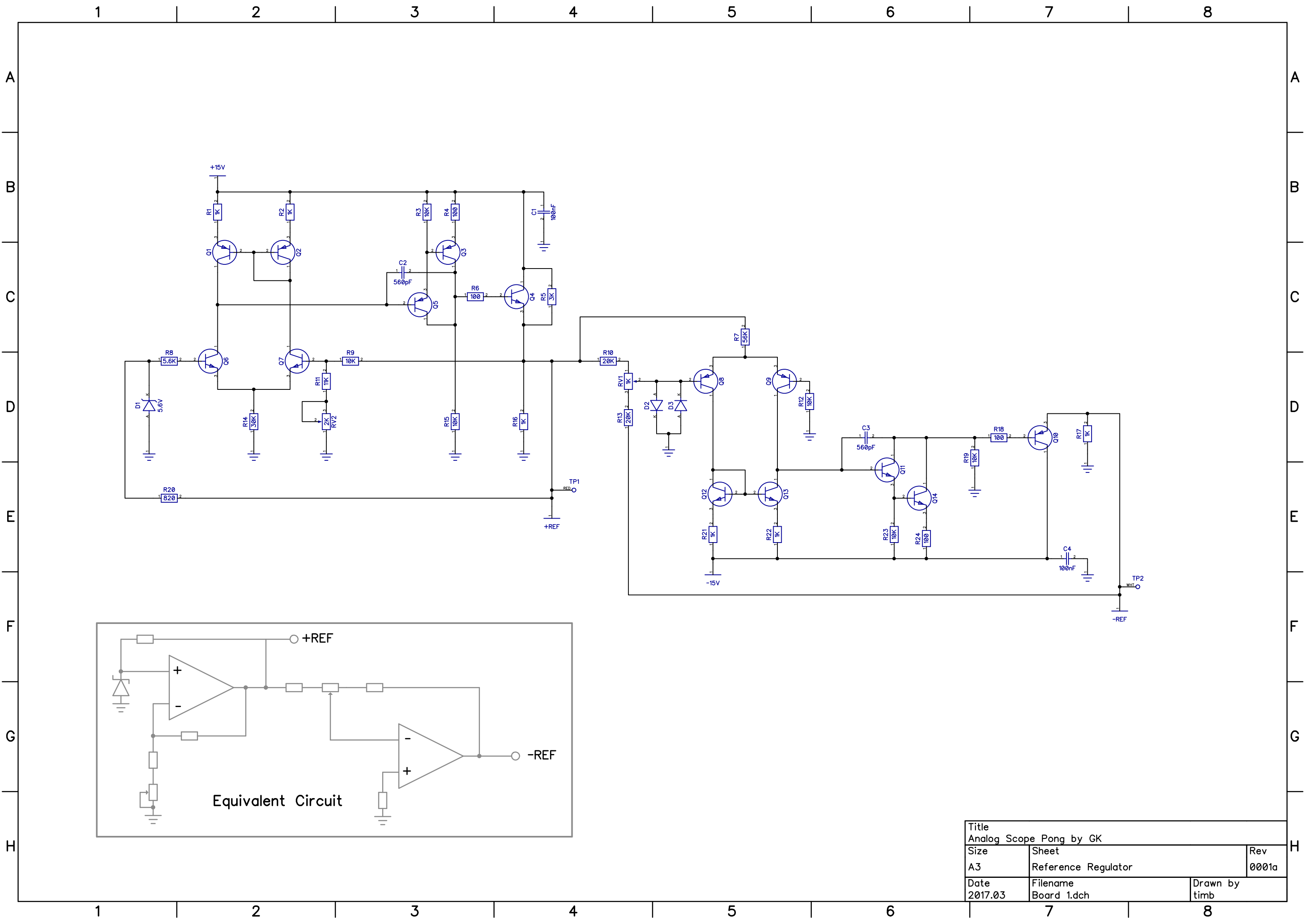
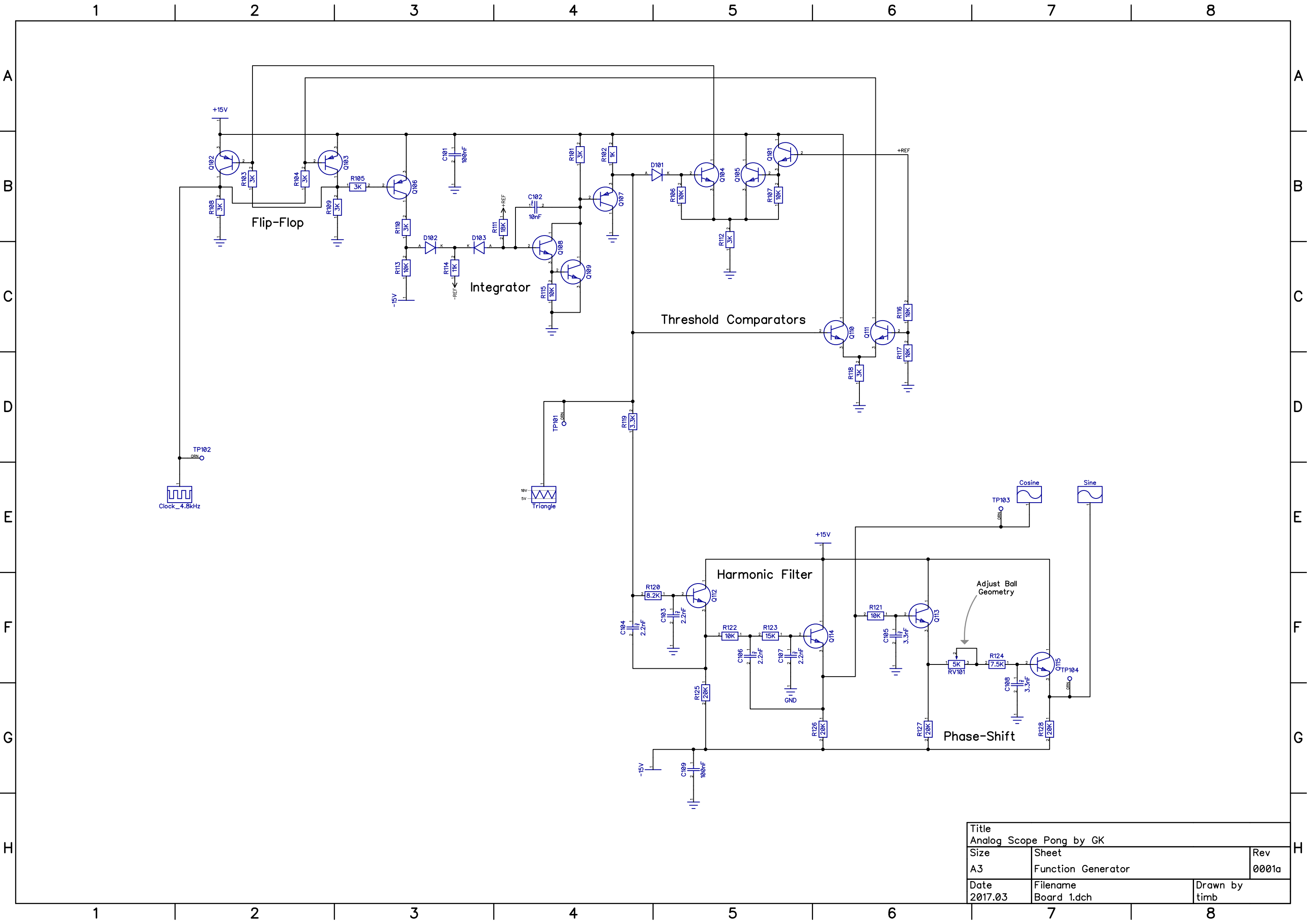
