

DODECAMODULE MODEL 212**BILL OF MATERIALS REV 2.2****PCB1****SEMICONDUCTORS**

VALUE	DESIGNATOR	QTY	DESCRIPTION	MOUSER PART#
TL072	IC1, IC29	2		595-TL072IP
TL074	IC2, IC3, IC9, IC11, IC28, IC30	6		595-TL074CN
TL071	IC10, IC27, IC39	3		595-TL071CP
LM741	IC12, IC13, IC14, IC15, IC16, IC17, IC18, IC19, IC20	9		926-LM741CN/NOPB
V2164	IC31, IC32	2	DIP16	http://store.synthrotek.com/V2164D-Quad-Voltage-Controlled-Amplifier_p_464.html
1N457	D1, D2, D3, D6, D9, D10, D11, D12, D13, D14, D15, D16, D17, D18, D19, D20, D21, D22, D23, D24, D25, D26, D27, D28, D29	25		512-1N457
2N3906	Q1, Q21, Q23, Q25	4		610-2N3906
2N3904	Q2, Q20, Q22, Q24	4		610-2N3904
LS3958	Q16, Q17	2		eBay
PN3566	Q18, Q19	2		eBay
1N5233	Z1	1		512-1N5233B
1N5228	Z2, Z5, Z6, Z7, Z8, Z9, Z10, Z11	8		512-1N5228B
1N5240	Z15	1		512-1N5240B

CAPACITORS

VALUE	DESIGNATOR	QTY	DESCRIPTION	MOUSER PART#
47uF	C11	1	ELECTROLYTIC 2MM LS	647-UR21E470MDD
15uF	C16, C50, C96, C97, C102	5	ELECTROLYTIC 2MM LS	667-EEA-GA1E150
4.7uF	C23	1	ELECTROLYTIC 2MM LS	647-UR11H4R7MDD
1uF	C15, C19, C21, C22	4	ELECTROLYTIC 2MM LS	647-URS1H010MDD
1uF	C8	1	FILM 5MM LS	80-R82DC4100CK60J
470nF	C41, C51, C52, C56, C60	5	FILM 5MM LS	871-B32529C1474K189
220nF	C7	1	FILM 5MM LS	871-B32529C224J
47nF	C24, C25	2	FILM 5MM LS	871-B32529C1473J
22nF	C13, C17, C44, C48	4	FILM 5MM LS	871-B32529C1223J
10nF	C14	1	FILM 5MM LS	871-B32529C103J
2.2nF	C66, C75, C84	3	FILM 5MM LS	871-B32529C1222J189
0.1uF	F7, F8, F9, F10, F11, F12, F23, F24, F25, F26, F27, F28, F29, F30, F31, F32, F33, F34, F35, F36, F37, F38, F39, F40, F41, F42, F43, F44, F45, F46, F59, F60, F61, F62, F63, F64, F65, F66, F67, F68, F69, F70, F75, F76	44	CERAMIC 5MM LS	581-SA105E104M
0.01uF	C54, C55, C58, C59, C62, C63, C137	7	CERAMIC 5MM LS	581-SA105E103M
1000pF	C12, C45, C53, C57, C61	5	CERAMIC 5MM LS	581-SA105A102JAR
560pF	C83, C95, C98, C100, C104, C106, C108, C109	8	CERAMIC 5MM LS	581-SA101A561GAA
470pF	C18, C47	2	CERAMIC 5MM LS	581-SA101A471JAR
220pF	C46	1	CERAMIC 5MM LS	581-SA101A221JAR
100pF	C20, C26, C91, C92, C94, C99, C101, C103, C105, C107, C110	11	CERAMIC 5MM LS	581-SA102A101J
47pF	C9, C10, C49	3	CERAMIC 5MM LS	581-SA102A470J

