Heating Pad Hand Warmer Blanket

What are heating pads good for?

There are a lot of great projects you can use heating pads in, ranging from warming gloves, slippers, a blanket, or anything you want to keep nice and warm. Got a beard mask you want to make toasty? Do beards need to be warmer? Not sure. Would it be a fun project? Definitely.

What parts should you consider getting for your project? You can go as simple as getting the appropriate power supply and a heating pad. One heating pad is rated for 5V, and draws about 600mA.

Part list for a basic setup:
Pick an appropriate power supply (there are tons of options available):
Wall Adapter Power Supply- TOL-08269
Heating Pad COM-11289 or COM-11288
Connector for your power supply (again, tons of options available): DC Barrel Jack Adapter - Male PRT-10287
Hook-up wire

If you want to add a form of logic or control to your circuit, such as interfacing with sensors, the easiest way is to add a microcontroller/development board to your project.

Please note: Make sure when using heatpads, not to leave unattended!

Here is a list of other tutorials you might find helpful while following this tutorial:
Basic Lilypad Tutorial
Beginning LilyPad Arduino

DIY Project Idea: Hand Warmer Blanket

A blanket project with two heating pads to keep your hands warm when you are on the computer/notebook/tablet/phone/playing chess/all other activities.

Part list:

Custom Hand Warmer Blanket SparkFun Wish List

 (2) Heating Pad - 5x15cm COM-11289These DC powered heating pads are perfect for near-body heating applications. They get warm to the touch but not too hot. Simply apply 5VDC to the wir…
 N-Channel MOSFET 60V 30A COM-10213If you've ever wondered how to control the headlight of a car from a microcontroller, a MOSFET is what you need. This is a very common MOSFET with ver…
 ProtoBoard - Penta-shape PRT-08847**Replacement:** None. We are no longer carrying this protoboard in our catalog. This page is for reference only.Why not prototype in 3D? The SparkFun…
 Wall Adapter Power Supply - 5V DC 1A TOL-08269High quality switching 'wall wart' AC to DC 5V 1000mA wall power supply manufactured specifically for Spark Fun Electronics. These are switch mode pow…
 Barrel Jack to 2-pin JST TOL-08734Two pin JST connector to a 2.1x 5.5mm barrel jack, 6.25 inch long jumper cable. We use this cable to adapt from a wall power supply to a relatively sm…

 LilyPad Arduino USB - ATmega32U4 Board DEV-11190The LilyPad Simple just got a whole lot... simpler. We've updated the Simple board to create the LilyPad USB by replacing the classic ATMega328 with t…
 Hook-up Wire - Red (22 AWG) PRT-08023Standard 22 AWG solid Red hook up wire. Use this with your bread board or any project in which you need sturdy wire. Comes in small spools of 25'.
 Hook-up Wire - Black (22 AWG) PRT-08022Standard 22 AWG solid Black hook up wire. Use this with your bread board or any project in which you need sturdy wire. Comes in small spools of 25'.
 LilyPad LED Blue (5pcs) DEV-10045Here is a simple 5 pack of blue LEDs for LilyPad, or whatever else you can dream up. Light up the night! LilyPad is a wearable e-textile technology …
 LilyPad Button Board DEV-08776We designed this board to give the user a low profile button without any sharp edges. Button closes when you push it and opens when you release (momen…
 Conductive Thread Bobbin - 30ft (Stainless Steel) DEV-10867This is 30 feet of conductive thread spun from stainless steel fiber and wound on a plastic bobbin. Use it to sew up all of your e-textile projects. T…

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There are a lot of parts on this list that can be exchanged for alternate parts, or that aren't needed at all, depending on what type of setup you want.

If you do not want to sew or use conductive thread, exchange the Lilypad LEDs and Lilypad button for through-hole components and solder on a bigger protoboard instead.

You could use a 3.7 LiPo battery to power both the LilyPad USB board and the heating pads. Remember: You will still need a MOSFET, because having two heating pads will draw more current then the LilyPad pins can handle. This option is nice, since you can use the LilyPad to charge the LiPo battery when the heating pad isn't in use. The draw back to using a 3.7v LiPo battery is that the heating pads won't get as warm as they would with a 5v (or higher) power supply.

In this setup we use the LilyPad USB, because you won't have to get an extra FTDI basic for an USB connection.

