true*)  
OAiplus (**boolean**): (*default: false*)  
OAiminus (**boolean**): (*default: false*)  
OAiout (**boolean**): (*default: false*)  
OAipluslabel (**string**): (*default: \empty*)  
OAiminuslabel (**string**): (*default: \empty*)  
OAioutlabel (**string**): (*default: \empty*)  
transistorinvert (**boolean**): (*default: false*)  
transistoribase (**boolean**): (*default: false*)  
transistoricollector (**boolean**): (*default: false*)  
transistoriemitter (**boolean**): (*default: false*)  
transistoribaselabel (**string**): (*default: \empty*)  
transistoricollectorlabel (**string**): (*default: \empty*)  
transistoriemitterlabel (**string**): (*default: \empty*)  
transistortype (**string**): (*default: PNP*)  
primarylabel (**string**): (*default: \empty*)  
secondarylabel (**string**): (*default: \empty*)  
transformerprimary (**boolean**): (*default: false*)  
transformersecondary (**boolean**): (*default: false*)  
transformerprimarylabel (**string**): (*default: \empty*)  
transformersecondarylabel (**string**): (*default: \empty*)  
tripolestyle (**string**): (*default: normal*)

### 3 Macros

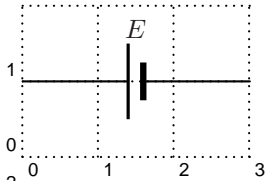
#### 3.1 Dipole macros



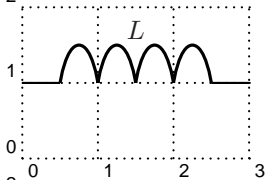
```
\pnode(0,1){A}
\node(3,1){B}
\resistor(A)(B){R$}
```



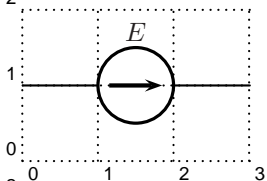
```
\pnode(0,1){A}
\node(3,1){B}
\capacitor(A)(B){C$}
```



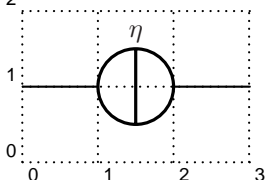
```
\pnode(0,1){A}
\node(3,1){B}
\battery(A)(B){E$}
```



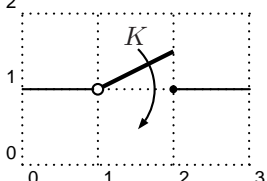
```
\pnode(0,1){A}
\node(3,1){B}
\coil(A)(B){L$}
```



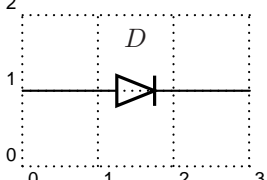
```
\pnode(0,1){A}
\node(3,1){B}
\Ucc(A)(B){E$}
```



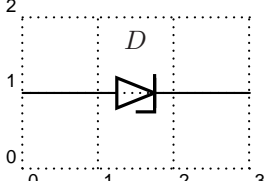
```
\pnode(0,1){A}
\node(3,1){B}
\Icc(A)(B){\eta$}
```



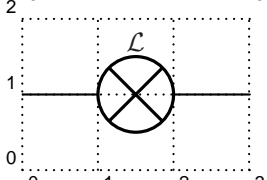
```
\pnode(0,1){A}
\node(3,1){B}
\switch(A)(B){K$}
```



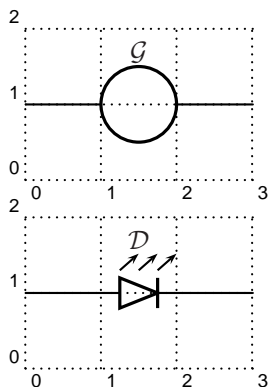
```
\pnode(0,1){A}
\node(3,1){B}
\diode(A)(B){D$}
```



```
\pnode(0,1){A}
\node(3,1){B}
\Zener(A)(B){D$}
```



```
\pnode(0,1){A}
\node(3,1){B}
\lamp(A)(B){\mathcal L$}
```

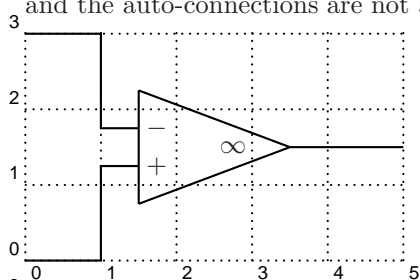


```
\pnode(0,1){A}
\pnode(3,1){B}
\circledipole(A)(B){\mathcal G$}
```

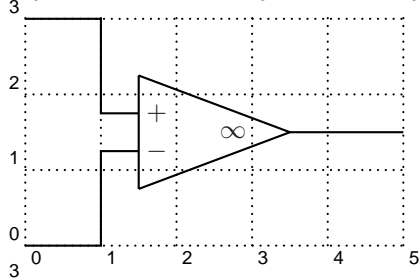
```
\pnode(0,1){A}
\pnode(3,1){B}
\LED(A)(B){\mathcal D$}
```

### 3.2 Tripole macros

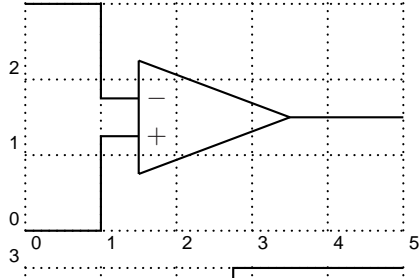
Obviously, tripoles are not node connections. So 'pst-circ' tries its best to adjust the position of the tripole regarding the three nodes. Internally, the connections are done by the `\ncangle` pst-node macro. However, the auto-positioning and the auto-connections are not always well chosen<sup>1</sup>, so don't try to use tripole macros in strange situations!



