

# SmaTrig 2.1

---

## DIY Guide

[instructions](#) [part list](#) [assembly plan](#) [schematics](#) [drill aid](#) [label](#) [pcb](#)

March 17, 2011

## 0.1 Instructions

Solder the SMD side first. Use these images for reference. Please observe the polarity of the AVR! If you are not familiar with SMD, read one of the tutorials in the web. Proceed with the THT parts. There are a few critical points. The **switch** (9.5 mm over-all height) should be mounted about 1 mm above the PCB.

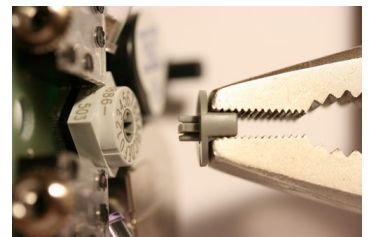
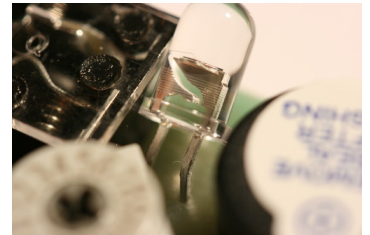
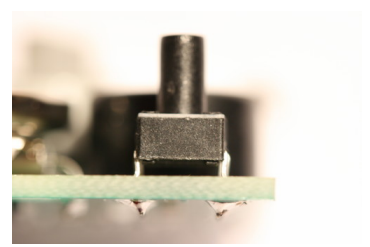
The **code switch** should be mounted about **1.5 mm** above the PCB. A spacer (e. g. a piece of PBC) should be used to avoid forces on the PCB pads.

The **IR-LED** and the **photo diode** should be bend to 45° for easier insertion of the assembled PCB into the enclosure. Watch the polarity of the diodes! Different types have different markings (compare SFH484 and LD274).

Now, insert the assembled PCB into the enclosure. Remove the **code switch knob** with flat pliers or a knife before. Don't forget to remove the protective seal from the buzzer.

While inserting the PCB the diodes should snap into the side holes and bend to 90°. Use tweezers if necessary.

Now the label can be attached. Peel of the protection foil in one corner and align the label (switch, dial) first.



