Bill Of Materials for Voltage Controlled Angle Generator Plus

Design Title	Voltage Controlled Angle Generator Plus
Author	Dustin Stroh J3RK
Document Number	
Revision	3.0
Design Created	Wednesday, April 23, 2025
Design Last Modified	Wednesday, April 23, 2025
Total Parts In Design	133

0 Modules

Quantity	References	Value	PCB Package	Notes
Sub-totals:				

14 Capacitors

Quantity	References	Value	PCB Package	Notes
1	C1	68nF	CAP20	Main Timing Capacitor (can be adjusted within reason) C0G/NP0 or Polypropylene Film
2	C2,C10	10nF	CAP10	C0G/NP0 MLCC / Ceramic / Film
1	C3	47pF	CAP20	C0G/NP0 MLCC / Ceramic / Film
2	C4,C8	100pF	CAP10	C0G/NP0 MLCC / Ceramic / Film
4	C5-C7,C9	1200pF	CAP10	C0G/NP0 MLCC / Ceramic / Film
1	C11	330pF	CAP10	C0G/NP0 MLCC / Ceramic / Film
1	C12	1uF	CAP20	Secondary SLOW MODE Timing Capacitor (can also be adjusted within reason) C0G/NP0 or Polypropylene Fim
1	C13	470pF	CAP10	C0G/NP0 MLCC / Ceramic / Film
1	C14	100nF	CAP10	C0G/NP0 MLCC / Ceramic / Film
Sub-totals:				

46 Resistors

Quantity	References	Value	PCB Package	Notes
1	R1	14k	RES40	1% Resistor (50PPM / 100PPM)
2	R2-R3	4.99k	RES40	1% Resistor (50PPM / 100PPM)
13	R4-R8,R32-R33,R40-R42,R44-R46	10K	RES40	1% Resistor (50PPM / 100PPM)
3	R9,R47-R48	100R	RES40	1% Resistor (50PPM / 100PPM)
2	R10,R23	49.9K	RES40	1% Resistor (50PPM / 100PPM)
2	R11,R17	10k	RES40	1% Resistor (50PPM / 100PPM)
2	R12-R13	4.7R	RES40	1% Resistor (50PPM / 100PPM)
1	R14	470R	RES40	1% Resistor (50PPM / 100PPM)
7	R15,R18,R25,R27-R30	100K	RES40	1% Resistor (50PPM / 100PPM)
4	R16,R20,R22,R24	220R	RES40	1% Resistor (50PPM / 100PPM)
2	R19,R21	390K	RES40	1% Resistor (50PPM / 100PPM)
1	R26	49.9k	RES40	1% Resistor (50PPM / 100PPM)
1	R31	680R	RES40	1% Resistor (50PPM / 100PPM)
1	R34	3.01K	RES40	1% Resistor (50PPM / 100PPM)
1	R35	330R	RES40	1% Resistor (50PPM / 100PPM)
1	R36	82K	RES40	1% Resistor (50PPM / 100PPM)
1	R37	5.6K	RES40	1% Resistor (50PPM / 100PPM)
1	R43	8.06K	RES40	1% Resistor (50PPM / 100PPM)
Sub-totals:				

10 Integrated Circuits

Quantity	References	Value	PCB Package	Notes
1	U1	4001	SO14	Any brand CD4001 is fine.
2	U2-U3	DG418	SOIC127P600X175-8	DG418LDY SOIC8 version widely available, and works perfectly here.

1	U4	LF347	SO14	Most standard quad op amps are fine here. However, something a bit more DC accurate with high slew rate (Maybe OP4180 or the like) may improve performance.
1	U5	J2164	SO16	Sound Semiconductor SSI2164 Quad VCA (SSI version only.)
1	U6	OPA2134UA	SO8	OPA 2134 / OPA 2132 / LF412 or any decent DC accuracy, fast slew rate, op amp.
1	U7	LM4040-5	TO92	LM4040 5V (A, B, or C version fine.)
1	U8	TLE2062	SO8	This Buffers the Voltage References, and needs to supply decent current. TLE2062 (or similar high output with wide swing op amp REQUIRED)
1	U9	TL074	SO14	Any standard quad op amp here. This is just for the OR Mixer circuit.
1	U10	TLE2061	SO8	TLE2071 / TLE2081 / AD8033 / LF356 / CA3140 Highly Recommended here. (TLE2061 is not recommended here, but works fine.)

Sub-totals:

5 Transistors

Quantity	References	Value	PCB Package	Notes
5	Q1-Q5	2N3904	TO92	2N3904 or Equivalent NPN (EBC Pinout Used on PCB)

Sub-totals:

14 Diodes

Quantity	References	Value	PCB Package	Notes
14	D1-D14	1N4148	DIODE30	Small Signal Diode 1N4148 or Equivalent

Sub-totals:

44 Miscellaneous

Quantity	References	Value	PCB Package	Notes
15	+5,+12,-5,-12,-0.032, 0V,ACV,DCV,EOC,IN, OAL,OBL,OIO,ORO, OUT	CONN-SIL1	CONN-SIL1	PCB PADS
3	AD AR SW,OS CY SW,RATE SW	SW-SPST	CONN-SIL2	SPST / SPDT Toggle Switch (NKK Recommended)
4	ALVL,ASCEND, BLVL,DESCEND	100K	CONN-SIL3	Panel Pots
15	BP1-BP15	100nF	0805	Decoupling / Bypass 0805 Capacitors C0G/NP0
2	FB1-FB2	0R	RES40	Ferrite Beads
1	J1	SIL-156-04	SIL-156-04	MTA-156 Friction Lock Power Header
2	LED1-LED2	LED-YELLOW	CONN-SIL2	Any Single Color LED
2	PF1-PF2	10uF	ELEC-RAD10	Electrolytic Power Filtering Capacitors

Sub-totals:

Totals:

Wednesday, April 23, 2025 12:08:37 PM