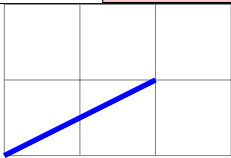
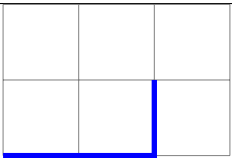
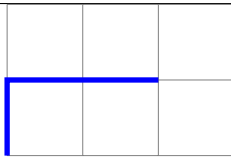
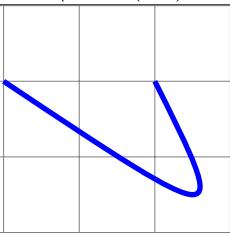
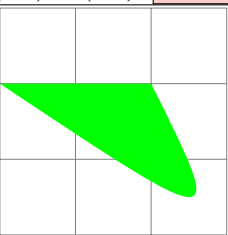
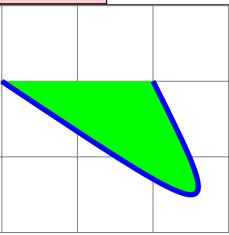


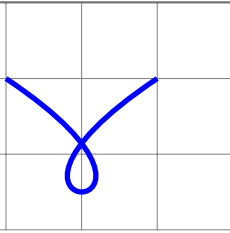
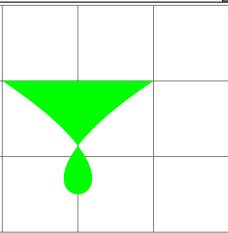
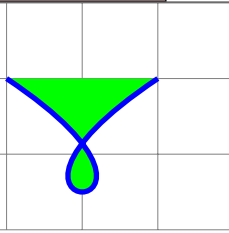
Contents

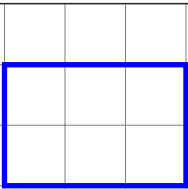
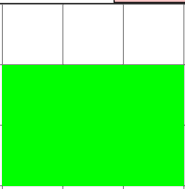
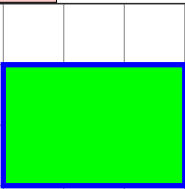
1	Basic figures	1
2	Path and edge	5
2.1	Path	5
2.2	Pathes in a path : edge	6
2.3	Symbols	7
2.4	Annotations	9
2.5	Example	13

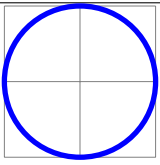
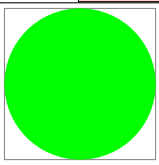
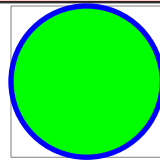
1 Basic figures

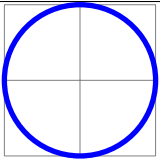
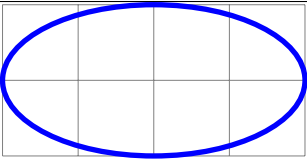
<code>\draw (0,0) -- (2,1);</code>	PGFmanual section : 14-2	<code>\draw (0,0) -- (2,1);</code>	<code>\draw (0,0) - (2,1);</code>
			

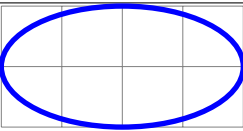
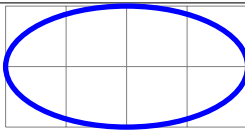
<code>\draw (0,2) .. controls (3,0) .. (2,2);</code>			PGFmanual section : 14-3
			