## 0.2 Part list

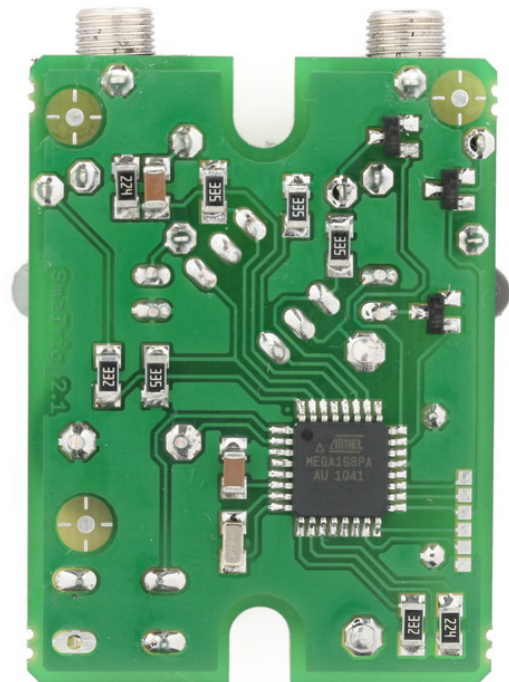
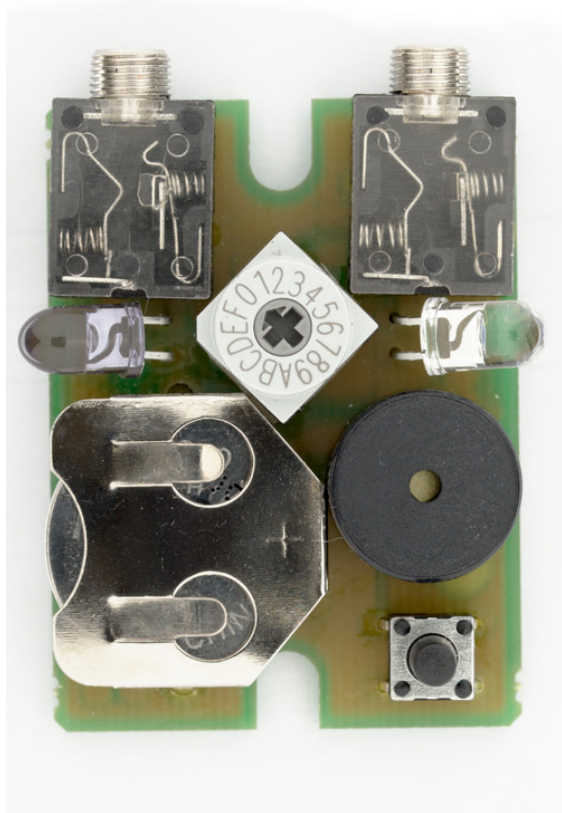
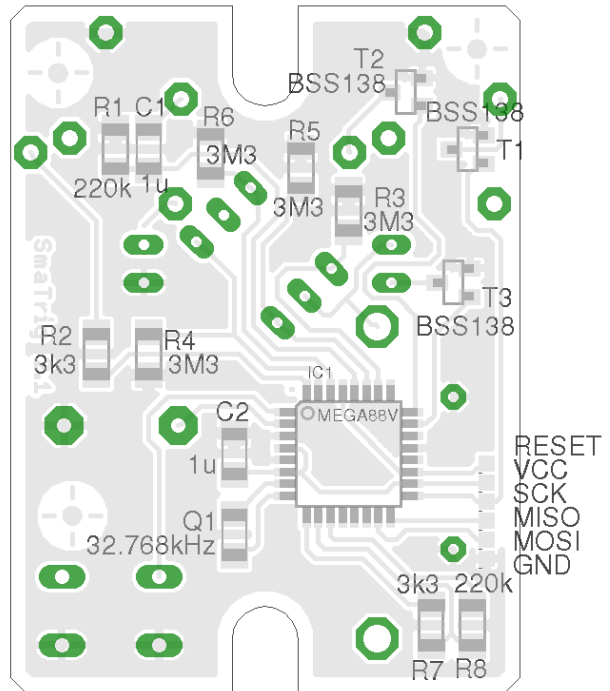
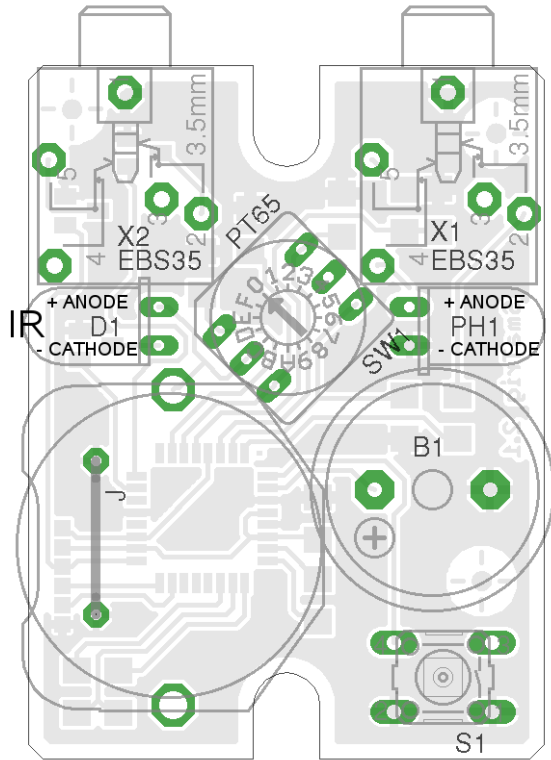
Part	Value	Device	Vendor	Comment
-- SMD --				
C1	1u	C1206	...	
C2	1u	C1206	...	
Q1	32.768kHz	C1206	Reichelt (32,768 PGC-12,5)	
R1	220k	R1206	...	
R2	3k3	R1206	...	
R3	3M3	R1206	...	
R4	3M3	R1206	...	
R5	3M3	R1206	...	
R6	3M3	R1206	...	
R7	3k3	R1206	...	
R8	220k	R1206	...	
IC1	MEGA88V/PV/PA	TQFP32-08	...	V/PV/PA version
T1	BSS138	SOT23	...	low Vgs type
T2	BSS138	SOT23	...	low Vgs type
T3	BSS138	SOT23	...	low Vgs type
-- THT --				
D1	SFH484 IR-LED	LED5MM	Segor/Reichelt	narrow angle type
PH1	SFH203 daylight	LED5MM	Segor/Reichelt	daylight type
S1	3301B	tact. switch	Reichelt	9.5mm total height
SW1	PT65-503	DIP6	Segor	by Hartmann
H1	KZH20P	batt holder	Segor/Reichelt	for 2032 battery
J	wire bridge	-	DIY	use a piece of wire
B1	EPM121	dia=14mm	Reichelt	7.5mm raster
X1	EBS35	EBS35	Reichelt	3.5mm jack
X2	EBS35	EBS35	Reichelt	3.5mm jack
-- OTHER --				
PCB	-	-	DIY	
distance plate for code switch			DIY	~1.5mm, use old PCB
enclosure 2046 sw		-	Segor	replacement: 2044
hot shoe mount		-	DIY	
label		-	DIY	