RESISTORS

VALUE	DESIGNATOR	QTY	DESCRIPTION	MOUSER PART#
10K	R1, R7, R13, R15, R29, R30, R37, R50, R138, R144, R151, R152, R172, R173, R180, R189, R194, R197, R198, R205, R214, R219, R222, R223, R230, R239, R244	27	1% 1/4W	271-10K-RC
1M	R2, R3, R170, R195, R220, R245	6	1% 1/4W	271-1.0M-RC
1K	R4, R45, R54, R137, R146, R149, R150, R166, R177, R183, R202, R208, R227, R233, R312	15	1% 1/4W	271-1K-RC
100K	R5, R8, R26, R48, R167, R175, R182, R187, R188, R190, R191, R192, R193, R200, R207, R212, R213, R215, R216, R217, R218, R225, R232, R237, R238, R240, R241, R242, R243, R246, R251, R267, R272, R286, R293, R309, R310, R311, R313, R338, R357, R360	42	1% 1/4W	271-100K-RC
47K	R6, R55, R112, R113, R118, R132, R153	7	1% 1/4W	271-47K-RC
33K	R9, R22, R31, R32, R40, R44, R47, R49, R52, R131, R134, R350	12	1% 1/4W	271-33K-RC
220R	R10, R11, R33, R161, R347	5	1% 1/4W	271-220-RC
6K8	R12, R53, R133, R143, R158	5	1% 1/4W	271-6.8K-RC
39K	R14	1	1% 1/4W	271-39K-RC
470K	R16, R21, R24, R28, R186, R211, R236, R250, R271, R292	10	1% 1/4W	271-470K-RC
220K	R17, R171, R178, R196, R203, R221, R228	7	1% 1/4W	271-220K-RC
68K	R18, R36, R38, R59, R154, R162	6	1% 1/4W	271-68K-RC
120K	R19	1	1% 1/4W	271-120K-RC
22K	R20	1	1% 1/4W	271-22K-RC
27K	R23	1	1% 1/4W	271-27K-RC
15K	R25, R41, R157, R165, R314, R315, R316, R322, R323, R325, R334, R337, R339, R340, R342, R343, R346, R353, R354, R358	20	1% 1/4W	271-15K-RC
3K3	R27, R181, R206, R231	4	1% 1/4W	271-3.3K-RC
10M	R34, R39, R135, R140, R185, R210, R235	7	5% 1/4W	291-10M-RC
22M	R35	1	5% 1/4W	291-22M-RC
4K7	R42, R142, R145	3	1% 1/4W	271-4.7K-RC
330K	R43, R51	2	1% 1/4W	271-330K-RC
4M7	R46, R168	2	5% 1/4W	291-4.7M-RC
78K7	R115	1	1% 1/4W	271-78.7K-RC
5K6	R129, R130	2	1% 1/4W	271-5.6K-RC
2M2	R136	1	5% 1/4W	291-2.2M-RC
680R	R139, R147	2	1% 1/4W	271-680-RC
150R	R141, R148	2	1% 1/4W	271-150-RC
1K5	R155, R156, R163, R164, R174, R199, R224	7	1% 1/4W	271-1.5K-RC
62K	R159, R169	2	1% 1/4W	271-62K-RC
68R	R160, R176, R201, R226	4	1% 1/4W	271-68-RC
2K2	R179, R184, R204, R209, R229, R234	6	1% 1/4W	271-2.2K-RC
60K4	R317, R335, R348, R361	4	1% 1/4W	271-60.4K-RC
30K	R318, R319, R321, R327, R328, R331, R332, R333, R345, R349, R351, R359, R362, R363, R364	15	1% 1/4W	271-30K-RC
499R	R320, R326, R329, R330, R355, R356, R365, R366	8	1% 1/4W	271-499-RC
86K6	R324, R367	2	1% 1/4W	271-86.6K-RC
91K	R336, R352	2	1% 1/4W	271-91K-RC
143K	R344	1	1% 1/4W	271-143K-RC
150K	R341	1	1% 1/4W	271-150K-RC
7K5	R368, R369	2	1% 1/4W	271-7.5K-RC
50K	TR1	1	SINGLE TURN	858-25PR50KLF
5K	TR2, TR7	2	SINGLE TURN	858-25PR5KLF
1M	TR3	1	SINGLE TURN	858-25PR1MLF
10K LIN	POT1, POT2, POT3, POT6, POT7, POT8, POT9, POT10, POT11, POT12, POT13, POT14, POT15, POT16, POT17, POT18, POT22, POT23, POT24, POT27, POT28, POT29, POT30	23	16MM	http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-16mm-right-angle-pc-mount/
20K LIN	POT4	1	9MM	652-PTV09A-4030UB203
50K LOG	POT5, POT19, POT20, POT21, POT25, POT26	6	16MM	http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-16mm-right-angle-pc-mount/

