Bazz Fuss

A SINGLE-TRANSISTOR FUZZ, ON A BREADBOARD // BREADBOARD BUILD SHEET // MESS O' PEDALS

Build the Bazz Fuss - about the smallest real fuzz there is: one transistor, one diode, one resistor, two caps - on a breadboard in ten minutes. Printable build sheet with the full parts list, a troubleshooting table, and a nastier Darlington version.

Parts

☐	1x 2N3904 or 2N5088 NPN transistor, TO-92 - spot it: the little half-cylinder with three legs and one flat face , part number printed on the flat
☐	1x 1N914 or 1N4148 silicon diode - spot it: a tiny glass bead with a band at one end ; the band marks the cathode, and where it points is the whole build
☐	1x 100K resistor - spot it: bands brown-black-yellow, or meter it
☐	1x 100nF film or ceramic - input cap. Spot it: printed 104 . Either way round
☐	1x 4.7 uF electrolytic - output cap. Spot it: a little can; the stripe marks the minus leg , longer leg is +
☐	1x 100K pot - volume. Spot it: marked B100K
☐	1x 100 uF electrolytic - supply smoothing. Same stripe rule
☐	1x jumper wire - yes, just the one
☐	Breadboard, 9V supply, two jacks - input and output
☐	For the optional nastier version: 1x MPSA13 Darlington transistor and 1x 10K resistor (bands brown-black-orange)

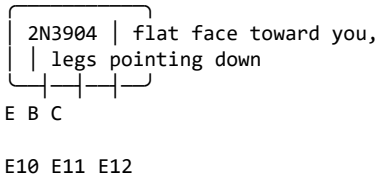
Before you start

Two parts care which way round they go : the diode (the band goes toward the base - backwards and nothing works at all) and the two electrolytics (the stripe marks the minus leg). Get those right and there's nothing here that can hurt you or the parts.

Mind your power leads - 9V positive to the + rail, negative to the - rail, and nothing in this build should ever get warm.

If you power it from a salvaged lithium pack, the usual cell cautions apply - see Do You Want to Survive the Vapocalypse?

The chip, from above



Emitter, base, collector - left to right, flat face toward you. Swap them and the fuzz stays silent. The diode's band goes toward the base (column 11).

Build

Steps 1-3 The semiconductors

Transistor first, then the jumper that ties its emitter down, then the diode. Get the three legs the right way round and the rest of this build is pushing parts into rows.

There is no bias network here, which is the whole trick. The diode in step 3 does two jobs at once: it trickles just enough current into the base to switch the transistor on, and it clips the signal at the same time. That is why the orientation matters so much and why the circuit is so short.

	STEP	DO
☐	1	Hold the transistor with the flat face toward you and the legs pointing down. Left to right the legs are emitter, base, collector . Spread them and push them into E10 , E11 and E12 in that order

	2	Jumper: A10 to the - rail (emitter)
	3	Diode : C12 to C11 , with the banded end in C11 . The band goes toward the base. Backwards and nothing works at all

Steps 4-7 The passives

Resistor, then the film cap, then the two electrolytics. Same order every time, so you can see at a glance what is still missing from the board.

	STEP	DO
	4	Resistor 100K : B12 to the + rail
	5	Cap 100nF : D4 to D11 . Either way round
	6	Cap 4.7 uF , + leg in D12 , other leg in D20
	7	Cap 100 uF , + leg in the + rail , other leg in the - rail

Steps 8-13 Off the board: pot and jacks

Nothing else goes into the breadboard. The volume pot and both jacks live on flying leads, so this is the part you unplug when you want the board back.

	STEP	DO
	8	Wire: A20 to either outer lug of the volume pot
	9	Wire: the volume pot's other outer lug to the - rail
	10	Wire: the volume pot's middle lug to the output jack tip
	11	Wire: output jack sleeve to the - rail
	12	Wire: input jack tip to A4
	13	Wire: input jack sleeve to the - rail

Step 14 Power up

	STEP	DO
	14	Power: 9V positive to the + rail , negative to the - rail

Optional A nastier version

Swapping the transistor for a Darlington - two transistors in one package - raises the gain enormously. It needs a smaller collector resistor to stay usable.

The 100K belongs to the plain transistor version and the 10K to the Darlington. Using the wrong one is why most Bazz Fuss builds on the internet are reported as too quiet or too wild.

	STEP	DO
	15	Replace the transistor in step 1 with an MPSA13 , same leg order, same three rows
	16	Replace the 100K in step 4 with a 10K resistor , same two points

If it doesn't work

SYMPTOM	CHECK
No sound at all	Step 3, the diode is backwards. This is the fault almost every time.
Still no sound with the diode right	Step 1 - the transistor legs are in the wrong order. Emitter, base, collector, left to right, flat face toward you.
Notes choke off and die early	That's the circuit, not a fault. Roll your guitar volume back if you want less of it.

Very dark and woolly	Step 5. Try 10nF (printed 103) instead for a thinner, spikier sound.
Thin and weak	Step 5 the other way - try 1 uF.
Hiss and squeal with nothing plugged in	Transistor gain too high for this build. Try a 2N3904 instead of a 2N5088.

Things to try

- Swap the diode. A germanium 1N34A is softer and quieter, an LED clips higher and louder and cleans up more, two silicon diodes in series gets closer to a proper fuzz.
- Tame the gate. Add a resistor from A10 to the - rail instead of the jumper in step 2. Anything from 100 ohms to a few K drags it from fuzz back toward overdrive.
- Starve it. Run it on less than 9V. Four or five volts is where it gets properly sick.
- Turn it up. Put it in front of the mini amp and turn both up.