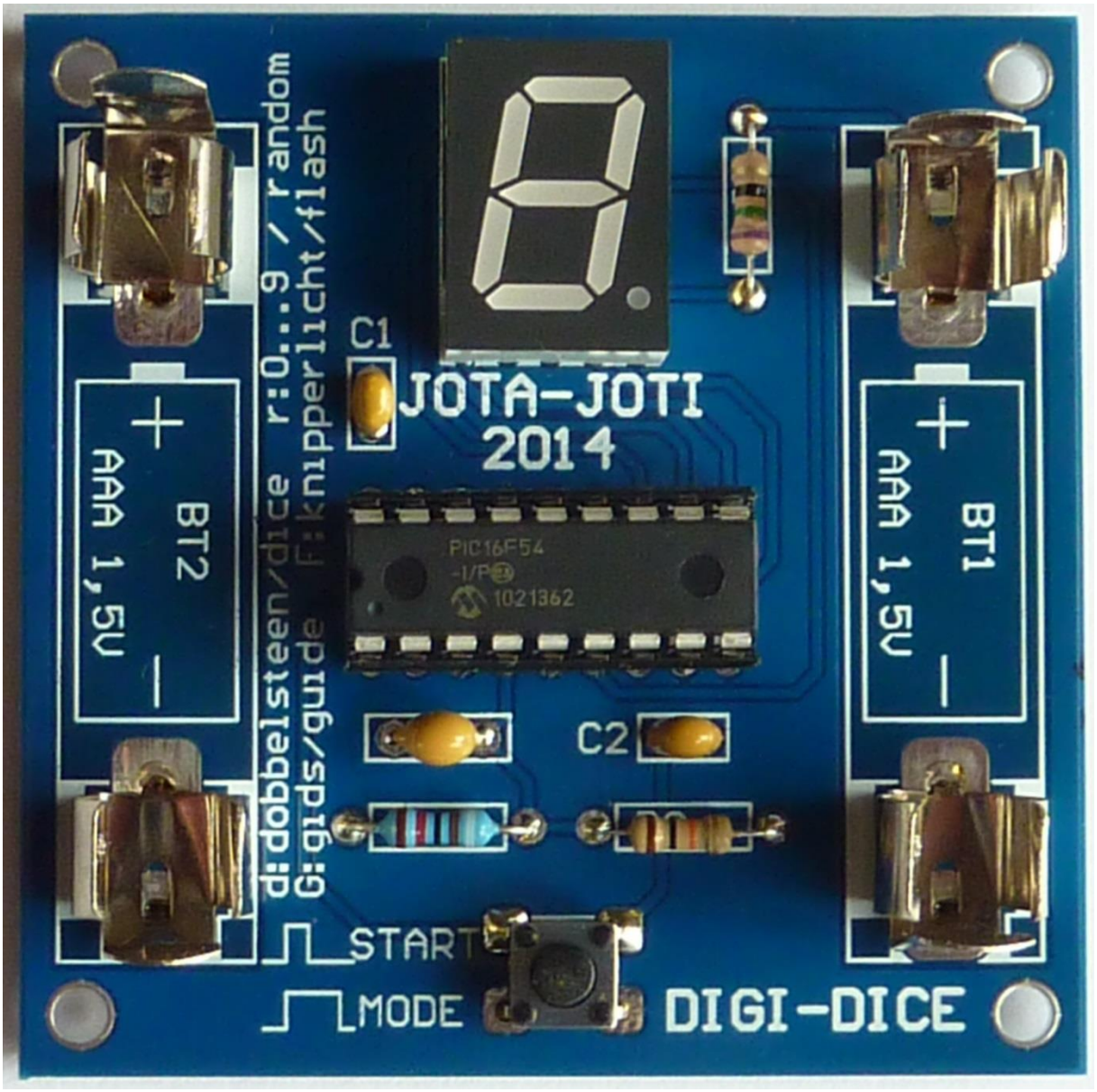
DIGI-DICE 2014



Manuel Digi-Dice kit.

A project of the Service Kring JOTA-JOTI.

You like the dice, you have great ideas?
Let us know, read the last page how.

