JUNKTRUNK

FX TYPE: Bass Envelope Filter

Based on the Chunk Systems® Agent 00Funk mkII™

Enclosure Size: 125B

"Softie" compatibility: none

Overview

The Agent 00Funk and BrownDog were produced by Australia's ChunkSystems and marketed to the bass playing community (Bootsy Collins was apparently a big fan) around the late 00's to early 2010's. I'm not sure if they went completely out of business but the pedals seemed to have been discontinued and only show up on the used market. That makes for ripe DIY projects!

The **JunkTrunk** is based on the 00Funk. It's an envelope filter with a number of familiar elements and some thoughtful design execution. Plus, it doesn't require any out of production parts so the overall build price is reasonable. It's very responsive to bass and lives up to its funk moniker. Combined with the GasTank project it will even deliver some bass synth type tones.

Special note: Neither the Agent 00Funk nor the BrownDog were true-bypass. In fact, they are not even buffered bypass being that the only outputs were switched. The JunkTrunk is wired for true-bypass, although I did preserve their method of bypass LED operation (it uses a transistor with a small time delay to avoid popping). The GasTank can also be wired as true-bypass but only if the ENV jack option is not used. Otherwise, it must be wired as the original. Details about that are in the GasTank doc.

Controls

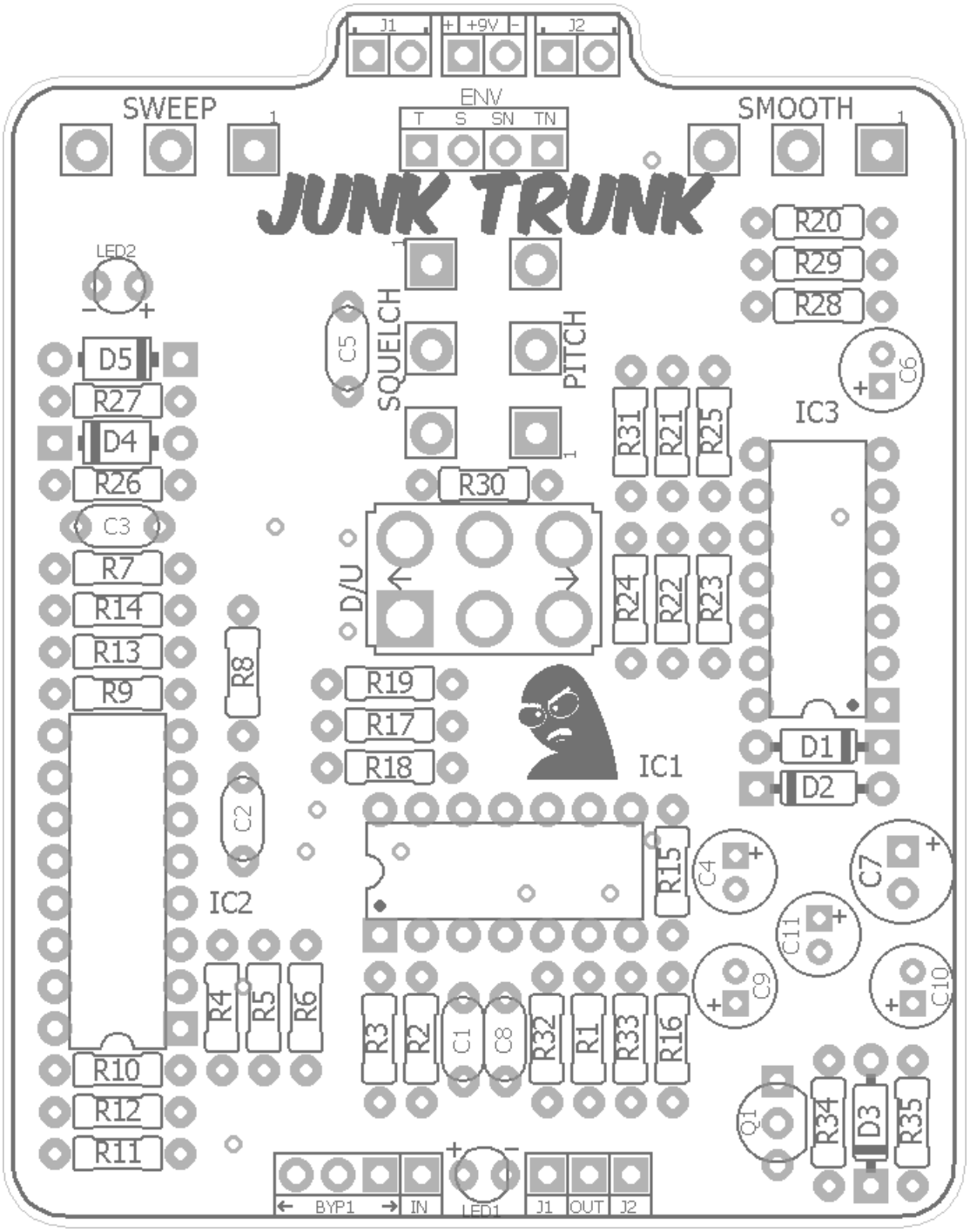
- **PITCH -** Sets the frequency of the swept filter from low to high.
- **SMOOTH -** Sets the length of the swept filter. CCW is short ("jerky") and CW is long ("smooth").
- **SQUELCH -** Adjusts the resonant peak of the swept filter. CCW is low resonance ("subtle") and CW is high ("mayhem").
- **SWEEP -** Determines the range of the swept filter. CCW is narrow, CW is wide.
- **D/U -** Determines the direction of the filter. Left is down, right is up.
- **ENV (optional) -** This jack is used to connect to the Gas Tank (bass fuzz) to allow for more dynamic response in the filter when both pedals are used together. More details in the Notes section.