<code>\draw</code>	<code>\fill</code>	<code>\filldraw</code>	

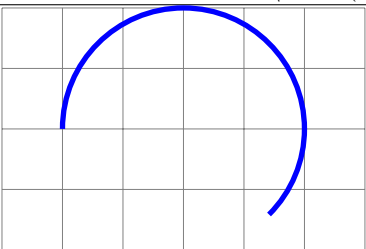
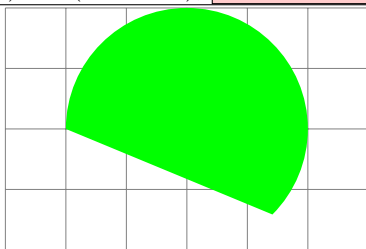
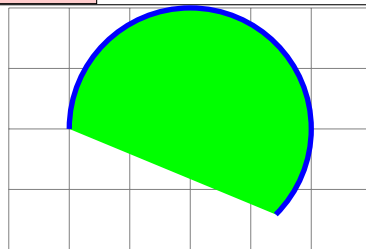
<code>\draw (0,2) .. controls (3,0) and (-1,0) .. (2,2);</code>			PGFmanual section : 14-3
			
<code>\draw</code>	<code>\fill</code>	<code>\filldraw</code>	

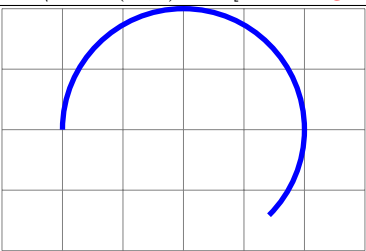
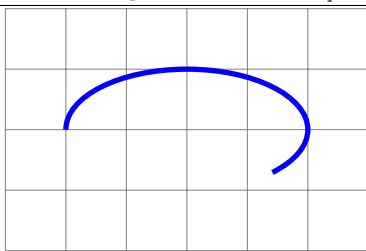
<code>\draw (0,0) rectangle (3,2);</code>			PGFmanual section : 14-4
			
<code>\draw</code>	<code>\fill</code>	<code>\filldraw</code>	

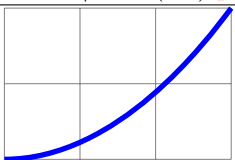
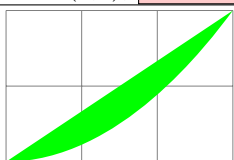
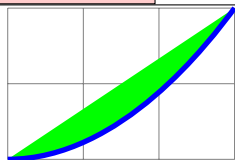
<code>\draw (1,1) circle (1);</code> PGFmanual section : 14-6		
		
