

## YCCC 6 Band Receive Bandpass filter

Based on W3LPL filter design By K1NQ 3/2007

This is a 6-band **receive** only filter designed to protect your receiver front end and provide 45dB reject at the stop bands. Stop band reject may be limited by the relay isolation. Worst case isolation is at 28 MHz or 35 dB or better. Relay K3/K8 protects the filter during transmit via the PTT line. A 25-50ms delay must be used between transmit and PTT. Do not rely on your radio to provide adequate delay without using the PTT. Your logging software must be set to allow a delay between PTT and time of 1<sup>st</sup> transmit. This filter will not work with VOX or QSK keying as you will damage the filter.

The “No-Power State” defaults to filter bypass. Bands are selected in either manual mode by the 7-position switch. An Automatic mode is also available by placing the 7-pole switch into automatic. To use automatic, an external 12V signal from a Band decoder or other source is required via the 8 pin external Din jack. 1-6 are bands 10-160m respectively. Pin 8 is ground. All relays are driven by a small transistor to buffer external lines.

The filters use T50 cores for the inductors and NPO 100V or higher ceramic capacitors. Mica capacitor may also be used.

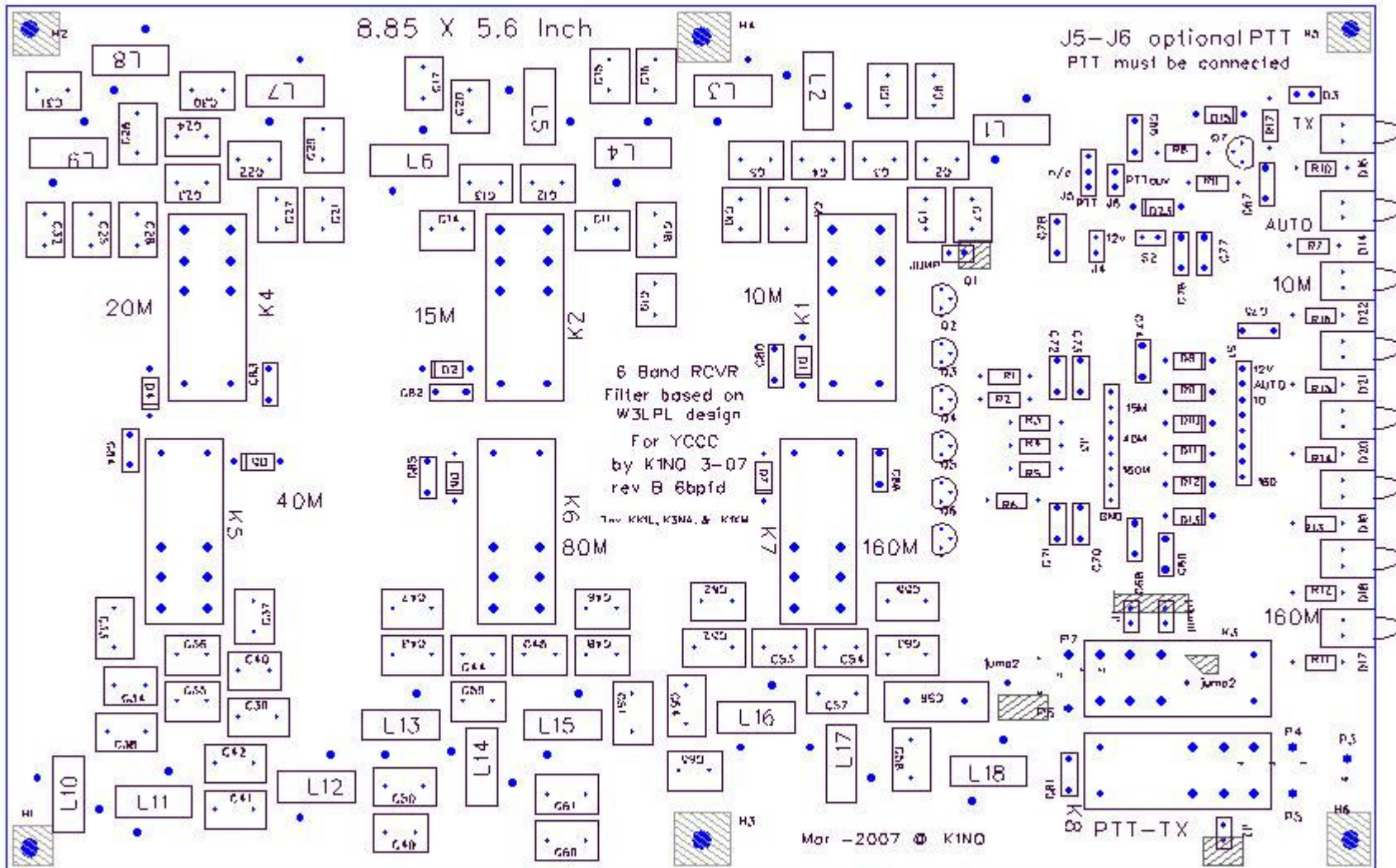
LED's are provided as indicators for 6 bands, TX on, and Automatic mode. A 3.5mm NC jack is used for PTT lines. If the PTT plug is not inserted into the jack, the filter is bypassed to prevent damage.

Construction is simple. Remember one pass thru the center of the toroid core constitutes a turn. A small coax cable jumper must connect relay K3 to relay K1 as marked on the pcb.