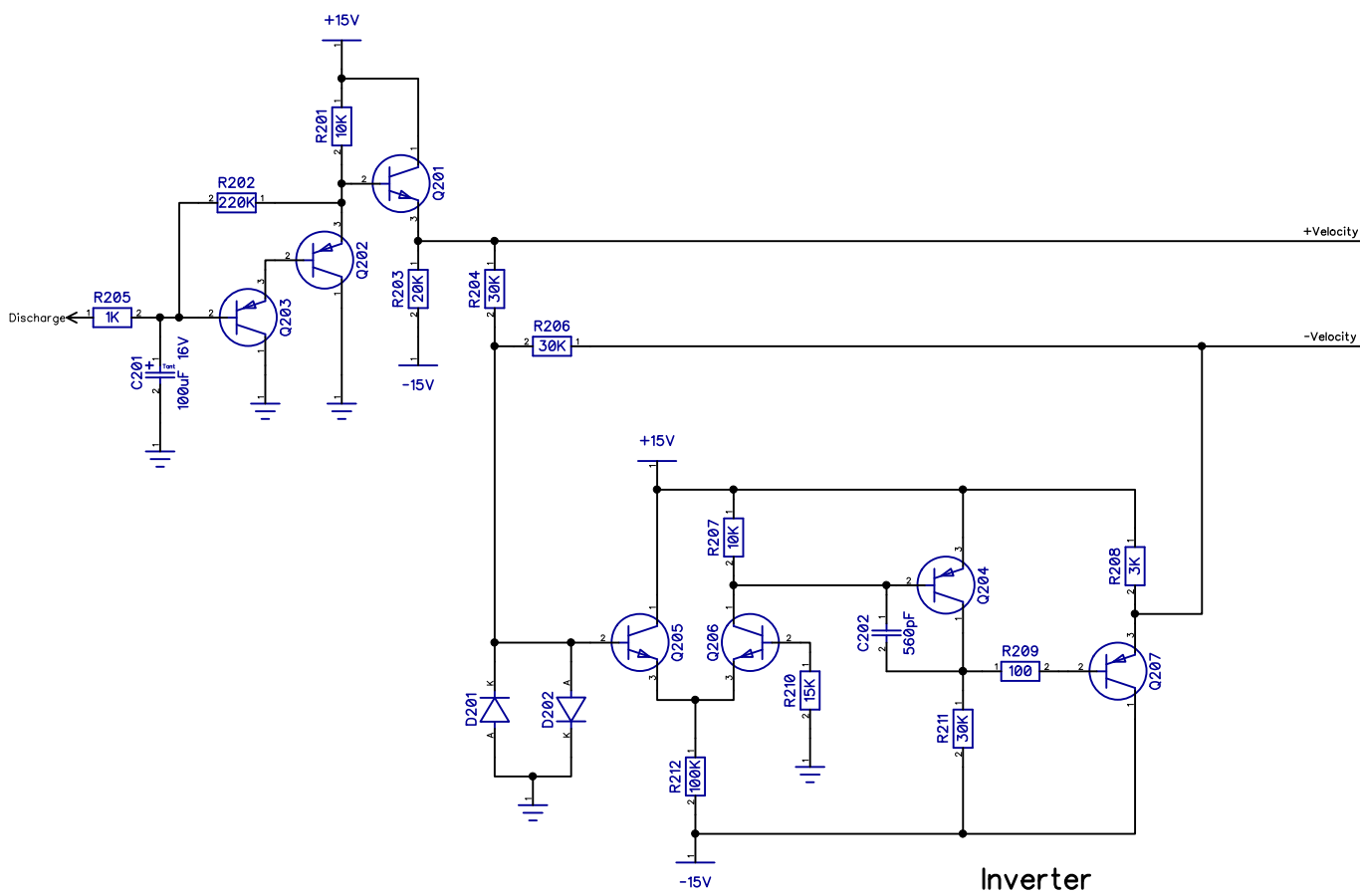


