

# RANGEMASTER2020

## FX TYPE: Boost

Based on the Dallas® Rangemaster™

Enclosure Size: 1590A

"Softie" compatibility: none

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## Overview

The **Rangemaster** is the all-time classic boost pedal. The mbp 2020 version builds on the previous iterations and incorporates modern conveniences for DIY pedal makers. These include a polarity inverter (so the positive ground circuit can be run on the standard 9v supply), a three position switch for treble, mid and full range boost and a few utilitarian mods for quiet operation (pulldown resistors and slow LED lighting).

## Controls

- **BOOST** - Adds up to 20db of warm boost.
- **T/S/F**: This on/off/on switch (Thick/Skinny/Fat) lets you choose between mid, treble and full boost. Treble boost is the middle position of the switch.
- **DIP**: Adds optional pulldown resistors for the input and output. Use this if you experience any popping when engaging the bypass footswitch.

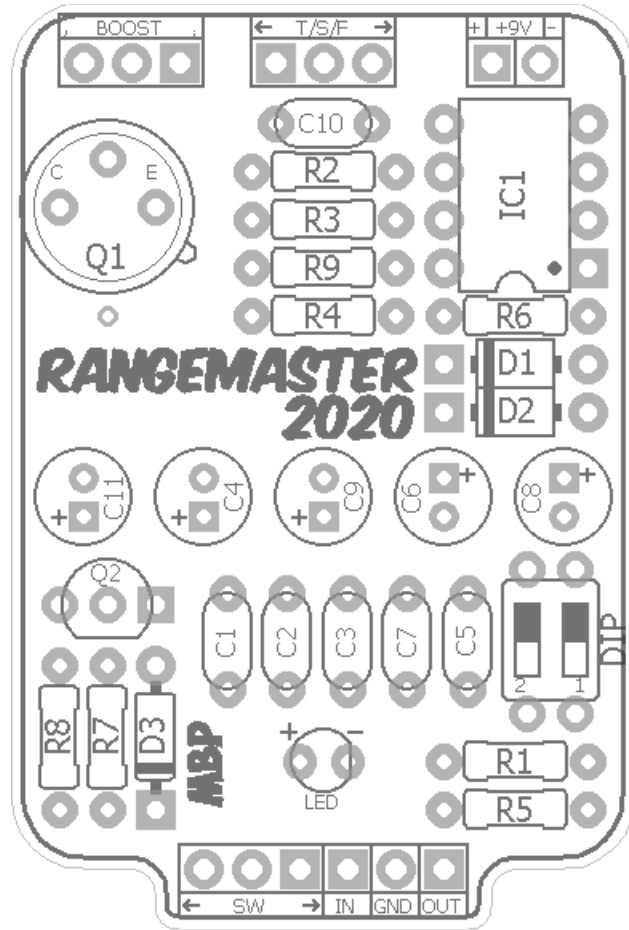
## Informative reading on the history and operation of the Rangemaster.

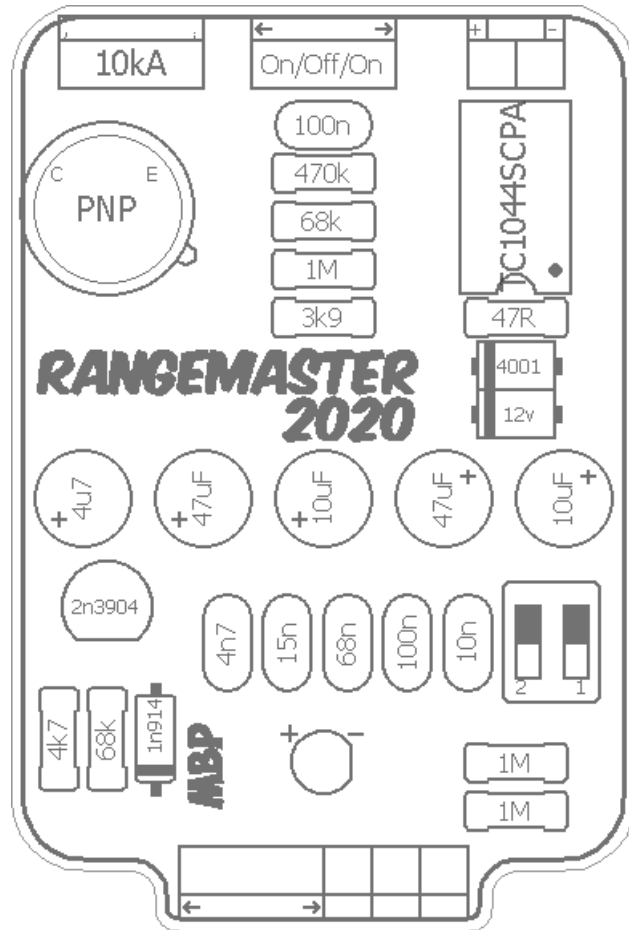
<https://www.electrosmash.com/dallas-rangemaster>  
<https://www.vintageguitar.com/20424/the-dallas-rangemaster/>