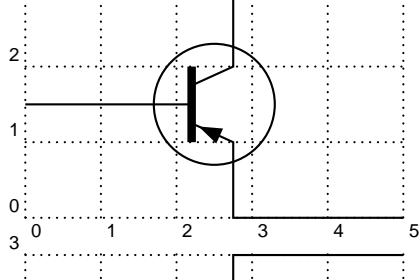
```
\pnode(0,0){A}
\pnode(0,3){B}
\pnode(5,1.5){C}
\VOA(B)(A)(C)
```



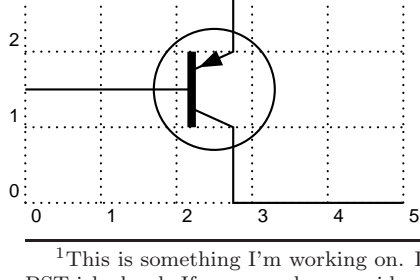
```
\pnode(0,0){A}
\pnode(0,3){B}
\pnode(5,1.5){C}
\OA[\OAinvert=false](B)(A)(C)
```



```
\pnode(0,0){A}
\pnode(0,3){B}
\pnode(5,1.5){C}
\OA[\OAsperfect=false](B)(A)(C)
```

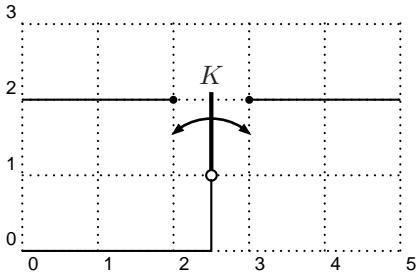


```
\pnode(0,1.5){A}
\pnode(5,3){B}
\pnode(5,0){C}
\transistor(A)(B)(C)
```



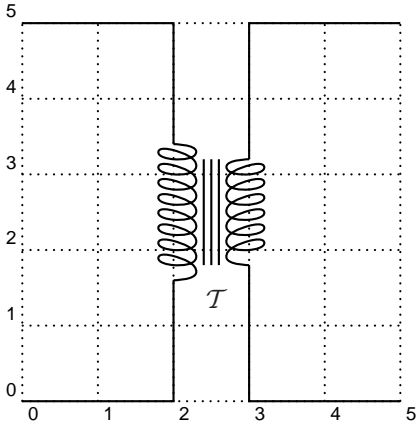
```
\pnode(0,1.5){A}
\pnode(5,3){B}
\pnode(5,0){C}
\transistor[\transistorinvert](A)(B)(C)
```

<sup>1</sup>This is something I'm working on. I think that auto-positioning and auto-connections should be done at PostScript level and not at PSTricks level. If someone has any ideas, please mail me.



```
\pnode(0,2){A}
\pnode(5,2){B}
\pnode(0,0){C}
\Tswitch(A)(B)(C){K}
```

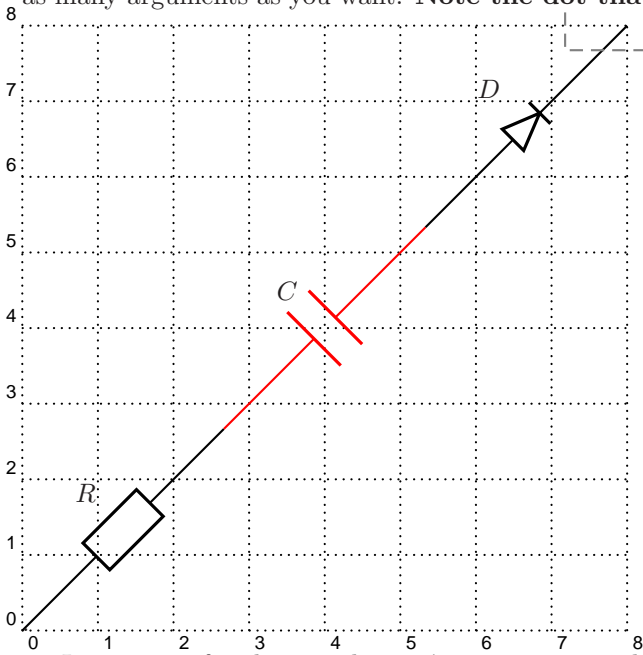
### 3.3 Quadropole macros



```
\pnode(0,5){A}
\pnode(0,0){B}
\pnode(5,5){C}
\pnode(5,0){D}
\transformer(A)(B)(C)(D){\mathcal T}
```

### 3.4 Multidipole

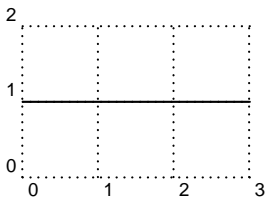
`\multidipole` is a macro that allows multiple dipoles to be drawn between two specified nodes. `\multidipole` takes as many arguments as you want. **Note the dot that is after the last dipole.**



```
\pnode(0,0){A}
\pnode(8,8){B}
\multidipole(A)(B)\resistor{R}%
\capacitor[linecolor=red]{C}%
\diode{D}. ←
```

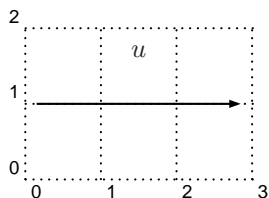
Important: for the time being, `\multidipole` takes optional arguments but does not restore original values. We recommend not using it.

### 3.5 Wire



```
\pnode(0,1){A}
\pnode(3,1){B}
\wire(A)(B)
```

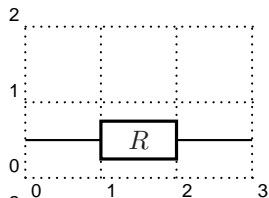
### 3.6 Tension



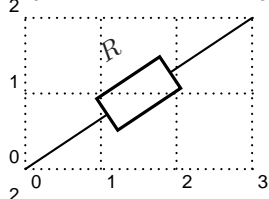
```
\pnode(0,1){A}
\pnode(3,1){B}
\tension(A)(B){$u$}
```

## 4 Parameters

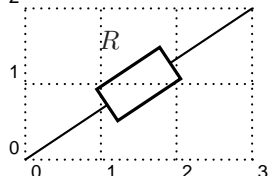
### 4.1 Label parameters



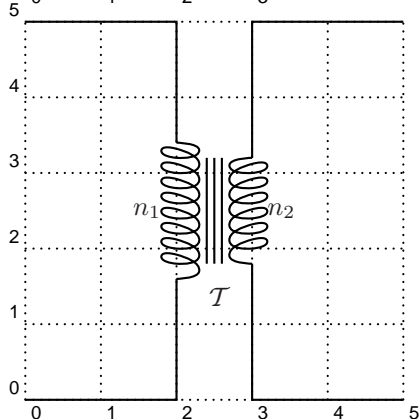
```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor[labeloffset=0](A)(B){$R$}
```



```
\pnode(0,0){A}
\pnode(3,2){B}
\resistor[labelangle=:U](A)(B){$R$}
```



```
\pnode(0,0){A}
\pnode(3,2){B}
\resistor[labelangle=0](A)(B){$R$}
```

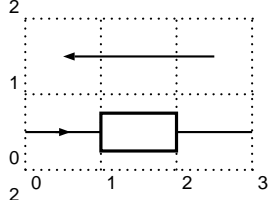


```
\pnode(0,5){A}
\pnode(0,0){B}
\pnode(5,5){C}
\pnode(5,0){D}
\transformer[primarylabel=$n_1$,
secondarylabel=$n_2$](A)(B)(C)(D){$\mathcal{T}$}
```

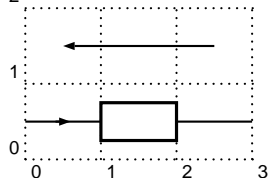
### 4.2 Intensity and tension parameters

If the **intensity** parameter is set to **true**, an arrow is drawn on the wire connecting one of the node to the dipole. If the **tension** parameter is set to **true**, an arrow is drawn parallel to the dipole.

