

# Light STITCHES

Monster Switch



**SMART MATERIALS**

**TEXTILES SOFT SWITCH**

**Attaching electronics to textile projects using  
POSSYTRONICS conductive thread**

## Kit Contents

- Small piece of self-adhesive hook & loop tape
- One sewable cell holder
- 2 leds
- One CR2032 cell battery
- Conductive thread
- One sewable soft switch
- 2 pattern pages
- Photographic story board of assembly instructions



## You will need

- ¼ m fur fabric
- ¼ m felt
- Small pieces of coloured felt for eyes
- Needle
- Long pointed pliers
- Scissors
- Sewing machine
- Stuffing

**Please note: The instructions for the circuit sewing can be followed in products of your own choosing. The switch could for example be down the arm of a soft toy or in the ear. The stitching would need to be in a different circuit shape but as long as the lines do not cross and cause a short circuit your circuit should still work. Test it out by drawing it out first on paper once you feel you understand this simple example included in these sheets.**

**Based on a Monster designed by Kate Scott from Farnham Heath end school**

## Assembly instructions

### 1. Assemble face –

Using the template off pattern page 1, cut one large heart shape from felt for the face. Cut 2 large circles for the Irises, 2 small circles for the pupils and 1 set of teeth.

Place the felt pieces where you would like them to be.

As you are using felt these pieces can be stitched to each other with an ordinary machine sewing stitch. If you have used a different material it may be wise to use a zig zag stitch to cover the raw edges of the fabric. Or you could use zig zag as a decorative stitch around the eyes or another layer of teeth. A cross of sewing stitch in the middle of the pupils will help you to insert the leds centrally later.



## 2. Cutting out the monster

Using the pattern pieces for the body off page 1 of the pattern sheets and arms off page 2, draw around the pattern for the body. Flip the pattern over and draw around it again to make a complete body.



When cutting out fur fabric it is important not to cut straight through the fur but to snip only through the reverse knitted side of the fabric. This allows you to retain as much of the pile as possible.



Cut out the arms ensuring that you make a pair by flipping the pattern over after cutting out one arm. Repeat this entire process for the body and arms by cutting out the pieces in felt too so that you have one body in fur (the front); one body in felt (the back); one pair of arms in fur and one pair of arms in felt. Swap one felt arm with one fur arm to ensure you have a pair of arms, each with one fur front and one felt back.



## 3. Stitch face to body

Place the face you made previously in position on the front of the body piece. Using an ordinary machine sewing stitch; top stitch the face into position.



## 4. Fixing the eyes

Using a pointed pair of scissors, push a hole through from front to back on the cross made on the pupils.



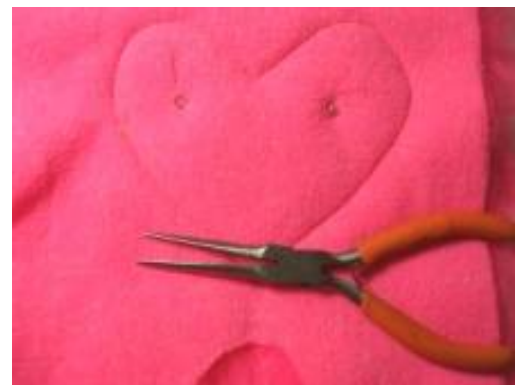
Taking one of the leds, push the metal legs through from front to back, leaving the domed part of the led on the front of the fabric and the legs on the reverse.

Taking one of the leds, push the metal legs through from front to back, leaving the domed part of the led on the front of the fabric and the legs on the reverse.

The 2 legs are different lengths. Using a pair of long nosed pliers, curl the shorter leg (the negative leg) around and lay flat against the reverse of the fabric towards the bottom of the heart.

#### 5. Fixing the cell holder

Attach the brushed side of the hook and loop tape to the wrong side of the fabric where you wish the cell holder to be by removing backing from the self adhesive strip on the back of the hook and loop tape. Attach the hook side of the hook and loop tape to the back of the cell holder by removing backing from the self adhesive strip on the back of the hook and loop tape. Place the two pieces of hook and loop tape to each other, note the way the cell holder is positioned in the photograph. The end with 3 prongs is the positive end.