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Note:

In contrast to previous years, a number of all the documents relating to the kit was added to a large document. This order, except for the building description, also all the background information and other facts are together here.

For the guidance during soldering we would recommend to read through this entire document. It is sufficient for printing for the purpose of building the kit during construction only pages 6 and 7, it can be nice to have 9 and 10 also As a reference page when operating, a copy of page 8 can serve the need. Once done it one time, the operation is not complicated.

TIP: in advance self-assemble one for the JOTA is also useful besides fun.

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Introduction:

This year, the Service Kring JOTA-JOTI again managed to establish, what we called Digi-Dice,a fun and educational construction project together. As in previous years, this kit is intended for use by children soldered together (under supervision) and to become familiar with electronics true this way . Besides a nice kit is also useful because it can be used Various way in Scouting games.

The theme of the JOTA-JOTI this year:

“After Daylight”

This theme could be used as leitmotif to do more night activity’s which are in the dark more exiting then in daytime. During these nightly activity’s you can also make use of the DIGI-DICE.

Buy the way: did you know you can order badges with this logo?

We wish you fun building the kit and using the Digi-Dice!

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Content of the package:

Below table can be used to check the content of the package, solder and 2 AAA batteries are not included.

Component	Value	Qty	Pos on board	Note
resistor	91 kΩ / 1%	1	R1	White, braun, black, red, braun
resistor	10 kΩ	1	R2	Braun, black, orange, gold
resistor	75 Ω	1	R3	Purple, green, black, gold
LED display	SM410521	1	LD1	
switch	switch	1	S1	
IC	PIC16F54	1	U1	
battery holder		2	BT1	2 pcd, 4 pcs total
battery holder		2	BT2	3 pcd, 4 pcs total
capacitor	330 pF	1	C1	yellow, mark 331
capacitor	1 nF	1	C2	yellow, mark102
capacitor	100 nF	1	C3	yellow, mark 104
IC-feet	IC feet 18 p	1	U1	
PCB		1		

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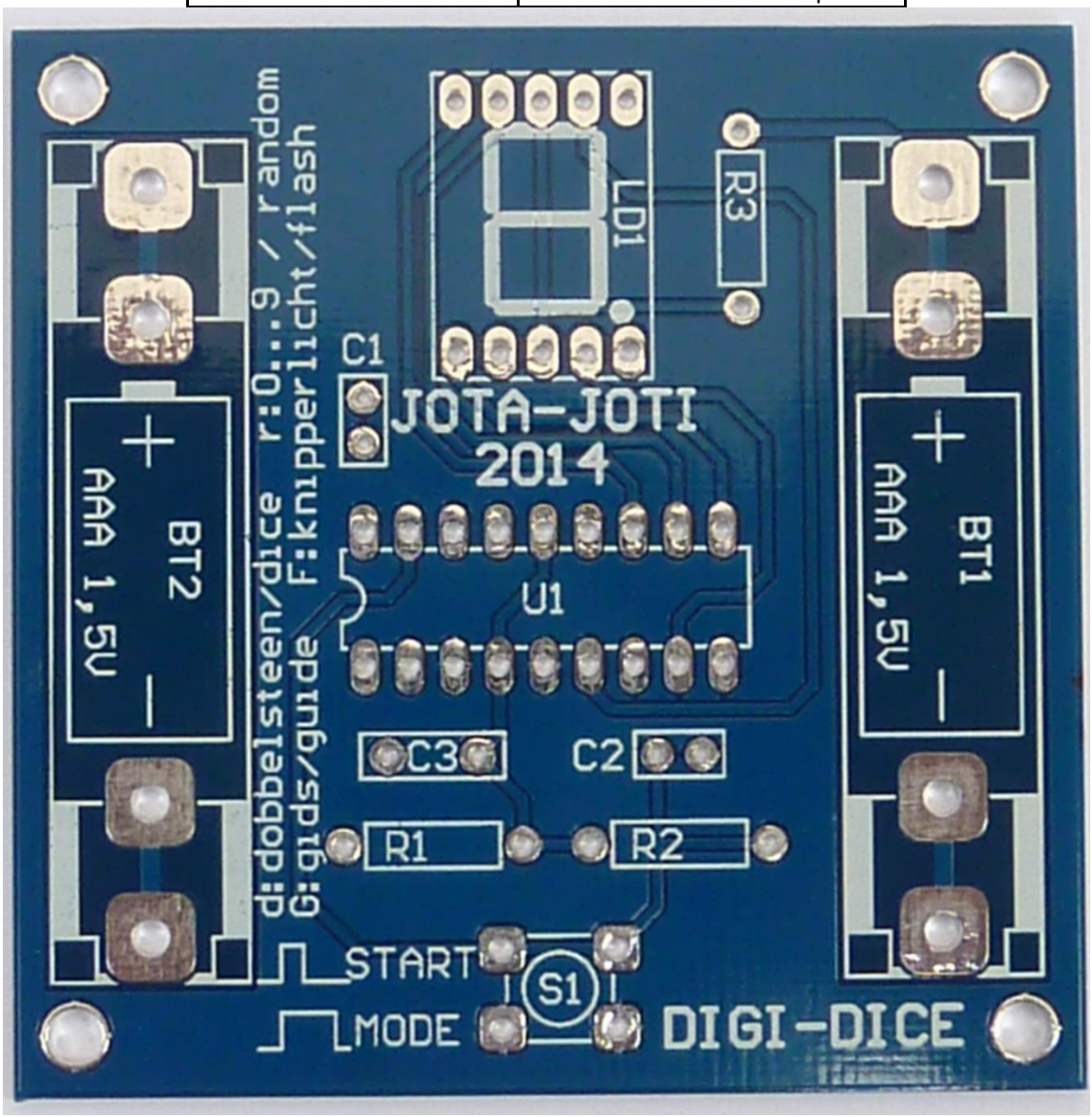
Component numbering en component values:

Text on board	Component	Text on board	Component
R1	91 KΩ	BT1	Battery holder
R2	10 KΩ	BT2	Battery holder
R3	75 Ω	C1	330 pF
LD1	SM410521	C2	1 nF
S1	switch	C3	100 nF
U1	PIC16F54	U1	IC feet 18 p



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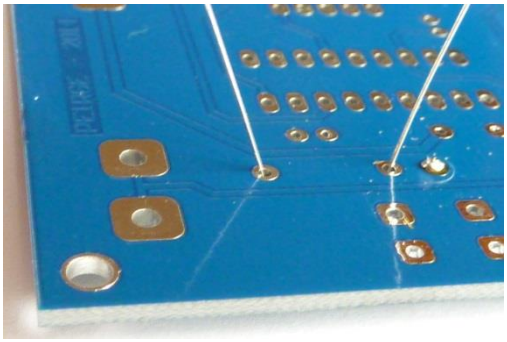
Building description of the Digi-Dice:

The easiest is to build the parts from low to high. All resistors are mounted lying, bend both threads at a 90 degree angle taking into account the distance between the holes on the PCB. Insert the resistors through the print back and bend the wires at the bottom of the print careful slightly apart. The print can now be turned around to solder, without the resistors fall out of the board. Cut the legs of the resistors just above the soldering off after soldering, do the same for al other components with longer legs as the capacitors and the display.

Tip 1: the polka dot at the beginning of the line can be coloured to indicate which parts are already mounted.
Tip 2: watch the pictures when your in doubt about the installation of a component, once soldered wrong it can bee difficult to repair.

Mounting order:

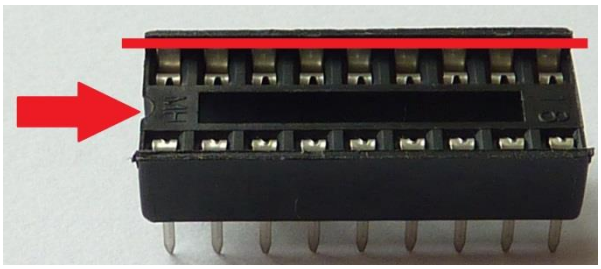


Mount the following resistors:
o R1: 91 k Ω (white, Brown, black, red, Brown)
o R2: 10 k Ω (Brown, black, Orange, gold)
o R3: 75 Ω (purple, green, black, gold)
Cut the wires neatly.