MISC

VALUE	DESIGNATOR	QTY	DESCRIPTION	MOUSER PART#
SPDT ON-ON	SW1, SW2, SW3	3	TOGGLE SWITCH	633-M201201
SPDT ON-OFF-ON	SW4, SW5, SW6	3	TOGGLE SWITCH	633-M201301
	J2, J3, J4, J5, J6, J7, J8, J9, J10, J11, J12, J13, J14, J15, J16, J17, J18, J19, J20, J21, J22, J23, J24, J25, J26, J27, J28, J29, J30, J31, J32, J33	32	TINJAX	502-41
	LED1, LED2, LED3, LED4, LED5, LED6	6	RED 3MM LED	630-HLMP-K101
		6	LED LENS	534-8662
	PBD3	1	PLD 10 PIN (MALE)	517-929836-01-05-RK
	PBD1	1	PLD 12 PIN (MALE)	517-929836-01-06-RK
	PBD2	1	PLD 20 PIN (MALE)	517-929836-01-10-RK
		8	BANANA JACK RED	530-108-0902-1
		2	BANANA JACK BLACK	530-108-0903-1
		29	NUT FOR 16MM POT	http://smallbear-electronics.mybigcommerce.com/nut-for-alpha-16mm-potentiometers
		29	SMALL DAVIES KNOB	5164-1610AA
		3	1.4" STEREO JACK	502-N112BX
		3	RED SWITCH CAP	
		3	BLACK SWITCH CAP	
VTL5C3	V3, V4, V5, V6	4	SINGLE VACTROL	http://smallbear-electronics.mybigcommerce.com/photocoupler-vactec-vtl5c3/

PCB2**SEMICONDUCTORS**

VALUE	DESIGNATOR	QTY	DESCRIPTION	MOUSER PART#
SIM1-1524S-DIL8	IC0	1	15V to 24V DC-DC CONVERTER	http://www.digitalto.de/products/167426/DC-DC-Wandler-1W-Sim1-1524s-Dil8.html?page=1&sort=1a
LM301	IC4	1		926-LM301AN/NOPB
CA3080	IC7	1		eBay
LM307	IC8	1		eBay
TL074	IC5, IC6, IC21, IC23, IC25, IC34	6		595-TL074CN
DG202	IC22, IC24, IC26	3		781-DG202BDJ-E3
TL072	IC33	1		595-TL072IP
LM380	IC35, IC36, IC37, IC38, IC47	5		926-LM380N/NOPB
12uHn	L1	1		542-77F120K-RC
2N3906	Q3, Q9, Q13, Q14, Q15	5		610-2N3906
2N3904	Q4, Q10	2		610-2N3904
J201	Q5, Q8, Q11, Q12	4		106-J201
PN3565	Q6	1		610-PN3565
2N4852	Q7	1	UNIJUNCTION TRANSISTOR	eBay
1N5234	Z4	1		512-1N5234B
1N5228	Z3, Z12, Z13, Z14	4		512-1N5228B
1N457	D4, D5, D6, D7	4		512-1N457