## 6. The negative circuit stitching

Thread your sewing needle with enough conductive thread to stitch from the cell holder up to the negative legs of the leds.

Tie a knot in the end of your thread and stitch through the negative metal hole (the hole at the end without the 3 prongs) on the sewable cell holder. Ensure this is sewn securely by going through the fabric and the hole 3 times, knotting on each occasion. It is important that the connection is firm. Do not fasten off.

Using small running stitches sew up towards the negative, curled legs of the leds.

Knot the thread through each curled up leg 3 times for stability.

When the negative leg of each led is attached you can fasten off.



Attach your thread to the positive end of the cell holder and knot into place just like you did with the negative end of the cell holder.

Do not fasten off.

Stitch across the top of the space between the legs using a running stitch, then down the leg until you come towards the end. The

last few stitches need a **large** stitch for the soft switch to lie across. Before making your large stitch, knot the thread for stability, stitch a large stitch and then knot again. This just secures your large stitch firmly in place for the switch to sit on. Make a couple more small running stitches and then fasten off. Your thread may now be cut off.



## 7. The switch

Remove the backing from the back of the self adhesive felt pad.

Place on top of long stitch so that the long stitch shows through the hole in the pad.

Tie a knot in a new piece of thread and stitch through the fabric and the felt pad on the right hand side of the felt pad. Knot a couple of times for stability and bring needle through and across the hole, then out the other side. Knot again thoroughly on the left hand side of the felt pad, again for stability. Do not fasten off.



## 8. The positive stitching

Using a small running stitch, sew up towards the positive legs of the leds, the ones that are straight at the moment.

When you reach the leds, curl the legs up just like you did for the negative legs. Attach your thread to each one with knots for stability.

This is the entire circuit see also the drawn diagram towards the end of the booklet.



9. Place your battery

A battery also has a positive and negative side. The shiny top is the positive and the rough side the negative. Place the battery into the cell holder with the rough side down and shiny side up.



#### 10. Check out your circuit

Press down on top of the hole in the soft switch, your leds should light up. Keeping hold of the switch will allow them to flash, once you let go, they will turn off.



#### 11. Stitch the arms

Pin the arms together; right sides together; one fur fabric and one felt. Using ordinary sewing stitch, stitch around the arms leaving the top edge open.



Snip into the curves and cut a small 'V' into the 'toes'. This allows the arms to lie better when turned right side out.

Turn arms right side out.





Take the body back and with right side facing, pin the arms (open end) in place, with the fur side uppermost. Stitch them in place using a normal machine sewing stitch.



## 12. Stitch the body

Pin the fur body, fur side down over the felt back and the arms.

Stitch, using a normal machine sewing stitch from the right leg, around the body to just past the right arm. This leaves a space for turning right side out and stuffing. Ensure you don't catch the arms when sewing.

Snip the corners of the legs and the curves to obtain a better shape

Turn right side out and push out the corners and seams to ensure a good shape.



**Re-test your soft switch and circuitry.**

Stuff the body with a polyester stuffing. Stuff firmly into the bottom of the legs and into the ears but make sure you don't disturb your stitching. Once stuffed, ensure your switch is still working and then stitch up the opening with a small ladder stitch. i.e. one small stitch from one side then one from the other. Fasten off tightly.



Brush out the fur which has been caught in the seams. This gives you a better quality finish and looks much better especially if you have cut the fabric as advised above.



**Tips**

Never let your stitching cross over – keep it in straight lines.

Never allow threads to touch that shouldn't. This can cause a cross circuit and your leds won't work.


Keep your stitching firm to ensure that the thread keeps a good connection with each of the components.



Electricity flows in circuits – look at the sewing, the stitching makes a circuit. It flows in a circle, the switch breaks the circuit but the circle is complete when you press the switch.

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MONSTER SWITCH.  
PATTERN PAGE 1

MONSTER TEETH  
PLACE TO FOLD  
Cut 1 from felt.