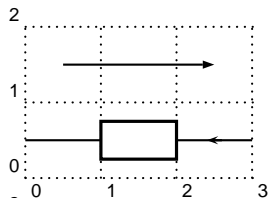
The way those arrows are drawn is set by **dipoleconvention** and **directconvention** parameters. **dipoleconvention** can take two values : **generator** or **receptor**. **directconvention** is a boolean.



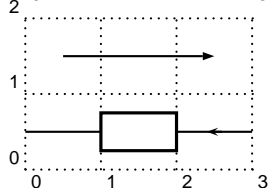
```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor[intensity,tension](A)(B){}
```



```
\pnode(0,.5){A}
\pnode(3,.5){B}
\resistor[intensity,tension,
dipoleconvention=receptor](A)(B){}
```

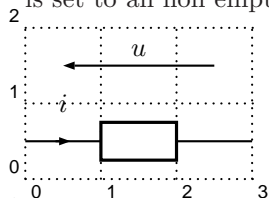


```
\pnode(0,.5){A}
\node(3,.5){B}
\resistor[intensity,tension,
directconvention=false](A)(B){}
```

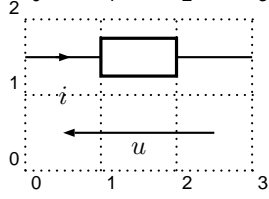


```
\pnode(0,.5){A}
\node(3,.5){B}
\resistor[intensity,tension,
dipoleconvention=receptor,directconvention=false](A)(B){}
```

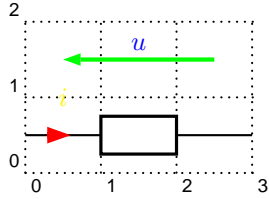
If `intensitylabel` is set to a non empty argument, then `intensity` is automatically set to true. If `tensionlabel` is set to a non empty argument, then `tension` is automatically set to true.



```
\pnode(0,.5){A}
\node(3,.5){B}
\resistor[intensitylabel=$i$,tensionlabel=$u$](A)(B){}
```

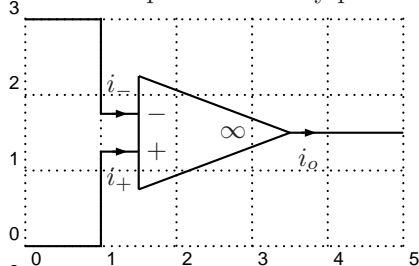


```
\pnode(0,1.5){A}
\node(3,1.5){B}
\resistor[intensitylabel=$i$,intensitylabeloffset=-0.5,
tensionlabel=$u$,tensionlabeloffset=-1.2,
tensionoffset=-1](A)(B){}
```

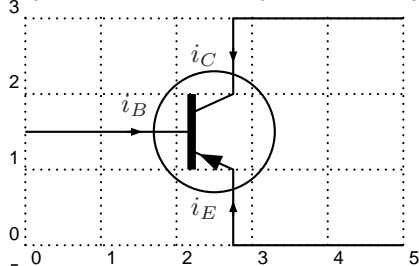


```
\pnode(0,.5){A}
\node(3,.5){B}
\resistor[intensitylabel=$i$,intensitywidth=3\pslinewidth,
intensitycolor=red,intensitylabelcolor=yellow,
tensionlabel=$u$,tensionwidth=2\pslinewidth,
tensioncolor=green,tensionlabelcolor=blue](A)(B){}
```

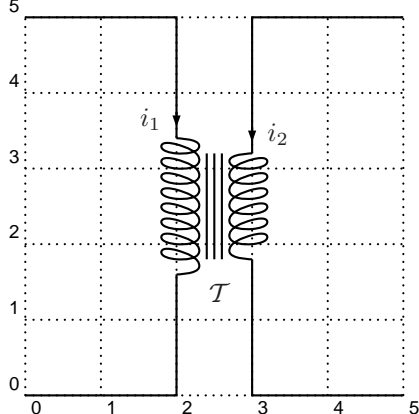
Some specific intensity parameter are set for tripoles and quadrupoles.



```
\pnode(0,0){A}
\node(0,3){B}
\node(5,1.5){C}
\OA[OApluslabel=$i_+$,
OAminuslabel=$i_-$,
OAioutlabel=$i_o$](B)(A)(C)
```



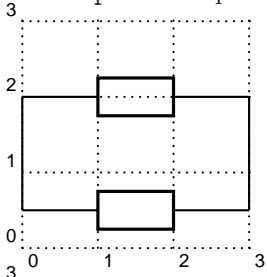
```
\pnode(0,1.5){A}
\node(5,3){B}
\node(5,0){C}
\transistor[transistoribaselabel=$i_B$,
transistoricollectorlabel=$i_C$,
transistoriemitterlabel=$i_E$](A)(B)(C)
```



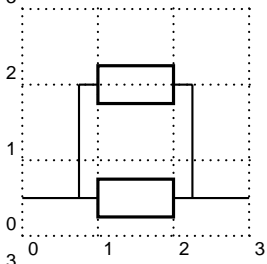
```
\pnode(0,5){A}
\node(0,0){B}
\node(5,5){C}
\node(5,0){D}
\transformer[transformerprimarylabel=$i_1$,
transformersecondarylabel=$i_2$]
(A)(B)(C)(D){\mathcal T}
```

### 4.3 Parallel parameters

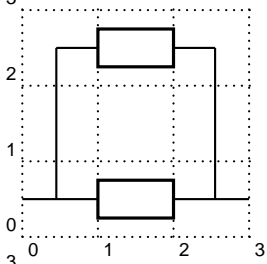
If the `parallel` parameter is set to `true`, the dipole is drawn parallel to the line connecting the nodes.