CAPACITORS

VALUE	DESIGNATOR	QTY	DESCRIPTION	MOUSER PART#
1uF	C70, C79, C88	3	FILM 5MM LS	80-R82DC4100CK60J
470nF	C43	1	FILM 5MM LS	871-B32529C1474K189
150nF	C32	1	FILM 5MM LS	871-B32529C154J
100nF	C27, C118, C123, C127, C132	5	FILM 5MM LS	871-B32529C3104J189
10nF	C117, C122, C126, C131	4	FILM 5MM LS	871-B32529C103J
4.7nF	C68, C77, C86	3	FILM 5MM LS	871-B32529C1472J
1nF	C87, C76, C85	3	FILM 5MM LS	871-B32529C102J289
470uF	C119, C124, C128, C133	4	ELECTROLYTIC 3.5MM LS	667-EEU-FC1E471L
390uF	C114	1	ELECTROLYTIC 3.5MM LS	661-EKZH350E391MH20D
220uF	C3, C137	2	ELECTROLYTIC 3.5MM LS	667-EEU-FC1V221L
100uF	C1, C2, C4, C5, C6	5	ELECTROLYTIC 3.5MM LS	667-ECA-1JM101
10uF	C39, C40	2	ELECTROLYTIC 2MM LS	667-ECA-1HHG100
4.7uF	C33, C116, C121, C125, C130, C135, C136	7	ELECTROLYTIC 2MM LS	647-URS1H4R7MDD
1uF	C37, C38	2	ELECTROLYTIC 2MM LS	647-URS1H010MDD
0.1uF	F1, F2, F3, F4, F5, F6, F13, F14, F15, F16, F17, F18, F19, F20, F21, F22, F47, F48, F49, F50, F51, F52, F53, F54, F55, F56, F57, F58, F71, F72, F73, F74, F76, F77, F78, F79, F80	37	CERAMIC 5MM LS	581-SA105E104M
10000pF	C31, C35	2	CERAMIC 5MM LS	581-SA105E103M
1000pF	C28, C29, C34, C36	4	CERAMIC 5MM LS	581-SA105A102JAR
470pF	C113	1	CERAMIC 5MM LS	581-SA101A471JAR
220pF	C69, C72, C78, C81, C87, C90	6	CERAMIC 5MM LS	581-SA101A221JAR
100pF	C65, C71, C74, C80, C83, C89, C111, C112, C115, C120, C129, C134	12	CERAMIC 5MM LS	581-SA102A101J
47pF	C42	1	CERAMIC 5MM LS	581-SA102A470J
22pF	C30, C64, C73, C82	4	CERAMIC 5MM LS	581-SA102A220J

RESISTORS

VALUE	DESIGNATOR	QTY	DESCRIPTION	MOUSER PART#
68K	R56, R84, R121, R125, R400, R404, R406, R411	8	1% 1/4W	271-68K-RC
56K	R57, R65	2	1% 1/4W	271-56K-RC
82K	R58	1	1% 1/4W	271-82K-RC
15K	R60, R64, R73, R97, R105, R116, R122, R260, R263, R281, R284, R302, R305, R370, R380, R388, R401	17	1% 1/4W	271-15K-RC
100K	R61, R66, R67, R78, R257, R258, R278, R279, R299, R300, R374	11	1% 1/4W	271-100K-RC
1M	R62, R70, R87	3	1% 1/4W	271-1.0M-RC
10K	R63, R68, R69, R72, R74, R76, R80, R81, R85, R94, R95, R100, R252, R253, R259, R261, R266, R273, R274, R280, R282, R287, R294, R295, R301, R303, R308, R371, R375, R377, R382, R394, R410, R412	34	1% 1/4W	271-10K-RC
1K	R71, R119, R120, R247, R256, R265, R268, R277, R286, R289, R298, R307, R372, R381	14	1% 1/4W	271-1K-RC
10M	R75, R103, R104	3	5% 1/4W	291-10M-RC
4K7	R77, R90, R255, R276, R297	5	1% 1/4W	271-4.7K-RC
6K8	R79, R378, R379, R386, R387, R392, R393, R398, R399, R408, R409	11	1% 1/4W	271-6.8K-RC
470R	R82, R86, R248, R269, R290, R376, R385, R391, R397, R407	10	1% 1/4W	271-470-RC
220R	R83, R101	2	1% 1/4W	271-220-RC
470K	R86	1	1% 1/4W	271-470K-RC
47R	R89	1	1% 1/4W	271-47-RC
33K	R91, R384, R390, R396, R405	5	1% 1/4W	271-33K-RC
3K3	R92, R102, R107	3	1% 1/4W	271-3.3K-RC
2K2	R93, R109, R111	3	1% 1/4W	271-2.2K-RC
1K5	R96, R373	2	1% 1/4W	271-1.5K-RC
150K	R98	1	1% 1/4W	271-150K-RC
330R	R99, R124, R127, R128	4	1% 1/4W	271-330-RC
22M	R106	1	5% 1/4W	291-22M-RC
220K	R108, R110, R114, R117, R123, R126, R403	7	1% 1/4W	271-220K-RC
4M7	R249, R270, R291	3	5% 1/4W	291-4.7M-RC
43K2	R254, R275, R296	3	1% 1/4W	271-43.2K-RC
30K	R262, R283, R304	3	1% 1/4W	27