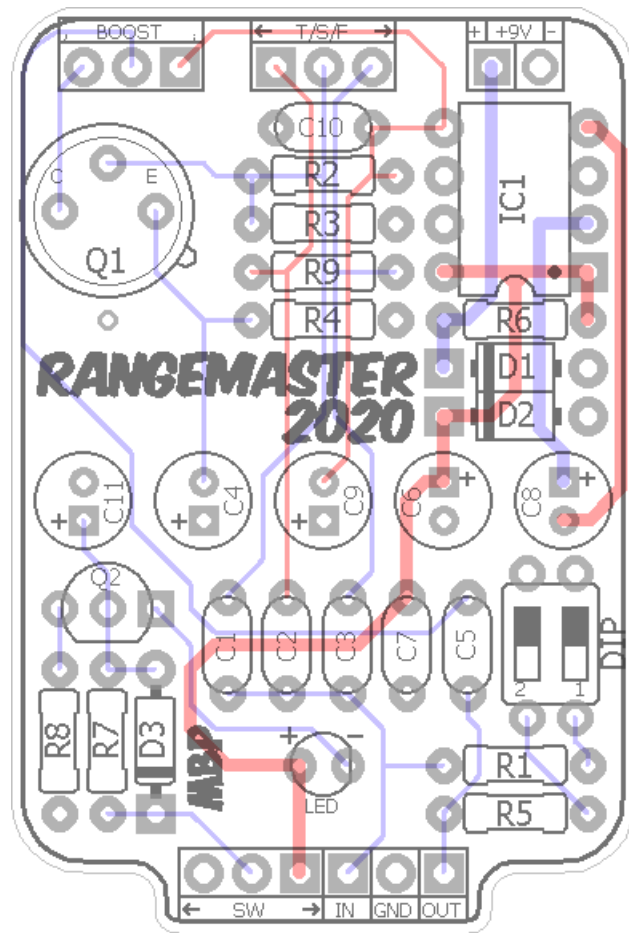
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**Technical assistance** for your build(s) is available via the [madbeanpedals forum](http://madbeanpedals.com). Please go there rather than emailing me for assistance on builds. This is because (1) I'm not always available to respond via email in a timely and continuous manner, and (2) posting technical problems and solutions in the forum creates a record from which other members may benefit.







Resistors		Caps		Diodes	
R1	1M	C1	4n7	D1	1N4001
R2	470k	C2	15n	D2	12v
R3	68k	C3	68n	D3	1n914
R4	3k9	C4	47uF	Transistors	
R5	1M	C5	10n	Q1	PNP
R6	47R	C6	47uF	Q2	2n3904
R7	68k	C7	100n	ICs	
R8	4k7	C8	10uF	IC1	TC1044SCPA
R9	1M	C9	10uF	Switches	
		C10	100n	T/S/F	SPDT
		C11	4u7	DIP	2-pos.
				Pots	
				BOOST	10kA

Value	QTY	Type	Rating
47R	1	Metal / Carbon Film	1/4W
3k9	1	Metal / Carbon Film	1/4W
4k7	1	Metal / Carbon Film	1/4W
68k	2	Metal / Carbon Film	1/4W
470k	1	Metal / Carbon Film	1/4W
1M	3	Metal / Carbon Film	1/4W
4n7	1	Film	16v min.
10n	1	Film	16v min.
15n	1	Film	16v min.
68n	1	Film	16v min.
100n	2	Film	16v min.
4u7	1	Low-profile Electrolytic	16v min.
10uF	2	Low-profile Electrolytic	16v min.
47uF	2	Low-profile Electrolytic	16v min.
1N4001	1		
12v	1	1W Zener	
1n914	1		
PNP	1	OC44 / CV7003	
2n3904	1		
TC1044SCPA	1		
On/Off/On	1	On/Off/On, sub-mini	
2-pos.	1	Dip Switch, mini	
10kA	1	Solder Lug	9 or 12mm

See the NOTES section for info about transistors for the Rangemaster.