PLACE TO FOLD  
MONSTER FACE  
Cut 1 from felt



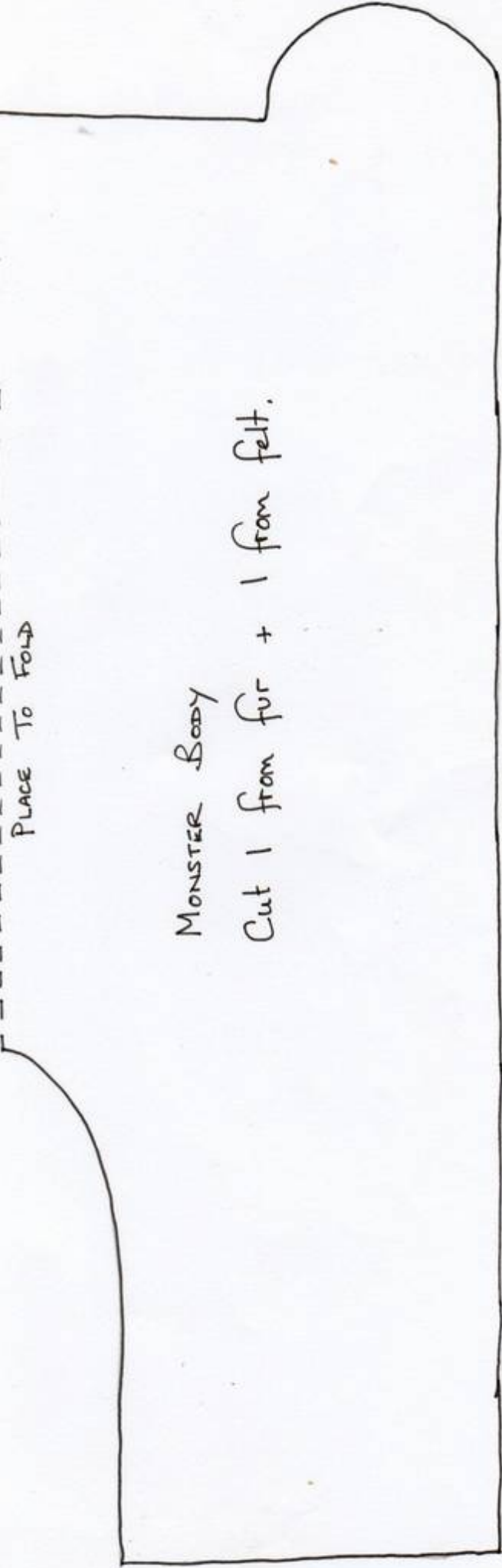
MONSTER  
EYE - IRIS  
Cut 2 from felt.



MONSTER EYE -  
PUPIL  
Cut 2 from felt.