Mount the capacitors:
o C1: 330 pF (yellow, marked 331)
o C2: 1 nF (yellow, marked 102)
o C3: 100 nF (yellow, marked 104)
Cut the wires neatly.

Mount switch, display and IC-foot.
- Make sure these items are seated well against the board. o Mount switch S1.

o Mount IC-foot, U1 (18 PIN).
PLEASE NOTE: in one of the ends of the IC-feet is a notch, it must match the drawing on the PCB. Make sure all the pins are visible on the solderside of the board before you go soldering all connections. They must all be in line.



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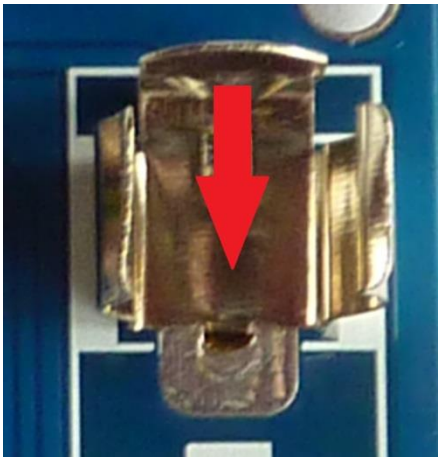
o Mount LED display LD1, look carefully **HOW THIS SHOULD BE MOUNTED!**
NOTE: check out the print how these should be mounted, look here to the point in the display.
Once incorrectly fitted is this quite tricky to get loose without damage!Cut the wires neatly.

o Mount battery holders, BT1 and BT2.
They consist of 2 metal containers, make sure to mount them flat agains the board.
Please note: that the closed sides of these metal holders must point towards the outside, otherwise the batteries do not fit.

o Insert U1, PIC16F54, carefully into the IC-foot. PLEASE NOTE: in one of the ends of the IC is a notch (slit), it must match the drawing on the print and the previously mounted IC-foot. The legs of the IC are spread out, bend them in before pushing the IC in the foot. The easiest way doing this to put the IC with the legs of one side on the table and then tilt the IC a bit. Do the same for the other side of the IC. If the IC is put into the foot, check if there are no legs double curved. You can do this by watching under the IC starting from the front.

The Digi-Dice is now assembled and is ready to be tested!!

Place the two batteries in the battery holders and the Digi-Dice must rise. Sometimes it may be necessary to bendthe ends of the battery holders slightly inward because they will not make contact with the terminals of the battery.



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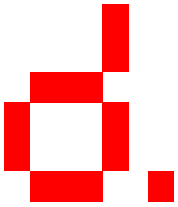
Use and features:

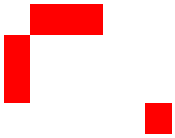
Once the batteries are inserted, the Dig-Dice starts with a self-test. All segments light up one at a time and then burn all segments at the same time. The Digi-Dice is now ready for use as dice. Press the button to start with dice, there appears a walking light and a number will be displayed.
Press the button to throw again.

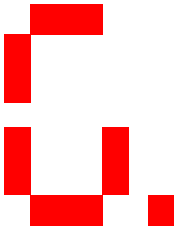
The Digi-Dice has more possibilities. By pressing and holding the button longer you can switch to another function, this is indicated in the display.



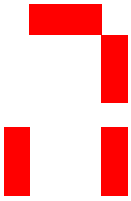
This is the d. van dice, as we have seen above we can dice with it, and there will appear a umber from 1 to 6 on the display . To throwing again, just push the button.

This is the r. of random This sets the Dig-Dice to give a random number from 0 to 9.

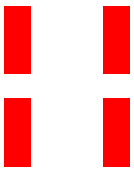




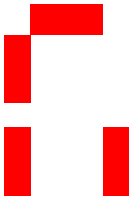
This is the g. van guide (Guide), in this mode you can use the Digi-Dice to determine a direction, this is also totally random there are 3 possibilities, turn left, right and straight ahead. See below the corresponding symbols:



Left turn

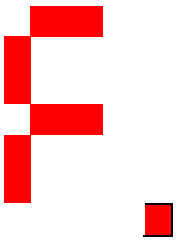


strait forward



right turn

Finally we have the **f**. of flash (**F**lash), this is kind of a walking light, the display runs continuously now..