**Low profile Electrolytic caps (required):**

<http://smallbear-electronics.mybigcommerce.com/electrolytic-radial-low-profile-16v-1-f-100-f/>

**12v Zener:**

<http://smallbear-electronics.mybigcommerce.com/diode-zener-1n4742a/>

**TC1044SCPA:**

<http://smallbear-electronics.mybigcommerce.com/ic-tc1044scpa/>

**MAX1044CPA (sub for the TC version):**

<http://smallbear-electronics.mybigcommerce.com/ic-max1044cpa/>

**Mini SPDT (On/Off/On):**

<http://smallbear-electronics.mybigcommerce.com/spdt-center-off-sub-mini-short-lever-pc-mount/>

**2-pos. Dip Switch:**

<http://smallbear-electronics.mybigcommerce.com/dip-switch-2-position/>

**12mm Pots (10kA):**

<http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-12mm-solder-terms/>

**9mm PC Mount pots (10kA):**

<http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-9mm-pc-mount/>

**Thinline DC Jack:**

<http://smallbear-electronics.mybigcommerce.com/dc-power-jack-all-plastic-unswitched-2-1-mm/>

**Enclosed Mono:**

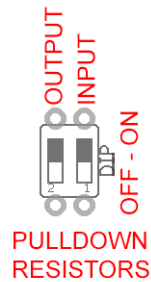
<http://smallbear-electronics.mybigcommerce.com/1-4-in-mono-enclosed-jack/>

<http://smallbear-electronics.mybigcommerce.com/1-4-in-mono-enclosed-switchcraft-111x/>

**Lumberg Mono:**

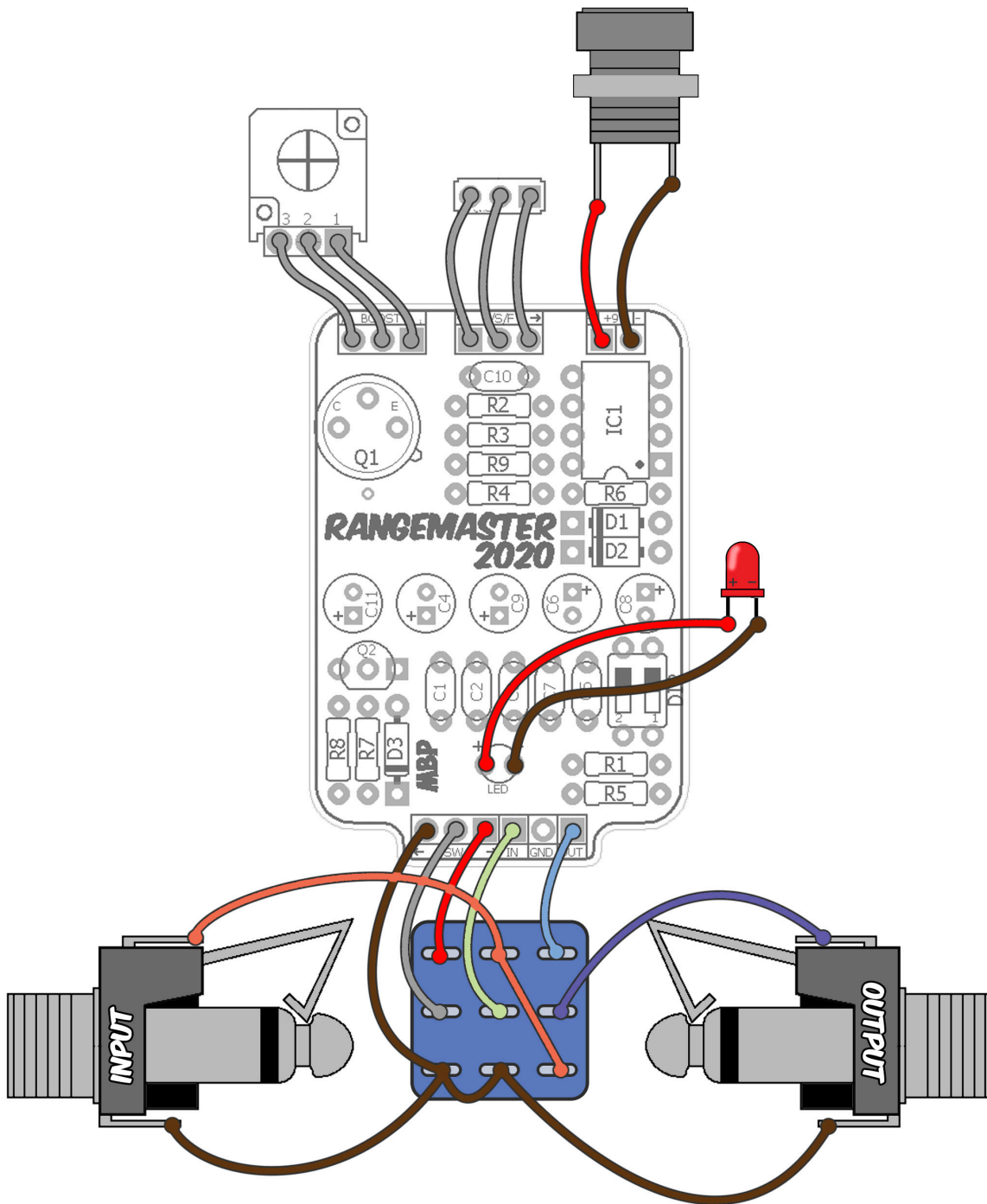
<http://smallbear-electronics.mybigcommerce.com/lumberg-1-4-compact-shrouded-mono-jack/>