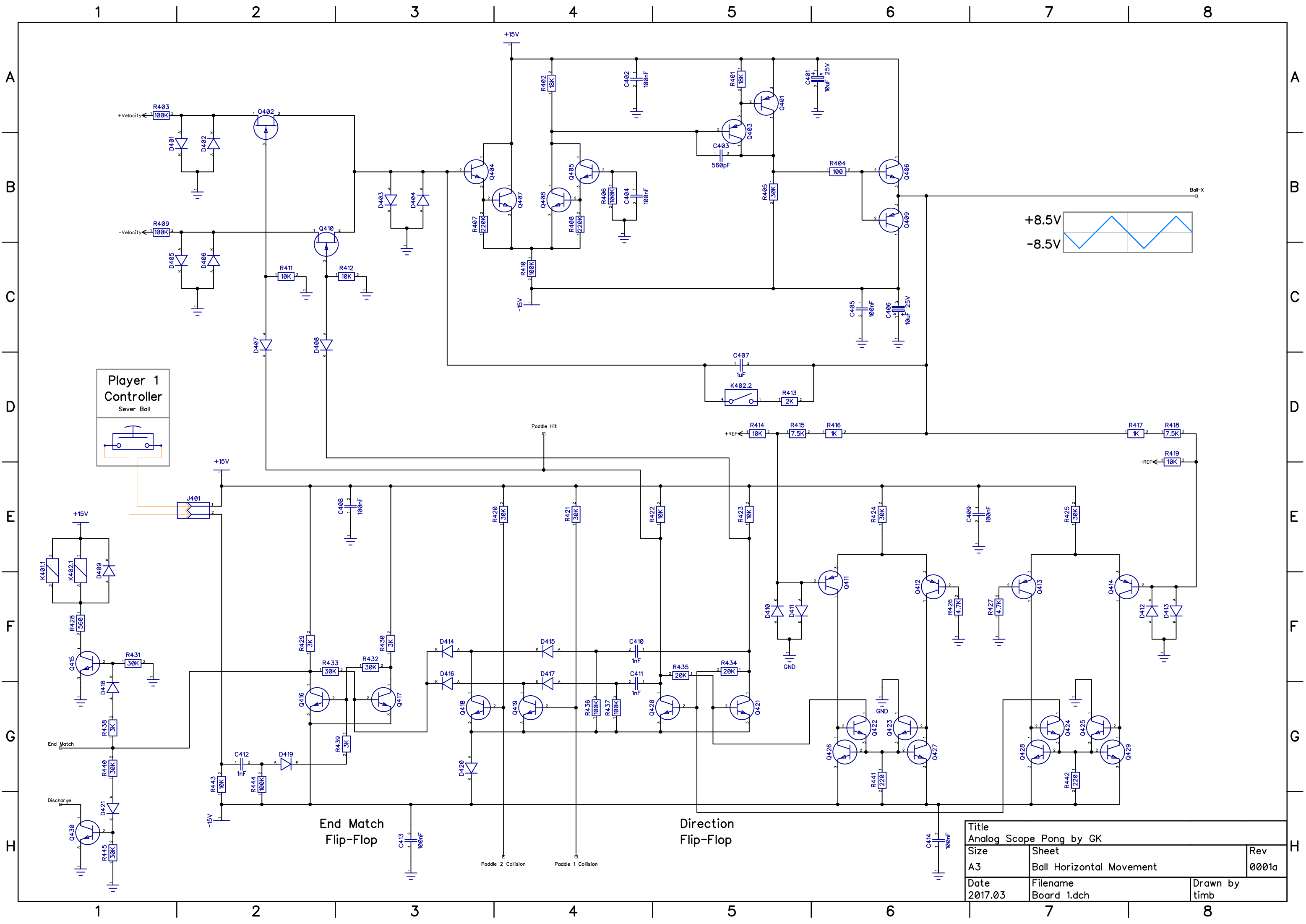




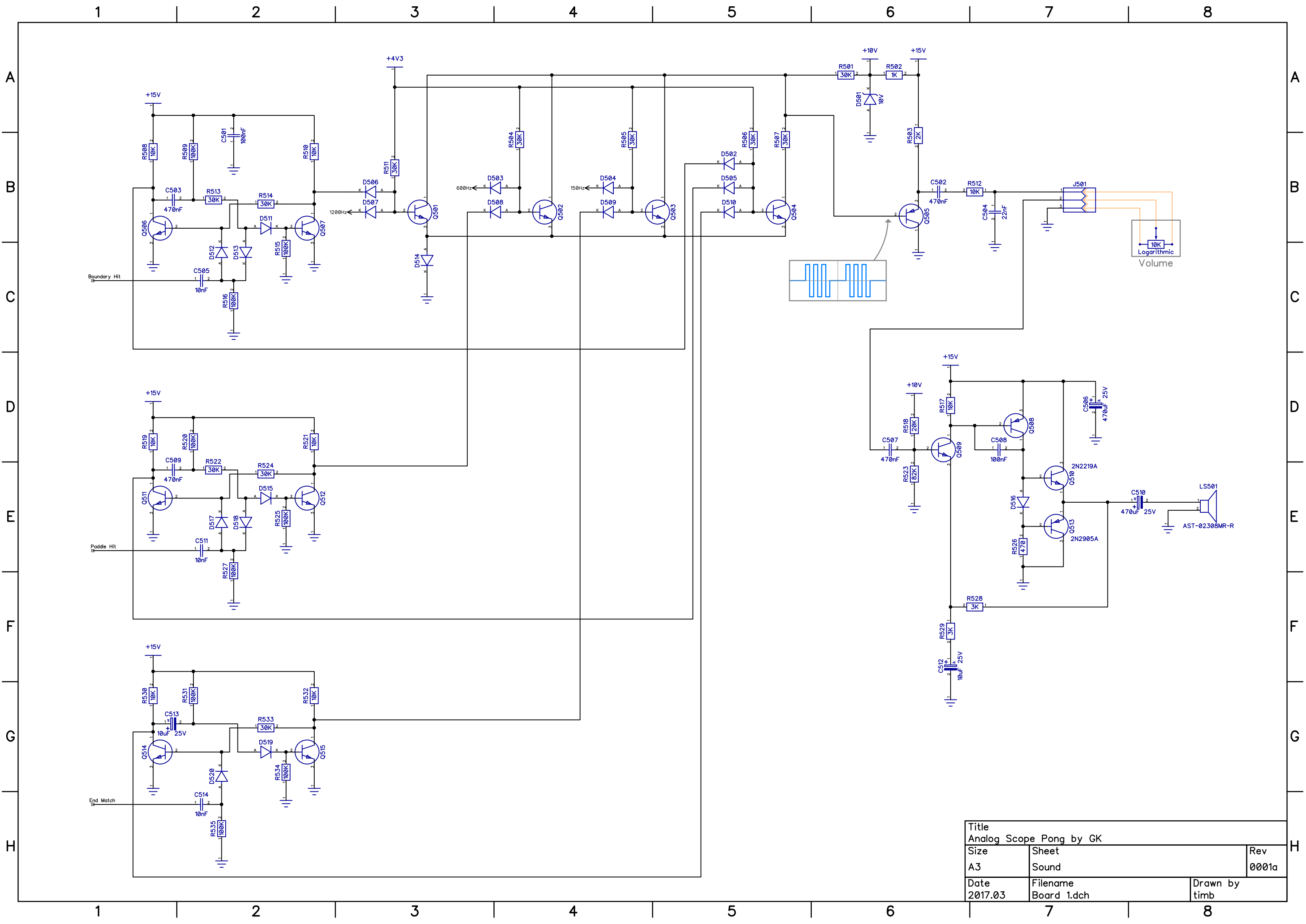
Title		
Analog Scope Pong by GK		
Size	Sheet	Rev
A3	Function Generator	0001a
Date	Filename	Drawn by
2017.03	Board 1.dch	timb



