

HELPFUL INSTRUCTIONS

GET ADDITIONAL INFORMATION AND YOUTUBE TUTORIAL AT:

<https://github.com/MakelTHackin/LearnToSolderBadge>

IT IS HIGHLY RECOMMENDED THAT YOU WATCH THE YOUTUBE TUTORIAL COMPLETELY BEFORE YOU START THE PROJECT. THEN WATCH IT AGAIN DURING YOUR ASSEMBLY OF THE PROJECT.

THE FOLLOWING COMPONENTS HAVE POLARITY AND IT MATTERS WHICH DIRECTION THEY ARE INSERTED INTO THE BOARD:

- * ALL LEDs
- * TRANSISTORS
- * CAPACITORS
- * BATTERY HOLDERS
- * DIODE

THE FOLLOWING COMPONENTS DO NOT HAVE POLARITY AND IT DOESN'T MATTER WHICH DIRECTION THEY ARE INSERTED:

- * RESISTORS
- * SWITCH
- * BUTTON (INSERT WITH ITS PINS ON THE LEFT AND RIGHT)

IT DOESN'T MATTER WHICH COLOR LED GOES INTO SLOTS 1/2/3/4.

LED 1 AND LED 2 FLASH, LED 3 LIGHTS UP WHEN THE BUTTON IS PRESSED, AND PWR LED LIGHTS UP SOLID WHEN THE POWER IS ON.

THERE IS A "PRACTICE" AREA AT THE BOTTOM IF YOU WISH TO PRACTICE BEFORE OR AFTER COMPLETING THE PROJECT.

TIPS & TRICKS:

**BEND LEGS OF COMPONENTS OR USE TAPE TO HELP HOLD THEM IN PLACE WHILE SOLDERING.
SOLDERING IRON TEMPERATURE SHOULD BE AROUND 650-700 DEGREES FAHRENHEIT**

HOLD SOLDER IN ONE HAND AND THE SOLDERING IRON IN YOUR OTHER HAND

USE THIN SOLDER (0.6mm IS RECOMMENDED)

63/37 (LEADED) SOLDER IS RECOMMENDED FOR BEGINNERS, HOWEVER YOU MAY CHOOSE TO USE LEAD-FREE SOLDER IF DESIRED. LEAD-FREE SOLDER REQUIRES HIGHER TEMPERATURE

CLEAN SOLDERING TIP OFTEN WITH WET SPONGE OR BRASS WOOL

PRACTICE MAKES PERFECT!

OPERATION:

**INSERT BATTERIES WITH "+" SIDE FACING UP. TURN ON POWER BY SLIDING SWITCH RIGHT.
LED1 AND LED2 WILL ALTERNATE FLASHING. LED3 WILL ILLUMINATE WHEN THE BUTTON IS PRESSED.**

TROUBLESHOOTING:

MOST COMMON ISSUES OCCUR WHEN THERE IS EITHER TOO MUCH OR TOO LITTLE SOLDER ON A JOINT. IF YOU EXPERIENCE ISSUES, DOUBLE CHECK ALL JOINTS AND MAKE SURE THERE IS AN EVEN AMOUNT OF SOLDER AND THAT NO TWO JOINTS ARE CONNECTED. REFER TO THE FRONT AND BACK IMAGES ON GITHUB FOR COMPARISON.

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RECOMMENDED ORDER OF ASSEMBLY:

- * 470KOhm Resistors (R2 & R3 - NOT POLARIZED)
- * 1KOhm Resistors (R1 & R4 - NOT POLARIZED)
- * 220Ohm Resistors (R5 & R6 - NOT POLARIZED)
- * Diode (POLARIZED - WHITE TIP FACING TOWARDS TOP OF BOARD)
- * Button (NOT POLARIZED, BUT MAKE SURE PINS ARE ON LEFT AND RIDE SIDES)
- * Switch (NOT POLARIZED)
- * Transistors (POLARIZED - MAKE SURE FLAT SIDE MATCHES BOARD LAYOUT AND BEND PINS)
- * Capacitors (POLARIZED - SHORTER LEG THROUGH BOTTOM HOLE. WHITE SIDE FACING TOWARD BOTTOM OF BOARD)
- * LEDs (POLARIZED - SHORTER LEG THROUGH TOP HOLE, LONGER LEG THROUGH BOTTOM)
- * Battery Holders (POLARIZED - MATCH BOARD LAYOUT AND USE TAPE WHILE SOLDERING)

TOOLS AND MATERIALS (LINKS AVAILABLE ON GITHUB)

REQUIRED:

- * SOLDERING IRON (YOU GET WHAT YOU PAY FOR. CHEAP SOLDERING IRONS CAN HAVE A HARD TIME HEATING UP. BUT THIS IS A GREAT INVESTMENT IF YOU PLAN TO CONTINUE. A DECENT SOLDERING IRON WILL COST AROUND \$80-\$100)
- * SOLDER (63/37 LEADED IS RECOMMENDED)
- * FLUSH CUTTERS (THESE ARE GREAT!)

