

## MFOS Vocoder Project Parts List – Ray Wilson

### IMPORTANT NOTES - PLEASE READ

All chips must be DIP (Dual-Inline Plastic or Ceramic) packages. All caps used in the filter sections MUST BE AT LEAST 5% TOLERANCE FILM CAPS or BETTER. Using 5% carbon film resistors will work perfectly and if you want to use 1% resistors they will work perfectly as well. The bypass caps can be ceramic 20% caps but don't scrimp on the filter caps. All of the ceramic and film caps should have lead spacing of 5mm (0.2").

**NOTE: C3 (1uF non-polar cap) and R9 (100 ohm resistor) are not located on the circuit board but are installed on the unit's front panel.**

Qty.	Description	Value	Designators
1	CD40106	CD40106	U3
6	LM13700 Dual gm OpAmp	LM13700	U6, U11, U15, U20, U25, U30
12	LM324 Low Power Quad Op Amp	LM324	U5, U8, U10, U13, U14, U17, U19, U22, U24, U27, U29, U32
13	TL072 Dual Op Amp	TL072	U2, U4, U7, U9, U12, U16, U18, U21, U23, U26, U28, U31, U33
1	TL074 Quad Op Amp	TL074	U1
5	Transistor NPN 2N3904	2N3904	Q1, Q2, Q3, Q4, Q5
12	Transistor PNP 2N3906	2N3906	Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16, Q17
36	Diode 1N914	1N914	D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15, D16, D17, D18, D19, D20, D21, D22, D23, D24, D25, D26, D27, D28, D29, D30, D31, D32, D33, D34, D35, D36
8	Linear Taper Potentiometer	100K	R1, R2, R4, R12, R16, R21, R25, R26
2	Linear Taper Potentiometer	1M	R32, R43
23	Resistor 1/4 Watt 5%	470K	R5, R7, R15, R17, R18, R27, R29, R34, R37, R39, R40, R60, R79, R100, R119, R141, R160, R181, R200, R221, R240, R261, R280
6	Resistor 1/4 Watt 5%	47K	R11, R23, R42, R44, R58, R66
2	Resistor 1/4 Watt 5%	510K	R291, R292
4	Resistor 1/4 Watt 5%	560K	R75, R84, R136, R143
2	Resistor 1/4 Watt 5%	680K	R112, R124
1	Resistor 1/4 Watt 5%	68K	R41
2	Resistor 1/4 Watt 5%	7.5K	R74, R83
2	Resistor 1/4 Watt 5%	750K	R153, R165
2	Resistor 1/4 Watt 5%	8.2K	R94, R106
2	Resistor 1/4 Watt 5%	820K	R95, R102
2	Resistor 1/4 Watt 5%	910K	R193, R205
2	Resistor 1/4 Watt 5%	1.2M	R216, R223
4	Resistor 1/4 Watt 5%	1.3M	R233, R245, R256, R263
1	Resistor 1/4 Watt 5%	100 ohms	R9