<code>\draw</code>	<code>\fill</code>	<code>\filldraw</code>

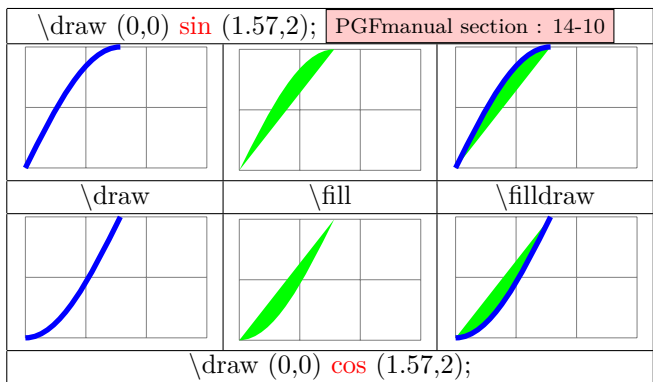
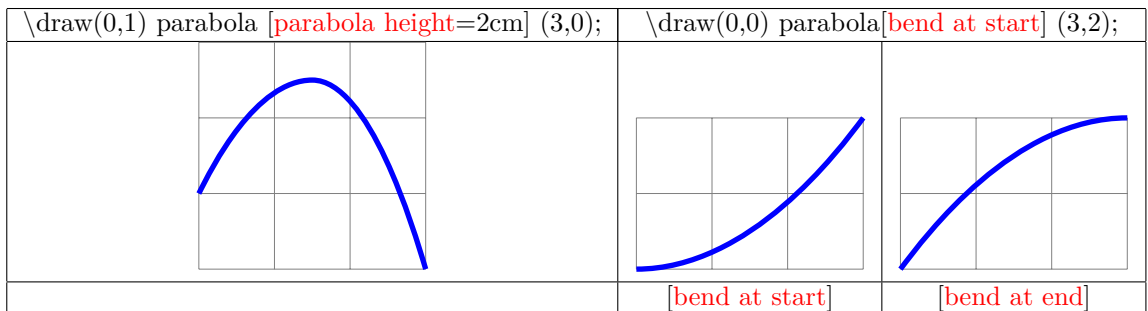
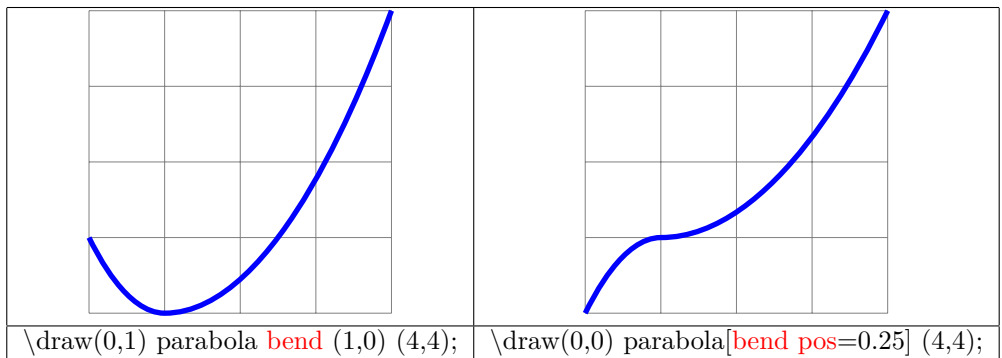
<code>\draw (1,1) circle [radius=1cm];</code>	<code>\draw (1,1) ellipse [x radius=2cm,y radius=1cm]</code>
	
<code>radius=1cm</code>	<code>x radius=2cm,y radius=1cm</code>

<code>\draw (1,1) circle (2 and 1);</code>	<code>\draw (1,1) ellipse (2 and 1);</code>
	

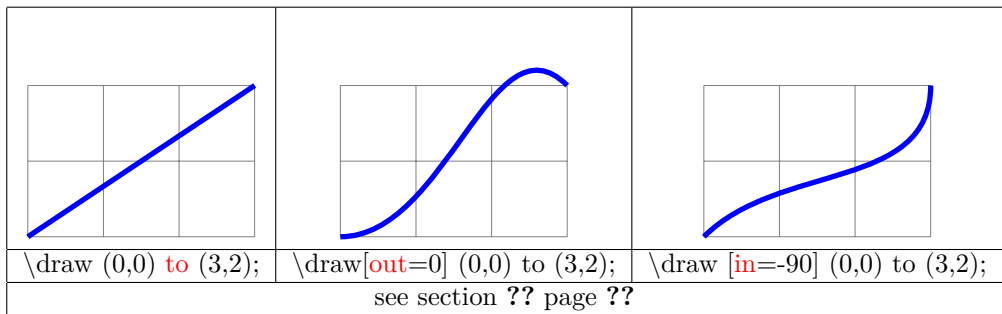
<code>\draw (-2,0) arc (180:-45:2);</code> PGFmanual section : 14-7		
		
<code>\draw</code>	<code>\fill</code>	<code>\filldraw</code>

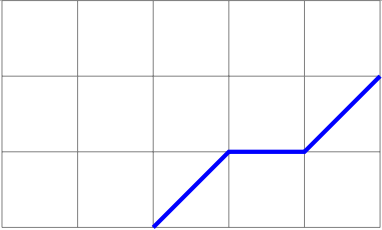
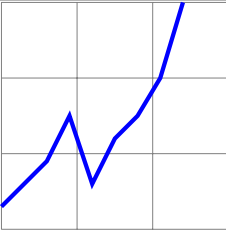
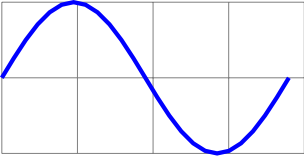
<code>\draw (-2,0) arc [start angle=180, end angle=-45,radius=1]</code>	<code>\draw (-2,0) arc (180:-45:2 and 1)</code>
	