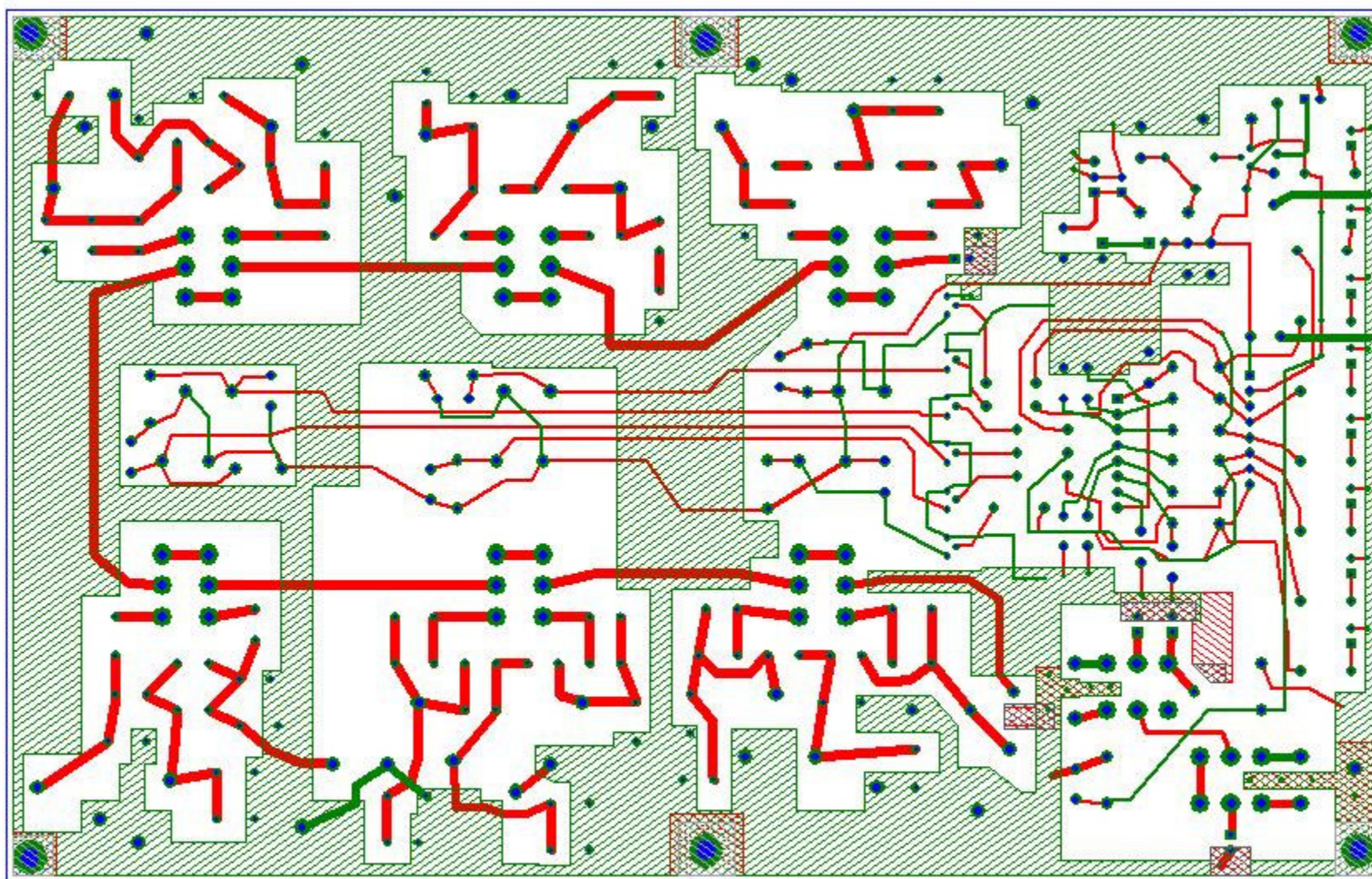
The 8 LED spacing is .45” center to center starting 1.575” from lower right board edge.

Failure to set up the PTT line may cause damage.

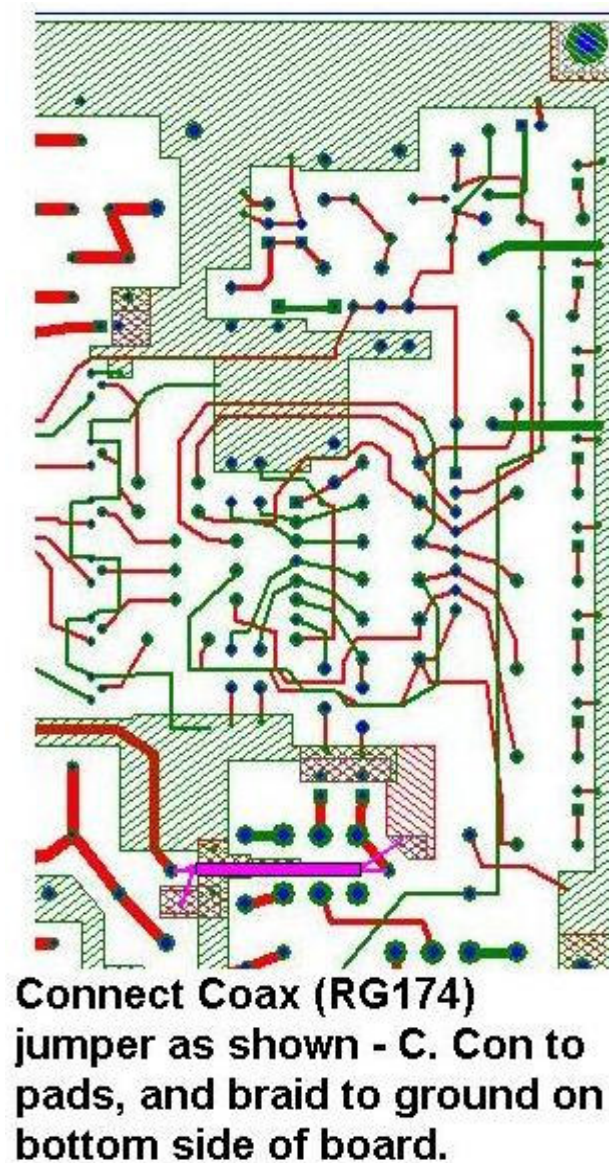
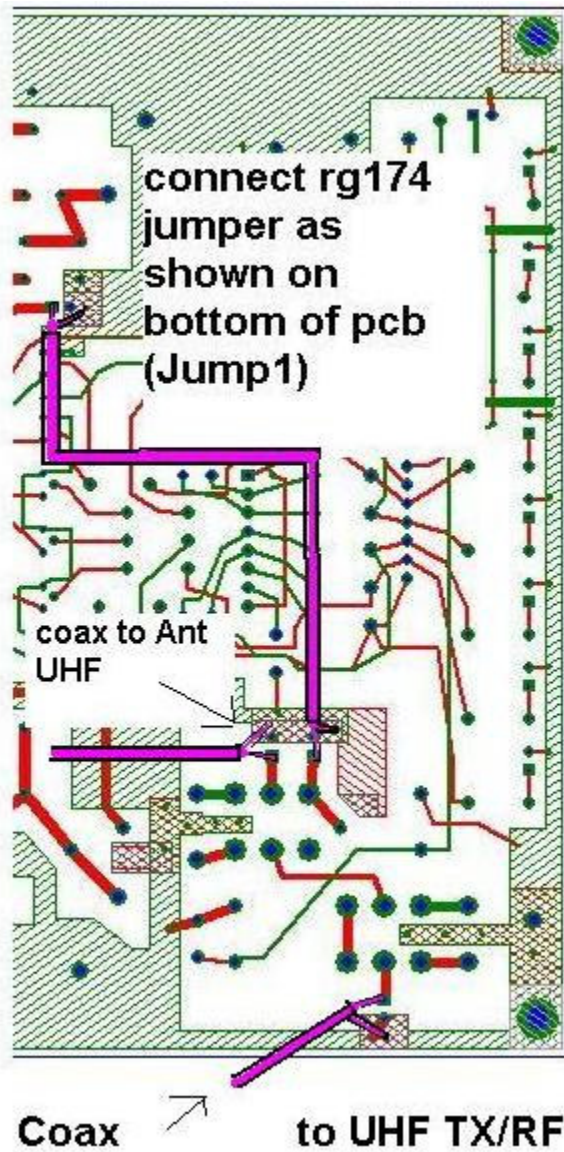
A Pictorial layout of the PCB, schematics, and parts list are included. A model of the 10m performance is included as a reference. See [www.k1ttt.net](http://www.k1ttt.net) for more info on W3LPL receive filters.



