

Construction Notes:

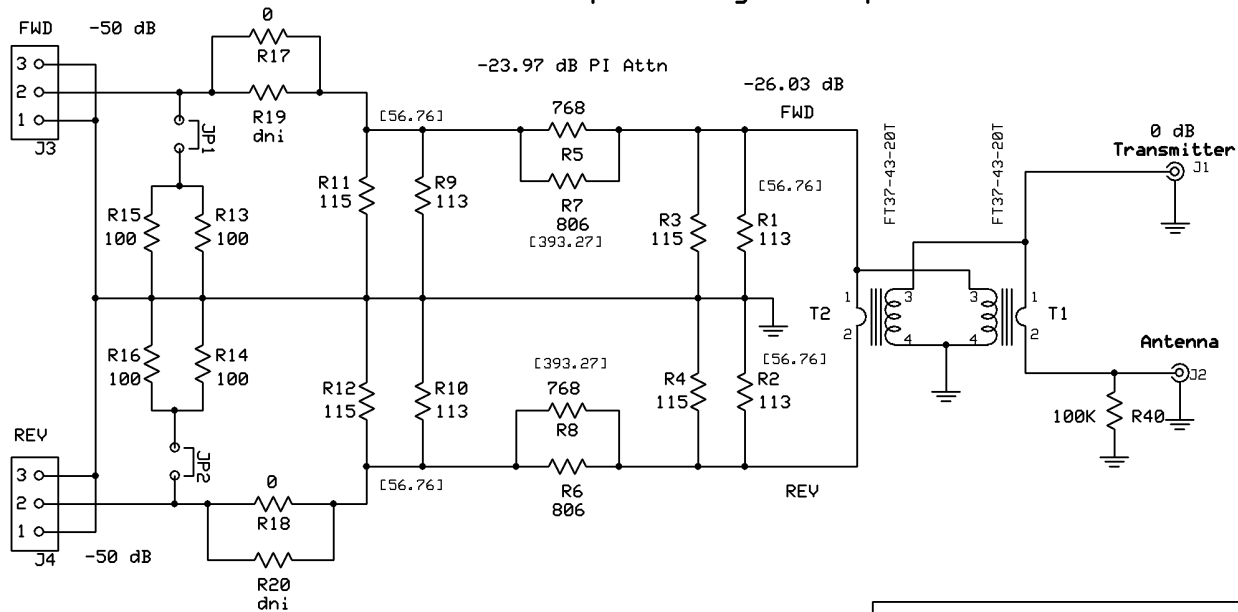
1. R3, R4, R7, R8, R11, R12, R15, R16, 19 & 20 are all located on the bottom side.
2. J1 & J2 can be an end launch BNC or SMA. Mounted in a box any connector can be used with wire or Co-Ax to the PCB.
3. R1, 2, 3, 4 are 0.25 Watt. With 2 in parallel they are a Termination @ 0.5 Watt.

Note: $100 \text{ W} = 50 \text{ dBm}$ $-26.03 \text{ dB} = 24.97 \text{ dBm}$ or 0.249 Watts

4. All 4 ports of the coupler must be terminated with a load that reflects 50 Ohms at the appropriate wattage.
5. Both T and PI attenuators are supported. Two resistors at each position allow for various resistance &/or power.
6. JP1,2 and R13 - 16 can be used for local terminations. [optional]
7. Values shown below are for a total of -50 dB . 26.03dB from the coupler and 29.97 dB from the PI pad.

If 100 W is applied [$+50\text{dBm}$] then 1mw [0dBm] will appear at the out put.

The circuit below is a Zero Degree DIRECTIONAL Coupler
 It senses the power from the input to the output [Tx to Ant]
 With 20 Turns on T1 & T2 the Isolation is 26.03 dB
 Since the circuitry is symmetrical the input and outputs can be reversed.
 When reversing the input and output [Tx & Ant] it is called a 180 Degree Coupler
 You may want to look at Michael Ellis's page for a complete analysis
<http://michaelgellis.tripod.com/direct.html>