see:

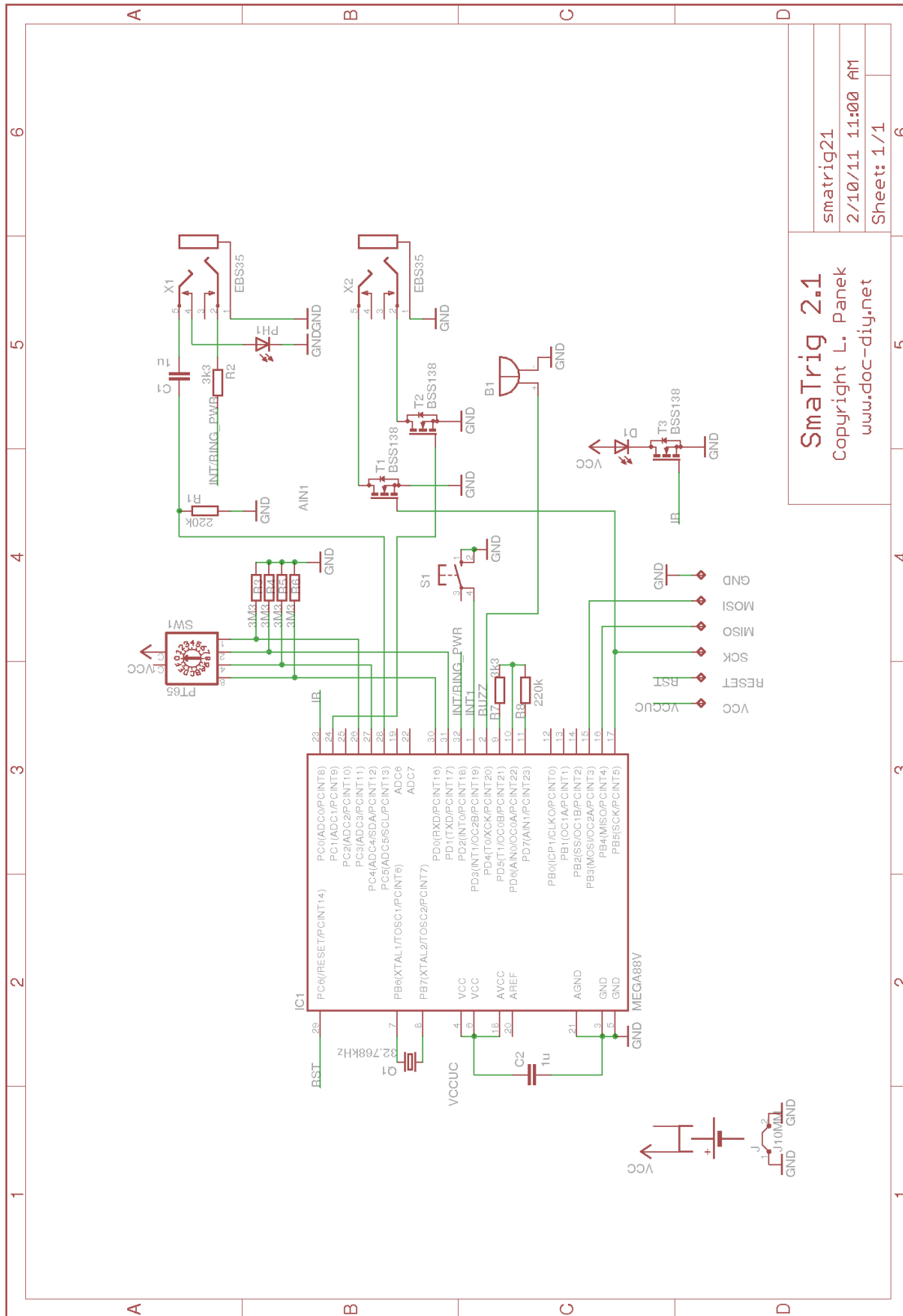
[www.segor.de](http://www.segor.de)