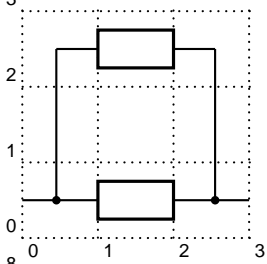
```
\pnode(0,.5){A}
\node(3,.5){B}
\resistor(A)(B){}
\resistor[parallel](A)(B){}
```



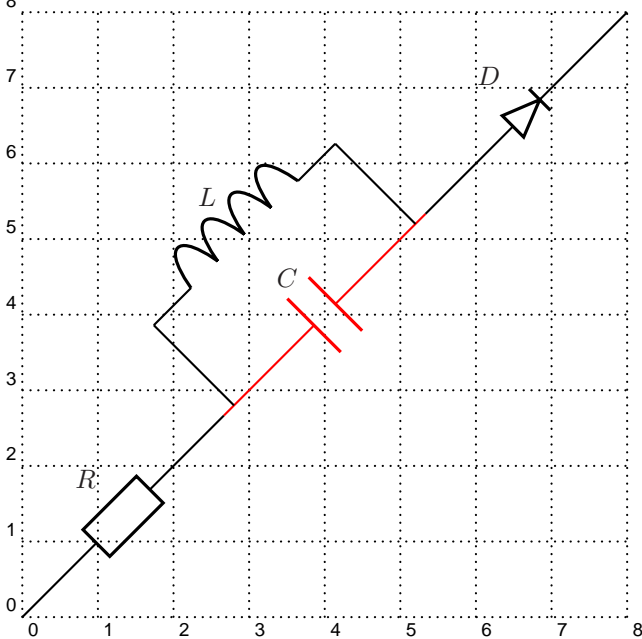
```
\pnode(0,.5){A}
\node(3,.5){B}
\resistor(A)(B){}
\resistor[parallel,parallese=.5](A)(B){}
```



```
\pnode(0,.5){A}
\node(3,.5){B}
\resistor(A)(B){}
\resistor[parallel,parallese=.3,
parallelarm=2](A)(B){}
```



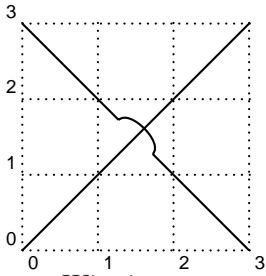
```
\pnode(0,.5){A}
\node(3,.5){B}
\resistor(A)(B){}
\resistor[parallel,parallese=.3,
parallelarm=2,parallelnode](A)(B){}
```



```
\pnode(0,0){A}
\node(8,8){B}
\multidipole(A)(B)\resistor{R}%
\capacitor[linecolor=red]{C}%
\coil[parallel,parallese=.1]{L}%
\diode{D}.
```

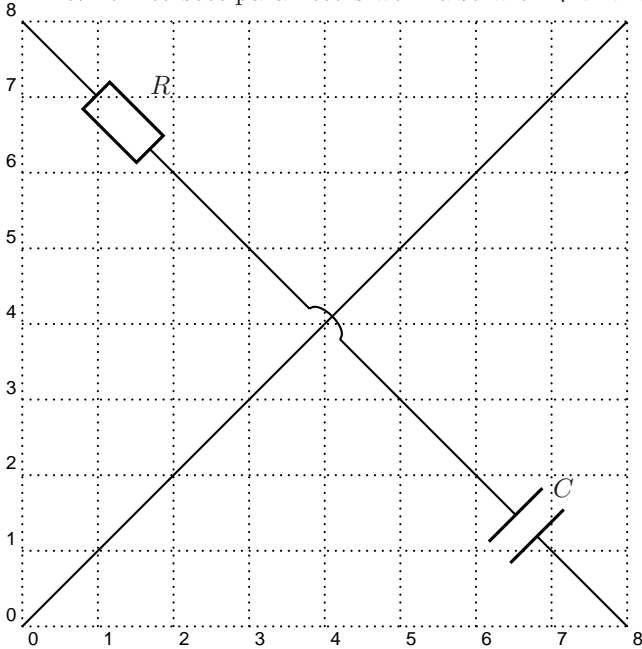
Note: when using `parallel` parameter with `\multidipole`, it must not be set for the first dipole.

### 4.4 Wire parameters



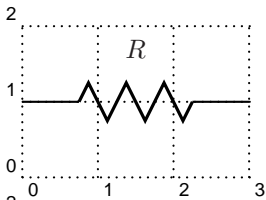
```
\pnode(0,0){A}
\pnode(3,3){B}
\pnode(0,3){C}
\pnode(3,0){D}
\wire(A)(B)
\wire[intersect,intersectA=A,intersectB=B](C)(D)
```

Wire intersect parameters work also with \multidipole.

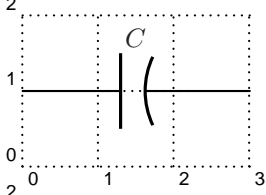


```
\pnode(0,0){A}
\pnode(8,8){B}
\pnode(0,8){C}
\pnode(8,0){D}
\wire(A)(B)
\multidipole(C)(D)\resistor{R}%
\wire[intersect,intersectA=A,intersectB=B]%
\capacitor{C}.
```

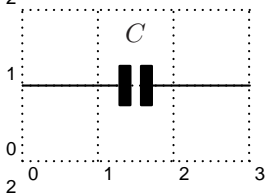
### 4.5 Dipole style parameters



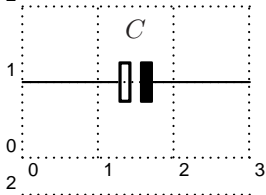
```
\pnode(0,1){A}
\pnode(3,1){B}
\resistor[dipolestyle=zigzag](A)(B){R}
```



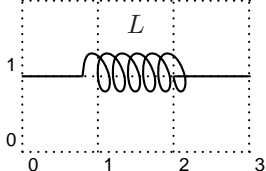
```
\pnode(0,1){A}
\pnode(3,1){B}
\capacitor[dipolestyle=chemical](A)(B){C}
```



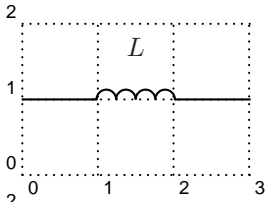
```
\pnode(0,1){A}
\pnode(3,1){B}
\capacitor[dipolestyle=elektor](A)(B){C}
```



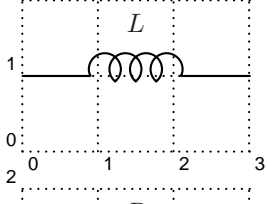
```
\pnode(0,1){A}
\pnode(3,1){B}
\capacitor[dipolestyle=elektorchemical](A)(B){C}
```



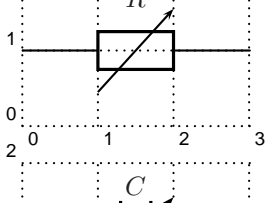
```
\pnode(0,1){A}
\pnode(3,1){B}
\coil[dipolestyle=curved](A)(B){L}
```