Directional Coupler

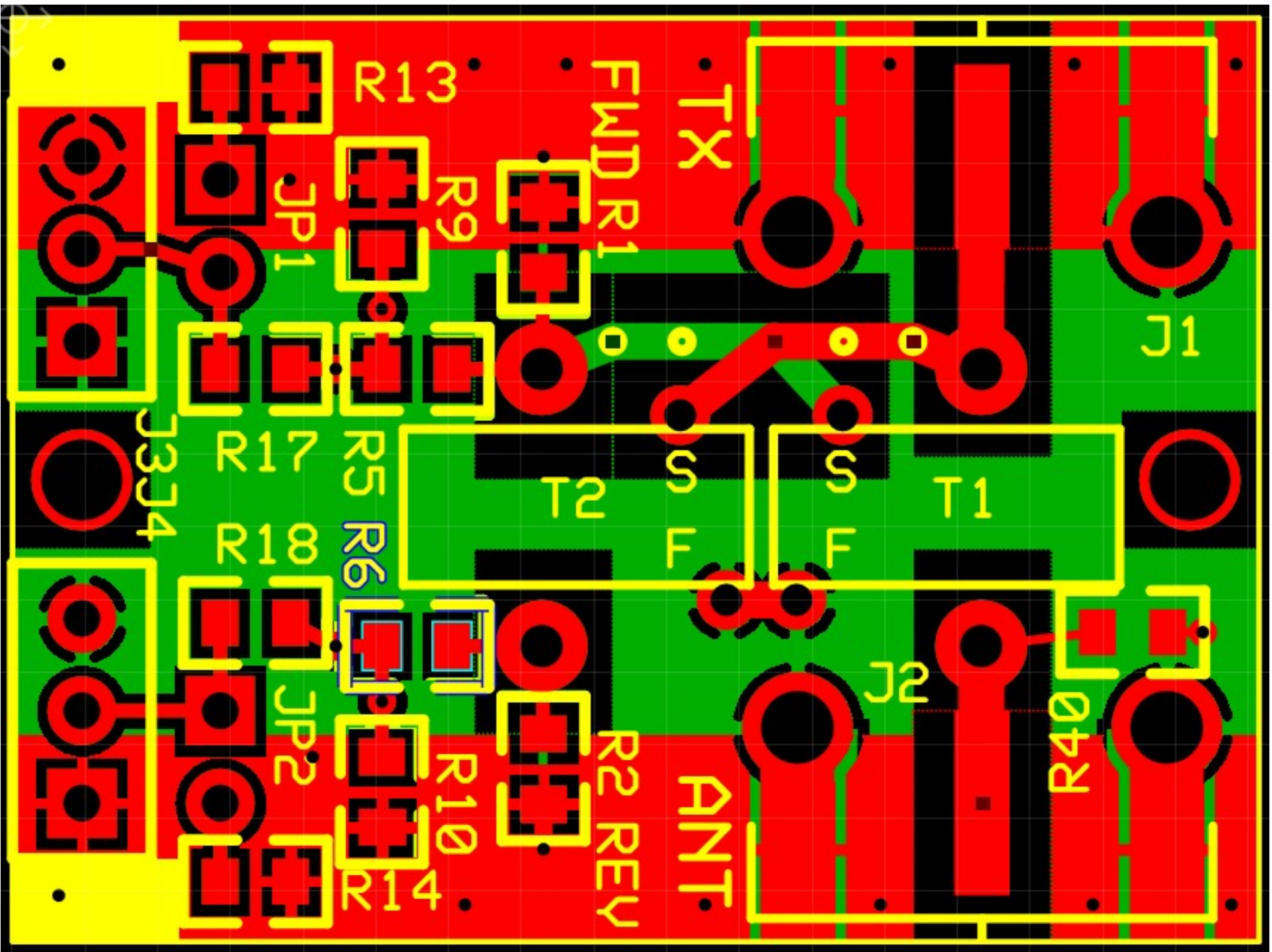
PWR, SWR, Pure Signal & Others

K9IYB

Rev 1.0

7/3/2019

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New Directional Coupler BOM

							Current 2019 \$ 1 @ \$x.xx	
		Part #	Mfg	Mouser	Pkg	Qty	Note	
J1, J2	RF Connectors / Coaxial Connectors 50 OHM BNC V- BITE	361V504ET	Bomar Interconnect	678-361V504ET	V-Bite	2		\$9.13
			Winchester Interconnect / Bomar	991-1037-ND			Digi Key	\$6.69
		361V504ET	Bomar Interconnect	80K0247			Newark	\$3.01
J3, J4	3 PIN		MOLEX			2		
JP1, JP2	2 pin with shunt or wire jumper							
R1, R2, R3, R4	Thick Film Resistors - SMD 113 ohms 1%		KOA Speer		R0805	4		
R5, R6	Thick Film Resistors - SMD 768 ohm 1%		KOA Speer		R0805	2		
R7, R8	Thick Film Resistors - SMD 806 ohm 1%		KOA Speer		R0805	2		
R9, R10	Thick Film Resistors - SMD 113 ohm 1%		KOA Speer		R0805	2		
R11, R12	Thick Film Resistors - SMD 115 ohm 1%		KOA Speer		R0805	2		

R17, R18	Thick Film Resistors - SMD 0 ohm or wire jumper		KOA Speer		R0805	2	
R19, R20	do not insert				R0805	2	
R13, R14, R15, R16	Thick Film Resistors - SMD 100 ohm 1%		KOA Speer		R0805	2	
R40	Thick Film Resistors - SMD 1/8watts 100Kohms 5%		KOA Speer		R0805	1	
T11, T12	FT50-43-20T #22ga 15" - 1T secondary from RG6 #18ga	1T through center made from RG6 center conductor and insulator - Braid removed		FT50-43		2	Kits and Parts
	Alternate parts						
J1, J2	RF Connectors SMA ST PCB- JCK BHD EMT I- AU Gold w/hard	73251-1290	Molex	538-73251-1290		2	\$6.61 end launch bulkhead with hardware
	2-56 screw and nut for chassie mount	Can put on #4 spacer				2	