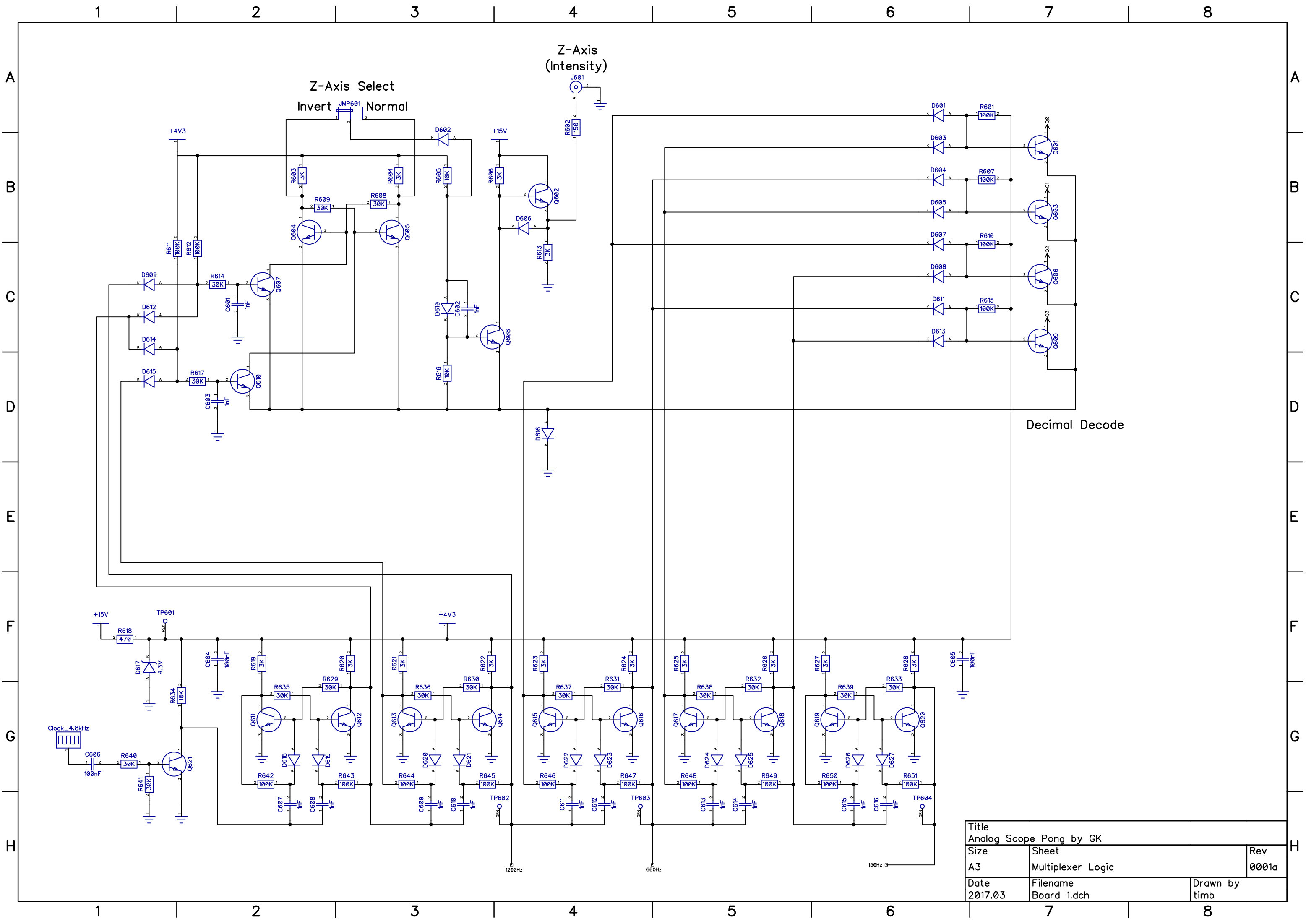
Title		
Analog Scope Pong by GK		
Size	Sheet	Rev
A3	Velocity Integrator	0001a
Date	Filename	Drawn by
2017.03	Board 1.dch	timb