<code>radius=1</code>	<code>x radius=1,y radius=.5</code>

<code>\draw (0,0) parabola (3,2);</code> PGFmanual section : 14-9		
		
<code>\draw</code>	<code>\fill</code>	<code>\filldraw</code>



PGFmanual section : 14-13



Drawing with plot		PGFmanual section : 14-12	PGFmanual section : 22
list of coordinates		file of coordinates	mathematical equation
			
plot coordinates $\{(2,0) (3,1) (4,1) (5,2)\}$		plot file {table.dat}	plot ($\backslash x, \{\sin(\backslash x)\}$)
voir page ??			

2 Path and edge

2.1 Path

PGFmanual section : 14

<code>\draw (0,0) -- (2,1) -- (3,0) ;</code>	<code>\draw (0,0) -- (2,1) -- (3,0) -- cycle ;</code>

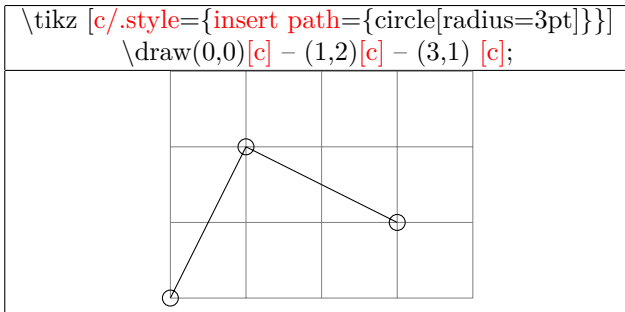
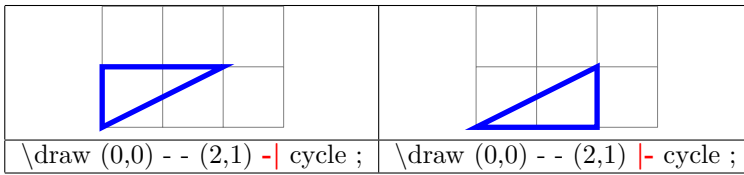
<code>\draw (0,0) -- (2,1) -- (3,3) arc (135:-20:1) .. controls (6,0) and (4,0) .. (5,2) sin (6.57,0) cos (7.57,2) ;</code>	
<code>\draw</code>	<code>\filldraw</code>

PGFmanual section : 14-5

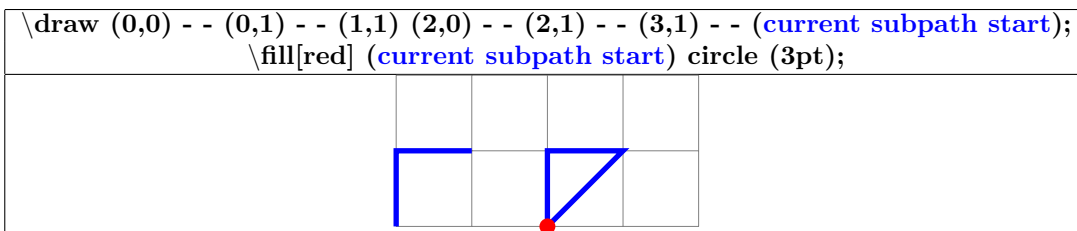
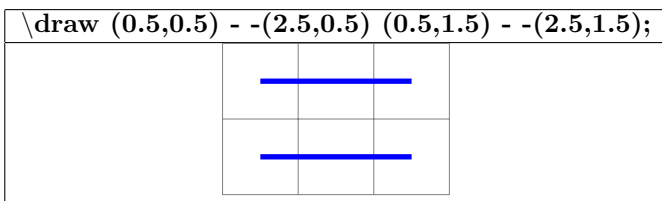
<code>\draw [rounded corners] (0,0) -- (2,1) -- (3,0) ;</code>	<code>\draw [sharp corners] (0,0) -- (2,1) -- (3,0) ;</code>

