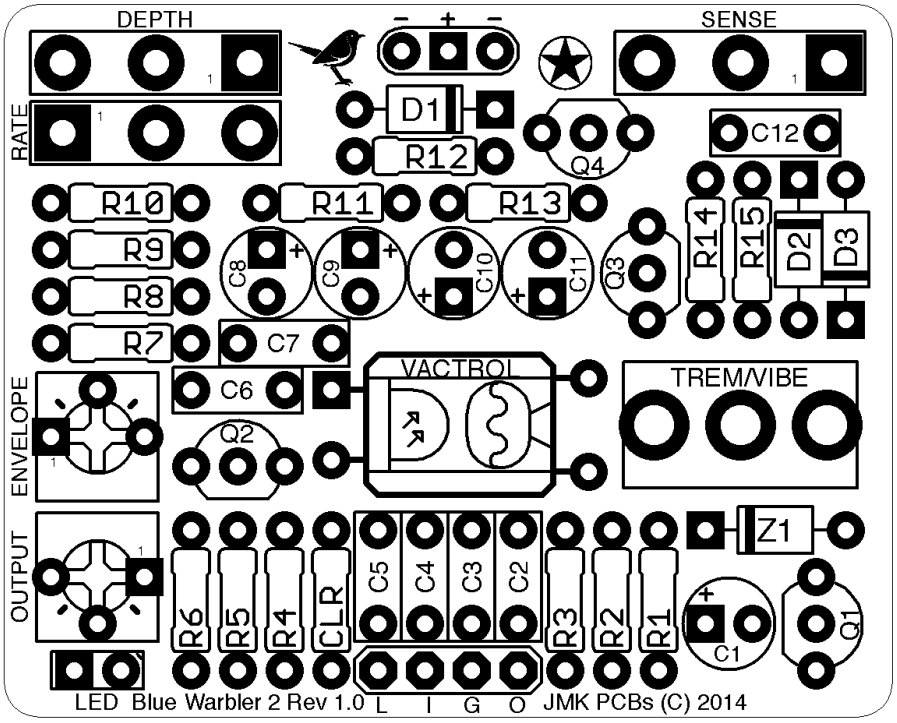
JMK PCBS PRESENTS...

BLUE WARBLER 2

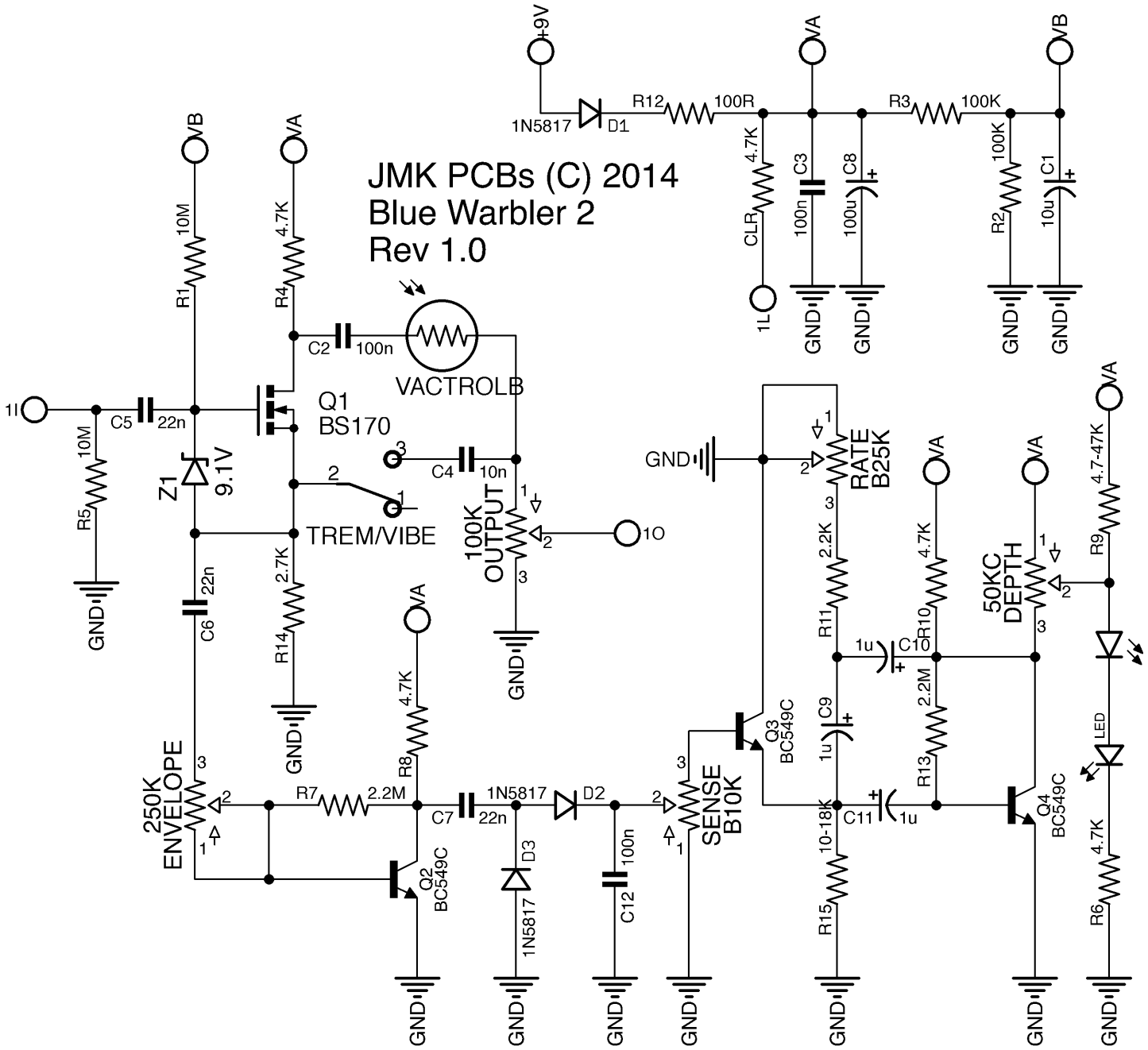
PCB AND SCHEMATIC ARTWORK (C) 2014 JMK PEDALS