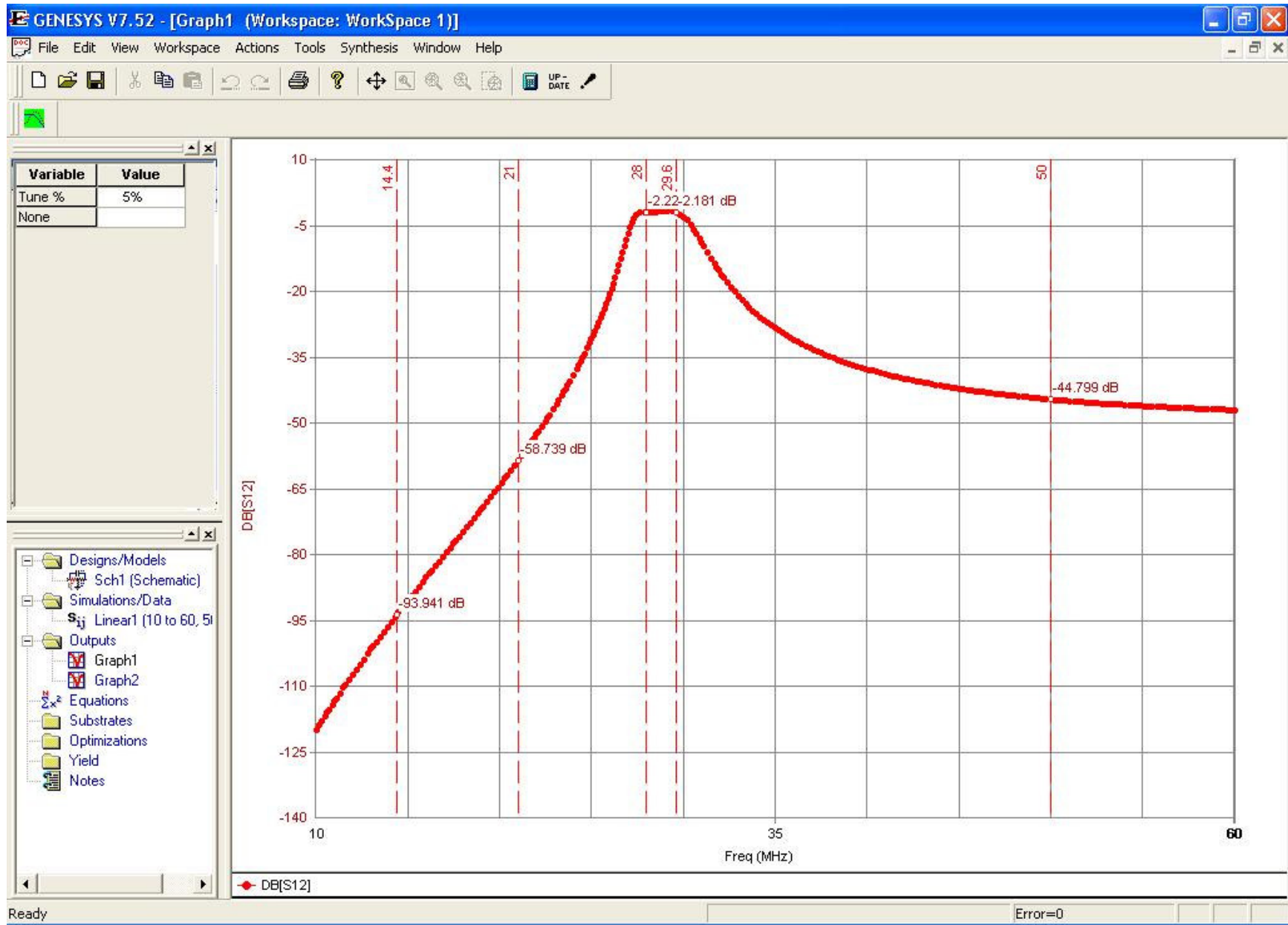


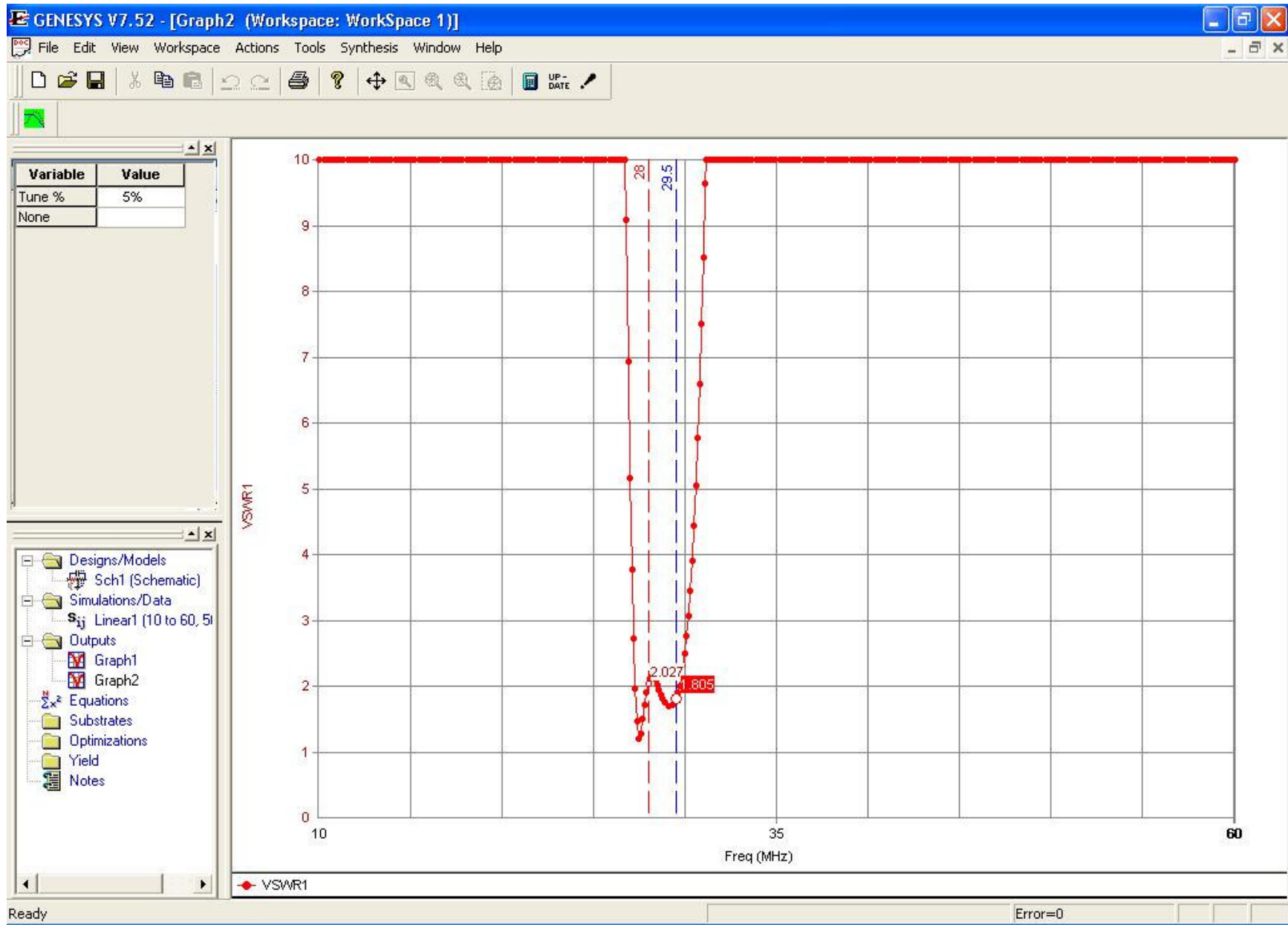


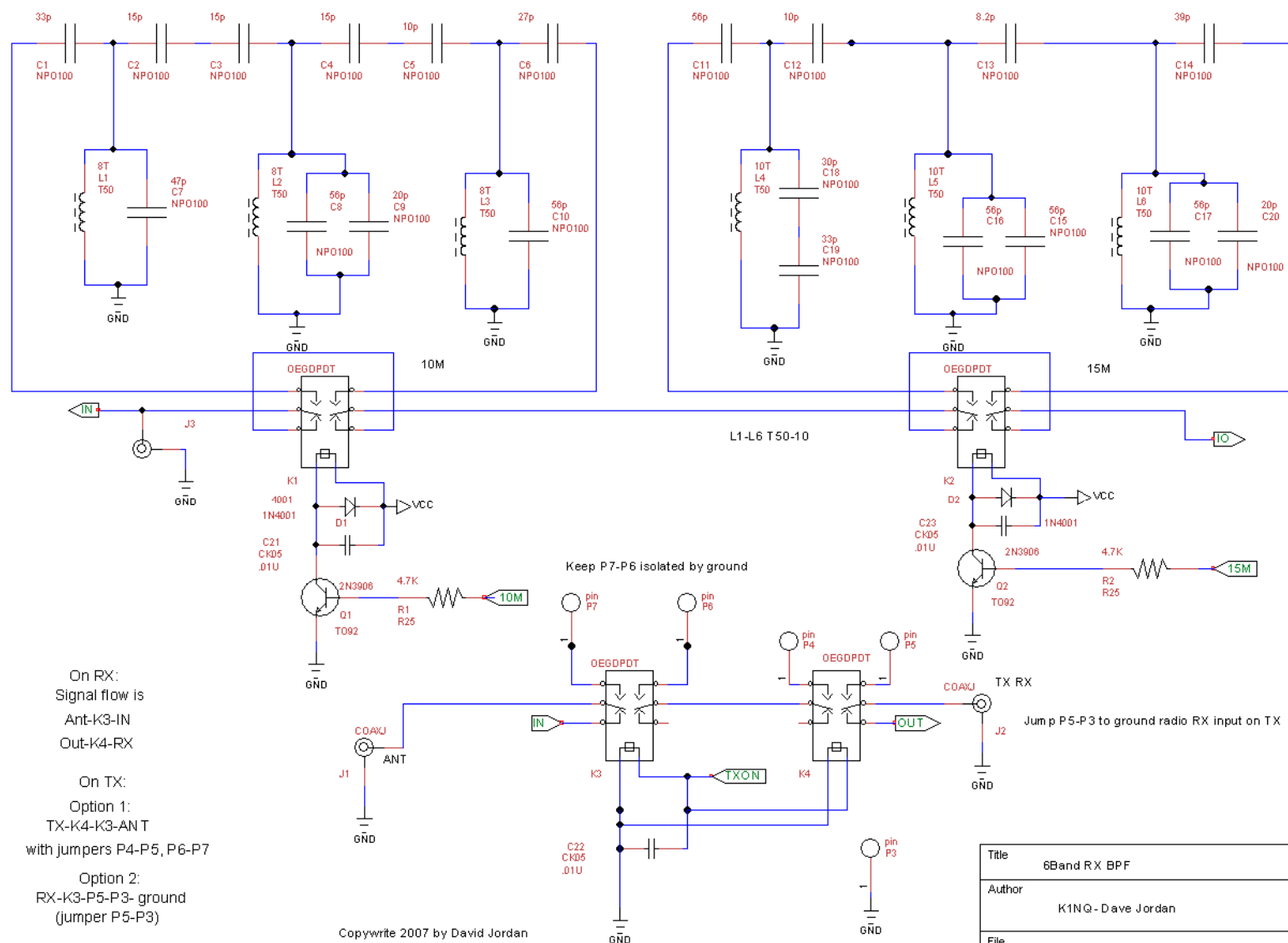




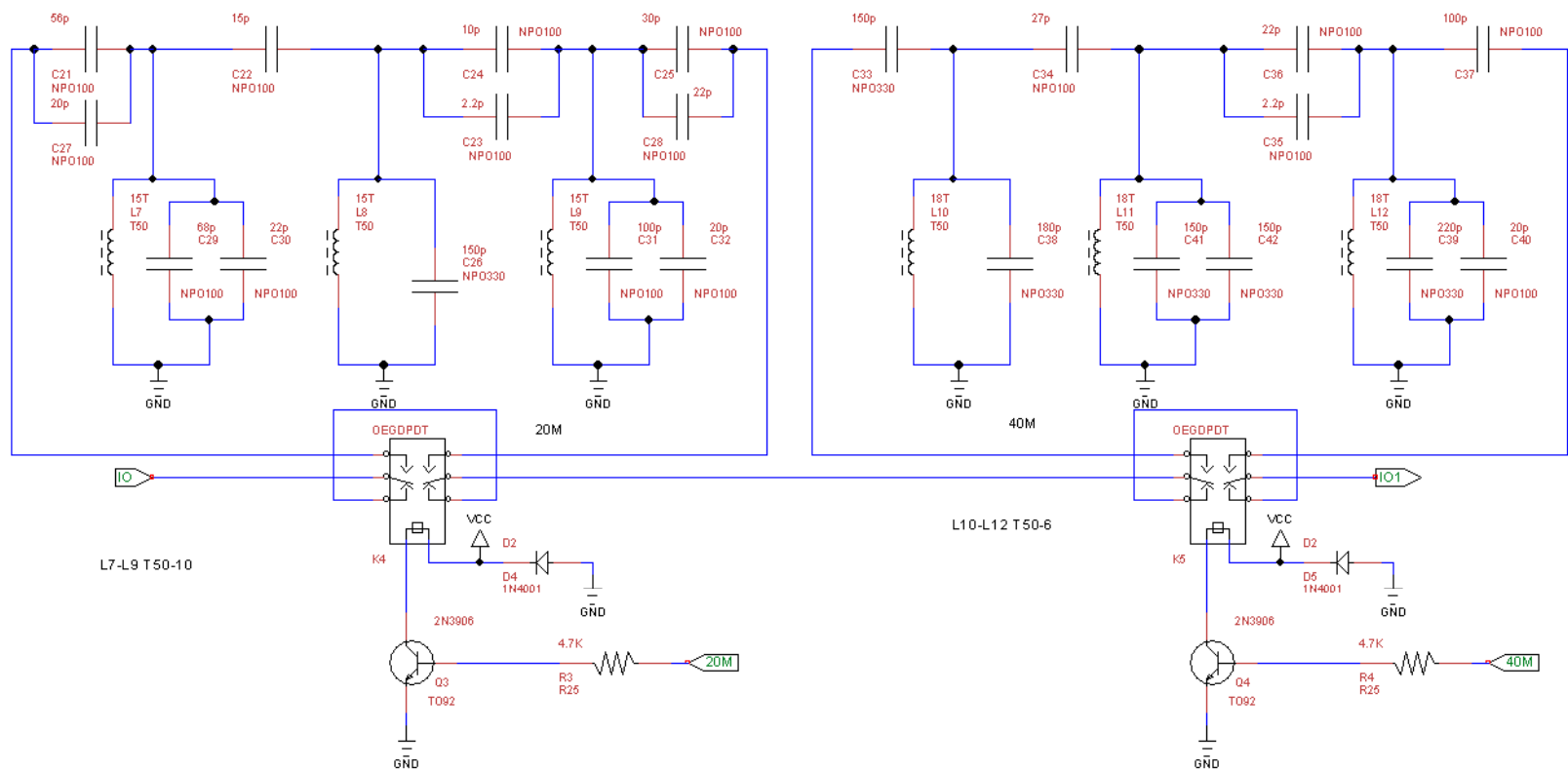
You must install 2 RG174 coaxial jumpers on the bottom side of the PCB. The center conductor connects to the respective pads and the braid to the ground plane. Two additional RG174 or equiv. cables are attached to the top side of the pcb. These cables connect to the chassis mount UHF connectors. You must also decide on the wire jumper settings. See page 1 of the schematic. Make these jumpers from solid wire #16-18 awg.