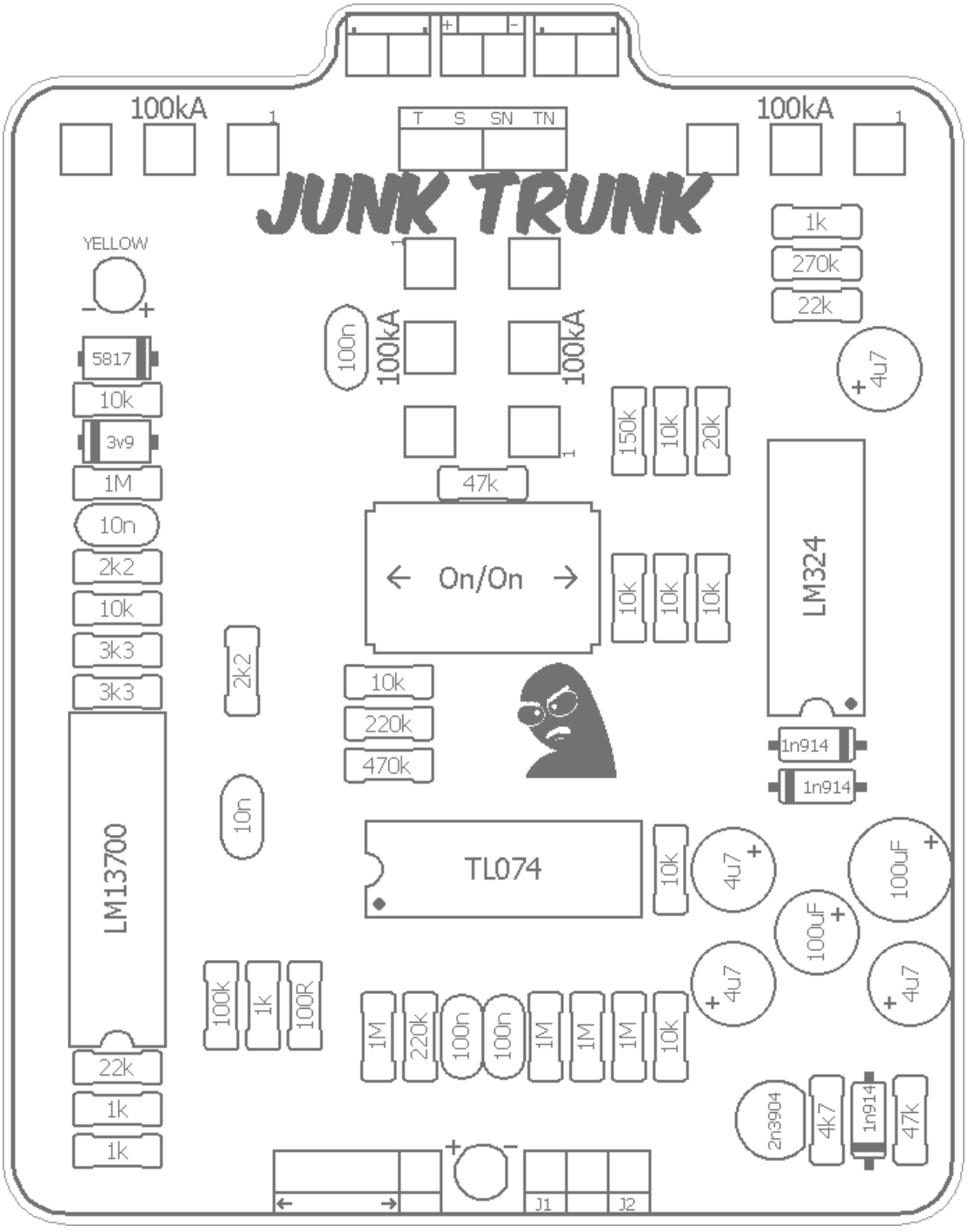
The potentiometer controls in this circuit have some dead spots at the extremes. They don't all "do something" at every setting and sounds need to be dialed in. Particularly, you'll find the Sweep control settings will have a certain range depending on where the Pitch control is set. The Pitch control doesn't really do anything when it's all the way up. Smooth and Squelch also share some interdependency with the other controls, too. IOW, when you encounter this your build is probably working correctly. It's the nature of the design and takes a little getting used to.