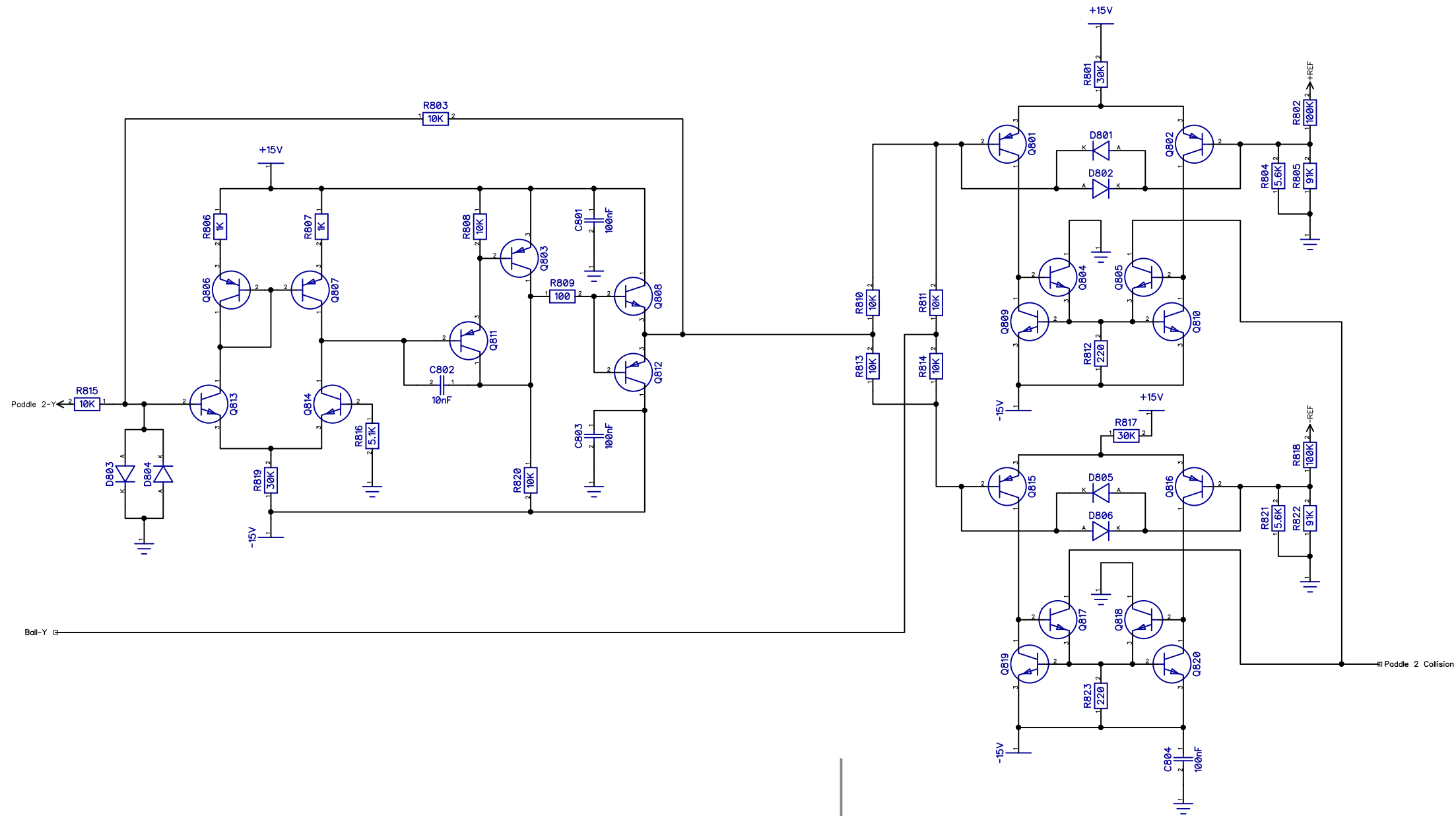


Title		
Analog Scope Pong by GK		
Size	Sheet	Rev
A3	Ball Horizontal Movement	0001a
Date	Filename	Drawn by
2017.03	Board 1.dch	timb



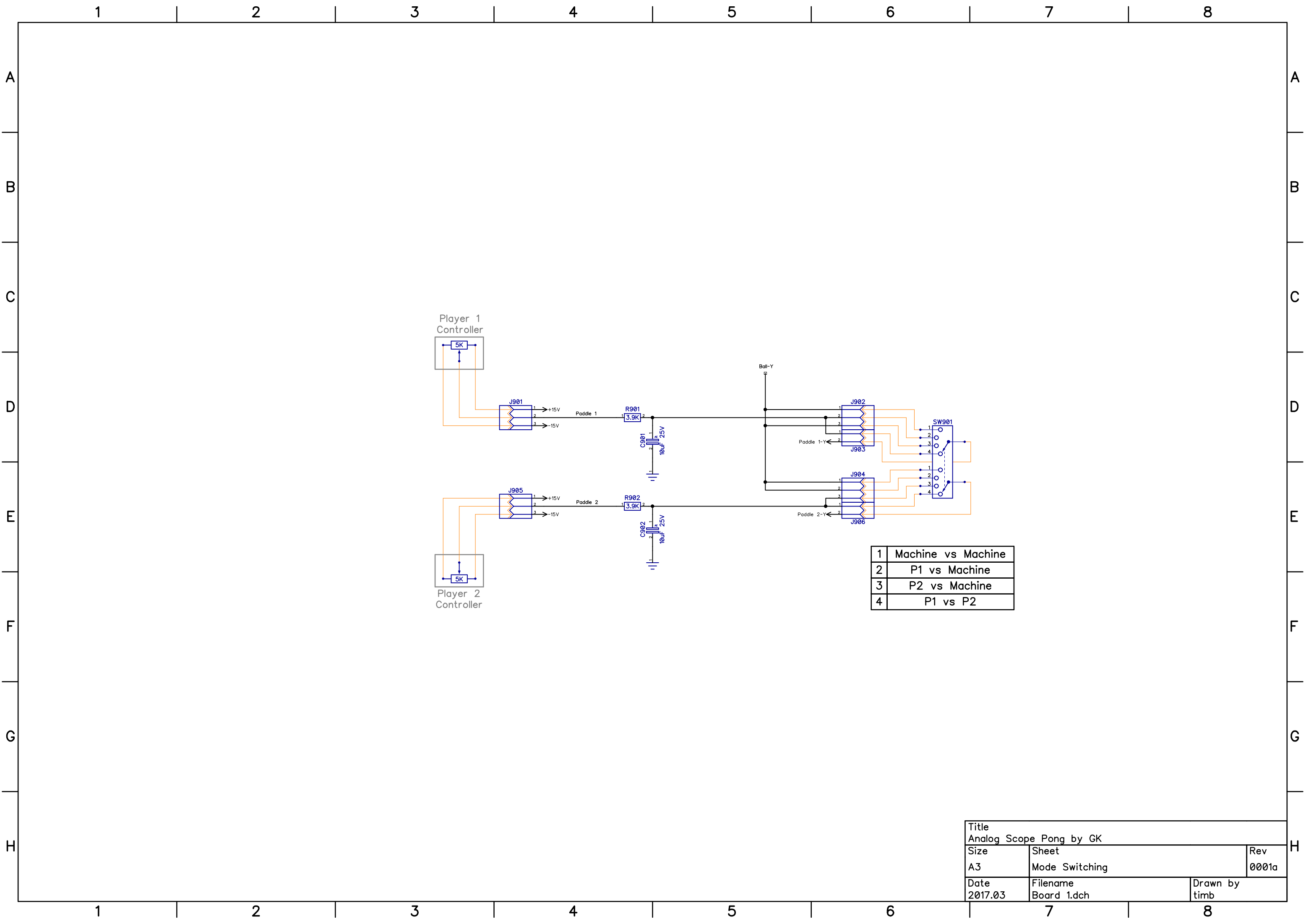
Title		
Analog Scope Pong by GK		
Size	Sheet	Rev
A3	Sound	0001a
Date	Filename	Drawn by
2017.03	Board 1.dch	timb