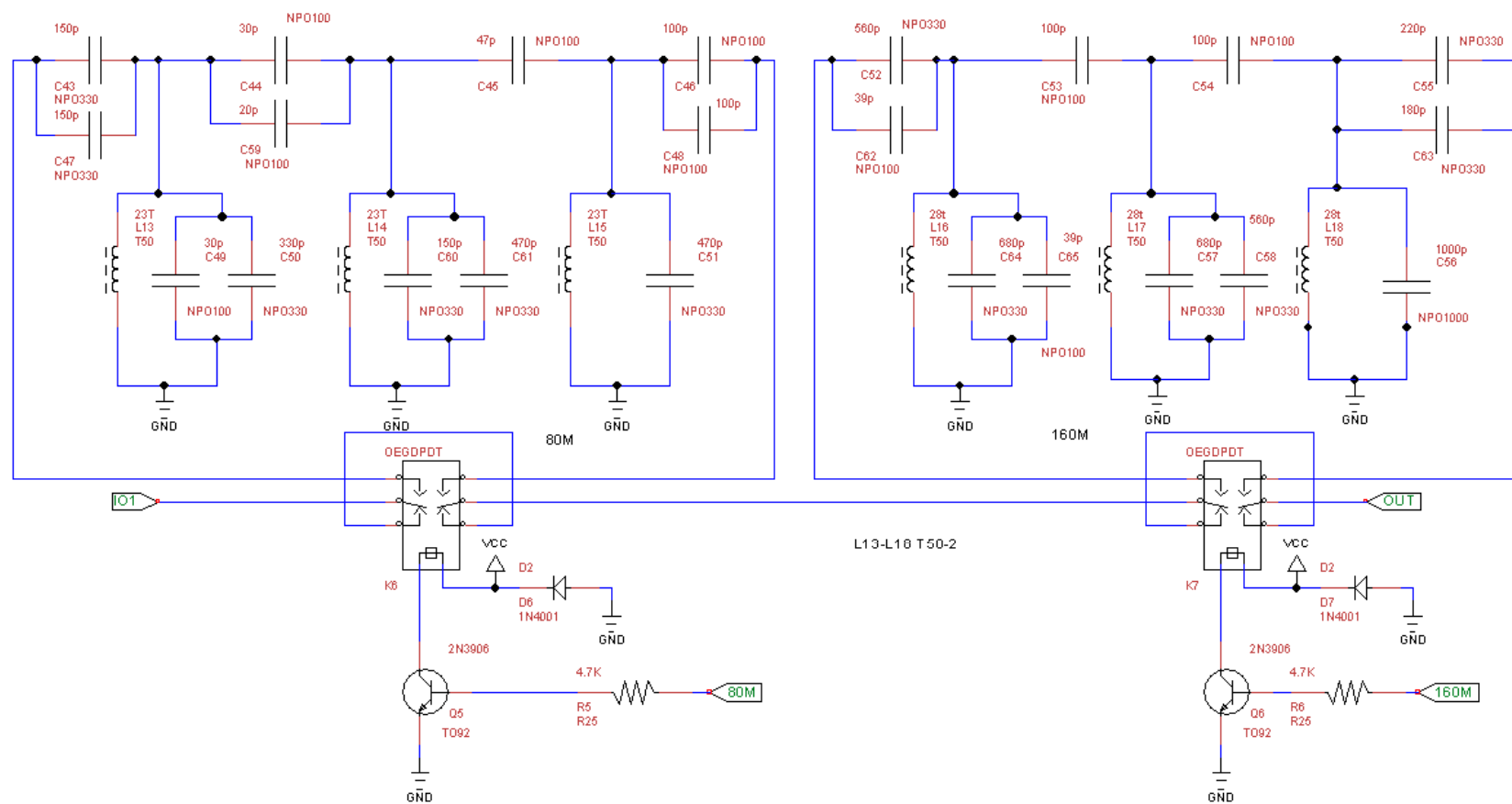


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Author K1NQ - Dave Jordan		
File C:\Program Files\TinyCAD\10ma.dsn	Document	
Revision 1.1	Date 3/9/07	Sheets 1 of 5