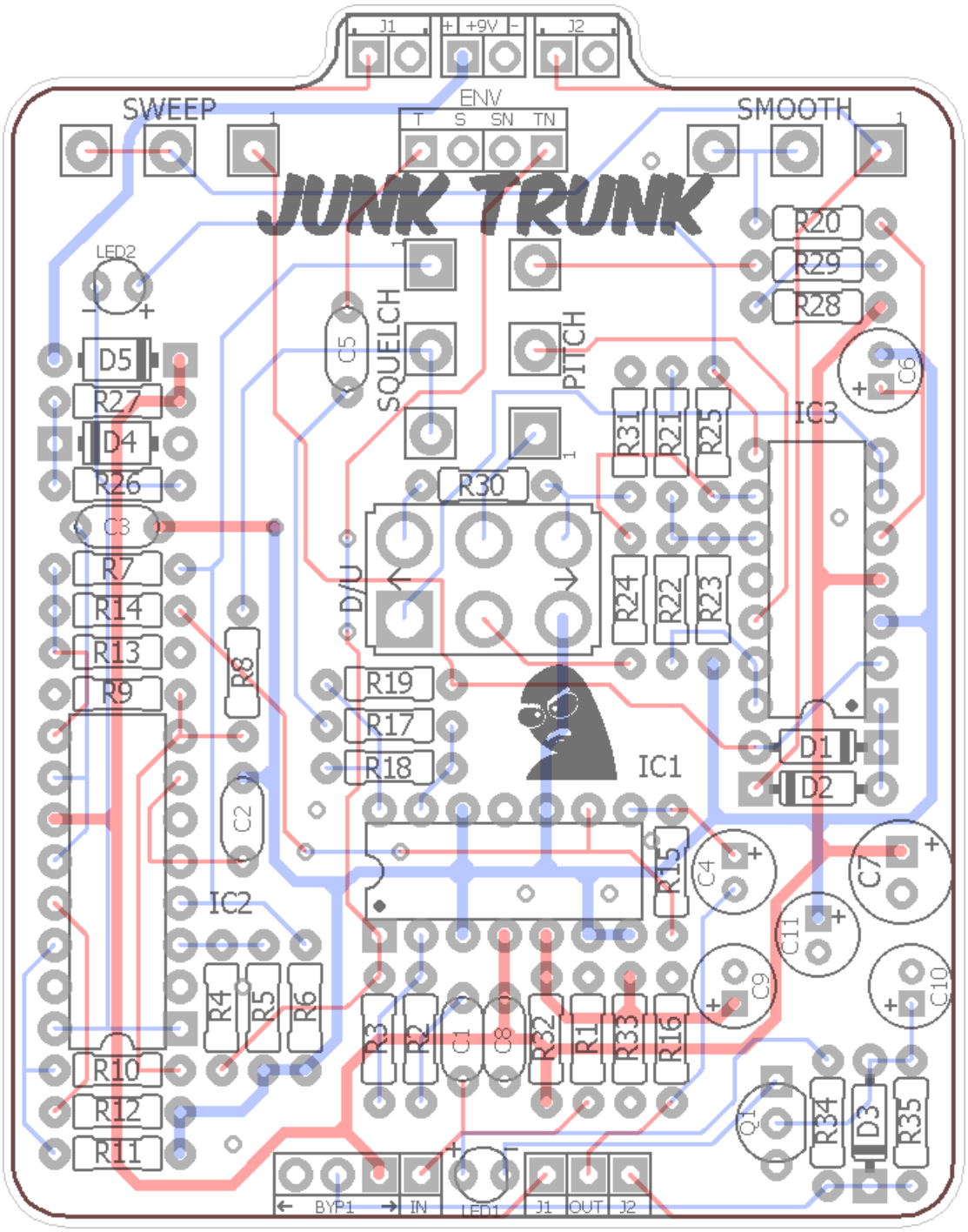
The JunkTrunk (and GasTank) are primarily bass effects. If you do build the JunkTrunk for guitar, I suggest trying smaller values for C2 and C3. This will adjust the center frequency of the filter. Suggested values are 1n through 6n8 (use the same value for both caps). Experiment and find what you like best. The GasTank doesn't sound that great as a guitar fuzz, you can get some neat synth-like settings when you combine it with the JunkTrunk.

This demo will give you a really good idea of how the Agent 00Funk and BrownDog operate and sound: https://www.youtube.com/watch?v=OEHMyviwZMA&t

Technical assistance for your build(s) is available via the madbeanpedals forum. 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.


J1
+9V
J2
SWEEP
ENV
T S SN TN
SMOOTH
JUNK TRUNK
LED2
R20
R29
R28
C6
D5
R27
D4
R26
C3
R7
R14
R13
R9
C5
SQUELCH
PITCH
R30
D/U
R31
R21
R25
IC3
R24
R22
R23
R8
R19
R17
R18
IC1
D1
D2
C2
IC2
R15
C4
C7
C11
C9
C10
R4
R5
R6
R3
R2
C1
C8
R32
R1
R33
R16
R10
R12
R11
Q1
R34
D3
R35
BYP1
IN
LED1
J1
OUT
J2


JUNK TRUNK
100kA
100kA
T S SN TN
YELLOW
5817
10k
3v9
1M
10n
2k2
10k
3k3
3k3
LM13700
22k
1k
1k
100n
100kA
100kA
47k
On/On
2k2
10k
220k
470k
10n
TL074
100k
1k
100R
1M
220k
100n
100n
1M
1M
1M
10k
1k
270k
22k
4u7
150k
10k
20k
LM324
10k
10k
10k
1n914
1n914
10k
4u7
100uF
100uF
4u7
4u7
2n3904
4k7
1n914
47k
J1
J2