	<code>\draw [rounded corners=0.5cm] (0,0) -- (1,1.732) -- (2,0) -- cycle ;</code>
	<code>\draw (0,0) -- (1,1.732) [rounded corners=0.5cm] -- (2,0) -- cycle ;</code>
	<code>\draw (0,0) -- (1,1.732) -- (2,0)[rounded corners=0.5cm] -- cycle ;</code>
	<code>\draw [rounded corners=0.5cm] (0,0) -- (1,1.732)[sharp corners] -- (2,0) -- cycle ;</code>

PGFmanual section : 14-2-2

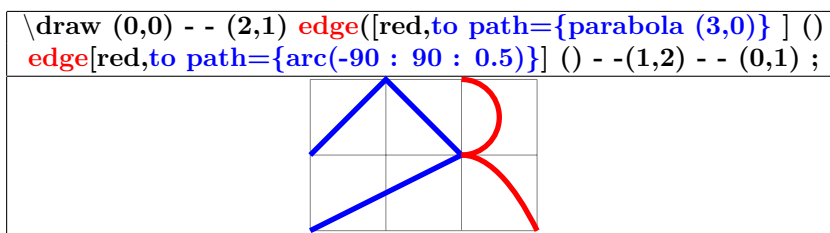
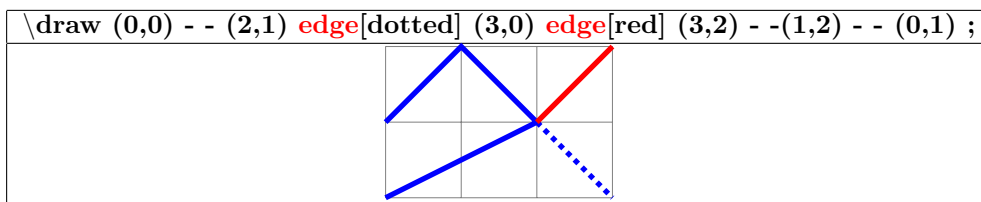


Path interrupted PGFmanual section : 14-1



2.2 Pathes in a path : edge

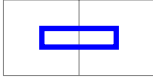
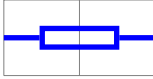
PGFmanual section : 17-12



























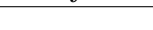

Load package : `\usepackage{circuits.ee.IEC}`

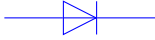




2.3 Symbols

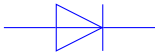


PGFmanual section : 47-4

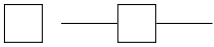
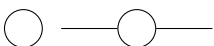
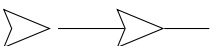
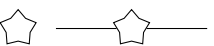
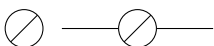
On a node	On a path
	
<code>\node [circuit ee IEC] at (1,0.5) to [resistor] {} ;</code>	<code>\draw [circuit ee IEC](0,0.5) to [resistor] (2,.5) ;</code>

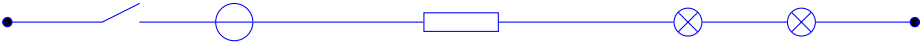
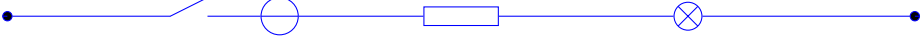
Basic Elements			
<code>\draw [circuit ee IEC] (0,.5) to [resistor] (2,.5) ;</code>			
PGFmanual section : 47-4-3			
			
[resistor]	[inductor]	[capacitor]	[battery]
			