61	Resistor 1/4 Watt 5%	100K	R6, R14, R19, R20, R24, R33, R38, R52, R56, R63, R64, R70, R71, R73, R81, R85, R86, R91, R93, R104, R105, R110, R111, R116, R121, R125, R126, R131, R132, R134, R142, R145, R146, R151, R157, R166, R167, R172, R174, R185, R186, R191, R197, R206, R207, R212, R214, R225, R226, R231, R237, R246, R247, R252, R254, R265, R266, R271, R277, R286, R287
44	Resistor 1/4 Watt 5%	10K	R22, R31, R35, R36, R45, R48, R53, R54, R62, R76, R77, R82, R96, R97, R103, R113, R114, R122, R135, R137, R138, R144, R147, R154, R155, R163, R177, R178, R184, R194, R195, R203, R217, R218, R224, R234, R235, R243, R257, R258, R264, R274, R275, R283
4	Resistor 1/4 Watt 5%	130K	R90, R101, R152, R162
6	Resistor 1/4 Watt 5%	15K	R3, R8, R13, R46, R158, R164
2	Resistor 1/4 Watt 5%	160K	R171, R182
2	Resistor 1/4 Watt 5%	180K	R192, R202
2	Resistor 1/4 Watt 5%	18K	R198, R204
27	Resistor 1/4 Watt 5%	1K	R10, R28, R50, R55, R69, R72, R88, R92, R109, R115, R127, R133, R150, R156, R168, R173, R190, R196, R208, R213, R230, R236, R248, R253, R270, R276, R288
14	Resistor 1/4 Watt 5%	1M	R176, R183, R293, R294, R295, R296, R297, R298, R299, R300, R301, R302, R303, R304
1	Resistor 1/4 Watt 5%	2.4K	R49
5	Resistor 1/4 Watt 5%	200K	R130, R211, R222, R272, R282
4	Resistor 1/4 Watt 5%	20K	R117, R123, R175, R187
2	Resistor 1/4 Watt 5%	220K	R273, R285
2	Resistor 1/4 Watt 5%	22K	R238, R244
4	Resistor 1/4 Watt 5%	270K	R232, R242, R251, R262
2	Resistor 1/4 Watt 5%	27K	R215, R227
1	Resistor 1/4 Watt 5%	33K	R47
1	Resistor 1/4 Watt 5%	39K	R30
14	Resistor 1/4 Watt 5%	4.7K	R57, R61, R65, R80, R98, R120, R139, R161, R179, R201, R219, R241, R259, R281
12	Resistor 1/4 Watt 5%	4.7M	R59, R78, R99, R118, R140, R159, R180, R199, R220, R239, R260, R279
14	Resistor 1/4 Watt 5%	43K	R68, R89, R108, R129, R149, R170,

			R189, R210, R229, R250, R255, R267, R269, R290
13	Trim Pot	100K	R51, R67, R87, R107, R128, R148, R169, R188, R209, R228, R249, R268, R289
86	Capacitor Ceramic	.1uF	C2, C4, C7, C12, C13, C16, C20, C21, C24, C35, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C52, C59, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C76, C83, C85, C86, C87, C88, C89, C90, C91, C92, C93, C94, C100, C107, C109, C110, C111, C112, C113, C114, C115, C116, C117, C118, C124, C131, C133, C134, C135, C136, C137, C138, C139, C140, C141, C142, C148, C149, C151, C155, C156, C157, C158, C159, C160, C161, C162, C163, C164, C165, C166, C168, C172, C173
12	Capacitor Ceramic	100pF	C176, C177, C178, C179, C180, C181, C182, C183, C184, C185, C186, C187
1	Capacitor Ceramic	15nF	C19
4	Capacitor Ceramic	47pF	C5, C6, C10, C15
4	Capacitor Ceramic	22nF	C36, C53, C55, C60, C72
3	Capacitor Ceramic	33nF	C26, C79, C96
11	Capacitor Ceramic	47nF	C23, C77, C84, C101, C103, C108, C120, C125, C127, C132, C144
7	Capacitor Alum. Bipolar	1uF	C1, C3, C8, C11, C17, C18, C22
2	Capacitor Electrolytic 16V (small size)	100uF	C9, C14
6	Metalized Polyester Film 5% Capacitor	10nF	C25, C30, C48, C174, C175
12	Metalized Polyester Film 5% Capacitor	1nF	C47, C49, C50, C51, C54, C56, C57, C58, C71, C73, C74, C75
16	Metalized Polyester Film 5% Capacitor	2.2nF	C31, C34, C78, C80, C81, C82, C95, C97, C98, C99, C102, C104, C105, C106, C169, C171
12	Metalized Polyester Film 5% Capacitor	4.7nF	C28, C29, C32, C33, C143, C145, C146, C147, C150, C152, C153, C154
9	Metalized Polyester Film 5% Capacitor	3.3nF	C27, C119, C121, C122, C123, C126, C128, C129, C130
3	Switch SPDT	SPDT	S1, S2, S3
3	Jack 1/4" 2 Terminal	1/4" Phone Jack	J1, J2, J3