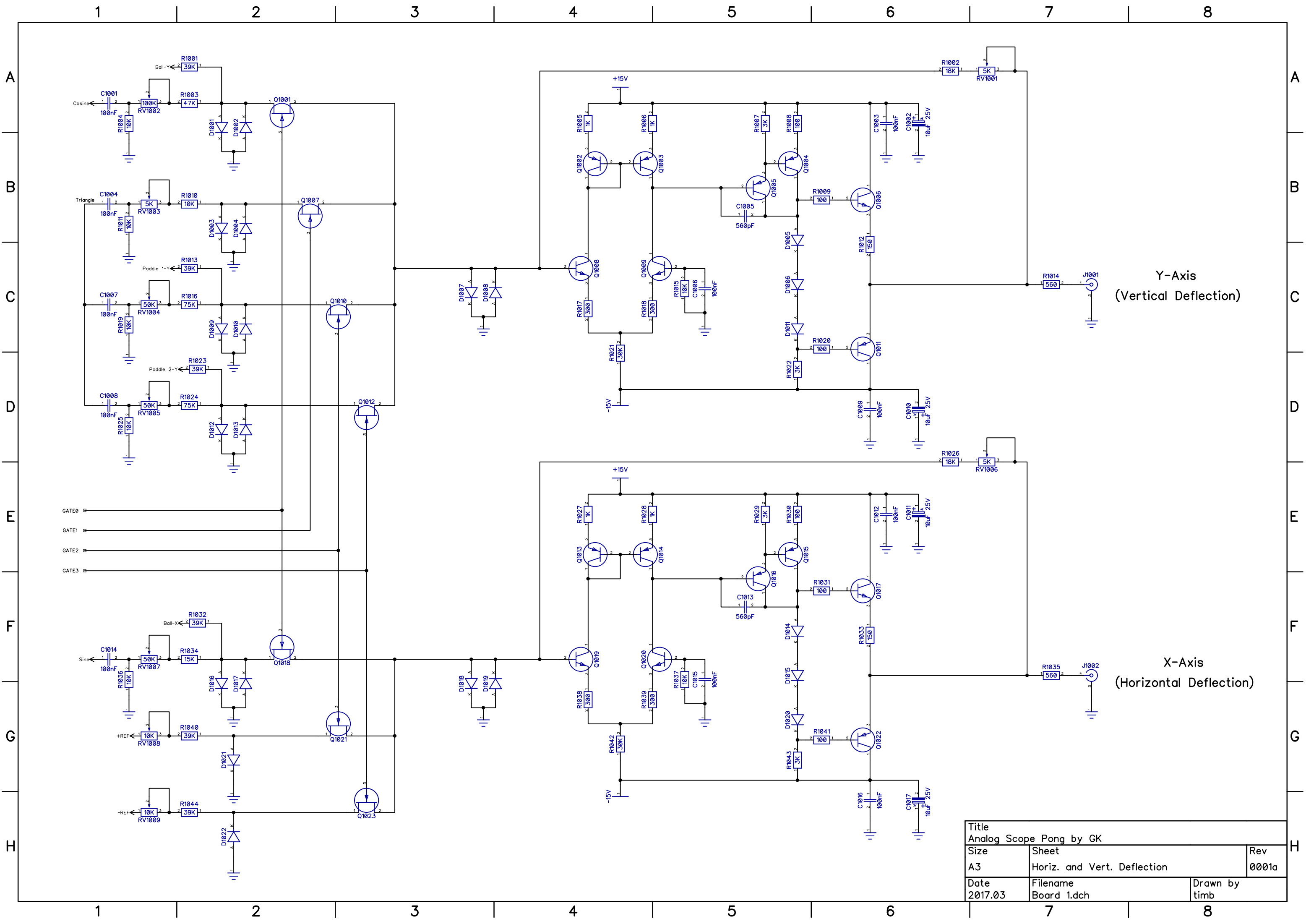


Paddle-Height Window Comparators

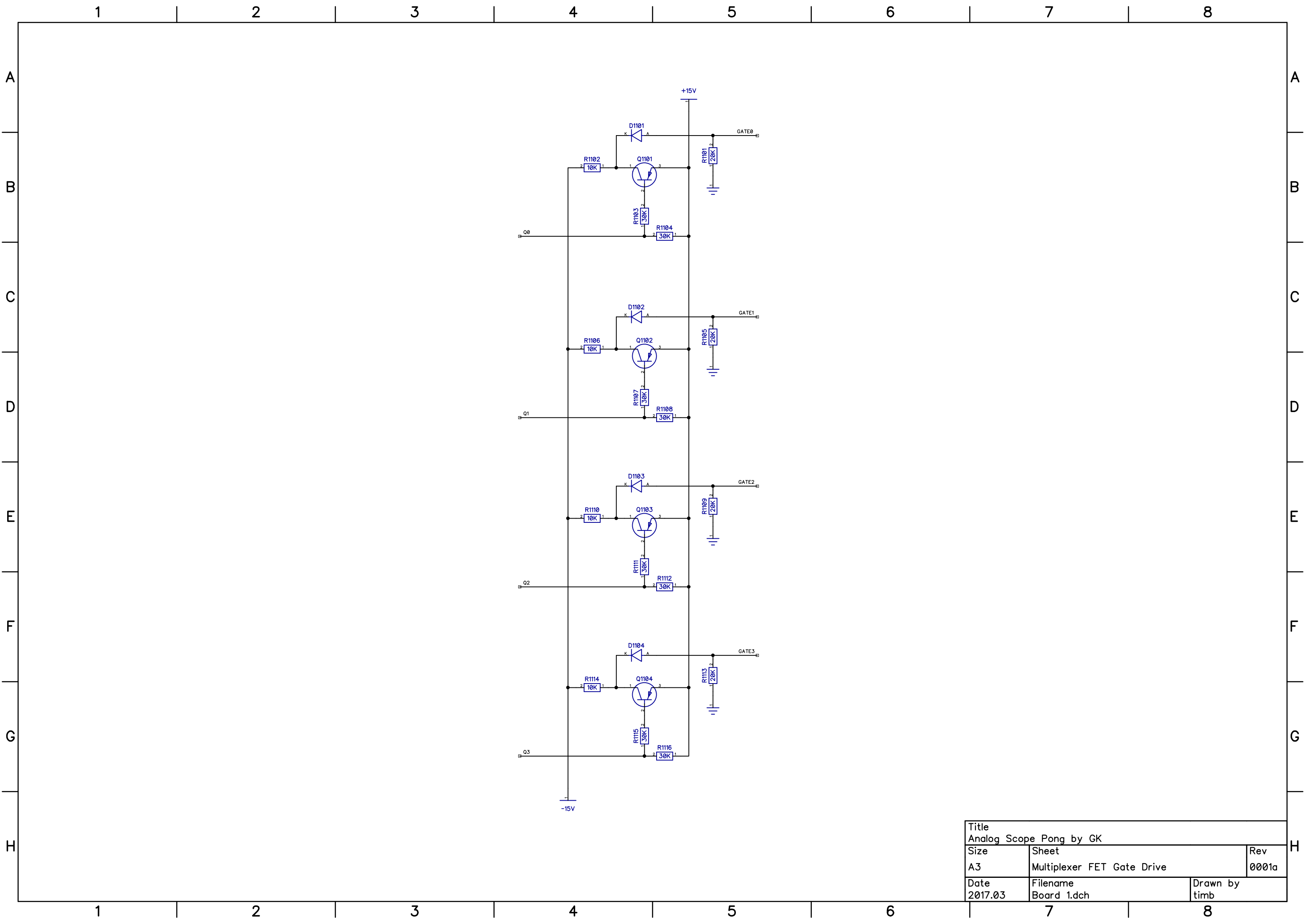
Title		
Analog Scope Pong by GK		
Size	Sheet	Rev
A3	Paddle 2 Ball Collision Detection	0001a
Date	Filename	Drawn by
2017.03	Board 1.dch	timb



