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diyAB Amp, aka. The Honey Badger

Name	diyAB Amp, aka. The Honey Badger
Type	Solid state
Application	Driving loudspeakers
Class	A/B
Approx Cost	it depends
Designer	ostripper
Thread	main thread and build thread and discussion of diyAudio Store boards

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The Project

The first Class AB power amplifier to be featured at the diyAudio Store. It has been designed from the ground up with the sonic character, power output and most of all the DIYer in mind. With a basic power output of 150W at 8 ohms, this power amp is sure to have a place in every builder's projects list. Not to mention its flexibility and adaptability to work with most output devices available locally in wherever country you may be.

Schematic/Blueprint

Bill of Materials

[mbrennwa](#) Jan-2017

These part values are based on the [build guide for version V2.0](#), the version V2.4 schematic, and a few small modifications as described in the comments.

Part	Value / Description	Comments
Transistors		
Q1, Q2	SS9014	
Q3, Q4, Q7, Q8	KSC1845	
Q5, Q6, Q9	KSA992	
Q10	MJE350	
Q11, Q12, Q13	MJE340	
Q14	MJE15032	
Q15	MJE15033	
Q16, Q17, Q18	MJL4281	Higher SOA than standard choice in build guide
Q19, Q20, Q21	MJL4302	Higher SOA than standard choice in build guide
Diodes		
D1, D2	1N914	
D3 (Cascode voltage reference)	1N4744A	Omit R18 and replace it with Zener diode (D3), use jumper "Z" (cascode / current mirror)
D4, D5, D8, D9	1N5408	
D6	LED red 3mm	
D7	LED blue 3mm	
BAKER CLAMP "D-BC" DIODE	BAV21	
Resistors		
R1, R52	100 k Ω / 0.25 W	
R2, R5, R22, R24	820 Ω / 0.25 W	
R3, R6	22 k Ω / 0.25 W	22 k Ω for lower overall gain (more feedback): gain = 1+(R6/R5) = 27.8 *** measured (150 Hz sine): V-in = 0.342 VAC, V-out = 9.1 VAC ==> gain = 9.1/0.342 = 26.6

R4	4.7 $\hat{\text{I}}\odot$ / 0.25 W	
R7	200 $\hat{\text{I}}\odot$ multi turn trimmer	
R8, R9, R15, R16, R26	100 $\hat{\text{I}}\odot$ / 0.25 W	
R10	22 $\hat{\text{I}}\odot$ / 0.25 W	
R11	10 k $\hat{\text{I}}\odot$ / 0.25 W	
R12	10 k $\hat{\text{I}}\odot$ / 0.25 W	
R13	15 k $\hat{\text{I}}\odot$ / 0.25 W	
R14, R28	2.2 k $\hat{\text{I}}\odot$ / 0.25 W	
R17	1 k $\hat{\text{I}}\odot$ multi turn trimmer	
R51	22 k $\hat{\text{I}}\odot$ / 0.25 W	
R19	68 k $\hat{\text{I}}\odot$ / 0.25 W	
R20, R21, R25	220 $\hat{\text{I}}\odot$ / 0.25 W	
R23	47 $\hat{\text{I}}\odot$ / 0.25 W	
R24	1.5 k $\hat{\text{I}}\odot$ / 0.25 W	
R26	10 $\hat{\text{I}}\odot$ / 0.25 W	
R27	51 $\hat{\text{I}}\odot$ / 0.25 W	For approx. 10 mA current in $\hat{\text{I}}\odot$ CCS
R29	680 $\hat{\text{I}}\odot$ / 0.25 W	
R30	500 $\hat{\text{I}}\odot$ multi turn trimmer	
R31	15 $\hat{\text{I}}\odot$ / 0.25 W	
R32, R33, R34, R35	22 $\hat{\text{I}}\odot$ / 0.5 W	
R53, R54	22 $\hat{\text{I}}\odot$ / 0.5 W	
R36	150 $\hat{\text{I}}\odot$ / 1 W	
R37, R38, R39, R40, R41, R42	2.2 $\hat{\text{I}}\odot$ / 0.5 or 1 W	
R43, R44, R45, R46, R47, R48	0.22 $\hat{\text{I}}\odot$ / 3 or 5 W	KOA Speer seem to be the same thing as KIWAME
R49, R50	10 $\hat{\text{I}}\odot$ / 3 W	

Capacitors

C1	MKP, 4.7 $\hat{\text{A}}\mu\text{F}$ / 35 $\hat{\text{A}}\text{V}$	Audio input capacitor
C2	Silver Mica, 270pf / 50V - 100V	
C3, C10, C12, C14, C16, C21	MKP, 100nf / 63V $\hat{\text{A}}\text{V}$ 100V (C21: 250V)	C3: bypass for C4
C4	Non-Polar Electrolytic , 220uf / 50V $\hat{\text{A}}\text{V}$ 100V	Feedback loop
C5	Electrolytic, 100 $\hat{\text{A}}\mu\text{F}$ / 63V - 100V	
C6	Film, 220nf / 35V - 50V	
C7	Silver Mica, 100pf / 300V - 500V	
C8	Silver Mica, 470pf / 300V - 500V	
C9	Electrolytic, 22uf / 35V - 50V	
C11, C15	Electrolytic, 220uf / 63V - 100V	
C13, C17	Electrolytic, 470uf - 1000uf / 63V $\hat{\text{A}}\text{V}$ 100V	
C18, C19	Silver Mica, 47pf / 300V - 500V	
C20	Film, 680nf - 2.2uf / 100V	
LC Cap	Silver Mica, 5pf / 300V - 500V	Don't install the LC cap, the amp sounds better without it

Power Supply

The Honey Badger will work with rail voltages from +/-30VDC to +/-70VDC (see <http://www.diyaudio.com/forums/solid-state/211905-diyab-amp-honey-badger-build-thread-102.html#post3873478>). The build guide describes a linear power supply with +/-63VDC rails using a 800VA transformer with 45-0-45 VAC secondaries. Recommended capacitance is a total of 40'000 $\hat{\text{A}}\mu\text{f}$ per rail.

Simulations and Analysis

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Construction (Steps / Tips / Notes)

There are a number of options to consider when building the Honey Badger amp. First of all, read the build guide, which has a thorough description of most options.

This post also has some useful comments: <http://www.diyaudio.com/forums/solid-state/211905-diyab-amp-honey-badger-build-thread-48.html#post3598622>

Project Modifications

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Modification 1

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Modification 2

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Build Threads

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