J1
+9V
J2
SWEEP
ENV
T S SN TN
SMOOTH
JUNK TRUNK
LED2
SQUELCH
PITCH
D5
R27
D4
R26
C3
R7
R14
R13
R9
R8
C2
IC2
R4
R5
R6
R10
R12
R11
C5
R30
D/U
R19
R17
R18
IC1
R20
R29
R28
C6
IC3
R31
R21
R25
R24
R22
R23
D1
D2
R15
C4
C7
C11
C9
C10
R3
R2
C1
C8
R32
R1
R33
R16
Q1
R34
D3
R35
BYP1
IN
LED1
J1
OUT
J2

Resistors		Caps		Diodes	
R1	1M	C1	100n	D1	1n914
R2	220k	C2	10n	D2	1n914
R3	1M	C3	10n	D3	1n914
R4	100k	C4	4u7	D4	3v9
R5	1k	C5	100n	D5	1N5817
R6	100R	C6	4u7	LED2	YELLOW
R7	2k2	C7	100uF	Transistors	
R8	2k2	C8	100n	Q1	2n3904
R9	3k3	C9	4u7	ICs	
R10	22k	C10	4u7	IC1	TL074
R11	1k	C11	100uF	IC2	LM13700
R12	1k			IC3	LM324
R13	3k3			Switches	
R14	10k			D/U	DPDT
R15	10k			Jacks	
R16	10k			ENV	Mono Jack
R17	220k			Pots	
R18	470k			SMOOTH	100kA
R19	10k			SQUELCH	100kA
R20	1k			SWEEP	100kA
R21	10k			PITCH	100kA
R22	10k				
R23	10k				
R24	10k				
R25	20k				
R26	1M				
R27	10k				
R28	22k				
R29	270k				
R30	47k				
R31	150k				
R32	1M				
R33	1M				
R34	4k7				
R35	47k				

Value	QTY	Type	Rating
100R	1	Metal / Carbon Film	1/4W
1k	4	Metal / Carbon Film	1/4W
2k2	2	Metal / Carbon Film	1/4W
3k3	2	Metal / Carbon Film	1/4W
4k7	1	Metal / Carbon Film	1/4W
10k	9	Metal / Carbon Film	1/4W
20k	1	Metal / Carbon Film	1/4W
22k	2	Metal / Carbon Film	1/4W
47k	2	Metal / Carbon Film	1/4W
100k	1	Metal / Carbon Film	1/4W
150k	1	Metal / Carbon Film	1/4W
220k	2	Metal / Carbon Film	1/4W
270k	1	Metal / Carbon Film	1/4W
470k	1	Metal / Carbon Film	1/4W
1M	5	Metal / Carbon Film	1/4W
10n	2	Film	16v min.
100n	3	Film	16v min.
4u7	4	Electroltyic	16v min.
100uF	2	Electroltyic	16v min.
1n914	3		
3v9	1	1W Zener	
1N5817	1		
LED	1	Yellow, Diffused	5mm
2n3904	1		
TL074	1		
LM13700	1		
LM324	1		
DPDT	1	On/On, Solder Lug	
Mono Jack	1	1/8” (optional)	
100kA	4	PCB Right Angle	16mm

The yellow LED is part of the envelope detector. For a bypass indicator LED, you can use any of the standard 3 or 5mm diffused types.

3.9v 1W Zener:
https://www.mouser.com/ProductDetail/771-1N4730A113/
https://www.taydaelectronics.com/diodes/zener/1n4730-zener-diode-1w-3-9v.html

TL074:
http://smallbear-electronics.mybigcommerce.com/ic-tl074/

LM324:
http://smallbear-electronics.mybigcommerce.com/ic-lm324n/

LM13700:
https://www.mouser.com/ProductDetail/926-LM13700N-NOPB/

LM13600 (sub):
http://smallbear-electronics.mybigcommerce.com/ic-njm13600d/

DPDT (On/On):
http://smallbear-electronics.mybigcommerce.com/dpdt-on-on-solder-term/

16mm PCB Right Angle Pots (100kA):
smallbear-electronics.mybigcommerce.com/alpha-single-gang-16mm-right-angle-pc-mount/

Thinline DC Jack:
http://smallbear-electronics.mybigcommerce.com/dc-power-jack-all-plastic-unswitched-2-1-mm/

Open-Frame Mono (recommended for this build):
http://smallbear-electronics.mybigcommerce.com/1-4-in-mono-nys229/

Optional

1/8” MiniJack:
http://smallbear-electronics.mybigcommerce.com/1-8-mono-pc-mount/

When using the miniJack option, you will need a 1/8” plug to connect the JunkTrunk and GasTank. You can actually use a standard TRS headphone type cable for this. Even though it is stereo, it will connect to the linked jacks as if it were mono.