- The 2-pos. dip switch allows you to add pulldown resistors to the input and output of the circuits. This is optional and only needs to be used if you experience any popping when switching the effect on. You can try either or both, as needed.

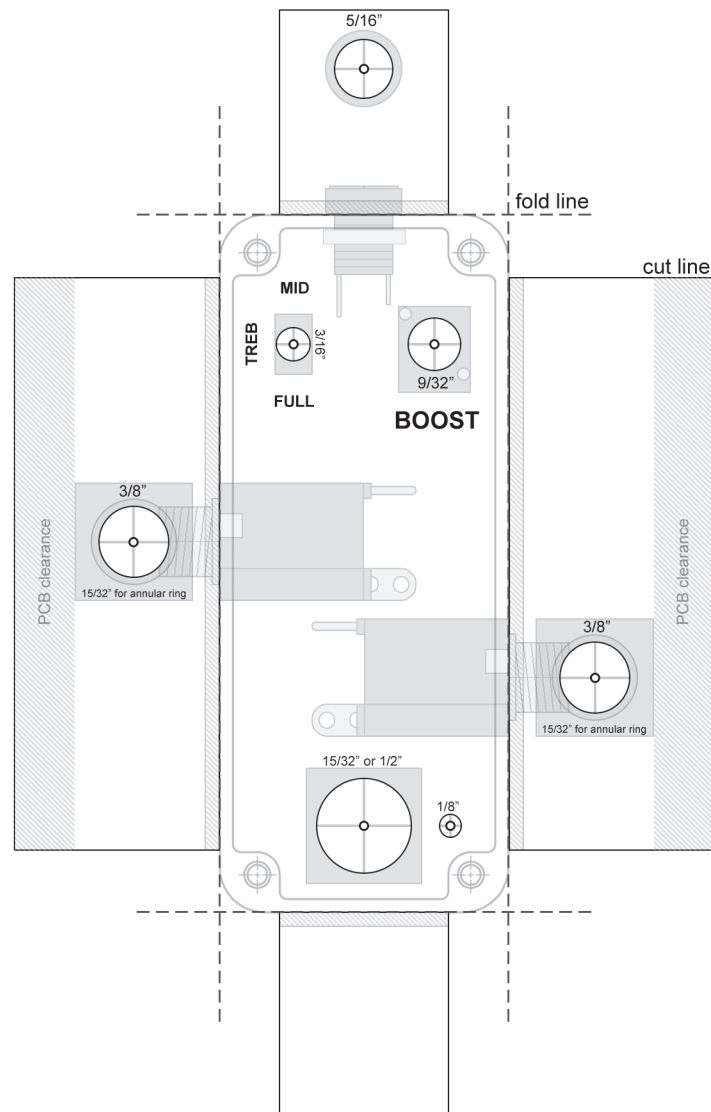


- The OC44 (CV7003) is the traditional choice for the Rangemaster. Unfortunately, smallbear no longer carries it at the time of writing. There may be other sources you can pursue to find one or an appropriate substitute (ebay, people in the DIY community, etc). A compatible sub will be PNP in the 70-100 HFE range with low leakage. I do not have any recommendations beyond that.
- For the glass enclosed OC44, the red dot on the casing indicates the Collector.
- You may hear a soft “pop” the first time you use the *toggle* switch on power up. This is unavoidable due to how that switch had to be arranged with the DIP switch option.