[bulb]	[current source]	[voltage source]	[ground]
PGFmanual section : 47-4-4			
			
[diode]	[Zener diode]	[Schottky diode]	[tunnel diode]
			
[backward diode]	[breakdown diode]		
PGFmanual section : 47-4-5			
			
[contact]	[make contact]	[break contact]	





Alternate appearance		
<code>\draw [circuit ee IEC,set resistor graphic=var resistor IEC graphic] (0,0.5) to [resistor] (2,0.5) ;</code>		
		
resistor	inductor	diode
		
Zener diode	Schottky diode	tunnel diode
		
backward diode	breakdown diode	make contact

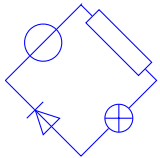
Symbol Size				
PGFmanual section : 47-2-1				
\draw [circuit ee IEC] (0,0.5) to [diode,large circuit symbols] (2,0.5) ;				
				
huge circuit symbols (10pt)	large circuit symbols (8pt)	medium circuit symbols (7pt)	small circuit symbols (6pt)	tiny circuit symbols (5pt)

\draw [circuit ee IEC,circuit symbol unit=14pt] (0,0.5) to [diode] (2,0.5) ;		
		
circuit symbol unit=14pt	circuit symbol size=width 3 height 1	circuit symbol size=width 1 height 5 don't work !



Declaring New Symbols			
PGFmanual section : 47-2-2			
	\begin{tikzpicture} [circuit declare symbol=xxx, set xxx graphic={draw,shape=rectangle,minimum size=5mm}] \node [xxx] at (.5,.5) ; \draw[circuit ee IEC] (1,.5) to [xxx] (3,.5) ; \end{tikzpicture}		
			
shape=circle	shape=dart	shape=star	shape=forbidden sign
voir les “different shape libraries”see the different shape libraries			
















Placement of symbol on a path	
\draw [circuit ee IEC] (0,0.5) to [contact={at start},make contact={very near start},voltage source={near start},resistor, bulb={near end}, bulb={very near end},contact={at end}] (12,0.5) ;	
	
\draw [circuit ee IEC] (0,0.5) to [contact={pos=0 },make contact={pos=0.2},voltage source={pos=0.4},resistor={pos=0.5 }, bulb={pos=0.75 },contact={pos =1 }] (12,0.5) ;	
	

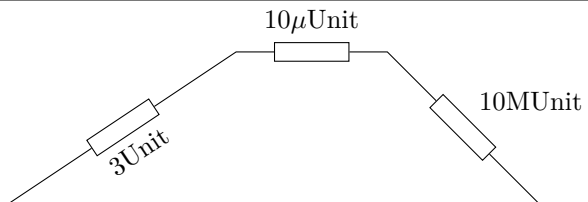
Symbol orientation			
PGFmanual section : 47-2-3			
\node [circuit ee IEC] at (1,.5) [diode,point up] {} ;			
			
[diode,point up]	[diode,point down]	[diode,point left]	[diode,point right]



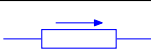









Automatic orientation	
	<pre>\draw [circuit ee IEC] (0,0) to [voltage source] (1,1) to [resistor] (2,0) to [bulb] (1,-1) to [diode] (0,0) ;</pre>

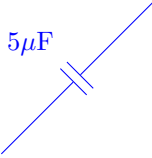
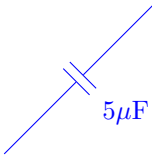
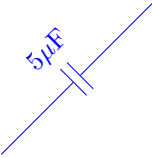
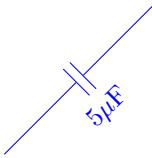
2.4 Annotations

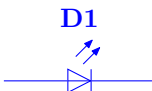


Indicating Current Directions	
PGFmanual section : 47-4-2	
\draw [circuit ee IEC] (0,0.5) to [current direction] (2,0.5) ;	
	
[current direction]	[current direction']