Something like this will work:
https://www.amazon.com/gp/product/B00NO73IN2/ref=ox_sc_act_title_1?smid=ATVPDKIKX0DER&psc=1

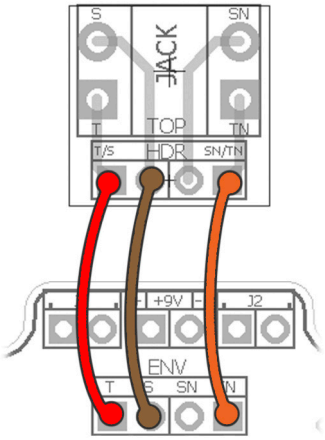
You can also construct your own 1/8” plugs with a couple of these:
http://smallbear-electronics.mybigcommerce.com/1-8-mono-straight/

The ENV jack allows you to alter how the envelope follower operates in the JunkTrunk. As a standalone effect, the envelope follower is keyed off the buffered input of the JunkTrunk. With a clean signal going in the envelope tracks very well to player dynamics. But let's say you are using the companion Gas Tank (bass fuzz) project in front of the JunkTrunk. Now you have a massive squared up fuzz feeding the input of the JunkTrunk and its envelope follower will be less responsive to those same playing dynamics due to the compressed nature of the fuzz.

The ENV jack let's you fix that by taking the same type of buffered input from the GasTank and feeding it directly to the envelope follower of the JunkTrunk. So, you still have the fuzz going into the JunkTrunk, but the envelope reacts as if it's being fed a clean signal. Neat, huh?

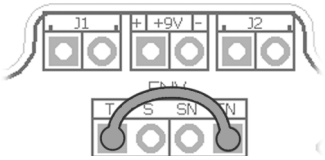
The ENV jack is optional. It's only used if you are planning on building both the Gas Tank *and* JunkTrunk. If you are not building the GasTank do not install the jack. Or, you can choose to build both projects without the envelope jack. They will work together without it. I think it's well worth the few added dollars to include it since it adds another dimension to the fuzz/envelope combo.

The miniJack "Breadbuddy" PCB is included with both the JunkTrunk and GasTank. This makes the wiring easier.



Solder the 1/8" jack to the included miniJack PCB first.

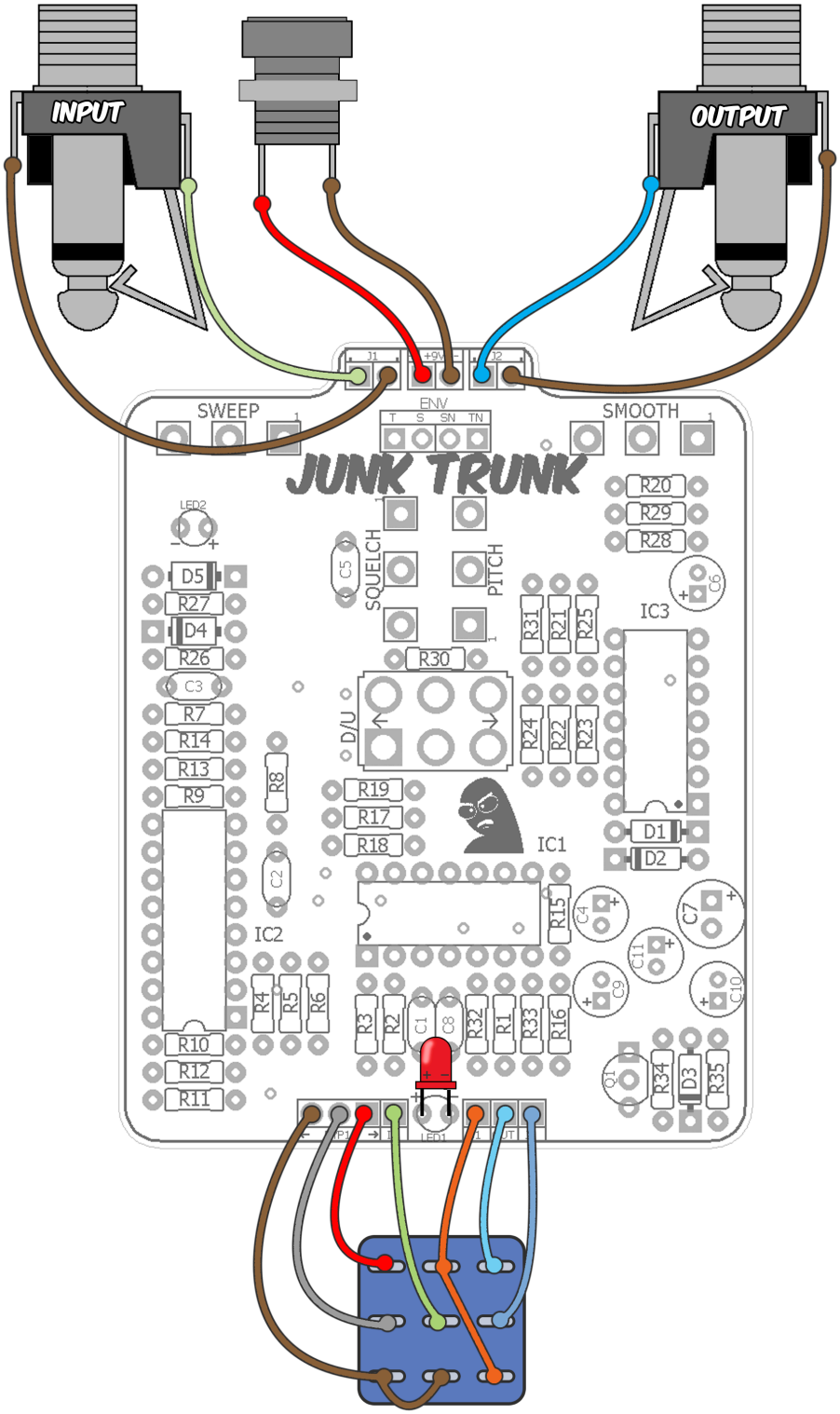
Wire the two PCBs together as shown. You do not need to connect the "SN" pads together in this case.