**Note:** Drill Guides are approximate and may require tweaking depending on the types of jacks, switches and pots you use.



- This template will work for either mono enclosed jacks or the “Lumberg” style.
- It uses the “Thinline” style DC Jack.
- The mini toggle switch will fit in either the horizontal or vertical orientation.
- The drill spot for the Boost pot will fit either the 9mm or 12mm from the Shopping List.

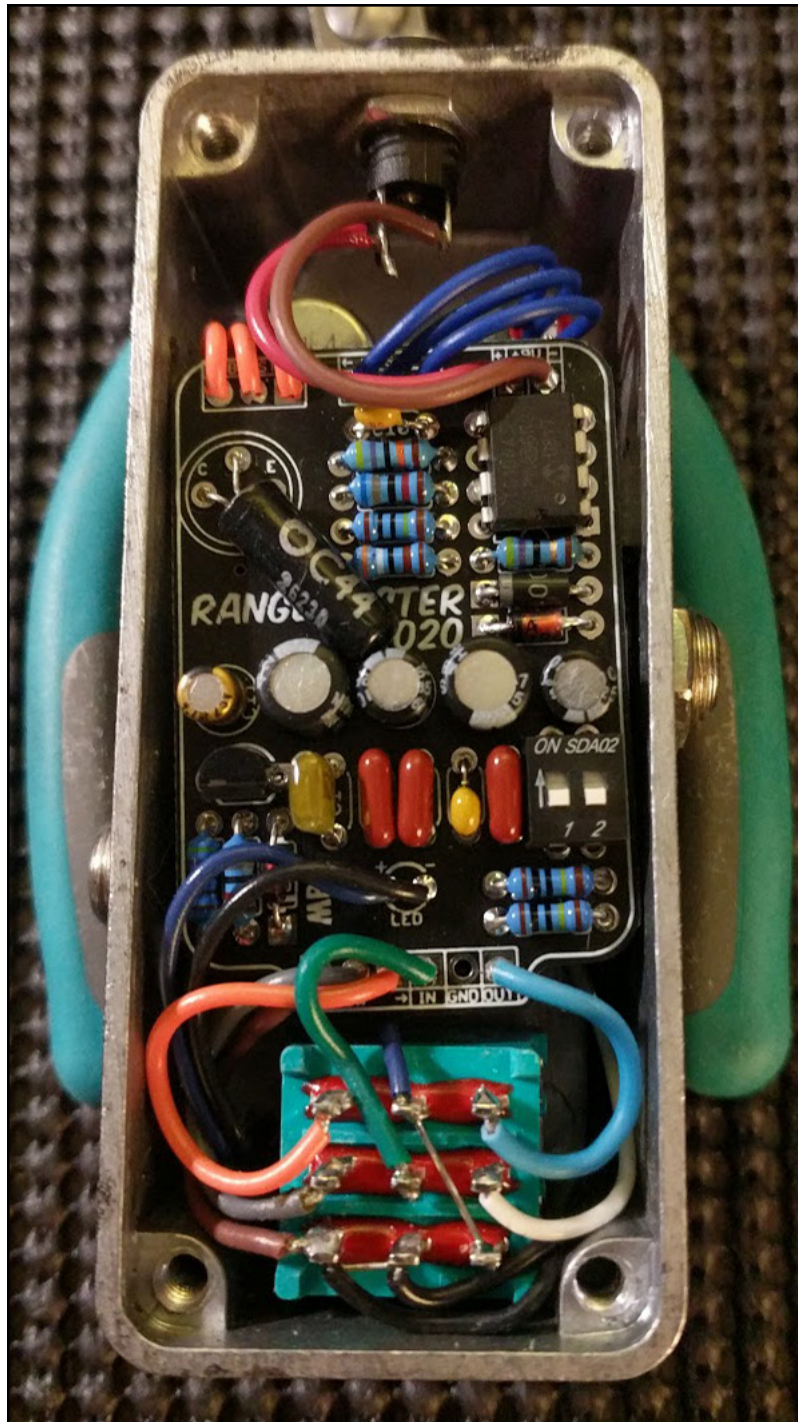
**IC1 4558**

1	9.3
2	5.46
3	0
4	-3.81
5	-9.27
6	4.47
7	6.81
8	9.3

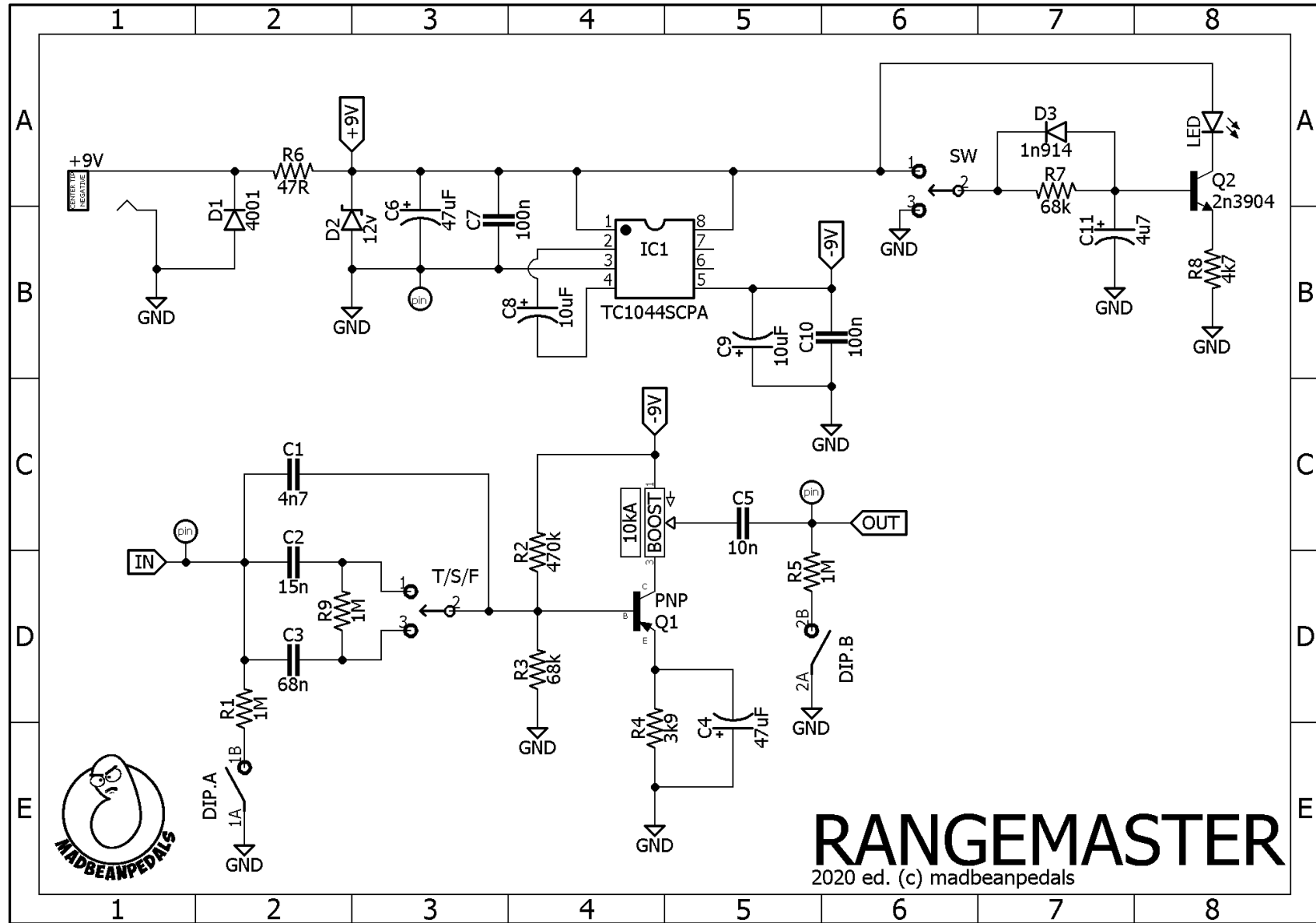
**Q1 OC44**

C	-6.88
B	-1.07
E	-0.97

- 9.42vDC One Spot
- Current Draw: ~2mA



The IC should be soldered directly to the PCB or used with a low-profile 8-pin socket. The standard size socket may be too tall for the 1590A enclosure.



**RANGEMASTER**  
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