[www.reichelt.de](http://www.reichelt.de)

### 0.3 Assembly plan



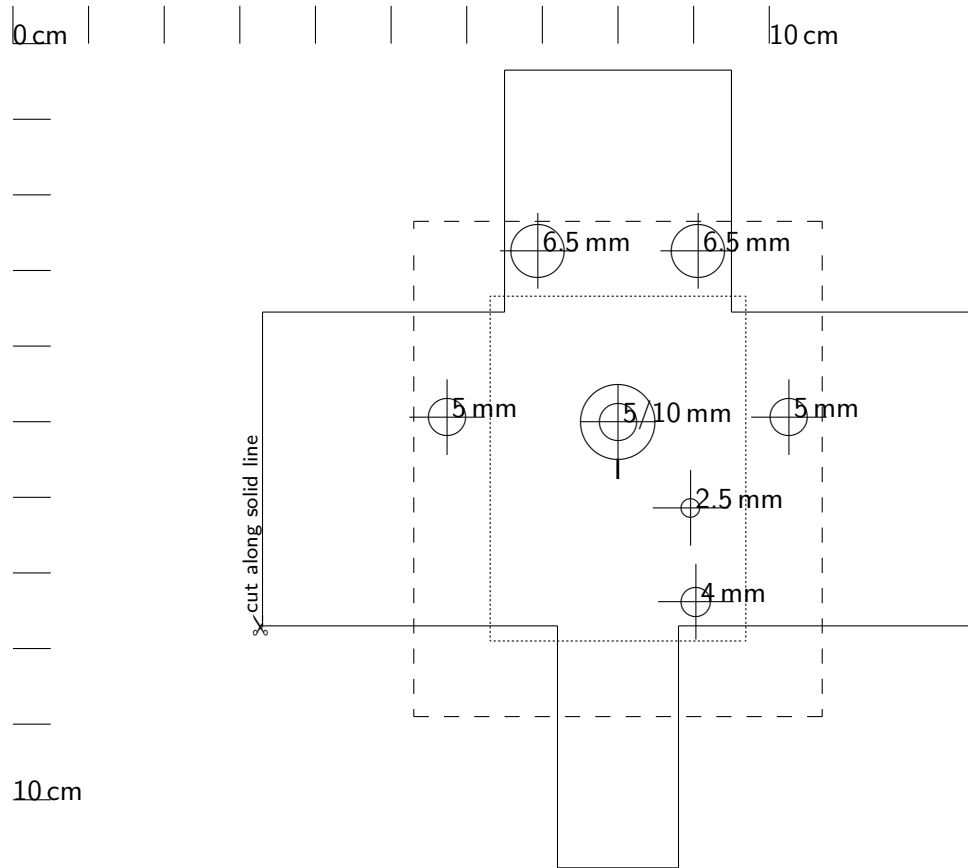
### 0.4 Schematics



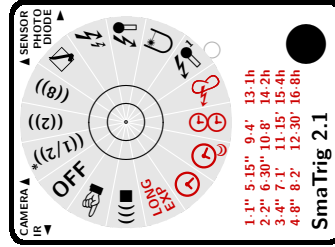
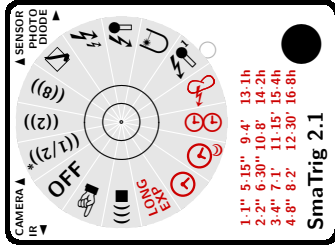
SmaTrig 2.1  
Copyright L. Panek  
www.doc-diy.net  
Sheet: 1/1

### 0.5 Drill aid

1 mm = 0.254 inch, print without scaling!



## 0.6 Label



## 0.7 PCB (34x45.7 mm)