Directions

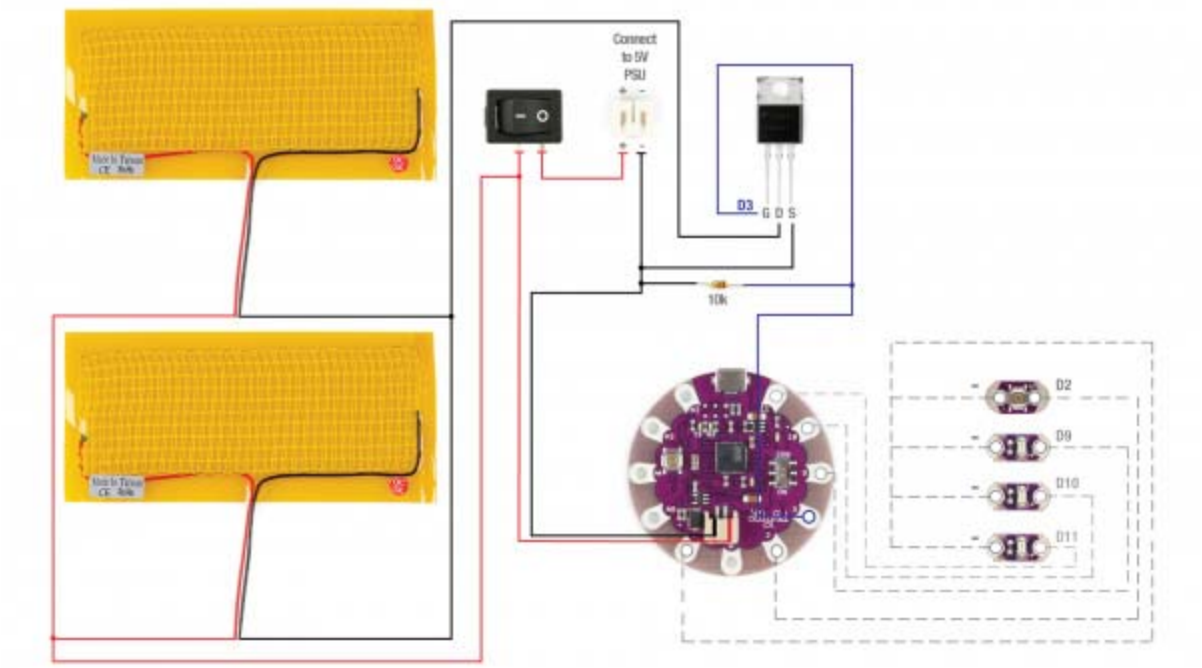
The first step is to select your fabric. When picking a fabric, you want to consider the following:

- Is the pattern on the fabric going to work, or look out of place? If you are going Snuggie style, will you need to add extra fabric for the arms?
- On what level of awesome is the fabric you are selecting? Meaning, how fast are you going to get sick of looking at it?
- Is the fabric thick, cozy, and going to keep the rest of your body warm? Sheer, light fabrics don't help to keep you warm during the winter months.

If you don't have a sewing machine, or don't want to sew, you can do a No-Sew blanket and be creative when adding a pouch that holds your heating pads and circuit. No-Sew blanket tutorials

Circuit

Here is a diagram of the circuit setup:



Please note: As you can see, the LilyPad LEDs and Lilypad Button were sewn into the fabric, but you can easily switch these for normal, through-hole LEDs, and a button soldered on a protoboard with the other soldered components.

Important! Make sure to solder hook-up wire to your heating pad connections. DO NOT try to use conductive thread to connect the two heating pads.

Example Code

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Copy Code /* Heating Pad Hand Warmer Blanket Code Example SparkFun Electronics, Pamela, 1/24/2013 Beerware License Hardware Connections: -led1 = D9; -led2 = D10; -led3 = D11; -button = D2; -Mofset = D3; Usage: Hit the switch to power, hit the button to adjust how warm the heating elements get, and three LEDs will indicate low, medium, and high levels. */ int btnPin = 2; boolean btnPressed = false; int fetPin = 3; int led1 = 9; int led2 = 10; int led3 = 11; int mode; void setup() { // initialize the digital pin as an output. pinMode(btnPin, INPUT); pinMode(fetPin, OUTPUT); pinMode(led1, OUTPUT); pinMode(led2, OUTPUT); pinMode(led3, OUTPUT); } // the loop routine runs over and over again forever: void loop() { //Increment mode on depress, unless mode = 3, then reset to 0 if (btnPressed && digitalRead(btnPin) == LOW) mode = mode == 3 ? 0 : mode + 1; //Assign button state btnPressed = digitalRead(btnPin); switch (mode) { case 0: analogWrite(fetPin, 0); //off digitalWrite(led1, LOW); digitalWrite(led2, LOW); digitalWrite(led3, LOW); break; case 1: analogWrite(fetPin, 85); //33% duty cycle digitalWrite(led1, HIGH); digitalWrite(led2, LOW); digitalWrite(led3, LOW); break; case 2: analogWrite(fetPin, 170); //66% duty cycle digitalWrite(led1, HIGH); digitalWrite(led2, HIGH); digitalWrite(led3, LOW); break; case 3: analogWrite(fetPin, 255); //100% duty cycle digitalWrite(led1, HIGH); digitalWrite(led2, HIGH); digitalWrite(led3, HIGH); break; } }
```

There you go! As with any DIY project, you should always customize and tweak what you want for maximum awesomeness.

If you liked this project, we recommend checking out the following tutorials:
Twinkling Fairy Wings
LilyFlyer