Units available				
PGFmanual section : 47-4-6				
\node [draw,circuit ee IEC] at(1,.5) [ampere=5] {}				
5A 	5V 	5 	5S 	5H 
[ampere=5]	[volt=5]	[ohm=5] don't work !	[siemens=5]	[henry=5]
5F 	5C 	5VA 	5W 	5Hz 
[farad=5]	[coulomb=5]	[voltampere=5]	[watt=5]	[hertz=5]
5kA 	5mA 	5μA 	5kW 	5MW 
[ampere=5k]	[ampere=5m]	[ampere=5\mu]	[watt=5k]	[watt=5M]



Declare unit
PGFmanual section : 47-2-4
<pre>\tikz[circuit ee IEC,circuit declare unit={xxx}{ Unit}] \draw (0,0) to[resistor={xxx' sloped=3}] (3,2) to [resistor={xxx= 10\mu}] (5,2) to [resistor={xxx= 10M}] (7,2)</pre>










Annotations			
PGFmanual section : 47-4-7			
\draw [circuit ee IEC] (0,0.5) to [resistor=light emitting] (2,0.5) ;			
			
[resistor=light emitting]	[resistor=light dependent]	[resistor=direction info]	[resistor=adjustable]
			
[diode=light emitting]	[diode=light dependent]	[diode=direction info]	[diode=adjustable]
			
[diode=light emitting']	[diode=light dependent']	[diode=direction info']	[diode=adjustable']

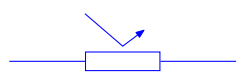
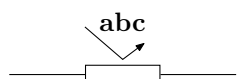
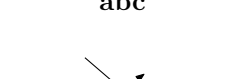
Units position	
PGFmanual section : 47-2-4	
\draw [circuit ee IEC] (0,0) to [capacitor={farad=5\mu}] (2,2) ;	
	
[capacitor={farad=5\mu}]	[capacitor={farad'=5\mu}]
	
[capacitor={farad sloped=5\mu}]	[capacitor={farad' sloped=5\mu}]

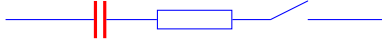
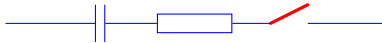

Info Labels		
PGFmanual section : 47-2-4		
\draw [circuit ee IEC] (0,0.5) to [diode={light emitting={info=D1}}] (2,0.5) ;		
		
[diode={light emitting={info=D1}}]]	[diode={light emitting={info'=D2}}]]	[diode={light emitting,info=D3}]]

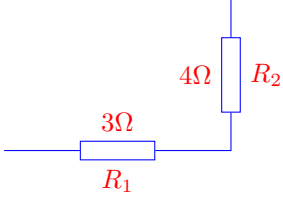
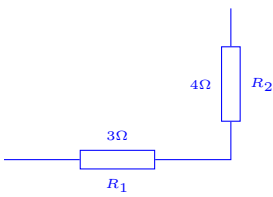
On a node	On a path
	
[resistor,info=\$3\Omega\$,info'=R1]	[resistor={info=\$3\Omega\$,info'=R1}]

	
<code>[resistor,point up,info=center:\$3\Omega\$]</code>	<code>[resistor,point up,info=center:\$3\Omega\$]</code>

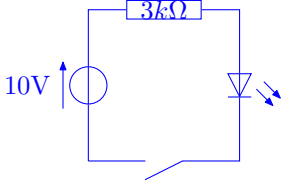
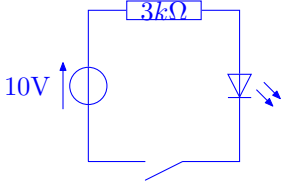
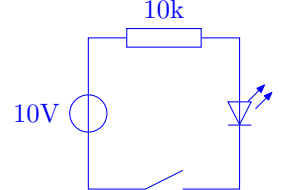
<code>\node [voltage source,direction info=\{volt=10\}] \{\}</code>		<code>\node [voltage source,direction info'=\{volt=10\}] \{\}</code>	
			
