

## Generic components



NB: All resistors 1/4W or better, except where noted

Left	Right	Value	Left	Right	Value	Left	Right	Value
C1	C21	220u 25V	D1	D21	Cheap red LED	R1	R21	47k
C2	C22	100n 350V	D2	D22	1N4007	R2	R22	100R
C6	C26	220u 25V	D3	D23	BZX55C15	R4	R24	1M
C7	C27	10u 350V	D4	D24	BZX55C15	R9	R29	1k
C8	C28	10u 25V				R15	R215	100R
C9	C29	47u 350V	P1	-	500R	R16	R216	1M
C10	C210	47u 350V				R17	R217	1M
Cx	C2x	Optional cartridge loading				R18	R218	4.7k 2W
						R19	R219	2.2k 2W



All-in-one

Choose equalisation

Split

Choose V1



Choose V1



	V1	ECC81 12AT7	<del>ECC82 12AU7</del>	ECC83 12AX7	ECC88 6DJ8	6N1P 6H1Π
Left	Right	Value	Value	Value	Value	Value
C3	C23	10n 100V		10n 100V	10n 100V	10n 100V
R3	R23	47k 2W		120k 2W	47k 2W	47k 2W
R5	R25	150k		150k	180k	180k
R6	R26	56k		27k	33k	30k
R7	R27	30k		30k	30k	30k
R8	R28	1.8k		1.8k	1.8k	1.8k
Input stage gain		42		64	26	25
Miller Capacitance		140p		190p	85p	120p



	V1	ECC81 12AT7	ECC82 12AU7	ECC83 12AX7	ECC88 6DJ8	6N1P 6H1Π
Left	Right	Value	Value	Value	Value	Value
<del>C3</del>	<del>C23</del>					
R3	R23	47k 2W	47k 2W	120k 2W	47k 2W	47k 2W
R5	R25	180k	180k	150k	180k	180k
R6	R26	6.8k	12k	7.5k	15k	10k
<del>R7</del>	<del>R27</del>					
<del>R8</del>	<del>R28</del>					
Input stage gain		42	16	64	26	25
Miller Capacitance		140p	55p	190p	85p	120p



↓  
Choose V2  
↓

↓  
Choose V2  
↓

	V2	ECC81 12AT7	ECC82 12AU7	ECC83 12AX7	ECC88 6DJ8	6N1P 6H1Π
Left	Right	Value	Value	Value	Value	Value
C4	C24	3.3n 100V	3.3n 100V	2.2n 100V	3.3n 100V	3.3n 100V
C5	C25	27p 100V	82p 100V	1n 100V	56p 100V	33p 100V
<del>C11</del>	<del>C211</del>					
R10	R210	47k 2W	47k 2W	120k 2W	47k 2W	47k 2W
R11	R211	680R	680R	1k	680R	820R
<del>R12</del>	<del>R212</del>					
R13	R213	1k	1k	1k	1k	1k
Second stage gain		33	14	56	23	22

	V2	ECC81 12AT7	ECC82 12AU7	ECC83 12AX7	ECC88 6DJ8	6N1P 6H1Π
Left	Right	Value	Value	Value	Value	Value
C4	C24	220p 100V	220p 100V	100p 100V	220p 100V	220p 100V
C5	C25	47p 100V	100p 100V	100p 100V	82p 100V	56p 100V
C11	C211	22n 350V	33n 350V	10n 350V	22n 350V	33n 350V
R10	R210	47k 2W	47k 2W	120k 2W	47k 2W	47k 2W
R11	R211	680R	680R	1k	680R	820R
R12	R212	15k	10k	30k	15k	10k
R13	R213	120k	82k	220k	130k	82k
Second stage gain		33	14	56	23	22

↙ Choose V3 ↓ ↘

	V3	ECC81 12AT7	ECC82 12AU7	<del>ECC83 12AX7</del>	ECC88 6DJ8	6N1P 6H1Π
Left	Right	Value	Value	<del>Value</del>	Value	Value
R14	R214	33k 2W	27k 2W		27k 2W	27k 2W
Output stage gain		1	1		1	1
Output Impedance		440R	630R		270R	450R