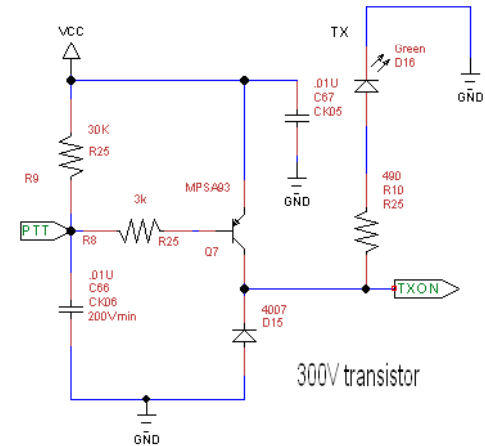
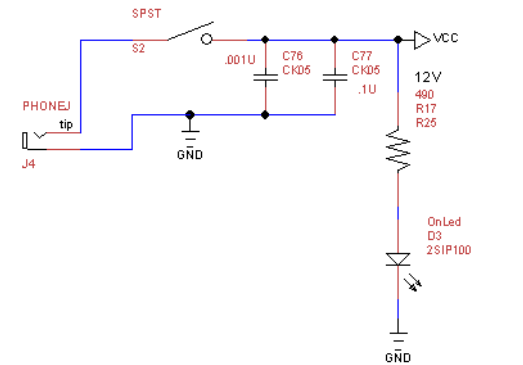
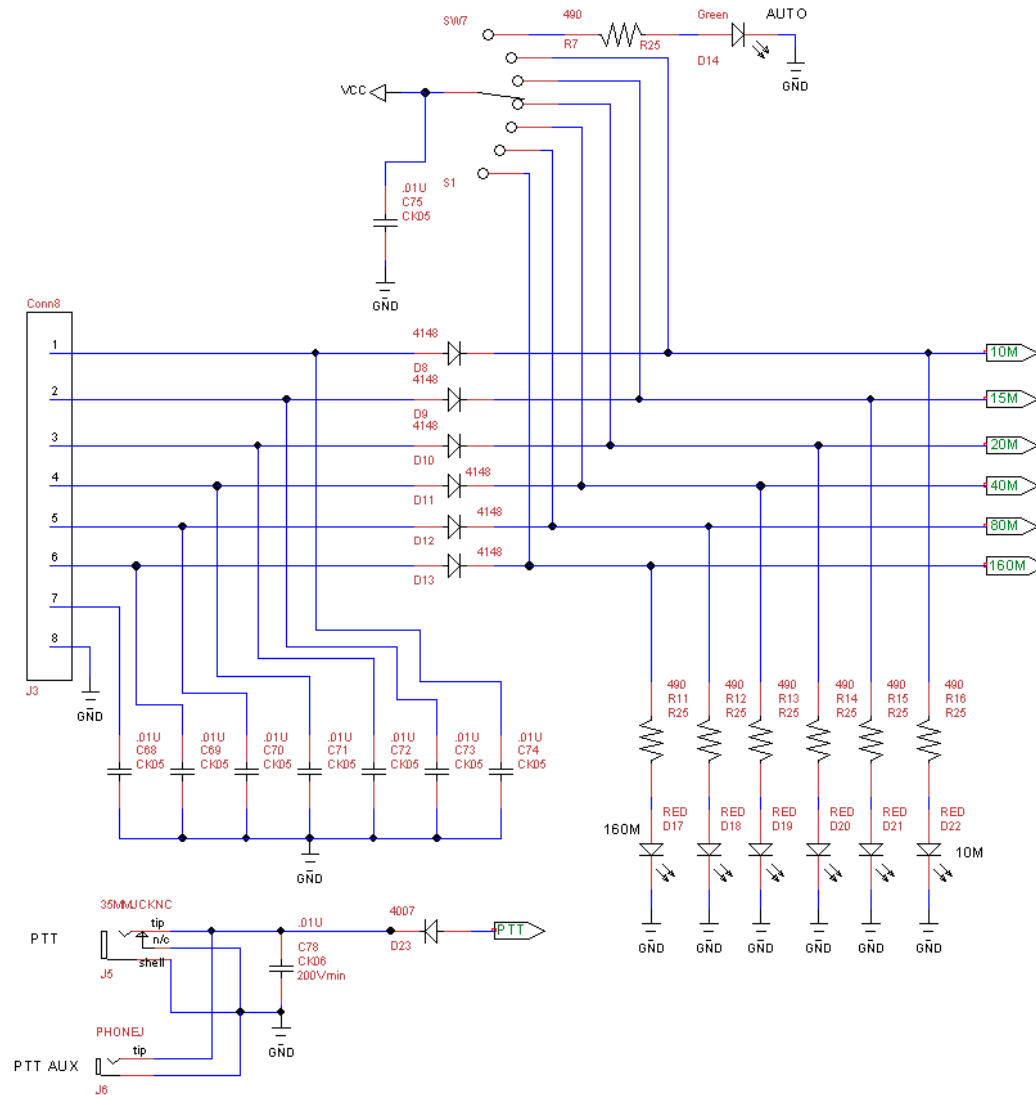


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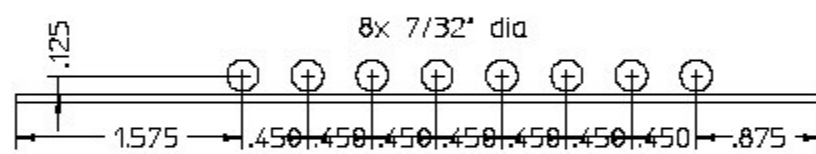




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Title		
Author		
File	C:\Program Files\TinyCAD\10ma.dsn	
Revision	Date	Sheets
1.0		4