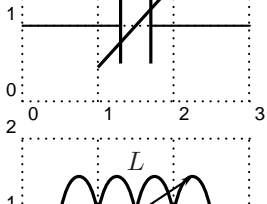
```
\pnode(0,1){A}
\node(3,1){B}
\coil[dipolestyle=elektor] (A) (B){L$}
```



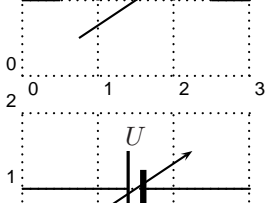
```
\pnode(0,1){A}
\node(3,1){B}
\coil[dipolestyle=elektorcurved] (A) (B){L$}
```



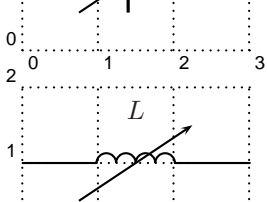
```
\pnode(0,1){A}
\node(3,1){B}
\resistor[variable] (A) (B){R$}
```



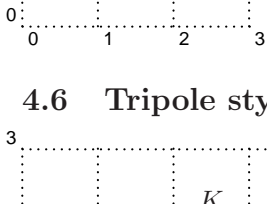
```
\pnode(0,1){A}
\node(3,1){B}
\capacitor[variable] (A) (B){C$}
```



```
\pnode(0,1){A}
\node(3,1){B}
\coil[variable] (A) (B){L$}
```

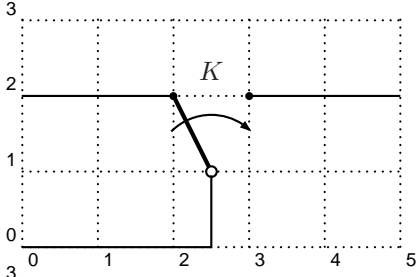


```
\pnode(0,1){A}
\node(3,1){B}
\battery[variable] (A) (B){U$}
```

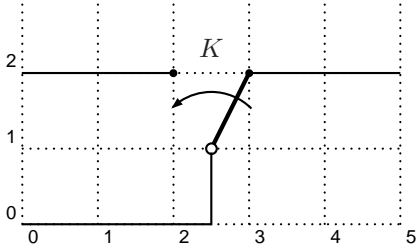


```
\pnode(0,1){A}
\node(3,1){B}
\coil[dipolestyle=elektor,variable] (A) (B){L$}
```

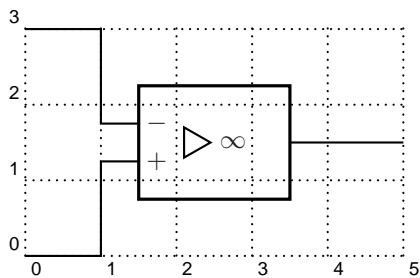
4.6 Tripole style parameters



```
\pnode(0,2){A}
\node(5,2){B}
\node(0,0){C}
\Tswitch[tripolestyle=left] (A) (B) (C){K$}
```

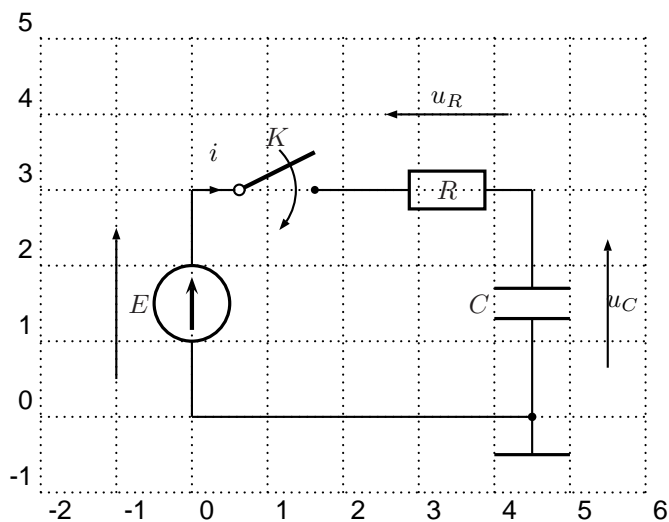


```
\pnode(0,2){A}
\node(5,2){B}
\node(0,0){C}
\Tswitch[tripolestyle=right] (A) (B) (C){K$}
```

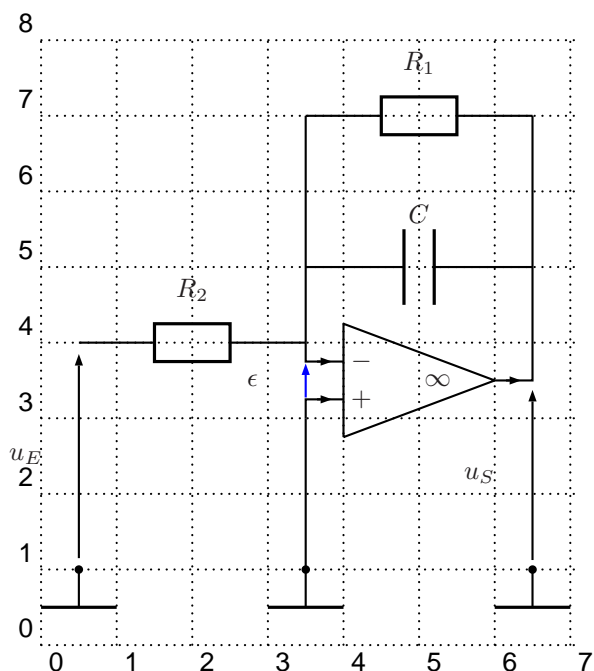


```
\pnode(0,3){A}
\node(0,0){B}
\node(5,1.5){C}
\OA[tripolestyle=french](A)(B)(C)
```