<code>\{volt=10\}</code> or <code>\{->,volt=10\}</code>	<code>\{volt'=10\}</code> or <code>\{->,volt'=10\}</code>	<code>\{volt=10\}</code> or <code>\{->,volt=10\}</code>	<code>\{volt'=10\}</code> or <code>\{->,volt'=10\}</code>
			
<code>\{<-,volt=10\}</code>	<code>\{<-,volt=10\}</code>	<code>\{<-,volt=10\}</code>	<code>\{<-,volt'=10\}</code>

Declare annotation	
	PGFmanual section : 47-2-5
	<code>\tikzset{circuit declare annotation=\{XXX\}\{9pt\}</code> <code>\{ (-0.5cm,0.5cm) edge[to path={- -(0pt,2pt) - - (8pt,8pt)}] ()} }</code> <code>\tikz[blue,circuit ee IEC] \draw (0,0) to [resistor=XXX] (3,0);</code>
	<code>\tikzset{circuit declare annotation=\{xxx\}\{9pt\}}</code> <code>\{ (-0.5cm,0.5cm) edge[to path={- -(0pt,2pt) - - (8pt,8pt)}] ()} }</code> <code>\tikz[blue,circuit ee IEC] \draw (0,0) to [resistor=\{xxx={info=abc}\}] (3,0);</code>
	<code>\tikzset{circuit declare annotation=\{xxx\}\{1cm\}}</code> <code>\{ (-0.5,0.5) edge[to path={- -(0pt,2pt) - - (8pt,8pt)}] ()} }</code> <code>\tikz[blue,circuit ee IEC] \draw (0,0) to [resistor=\{xxx={info=abc}\}] (3,0);</code>

Theming Symbols	
PGFmanual section : 47-2-6	
<pre>\draw[circuit symbol lines/.style={draw,red,very thick}] (0,0) to [capacitor={near start},resistor, make contact={near end}] (5,0);</pre>	
	
<pre>\draw[circuit symbol wires/.style={draw,red,very thick}] (0,0) to [capacitor={near start},resistor, make contact={near end}] (5,0);</pre>	
	
<pre>\draw[circuit symbol open/.style={thick,draw,red,fill=yellow}] (0,0) to [capacitor={near start},resistor, make contact={near end}] (5,0);</pre>	
	

<pre>\tikz[blue,circuit ee IEC, every info/.style=red] \draw (0,0) to[resistor={info={3\Omega},info'={\$R_1\$}}] (3,0) to[resistor={info={4\Omega},info'={\$R_2\$}}] (3,2);</pre>	
	
every info/.style=red	every info/.style={font=\tiny}

2.5 Example

3 methods for the same circuit	
	<pre> \begin{tikzpicture}[blue,circuit ee IEC] \draw (0,0) to [voltage source={direction info={->,volt=10}}] (0,2) to [resistor={info=center:\$3\text{ k}\Omega\$}] (2,2) to [diode=light emitting] (2,0) to [make contact] (0,0); \end{tikzpicture} </pre>
	<pre> \begin{tikzpicture}[blue,circuit ee IEC] \draw (0,0) to [voltage source={direction info={->,volt=10}}] ++(up:2) to [resistor={info=center:\$3\text{ k}\Omega\$}] ++(right:2) to [diode=light emitting] ++(down:2) to [make contact] ++(left:2) ; \end{tikzpicture} </pre>
	<pre> \begin{tikzpicture}[blue,circuit ee IEC] \node (A) at (0,1) [voltage source,point up,volt=10]{}; \node (B) at (1,2) [resistor,ohm=10k] {}; \node (C) at (2,1) [diode=light emitting,point down] {} ; \node (D) at (1,0) [make contact] {}; \draw (A) - (B) - (C) - (D) - (A); \end{tikzpicture} </pre>

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