LED dimensions



Reference	Quantity	Name	Description	Package	Pn	\$	TOTAL	
C1,C19	2	33p	Capacitor	NPO100	140-100N5-330J-RC	\$0.09	\$0.18	MOUSER
C10,C11,C15,C16,C17,C21,C8	7	56p	Capacitor	NPO100	140-100N5-560J-RC	\$0.09	\$0.63	MOUSER
C12,C24,C5	3	10p	Capacitor	NPO100	140-100N2-100J-RC	\$0.09	\$0.27	MOUSER
C13	1	8.2p	Capacitor	NPO100	140-500N2-8R2D-RC	\$0.08	\$0.08	MOUSER
C14,C62,C65	3	39p	Capacitor	NPO100	140-100N5-390J-RC	\$0.07	\$0.21	MOUSER
C18,C25,C44,C49	4	30p	Capacitor	NPO100	140-100N5-300J-RC	\$0.07	\$0.28	MOUSER
C2,C22,C3,C4	4	15p	Capacitor	NPO100	140-100N2-150J-RC	\$0.07	\$0.28	MOUSER
C20,C27,C32,C40,C59,C9	6	20p	Capacitor	NPO100	140-100N2-200J-RC	\$0.07	\$0.42	MOUSER
C23,C35	2	2.2p	Capacitor	NPO100	140-100N2-2R2D-RC	\$0.07	\$0.14	MOUSER
C26,C33,C41,C42,C43,C47,C60	7	150p	Capacitor	NPO330	140-102S6-331J-RC	\$0.23	\$1.61	MOUSER
C28,C30,C36	3	22p	Capacitor	NPO100	140-100N5-220J-RC	\$0.09	\$0.27	MOUSER
C29	1	68p	Capacitor	NPO100	140-100N5-680J-RC	\$0.09	\$0.09	MOUSER
C31,C37,C46,C48,C53,C54	6	100p	Capacitor	NPO100	140-100N5-101J-RC	\$0.15	\$0.90	MOUSER
C34,C6	2	27p	Capacitor	NPO100	140-100N5-270J-RC	\$0.07	\$0.14	MOUSER
C38,C63	2	180p	Capacitor	NPO330	140-102S6-181J-RC	\$0.18	\$0.36	MOUSER
C39,C55	2	220p	Capacitor	NPO330	140-102S6-221J-RC	\$0.18	\$0.36	MOUSER
C45,C7	2	47p	Capacitor	NPO100	140-100N5-470J-RC	\$0.07	\$0.14	MOUSER
C50	1	330p	Capacitor	NPO330	140-102S6-331J-RC	\$0.23	\$0.23	MOUSER
C51,C61	2	470p	Capacitor	NPO330	140-102S6-471J-RC	\$0.23	\$0.46	MOUSER
C52,C58	2	560p	Capacitor	NPO330	140-102S6-561J-RC	\$0.25	\$0.50	MOUSER
C56	1	1000p	Capacitor	NPO100	0	\$0.31	\$0.31	MOUSER
C57,C64	2	680p	Capacitor	NPO330	140-102S6-681J-RC	\$0.25	\$0.50	MOUSER
C66,C78	2	.01u	200V cap	C322	80-C320C103K2R	\$0.19	\$0.38	MOUSER
C67,C68,C69,C70,C71,C72,C73, C74,C75, C80-86	15	.01U	Small Capacitor	CK05	140-50Z2-103M-RC	\$0.08	\$1.20	MOUSER
C76	1	.001U	Small Capacitor	CK05	140-50Z5-102M-RC	\$0.07	\$0.07	MOUSER
C77	1	.1U	Small Capacitor	CK05	140-50Q9-104Z-RC	\$0.26	\$0.26	MOUSER
D1,D2,D4-D13	13	4003	small diode	1N4003	583-1N4003-B	\$0.03	\$0.39	MOUSER
D3	1		5mm led orange		604-WP7113NC	\$0.12	\$0.12	MOUSER
D15,D23	2	4007	small diode	1N4007	583-1N4007-B	\$0.03	\$0.06	MOUSER
D14	1	Green	small LED RA 5MM	LUMEX	696-SSF-LXH100MGD	\$0.30	\$0.30	MOUSER
D16	1	YELLOW	small LED RA 5MM	LUMEX	696-SSF-LXH100MYD	\$0.30	\$0.30	MOUSER
D17,D18,D19,D20,D21,D22	6	RED	small LED RA 5MM	LUMEX	696-SSF-LXH100ML1D	\$0.30	\$1.80	MOUSER
J1,J2	2	COAXJ	Coax Jack	uhf	27-7350	\$0.99	\$1.98	OCEANSTATE
J3	1	Conn8	conn8	DIN 8 F	ES11	\$1.93	\$1.93	OCEANSTATE
J6	1		3.5mm phonejack NC		16PJ135	\$0.27	\$0.27	MOUSER
J6 mate	1		3.5mm plug		17PJ103	\$0.43	\$0.43	MOUSER

J5	1		phonojack		30-428	\$0.60	\$0.60	OCEANSTATE
J4	1		2.5mm power jack		30-248	\$1.65	\$1.65	OCEANSTATE
J4 mate	1		2.5mm power plug		30-250L	\$0.65	\$0.65	OCEANSTATE
K1,K2,K3,K4,K5,K6,K7,K8	8	OEGDPD T	OEGDPDT	OEGDP DT	677-OMI-SH-212D	\$2.00	\$16.00	MOUSER
L1,L2,L3	3	8T	Inductor	T50-10	#16 8t	\$0.65	\$1.95	OCEANSTATE
L10,L11,L12	3	18T	Inductor	T50-6	#20 18t	\$0.65	\$1.95	OCEANSTATE
L13,L14,L15	3	23T	Inductor	T50-2	#22 23t	\$0.65	\$1.95	OCEANSTATE
L16,L17,L18	3	28t	Inductor	T50-2	#24 28t	\$0.65	\$1.95	OCEANSTATE
L4,L5,L6	3	10T	Inductor	T50-10	#18 10t	\$0.65	\$1.95	OCEANSTATE
L7,L8,L9	3	15T	Inductor	T50-10	#20 15t	\$0.65	\$1.95	OCEANSTATE
Q1,Q2,Q3,Q4,Q5,Q6	6	2N3906	Bipolar	TO92	512-2N3906TA	\$0.06	\$0.36	OCEANSTATE
Q7	1	MPSA93	Bipolar	TO92	512-MPSA93	\$0.15	\$0.15	OCEANSTATE
R1,R2,R3,R4,R5,R6	10	4.7K	Resistor (USA Style)	R25	RQ4.7K	\$0.05	\$0.50	OCEANSTATE
R10,R11,R12,R13,R14,R15,R16, R7,R17	10	490	Resistor (USA Style)	R25	RQ470	\$0.05	\$0.50	OCEANSTATE
R8	10	3k	Resistor (USA Style)	R25	RQ3.0K	\$0.05	\$0.50	OCEANSTATE
R9	10	6800	Resistor (USA Style)	R25	RQ6.8K	\$0.05	\$0.50	OCEANSTATE
S1	1	SW7	SP12T Switch		30-15100	\$2.40	\$2.40	OCEANSTATE
S2	1	SPST	Single Pole Switch		10002	\$1.50	\$1.50	OCEANSTATE
	1		KNOB		KN-7114	\$0.65	\$0.65	OCEANSTATE
	1		10-1/8L x 7-3/8W x 3-3/8H	CASE	PB250	\$12.95	\$12.95	OCEANSTATE
	1		PCB			\$25.00	\$25.00	K1NQ
OTHER								
	1		8 PIN DIN MALE		EA11	\$3.89		OCEANSTATE
	3		RG316 or RG174		3 FEET	\$0.18		OCEANSTATE
			#22 MAGNET WIRE					
			#24 MAGNET WIRE					
			#22 MAGNET WIRE					
			#20 MAGNET WIRE					
			#18 MAGNET WIRE					
			#16 MAGNET WIRE					