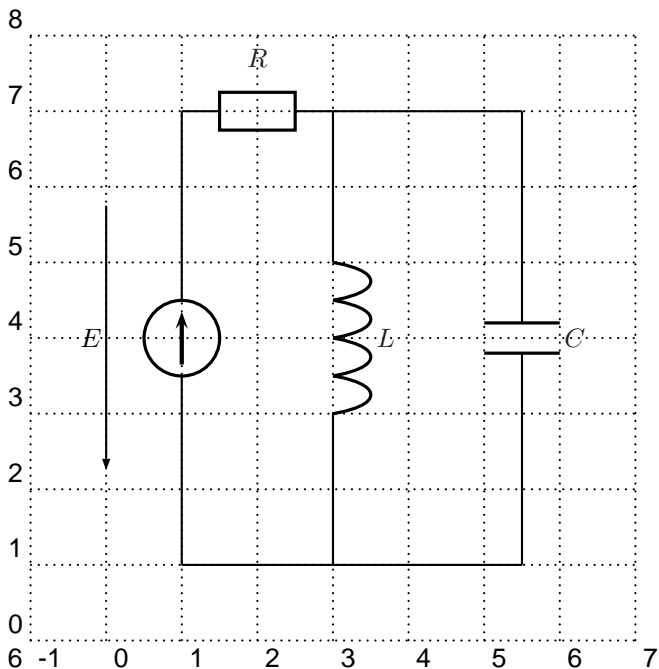
### 5 Examples



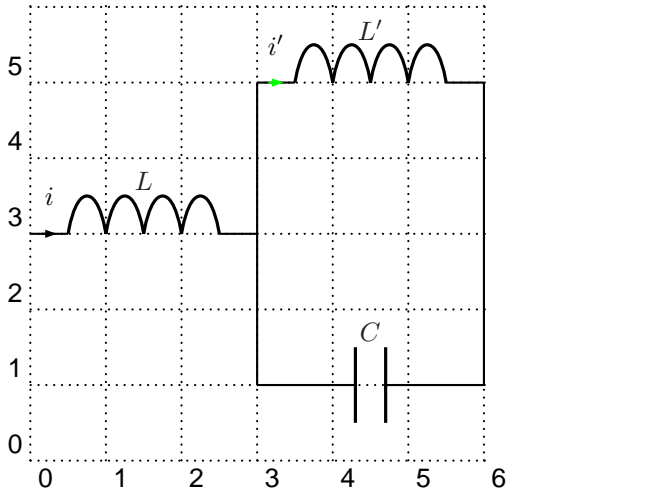
```
\begin{pspicture}(-1.5,-1)(6,5)
\psgrid[subgriddiv=1,griddots=10]
% Node definitions
\node(0,0){A}
\node(0,3){B}
\node(4.5,3){C}
\node(4.5,0){D}
% Dipole node connection
\Ucc[tension,dipoleconvention=generator](A)(B){$E$}
\multidipole(B)(C)%
\switch[intensitylabel=$i$]{K}%
\resistor[labeloffset=0,tensionlabel=$u_R$]{$R$}.
\capacitor[tensionlabel={$u_C$},
tensionlabeloffset=-1.2,tensionoffset=-1,
directconvention=false](D)(C){$C$}
% Wire to complete circuit
\wire(A)(D)
% Ground
\ground(D)
\end{pspicture}
```



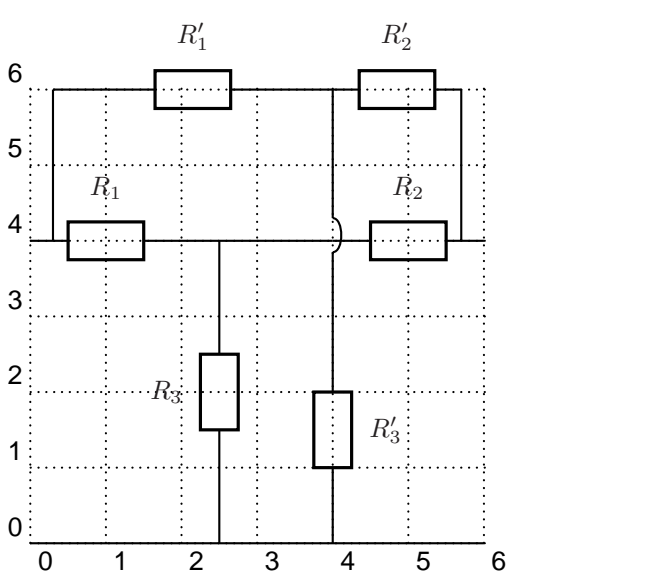
```
\begin{pspicture}(-0.5,0)(7,8)
\psgrid[subgriddiv=1,griddots=10]
% Node definitions
\node(0.5,1){A}
\node(3.5,1){B}
\node(6.5,1){C}
\node(0.5,4){D}
\node(3.5,4){Minus}
\node(3.5,3){Plus}
\node(6.5,5){S}
\node(3.5,5){E}
% Dipole node connections
\resistor(D)(Minus){$R_2$}
\capacitor(E)(S){$C$}
\resistor[parallel,parallellarm=2](E)(S){$R_1$}
\OA[intensity](Minus)(Plus)(S)
% Wires
\wire(Minus)(E)
\wire(Plus)(B)
% Tensions
\tension(A)(D){$u_E$}
\makeatletter % (special tricks see below)
\tension(C)(S@@){$u_S$}
\tension[linecolor=blue](Plus@@)(Minus@@){$\epsilon$}
\makeatother
% Grounds
\ground(A)
\ground(B)
\ground(C)
\end{pspicture}
```