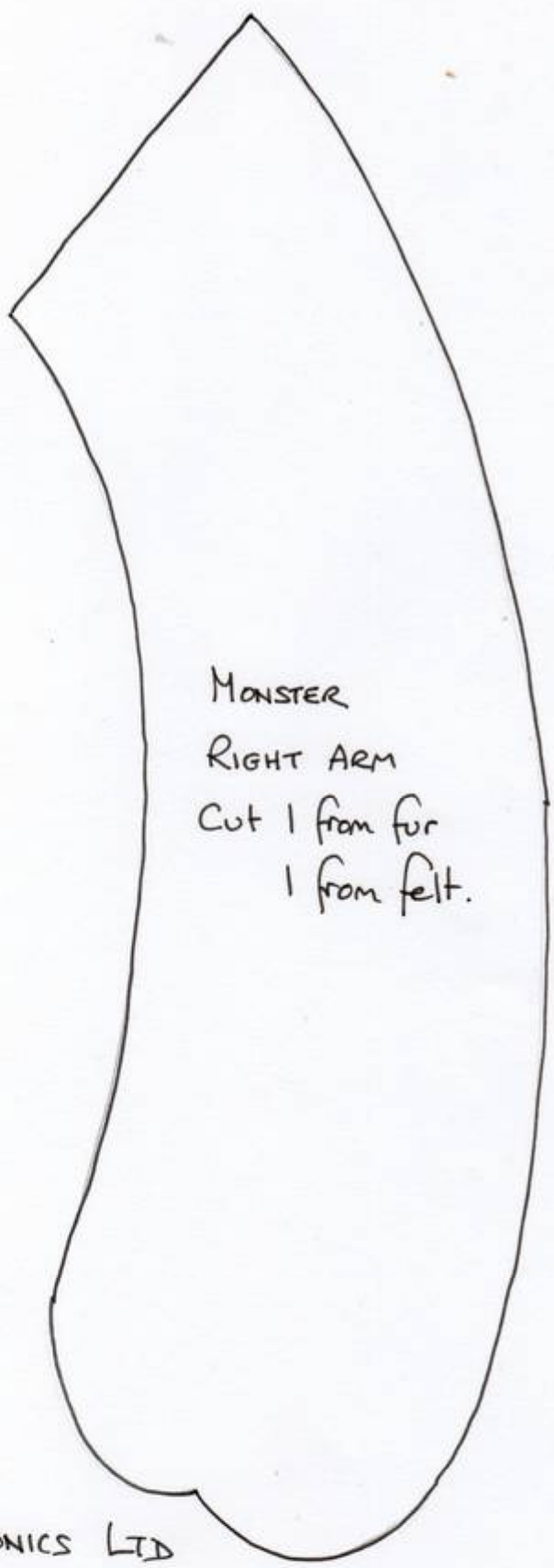
PLACE TO FOLD



MONSTER BODY  
Cut 1 from felt + 1 from fur.