If you are not using the miniJack, solder a jumper between the two outside pads on the JunkTrunk (T and TN).

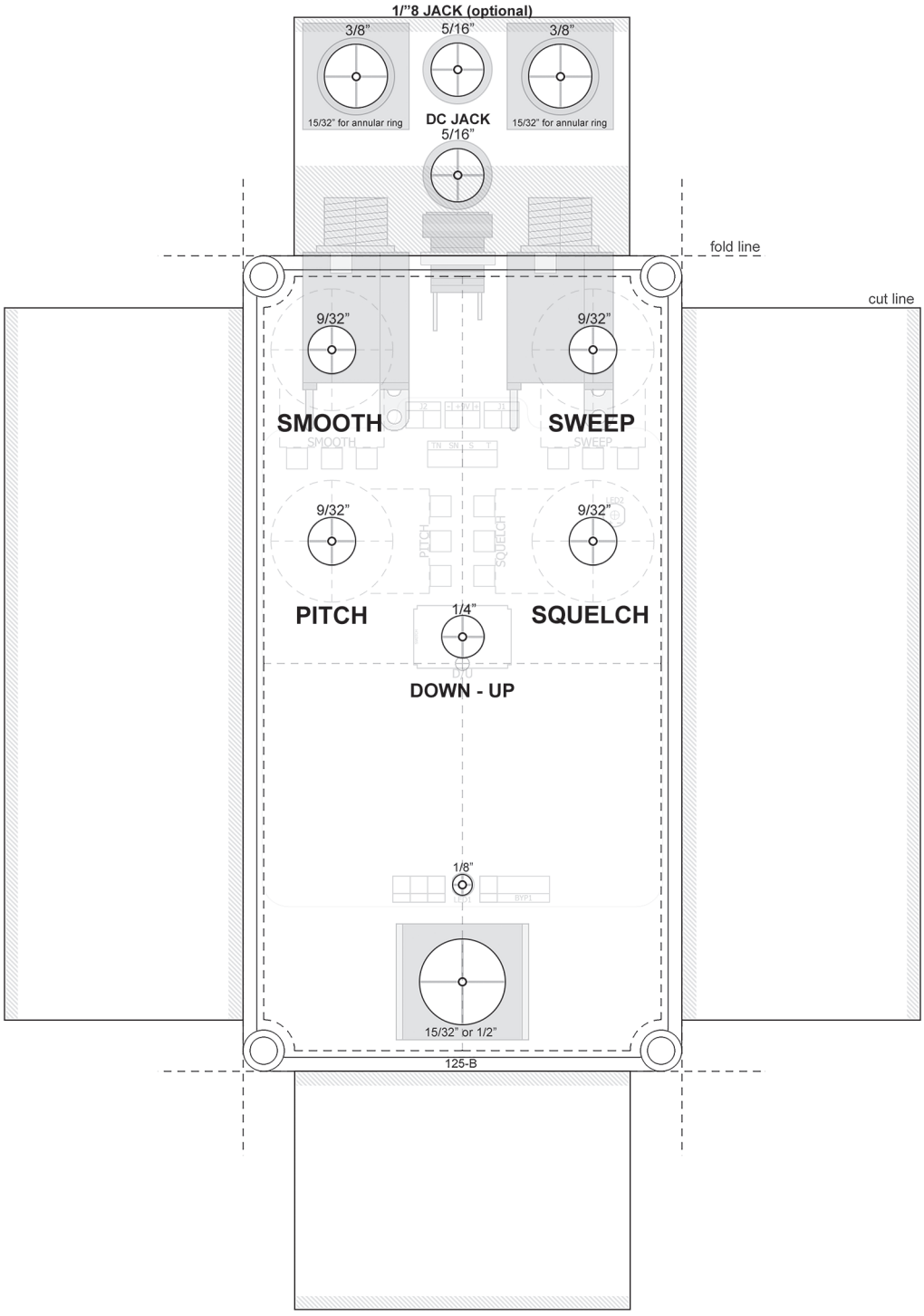
PS: It may be possible to use a 1/4" jack in place of the 1/8" one and just use a standard pedal patch cable. You'll need to alter the drilling diagram later on in this doc to do so. Best bet is to put the third 1/4" jack near the spot on the drilling diagram where the DC jack is, and then move the DC jack between the input and output. You'll need to use a switched jack like this: smallbear-electronics.mybigcommerce.com/1-4-mono-enclosed-nmj4hcd2/

Spend some time to get the drill spots correct so everything fits. Good luck!



- The JunkTrunk is wired for true bypass rather than the wiring used on the original Agent 00Funk.
- See Notes for 1/8” mini jack wiring.