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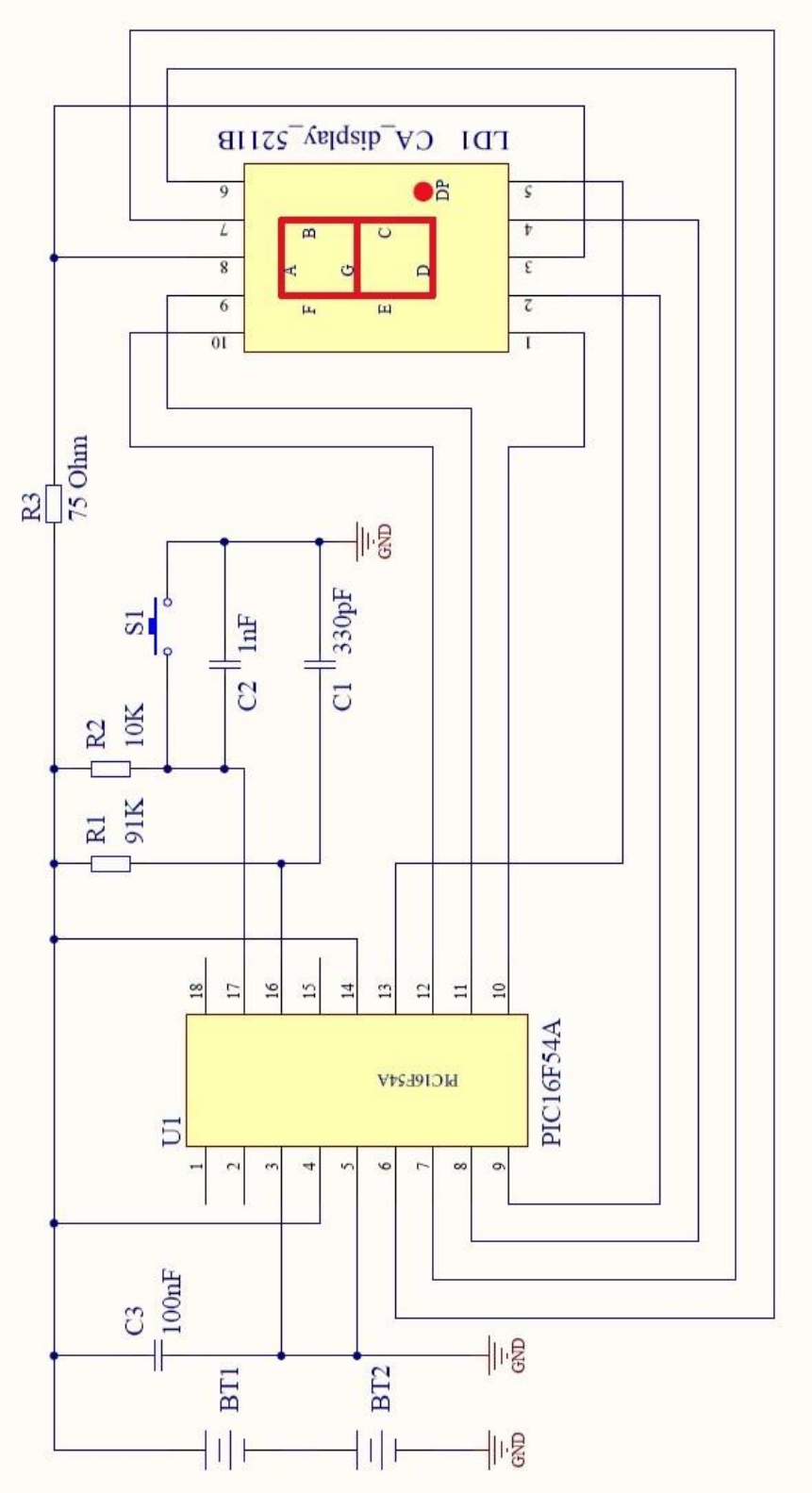
Schematic:



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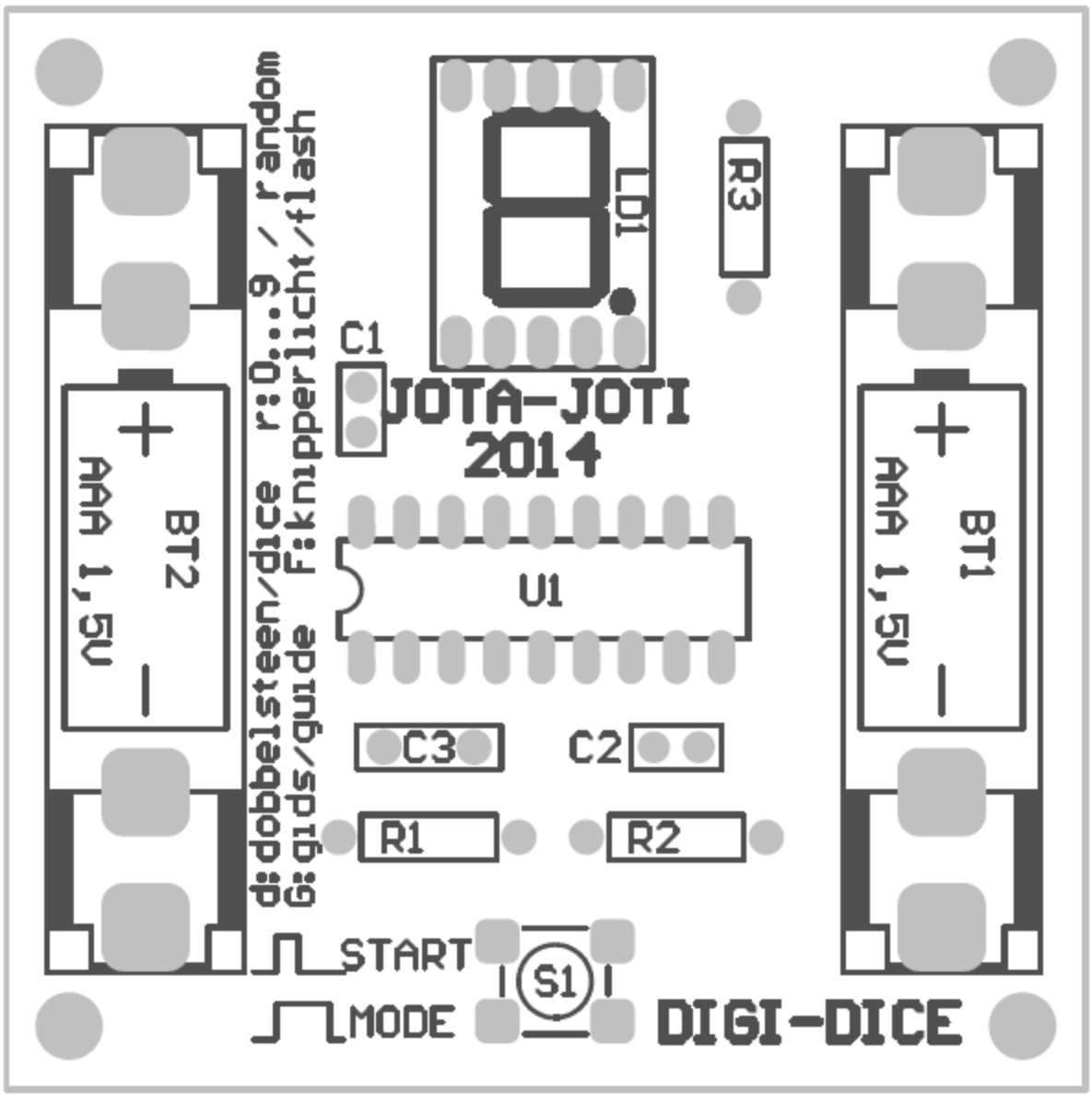
Component layout:



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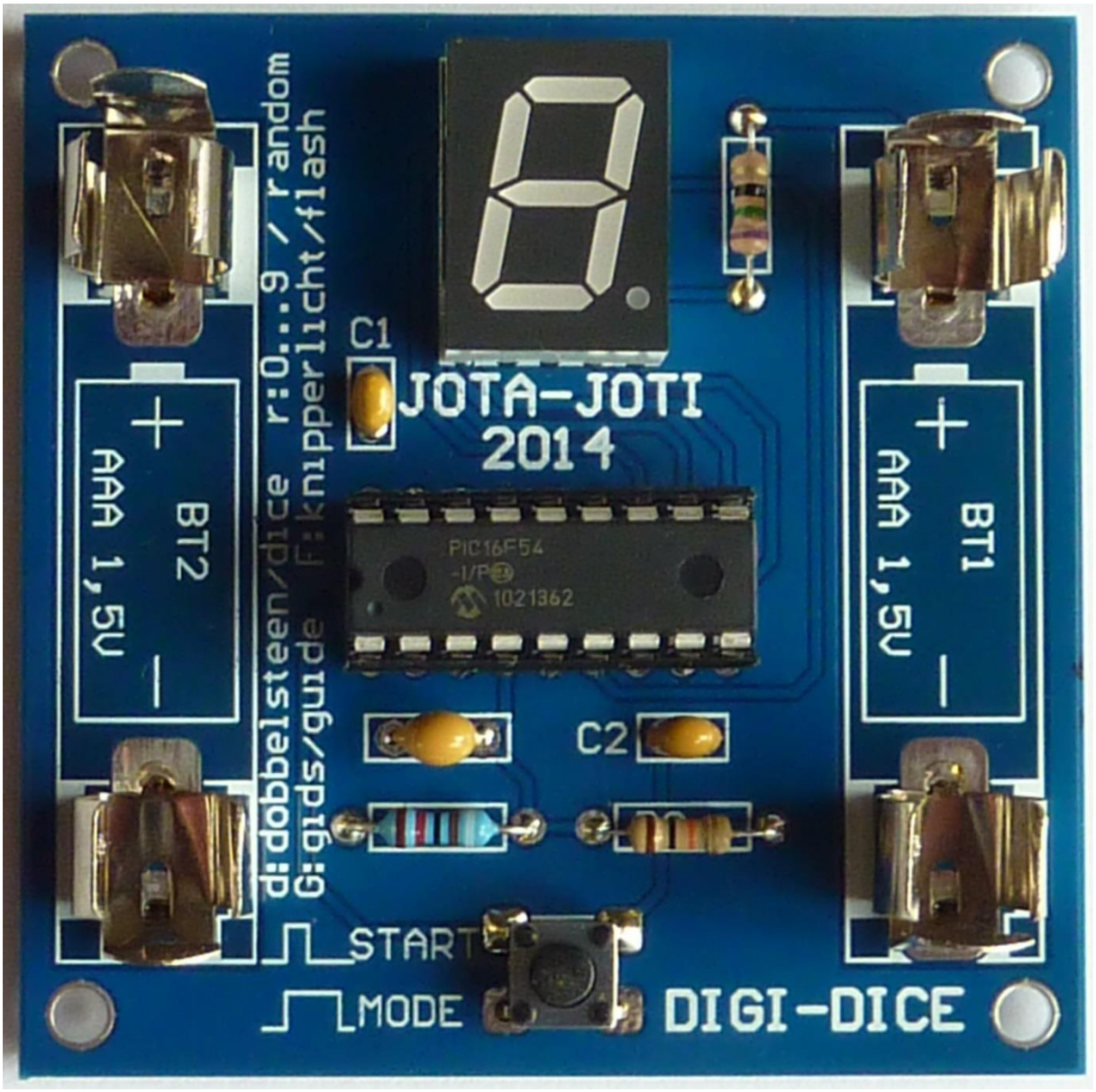
Complete build-up board:



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Feedback:

Except that the Digi-Dice is fun and a decorative structure,there are also countless ways for playing games. Make a fun scavenger hunt with a number of kits, near or in the forest and use it as dice in games. Do you have any other cool ideas please tell us!

Do you have comments or do you want to give feedback on the Digi-Dice?
Do you have comments or questions about the Service Kring JOTA-JOTI?
Please contact us using the contact form on the site www.kitbuilding.org.

On behalf of the Service Kring JOTA-JOTI, we wish everyone all lot of fun building kit and playing with it.