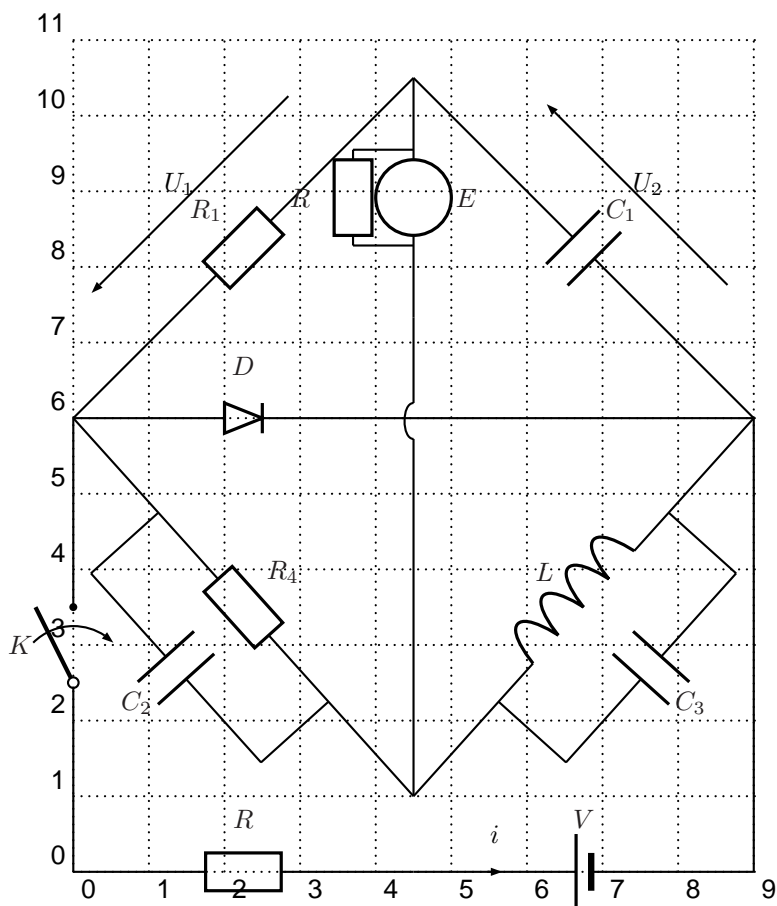
```
\begin{pspicture}(-1,0)(7,8)
\psgrid[subgriddiv=1,griddots=10]
% Node definitions
\node(1,1){A}
\node(1,7){B}
\node(3,1){C}
\node(3,7){D}
% Dipole node connections
\Ucc[tensionlabel=$E$](A)(B){}
\resistor(B)(D){$R$}
\coil(D)(C){$L$}
\capacitor[parallel,parallelarm=2.5](D)(C){$C$}
% Wire
\wire(A)(C)
\end{pspicture}
```



```
\begin{pspicture}(6,6)
\psgrid[subgriddiv=1,griddots=10]
% Node definitions
\node(0,3){A}
\node(3,3){B}
\node(6,3){C}
% Dipole node connections
\coil[intensitylabel=$i$](A)(B){$L$}
\coil[intensitylabel=$i'$,intensitycolor=green,%
parallel,parallelarm=2](B)(C){$L'$}
\capacitor[parallel,parallelarm=-2](B)(C){$C$}
\end{pspicture}
```



```
\begin{pspicture}(6,6)
\psgrid[subgriddiv=1,griddots=10]
% Node definitions
\node(0,0){A}\node(6,0){B}
\node(0.3,4){Cprime}\node(5.7,4){Dprime}
\node(2.5,4){Gprime}\node(2.5,0){Hprime}
\node(0,4){C}\node(6,4){D}
\node(0.3,6){E}\node(5.7,6){F}
\node(4,6){G}\node(4,0){H}
\multidipole(G)(H)%
\wire[intersect,
intersectA=C,intersectB=D]
\resistor{$R'_3$}.
\resistor(E)(G){$R'_1$}
\resistor(G)(F){$R'_2$}
\multidipole(C)(D)\resistor{$R_1$}%
\wire\resistor{$R_2$}.
\wire(A)(B)\wire(Cprime)(E)
\wire(Dprime)(F)
\resistor(Hprime)(Gprime){$R_3$}
\end{pspicture}
```



```

\begin{pspicture}(9,11)
\psgrid[subgriddiv=1,griddots=10]
% Node definitions
\node(0,0){A}
\node(9,0){B}
\node(0,6){C}
\node(9,6){D}
\node(4.5,1){E}
\node(4.5,10.5){F}
%
\switch(A)(C){K}
\multidipole(A)(B)\resistor{R}
\battery[intensitylabel=$i$]{V}
\wire(B)(D)
\multidipole(C)(D)\diode{D}\wire.
\resistor[tensionlabel=$U_1$](C)(F){R_1}
\resistor(C)(E){R_4}
\capacitor[parallel,parallellarm=1.2,
parallellsep=1.5](C)(E){C_2}
\coil(E)(D){L}
\capacitor[parallel,parallellarm=1.2,
parallellsep=1.5](E)(D){C_3}
\capacitor[tensionlabel=$U_2$](F)(D){C_1}
\multidipole(E)(F)\wire%
\wire[intersect,
intersectA=C,intersectB=D]
\circledipole[labeloffset=-0.7]{E}
\resistor[parallel,
parallellsep=.6,parallellarm=.8]{R}.
\end{pspicture}

```

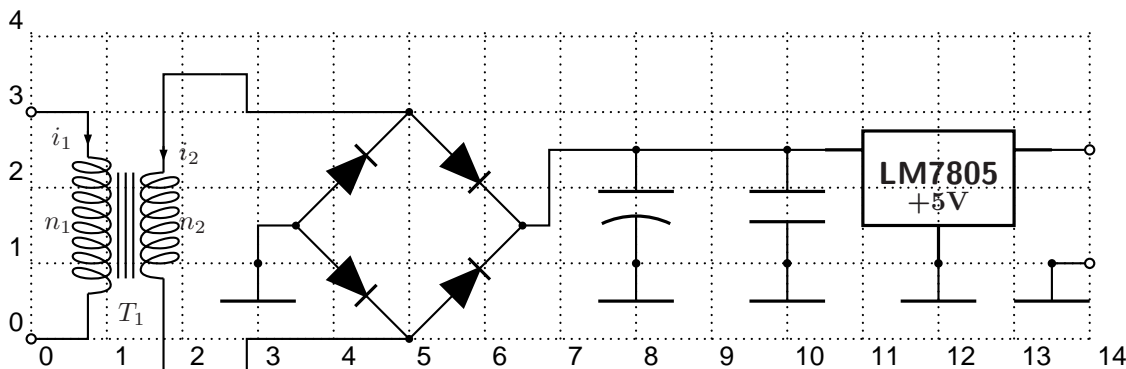
The following example was written by Manuel Luque.

```

\begin{pspicture}(14,4)
\psgrid[subgriddiv=1,griddots=10]
\node(0,0){B}\node(0,3){A}
\node(2.5,3.5){C}\node(2.5,-0.5){D}
\node(5,3){E}\node(6.5,1.5){F}
\node(5,0){G}\node(3.5,1.5){H}
\node(8,2.5){I}\node(8,1){J}
\node(10,2.5){K}\node(10,1){L}
\node(14,2.5){M}\node(12,1){N}
\node(3,1){H'}\node(14,2.5){O}
\node(14,1){P}\node(13.5,1){Q}
\transformer[transformerprimarylabel=$i_1$,
transformersecondarylabel=$i_2$,
primarylabel=$n_1$,secondarylabel=$n_2$]
(A)(B)(C)(D){T_1}
\psset{fillstyle=solid,fillcolor=black}
\diode(H)(E){}\diode(H)(G){}
\diode(E)(F){}\diode(G)(F){}
\capacitor[dipolestyle=chemical](I)(J){}
\capacitor(K)(L){}
\REG(K)(M)(N)%
{\shortstack{\textsf{%
\textbf{\large LM7805}}\textbf{+5V}}}
\ncangle{I}{F}\psline(I)(K)
\ncangle{E}{C}\ncangle{G}{D}
\ncangle[arm=0]{P}{Q}
\ncangle[arm=0]{H}{H'}
\ground(H')\ground(J)
\ground(L)\ground(N)
\ground(Q)\qdisk(I){1.5pt}

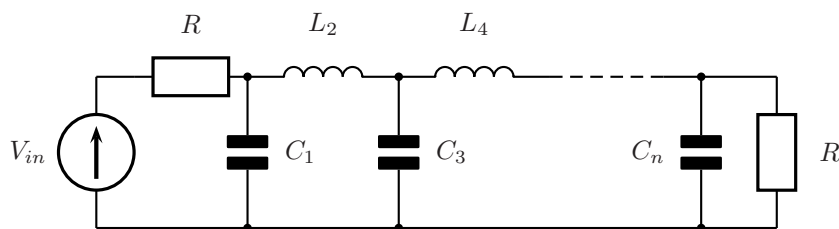
```

```
\qdisk(K){1.5pt}\qdisk(E){1.5pt}
\qdisk(G){1.5pt}\qdisk(H){1.5pt}
\qdisk(F){1.5pt}
\pscircle[fillstyle=solid](A){0.075}
\pscircle[fillstyle=solid](B){0.075}
\pscircle[fillstyle=solid](P){0.075}
\pscircle[fillstyle=solid](O){0.075}
\end{pspicture}
```