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



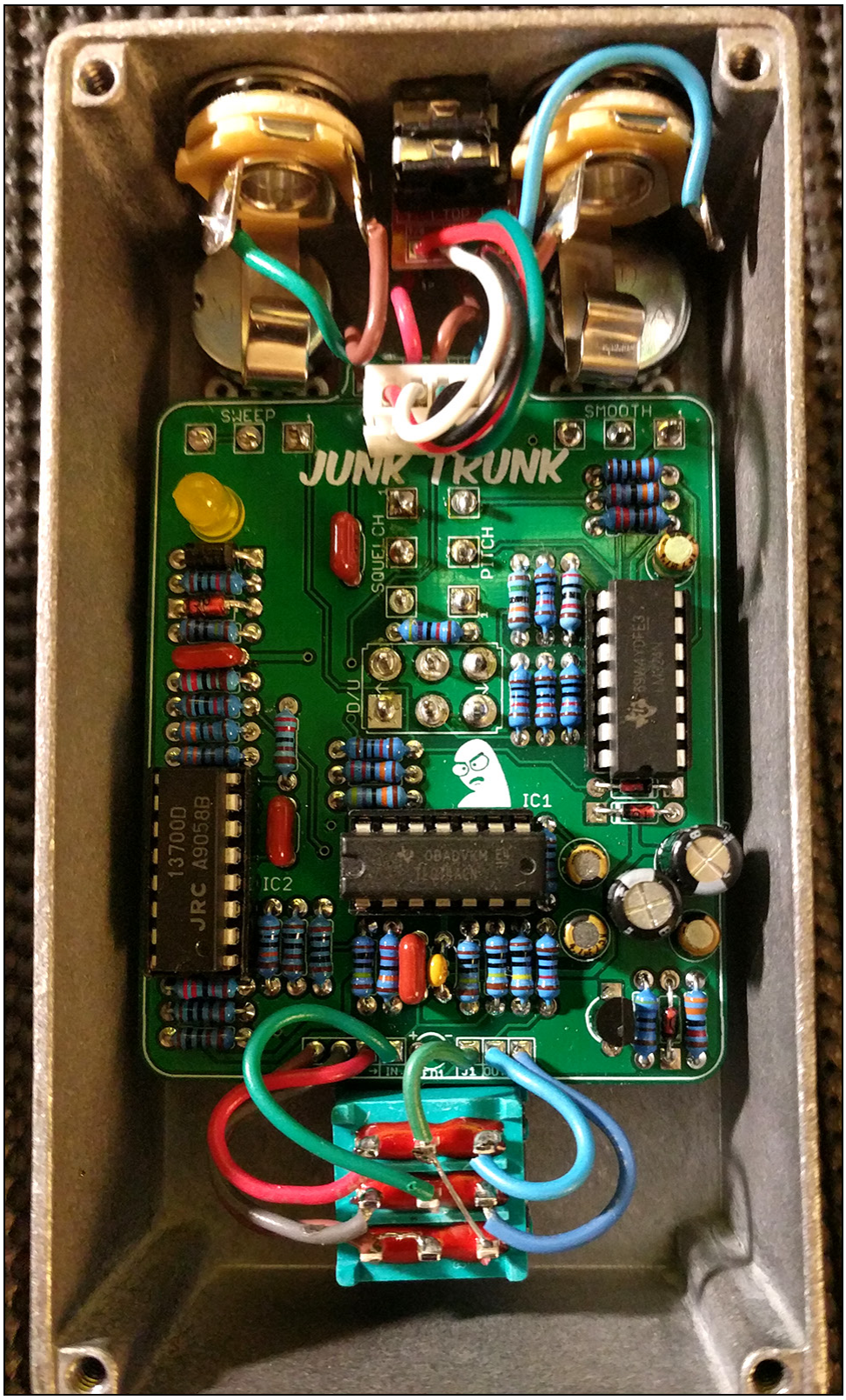
- Although this template shows enclosed jacks I recommend open frame jacks like the Neutriks for this build. When installing the PCB in the enclosure, first wire the DC jack. Then mount the 1/8” jack to the enclosure. Finish by mounting the 1/4” jacks. It’s a close fit (four different jacks at the top!) but goes together smoothly if you do it in that order.