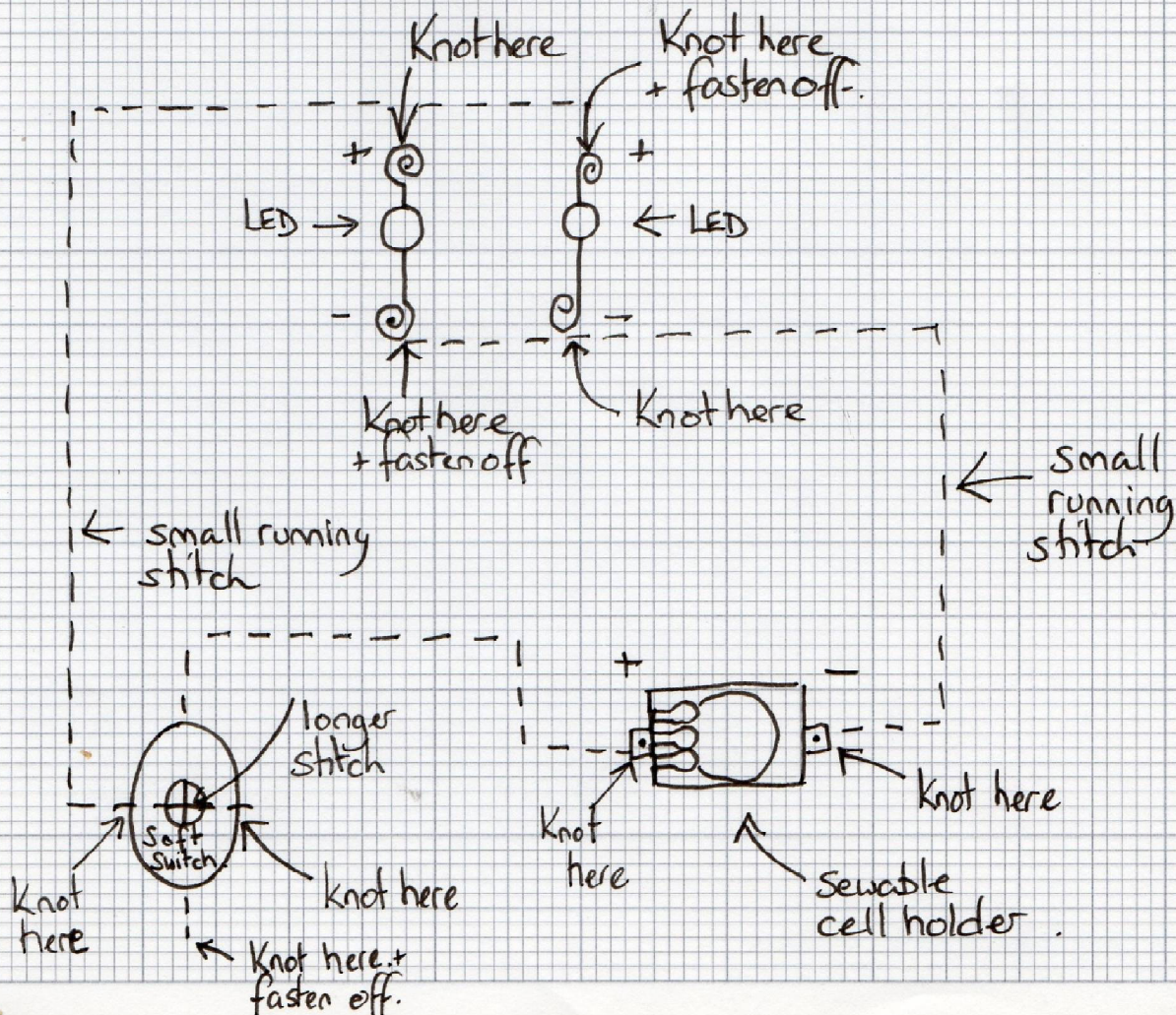
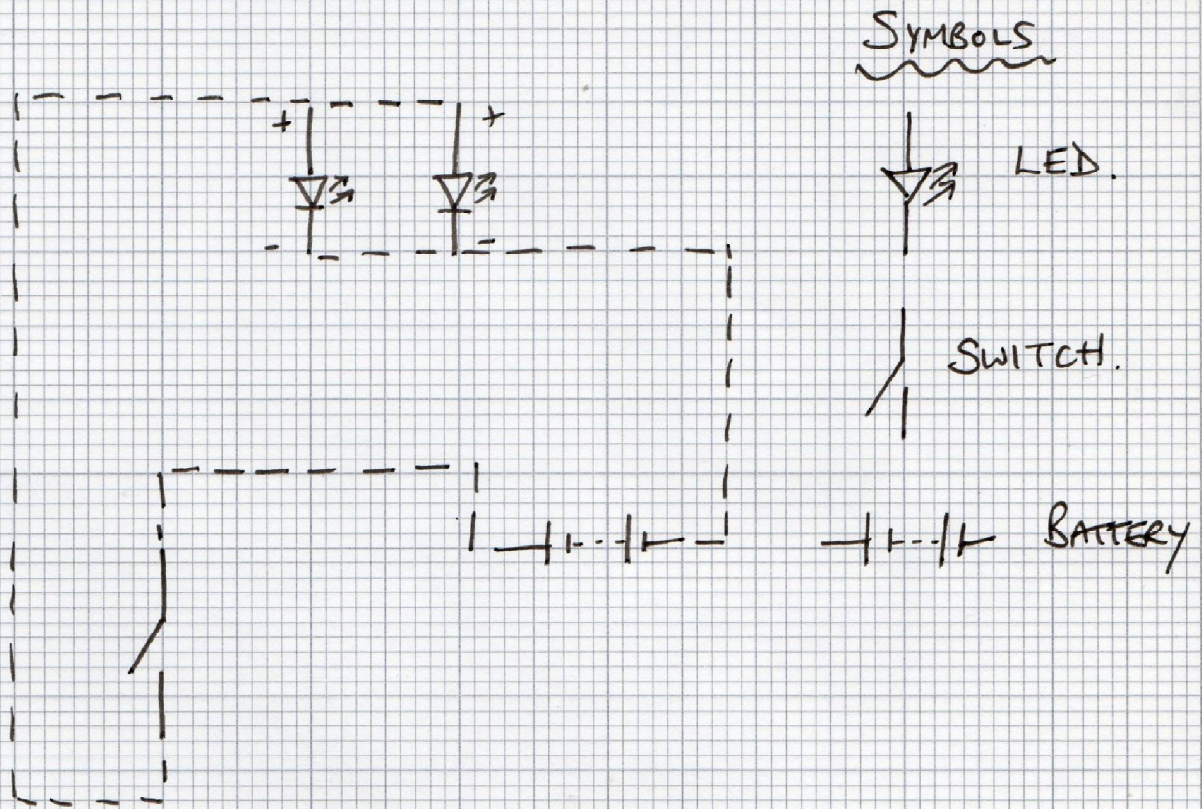
MONSTER  
LEFT ARM  
Cut 1 from fur  
1 from felt



MONSTER  
RIGHT ARM  
Cut 1 from fur  
1 from felt.

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PATTERN PAGE 2.

MONSTER SWITCH CIRCUIT.



## MONSTER SWITCH - Circuit Diagram

## Symbols