Title		
Analog Scope Pong by GK		
Size	Sheet	Rev
A3	Mode Switching	0001a
Date	Filename	Drawn by
2017.03	Board 1.dch	timb



Title		
Analog Scope Pong by GK		
Size	Sheet	Rev
A3	Horiz. and Vert. Deflection	0001a
Date	Filename	Drawn by
2017.03	Board 1.dch	timb



Title		
Analog Scope Pong by GK		
Size	Sheet	Rev
A3	Multiplexer FET Gate Drive	0001a
Date	Filename	Drawn by
2017.03	Board 1.dch	timb

1		2		3		4	
RefDes		Value	Manufacturer	Name	Quantity		
A	C1, C4, C101, C109, C302, C304, C305, C308, C402, C404, C405, C408, C409, C413, C414, C501, C508, C604, C605, C606, C701, C702, C704, C801, C803, C804, C1001, C1003, C1004, C1006, C1007, C1008, C1009, C1012, C1014, C1015, C1016, C1202, C1204, C1208, C1210	100nF		Ceramic (5/4x2.5)	41		
	C2, C3, C202, C303, C403, C1005, C1013	560pF		Ceramic (5/4x2.5)	7		
	C102	10nF	Kemet	R82EC2100AA50J	1		
	C103, C104, C106, C107	2.2nF	Kemet	R82EC1220AA50J	4		
	C105, C108	3.3nF	Kemet	R82EC1330AA50J	2		
	C201	100uF 16V	Kemet	T356L107K016AT	1		
	C301, C306, C401, C406, C512, C513, C1002, C1010, C1011, C1017, C1207, C1214	10uF 25V	Nichicon	UVZ1E100MDD	12		
	C307, C407	1uF		Ceramic (5/4x2.5)	2		
	C410, C411, C412, C601, C602, C603, C607, C608, C609, C610, C611, C612, C613, C614, C615, C616	1nF		Ceramic (5/4x2.5)	16		
	C502, C503, C507, C509	470nF		Ceramic (5/4x2.5)	4		
B	C504	22nF		Ceramic (5/4x2.5)	1		
	C505, C511, C514, C703, C802	10nF		Ceramic (5/4x2.5)	5		
	C506, C510	470uF 25V	Nichicon	UPW1E471MPD	2		
	C901, C902	10uF 25V	Panasonic	ECE-A1EN100U	2		
	C1201, C1205, C1209, C1212	100uF 25V	Nichicon	UVZ1E101MED1TA	4		
	C1203, C1211	3.3mF 35V	Nichicon	UVZ1V332MHD	2		
	C1206, C1213	100pF		Ceramic (5/4x2.5)	2		
	D1	5.6V	ON Semiconductor	BZX79C5V6	1		
	D2, D3, D101, D102, D103, D201, D202, D301, D302, D303, D304, D305, D306, D307, D308, D309, D310, D311, D312, D313, D401, D402, D403, D404, D405, D406, D407, D408, D409, D410, D411, D412, D413, D414, D415, D416, D417, D418, D419, D420, D421, D502, D503, D504, D505, D506, D507, D508, D509, D510, D511, D512, D513, D514, D515, D516, D517, D518, D519, D520, D601, D602, D603, D604, D605, D606, D607, D608, D609, D610, D611, D612, D613, D614, D615, D616, D618, D619, D620, D621, D622, D623, D624, D625, D626, D627, D701, D702, D703, D704, D705, D706, D801, D802, D803, D804, D805, D806, D1001, D1002, D1003, D1004, D1005, D1006, D1007, D1008, D1009, D1010, D1011, D1012, D1013, D1014, D1015, D1016, D1017, D1018, D1019, D1020, D1021, D1022, D1101, D1102, D1103, D1104		ON Semiconductor	1N4148	124		
	D501	10V	ON Semiconductor	BZX79C10	1		
C	D617	4.3V	ON Semiconductor	BZX79C4V3	1		
	D1201, D1207	Red	Kingbright	WP7113	2		
	D1202, D1203, D1204, D1205		Vishay	1N4001	4		
	D1206, D1208	6.2V	ON Semiconductor	BZX79B6V2	2		
	F1201, F1202	750mA	Bourns	MF-R075	2		
	HS1201, HS1202		Aavid	581002B02500G	2		
	J401, J903, J906		Phoenix Contact	1729128	3		
	J501, J901, J902, J904, J905, J1201		Phoenix Contact	1729131	6		
	J601, J1001, J1002		TE	1-1634613-0	3		
	JMP601			TH Selector (2.54mm)	1		
D	K401, K402		Coto	9007	2		
	LS501		Pui Audio	AST-02308MR-R	1		
	Q1, Q2, Q3, Q5, Q8, Q9, Q10, Q102, Q103, Q106, Q107, Q202, Q203, Q204, Q207, Q301, Q303, Q309, Q311, Q312, Q313, Q314, Q401, Q403, Q409, Q411, Q412, Q413, Q414, Q505, Q508, Q701, Q702, Q703, Q706, Q707, Q711, Q712, Q715, Q716, Q801, Q802, Q803, Q806, Q807, Q811, Q812, Q815, Q816, Q1002, Q1003, Q1004, Q1005, Q1011, Q1013, Q1014, Q1015, Q1016, Q1022, Q1101, Q1102, Q1103, Q1104		ON Semiconductor	BC560CTA	63		
	Q4, Q6, Q7, Q11, Q12, Q13, Q14, Q101, Q104, Q105, Q108, Q109, Q110, Q111, Q112, Q113, Q114, Q115, Q201, Q205, Q206, Q304, Q305, Q306, Q307, Q308, Q315, Q316, Q317, Q318, Q319, Q320, Q321, Q322, Q323, Q324, Q404, Q405, Q406, Q407, Q408, Q415, Q416, Q417, Q418, Q419, Q420, Q421, Q422, Q423, Q424, Q425, Q426, Q427, Q428, Q429, Q430, Q501, Q502, Q503, Q504, Q506, Q507, Q509, Q511, Q512, Q514, Q515, Q601, Q602, Q603, Q604, Q605, Q606, Q607, Q608, Q609, Q610, Q611, Q612, Q613, Q614, Q615, Q616, Q617, Q618, Q619, Q620, Q621, Q704, Q705, Q708, Q709, Q710, Q713, Q714, Q717, Q718, Q719, Q720, Q804, Q805, Q808, Q809, Q810, Q813, Q814, Q817, Q818, Q819, Q820, Q1006, Q1008, Q1009, Q1017, Q1019, Q1020		ON Semiconductor	BC550CTA	117		
	Q302, Q310, Q402, Q410, Q1001, Q1007, Q1010, Q1012, Q1018, Q1021, Q1023		ON Semiconductor	MMBF5484	11		
	Q510		Central Semi	2N2219A	1		
	Q513		Central Semi	2N2905A	1		
	Q1201		ON Semiconductor	TIP110	1		
	Q1202, Q1203		ON Semiconductor	2N3904TF	2		
	E	Q1204		ON Semiconductor	TIP115	1	
Q1205, Q1206			ON Semiconductor	2N3906TF	2		
R1, R2, R16, R17, R21, R22, R25, R26, R102, R205, R416, R417, R502, R706, R707, R806, R807, R1005, R1006, R1027, R1028, R1205, R1211		1K		Resistor (7.62/6.5x2.5)	23		
R3, R9, R12, R15, R19, R23, R106, R107, R113, R115, R116, R117, R121, R122, R201, R207, R311, R312, R318, R321, R322, R323, R411, R412, R414, R419, R422, R423, R443, R508, R510, R512, R517, R519, R521, R530, R532, R605, R616, R634, R703, R708, R710, R711, R713, R714, R715, R720, R803, R808, R810, R811, R813, R814, R815, R820, R1004, R1010, R1011, R1015, R1019, R1025, R1036, R1037, R1102, R1106, R1110, R1114		10K		Resistor (7.62/6.5x2.5)	68		
R4, R6, R18, R24, R209, R304, R404, R709, R809, R1008, R1009, R1020, R1030, R1031, R1041		100		Resistor (7.62/6.5x2.5)	15		
R5, R101, R103, R104, R105, R108, R109, R110, R112, R118, R208, R429, R430, R438, R439, R528, R529, R603, R604, R606, R613, R619, R620, R621, R622, R623, R624, R625, R626, R627, R628, R1007, R1022, R1029, R1043		3K		Resistor (7.62/6.5x2.5)	35		
R7		56K		Resistor (7.62/6.5x2.5)	1		