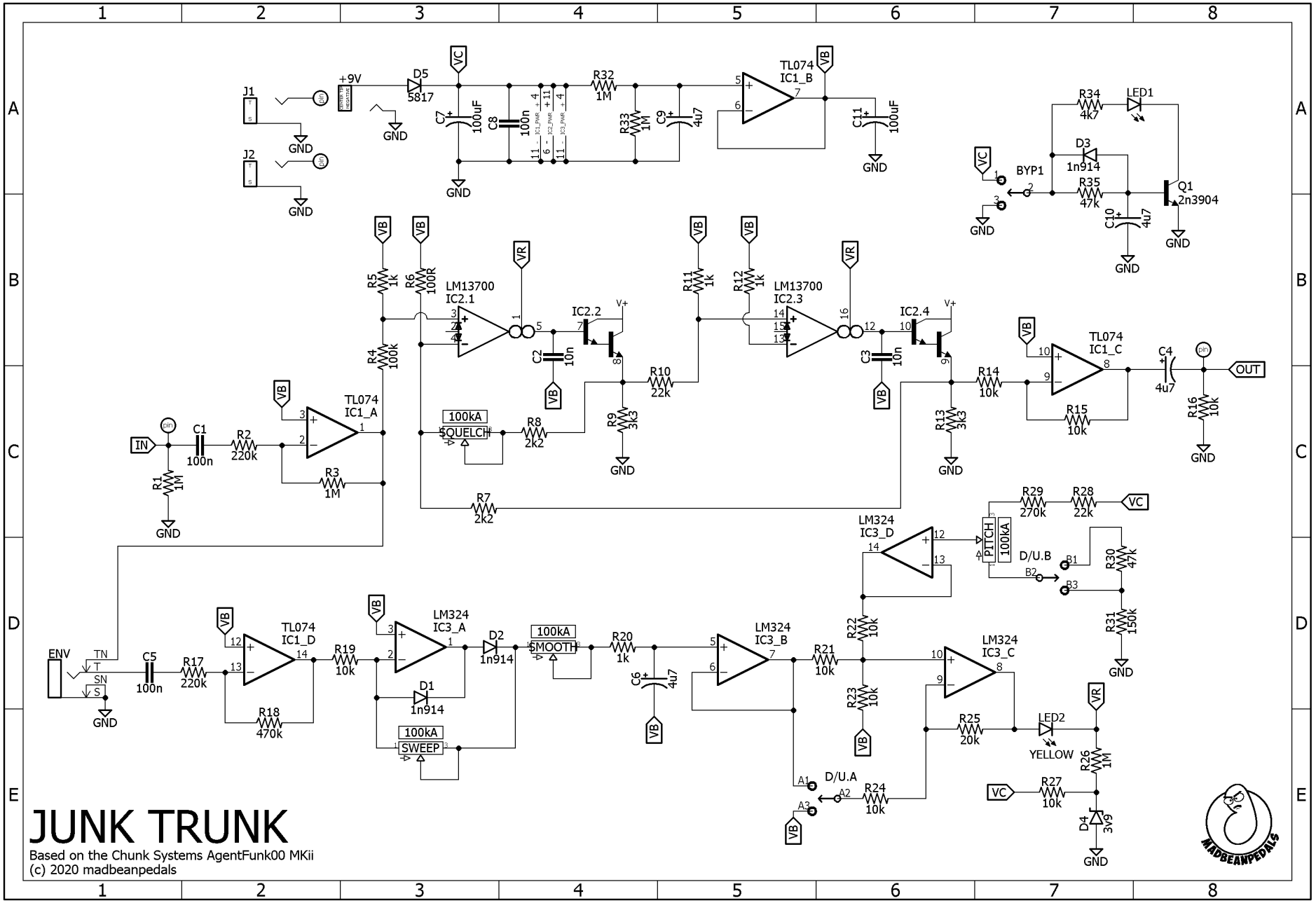
IC1	TL074
1	4.55
2	4.58
3	4.55
4	9.14
5	4.35
6	4.55
7	4.56
8	4.6
9	4.56
10	4.56
11	0
12	4.56
13	4.61
14	4.56

IC2	LM13700
1	1.3
2	ignore
3	4.56
4	4.56
5	5.76
6	0
7	5.76
8	4.57
9	4.54
10	5.74
11	9.14
12	5.74
13	4.56
14	4.56
15	ignore
16	1.26

IC3	LM324
1	4.65
2	4.55
3	4.56
4	9.14
5	4.76
6	4.76
7	4.76
8	3.09
9	4.2
10	4.2
11	0
12	3.24
13	3.3
14	3.3

- 9.42vDC One Spot
- Current Draw: ~20mA
- Testing conditions: pots 1/2up, toggle switch left side.


SWEEP
SMOOTH
JUNK TRUNK
SQUELCH
PITCH
D/U
IC1
IC2
13700D
JRC A9058B


JUNK TRUNK
Based on the Chunk Systems AgentFunk00 MKii
(c) 2020 madbeanpedals
+9V
D5
5817
J1
J2
GND
VC
VB
VR
C7 100uF
C8 100n
C9 4u7
C11 100uF
R32 1M
R33 1M
TL074 IC1_B
R34 4k7
LED1
D3 1n914
R35 47k
Q1 2n3904
BYP1
C10 4u7
R5 1k
R6 100R
R4 100k
LM13700 IC2.1
IC2.2
C2 10n
R10 22k
R11 1k
R12 1k
LM13700 IC2.3
IC2.4
C3 10n
R13 3k3
R14 10k
R15 10k
R16 10k
C4 4u7
OUT
TL074 IC1_C
IN
C1 100n
R1 1M
R2 220k
R3 1M
TL074 IC1_A
100kA SQUELCH
R8 2k2
R9 3k3
R7 2k2
R29 270k
R28 22k
LM324 IC3_D
PITCH 100kA
D/U.B
R30 47k
R31 150k
ENV
TN
SN
C5 100n
R17 220k
R18 470k
TL074 IC1_D
R19 10k
LM324 IC3_A
D2 1n914
D1 1n914
100kA SMOOTH
100kA SWEEP
R20 1k
C6 4u7
LM324 IC3_B
R21 10k
R22 10k
R23 10k
LM324 IC3_C
R25 20k
LED2 YELLOW
R26 1M
R27 10k
D4 3v9
D/U.A
R24 10k
MADBEANPEDALS