OPTIONAL:

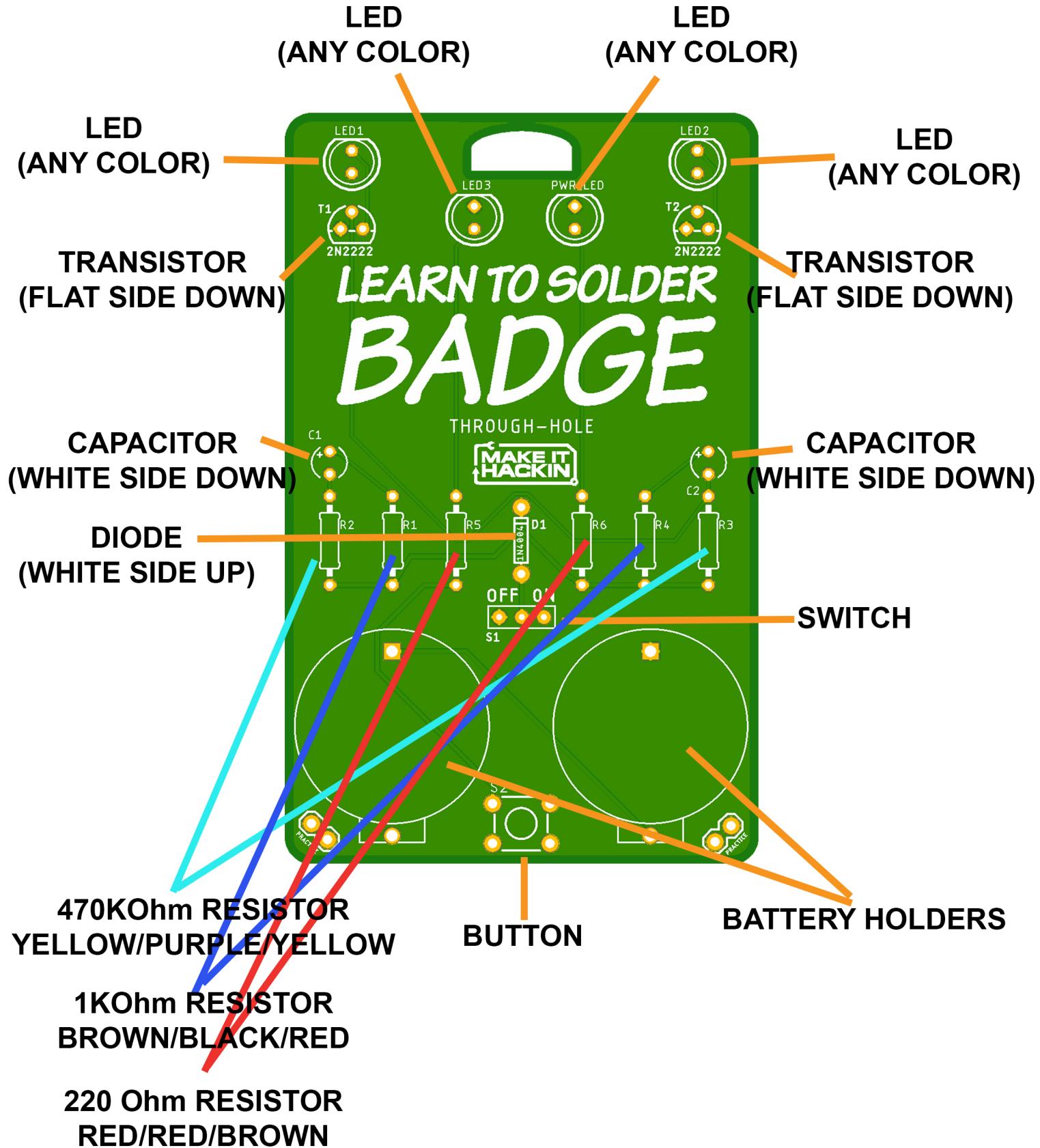
- * ELECTRICAL TAPE
- * MULTIMETER
- * FUME EXTRACTOR
- * BRASS SPONGE
- * SILICONE SOLDERING MAT
- * DESOLDERING WICK
- * DESOLDERING PUMP
- * TIP TINNER
- * FLUX

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ALL LEDs:

**SHORT LEG GOES THROUGH TOP HOLE,
LONGER LEG THROUGH BOTTOM HOLE**

TRANSISTORS:

**MAKE SURE FLAT SIDE MATCHES FLAT SIDE ON BOARD AND
BEND LEGS TO FIT THROUGH HOLES**

CAPACITORS:

**SHORT LEG GOES THROUGH BOTTOM HOLE,
LONGER LEG THROUGH TOP HOLE.**

**NOTE: THE WHITE SIDE (WITH MINUS “-” SYMBOL SHOULD ALSO
BE ON THE BOTTOM / SAME SIDE AS SHORTER LEG TO GO THROUGH THE BOTTOM HOLE**

DIODE:

**THERE IS A WHITE MARKING ON THE DIODE.
IT SHOULD BE INSERTED INTO THE BOARD MATCHING THE MARKING ON THE BOARD.
WHITE SIDE SHOULD BE NEAR TOP HOLE.**

RESISTORS:

**470KOhm RESISTORS GO INTO R2 AND R3 AND ARE MARKED YELLOW/PURPLE/YELLOW
1KOhm RESISTORS GO INTO R1 AND R4 AND ARE MARKED BROWN/BLACK/RED
220 Ohm RESISTORS GO INTO R5 AND R6 AND ARE MARKED RED/RED/BROWN**

SWITCH:

CAN BE INSERTED EITHER WAY.

BATTERY HOLDERS:

MAKE SURE TO HOLD THEM DOWN WITH TAPE WHILE SOLDERING

BUTTON:

INSERT WITH PINS ON THE LEFT AND RIGHT