1

2

3

4

1		2		3		4	
RefDes		Value	Manufacturer	Name	Quantity		
R8, R704, R721, R804, R821		5.6K		Resistor (7.62/6.5x2.5)	5		
R10, R13, R125, R126, R127, R128, R203, R324, R325, R434, R435, R518, R1101, R1105, R1109, R1113		20K		Resistor (7.62/6.5x2.5)	16		
R11, R114		11K		Resistor (7.62/6.5x2.5)	2		
A	R14, R204, R206, R211, R306, R314, R315, R405, R420, R421, R424, R425, R431, R432, R433, R440, R445, R501, R504, R505, R506, R507, R511, R513, R514, R522, R524, R533, R608, R609, R614, R617, R629, R630, R631, R632, R633, R635, R636, R637, R638, R639, R640, R641, R701, R717, R719, R801, R817, R819, R1021, R1042, R1103, R1104, R1107, R1108, R1111, R1112, R1115, R1116	30K		Resistor (7.62/6.5x2.5)	60	A	
	R20	820		Resistor (7.62/6.5x2.5)	1		
	R111, R301, R302, R401, R402, R1002, R1026	18K		Resistor (7.62/6.5x2.5)	7		
	R119	3.3K		Resistor (7.62/6.5x2.5)	1		
	R120	8.2K		Resistor (7.62/6.5x2.5)	1		
R123, R210, R1034		15K		Resistor (7.62/6.5x2.5)	3		
R124, R316, R317, R415, R418		7.5K		Resistor (7.62/6.5x2.5)	5		
R202, R307, R308, R407, R408		220K		Resistor (7.62/6.5x2.5)	5		
B	R212, R303, R305, R309, R310, R403, R406, R409, R410, R436, R437, R444, R509, R515, R516, R520, R525, R527, R531, R534, R535, R601, R607, R610, R611, R612, R615, R642, R643, R644, R645, R646, R647, R648, R649, R650, R651, R702, R718, R802, R818	100K		Resistor (7.62/6.5x2.5)	41		
	R313, R413, R503, R1202, R1203, R1208, R1209	2K		Resistor (7.62/6.5x2.5)	7	B	
	R319, R320	4.3K		Resistor (7.62/6.5x2.5)	2		
	R326, R327, R441, R442, R712, R723, R812, R823	220		Resistor (7.62/6.5x2.5)	8		
	R426, R427	4.7K		Resistor (7.62/6.5x2.5)	2		
R428, R1014, R1035		560		Resistor (7.62/6.5x2.5)	3		
R523		82K		Resistor (7.62/6.5x2.5)	1		
R526, R618		470		Resistor (7.62/6.5x2.5)	2		
R602, R1012, R1033		150		Resistor (7.62/6.5x2.5)	3		
R705, R722, R805, R822		91K		Resistor (7.62/6.5x2.5)	4		
R716, R816		5.1K		Resistor (7.62/6.5x2.5)	2		
R901, R902		3.9K		Resistor (7.62/6.5x2.5)	2		
R1001, R1013, R1023, R1032, R1040, R1044		39K		Resistor (7.62/6.5x2.5)	6		
C	R1003	47K		Resistor (7.62/6.5x2.5)	1		
	R1016, R1024	75K		Resistor (7.62/6.5x2.5)	2	C	
	R1017, R1018, R1038, R1039	300		Resistor (7.62/6.5x2.5)	4		
	R1201, R1207	1		Resistor (15.24/11x4.5)	2		
	R1204, R1210	12K		Resistor (7.62/6.5x2.5)	2		
R1206, R1212		9K		Resistor (7.62/6.5x2.5)	2		
RV1		1K	Bourns	3296W-1-102LF	1		
RV2		2K	Bourns	3296W-1-202LF	1		
RV101, RV1001, RV1003, RV1006		5K	Bourns	3386F	4		
RV501		10K		Ext. Potentiometer	1		
RV901, RV902		5K		Ext. Potentiometer	2		
RV1002		100K	Bourns	3386F	1		
RV1004, RV1005, RV1007		50K	Bourns	3386F	3		
RV1008, RV1009		10K	Bourns	3386F	2		
D	RV1201, RV1202	2K	Bourns	3296W	2	D	
	SW1		E-Switch	500SPD1S1M2QEA	1		
	SW401			Ext. Pushbutton	1		
	SW901			Ext. DP4T Rotary Switch	1		
	TP1, TP601, TP1201		Keystone	5005	3		
TP2, TP1202			Keystone	5007	2		
TP101, TP102, TP103, TP104, TP602, TP603, TP604			Keystone	5008	7		
TP1203			Keystone	5006	1		
					839		
E		E					
F		F					
1	2	3	4				