VERSION 1.0: 09/19/2014



Resistors				Capactitors				Semiconductors	
R1	10M	R9	4.7-47K	C1	10u	C7	22n	Q1	Mosfet*
R2	100K	R10	4.7K	C2	100n	C8	100u	Q2-Q4	NPN*
R3	100K	R11	2.2K	C3	100n	C9	1u	LED	Ultra-Bright
R4	4.7K	R12	100R	C4	10n	C10	1u	D1	1N4001
R5	10M	R13	2.2M	C5	22n	C11	1u	D2, D3	1N5817
R6	4.7K	R14	2.7K	C6	22n	C12	100n	Z1	9.1V
R7	2.2M	R15	10-18K	Other				Potentiometer	
R8	4.7K	CLR	4.7K	VACTROL		See Notes*		DEPTH	50KC
Switch				OUTPUT		100K trimpot		RATE	B25K
TREM/VIBE		SPDT on/on		ENVELOPE		250K trimpot		SENSE	B10K

* = See Notes



Build Notes

• The Blue Warbler is a very unique modulation effect. It feature an envelope controlled LFO that can provide both a vibrato and a tremolo effect. In essence, it's a combination effect, based on a classic analog circuit, but with some awesome new features you won't see elsewhere.

• Much of the credit for this project goes to Jon Patton, who designed, and then redesigned the effect. JMK PCBs is privileged to have access to and the willingness of Jon in releasing this effect in our shop.

• The key to this circuit is the vactrol. As mentioned in the BOM above, you should be reading this note for details on what to be using! Here's some notes:

  • The VTL5C1 is our top recommendation. If you're willing to spend money on a vactrol, this is what we suggest you use.

  • The VTL5C3 is another great option. In many ways, it's similar to the 5C1, so if you can't find the first, the 5C3 is pretty much identical in this circuit

  • There are Macron clones of the above two vactrols available at Smallbear. The clone of the 5C1 is the 'E' version, and the 5C3 is the 'F' version

  • There are a number of alternative vactrols available, including the Silonex and CDS types from Smallbear. In some cases they work great, in some cases they work 'ok.' If you can't get one of the above vactrols, send 'midwayfair' a message through the Madbean forums for recommendations, or contact us at jmkpcbs@gmail.com

  • It is entirely fine to 'roll your own' vactrol. To do so, you'll need a good blue LED and some LDRs. Tayda, Smallbear, and a number of other suppliers have options to try, and most have worked ok for us.

  • Do not try and use an integrated version like the H11F1 - they don't work well.

• For Q1, a Mosfet is used. A 2N7000 or a BS170 will work, but the 170 will need to be flipped 180 degrees from the silkscreen.

• For Q2-Q4, NPN transistors are needed. Our top recommendation is the BC549C (although a B works well too), although a 2N5088 will work well also. If you use the 549, keep in mind that the transistor will need to be flipped 180 degrees.

• There is a place for an LED in the lower left corner of the PCB. This LED is needed for the circuit to work, so do not leave it out. It is up to you if you choose to use this as a n external LFO speed indicator, or simply leave it on the PCB. We do not recommend using it as a bypass indcator LED.

• Hooking up the PCB is pretty simple, but to clarify: L = the connection for the + end of an LED; I = PCB Input; G = Ground for the Switch; O = PCB Output; + = 9V input; - = Ground for DC Jack; GND = Extra Ground for 1/4" Jack

• The semiconductors used in this project are very influential on the tone and character of the drive. Keep in mind that the pinout any transistor needs to be considered when installing, and w**e highly recommend socketing your transistors and vactrol!** Socketing these parts will enable you to replace backwards or damaged parts.

True Bypass Wiring Diagram