The following example was written by Lionel Cordesses.

```
\begin{pspicture}(11,3)
\psset{dipolestyle=elektor}
\node(1,2){Vin}\node(0.5,2){S}\node(0.5,0){Sm}
\node(2.5,2){A}\node(4.5,2){B}\node(6.5,2){C}
\node(8,2){Cd}\node(8.5,2){D}\node(9.5,2){E}
\node(2.5,0){Am}\node(4.5,0){Bm}\node(6.5,0){Cm}
\node(8.5,0){Dm}\node(9.5,0){Em}
\Ucc[labeloffset=0.9](Sm)(S){$V_{in}$}\resistor(Vin)(A){$R$}
\capacitor(A)(Am){$C_1$}\capacitor(B)(Bm){$C_3$}
\capacitor[labeloffset=-0.7](D)(Dm){$C_n$}\resistor(E)(Em){$R$}
\coil(A)(B){$L_2$}\coil(B)(C){$L_4$}
\wire(Am)(Bm)\wire(Bm)(Cm)\wire(Cm)(Dm)\wire(Dm)(Em)\wire(D)(E)
\wire(Cd)(D)\psline[linestyle=dashed](C)(Cd)
\wire(S)(Vin)\wire(Sm)(Am)
\pscircle*(D){2\pslinewidth}\pscircle*(Dm){2\pslinewidth}
\pscircle*(A){2\pslinewidth}\pscircle*(Am){2\pslinewidth}
\pscircle*(B){2\pslinewidth}\pscircle*(Bm){2\pslinewidth}
\end{pspicture}
```



## 6 Adding new components

Adding new components is not so simple. As a matter of fact, due to the complex mechanism of `\multidipole`, there are multiple steps. The easiest way to proceed is to draw the component, send it to me ([christophe.jorssen@noos.fr](mailto:christophe.jorssen@noos.fr)) and I'll do the programming work regarding your component. Nevertheless, it can take a few time...

If you want to modify the code, you need to know the following things. For a dipole, you need to define

```
\def\component_name{\@ifnextchar[{\pst@component_name}{\pst@component_name []}}
%
\def\pst@component_name[#1](#2)(#3)#4{
\pst@draw@dipole{#1}{#2}{#3}{#4}\pst@draw@component_name
```

```

}\ignorespaces}
%
\def\pst@multidipole@component_name{\@ifnextchar[{\pst@multidipole@component_name@}%
{\pst@multidipole@component_name@[]}}
%
\def\pst@multidipole@component_name@[#1]#2{%
\expandafter\def\csname pst@circ@tmp@\number\pst@circ@count@iii\endcsname{#2}%
{\setkeys{psset}{#1}}%
\ifPst@circ@parallel\aftergroup\advance\aftergroup\pst@circ@count@i\aftergroup\m@ne\fi}%
\pst@circ@count@ii=\pst@circ@count@i%
\advance\pst@circ@count@ii\@ne%
\toks0\expandafter{\pst@multidipole@output}%
\edef\pst@multidipole@output{%
\the\toks0%
\pst@multidipole@def@coor%
\noexpand\component_name [#1]%
(! X@\the\pst@circ@count@i\space Y@\the\pst@circ@count@i)%
(! X@\the\pst@circ@count@ii\space Y@\the\pst@circ@count@ii)%
{\noexpand\csname pst@circ@tmp@\number\pst@circ@count@iii\endcsname}%
}%
\pst@multidipole@
}
%
\def\pst@draw@component_name{%
% The PSTricks code for your component
% The center of the component is at (0,0)
\node(component_left_end,0){dipole@1}
\node(component_right_end,0){dipole@2}
}

```

Then, you have to make some changes in \multidipole core code. . . In the definition of \pst@multidipole, look for the last \ifx test

```

% ...
% Extract from \pst@multidipole
\else
\ifx\circledipole #4%
\let\next\pst@multidipole@circledipole
\else
\ifx\LED #4%
\let\next\pst@multidipole@LED
\else
% Put your modification here
\let\next\ignorespaces
\fi
\fi
\fi
% Extract form \pst@multidipole
% ...

```

and add (in red)

```

% ...
% Extract from \pst@multidipole
\else
\ifx\circledipole #4%
\let\next\pst@multidipole@circledipole
\else
\ifx\LED #4%
\let\next\pst@multidipole@LED
\else
\ifx\component_name #4%
\let\next\pst@multidipole@component_name

```

```

        \else
        \let\next\ignorespaces
        \fi
    \fi
\fi
\fi
% Extract form \pst@multidipole
% ...

```

Do the same in \pst@multidipole@

```

% ...
% Extract from \pst@multidipole@
    \else
    \ifx\circledipole #1%
    \let\next\pst@multidipole@circledipole
    \else
    \ifx\LED #1%
    \let\next\pst@multidipole@LED
    \else
    \ifx\component_name #1%
    \let\next\pst@multidipole@component_name
    \else
    \let\next\ignorespaces
    \pst@multidipole@output
    \fi
    \fi
    \fi
\fi
% Extract form \pst@multidipole@
% ...

```

and that’s it! All you have to do then is send your modified `pst-circ.tex` to me: it’ll be part of the official release of ‘pst-circ’.

**Important:** Pay attention to the comment char `%` at the end of lines. They are *very* important in order to avoid spurious blanks.

## 7 Acknowledgements

I thank of course Manuel Luque for his original work on `pst-circ` and for his circuit drawings: this wouldn’t have been possible without him. As usual, Denis Girou gave me a precious hand with some dark tricks of `TEX` and `PSTricks`. Jean-Côme Charpentier wrote the outline of `\multidipole` (a story about riri, fifi and loulou... ). Herbert Voss drew some additional tripoles (`\Tswitch`), introduced new color features and solved a bug with `\multidipole`. Finally, Lionel Cordosses drew the `elektor` style dipoles.