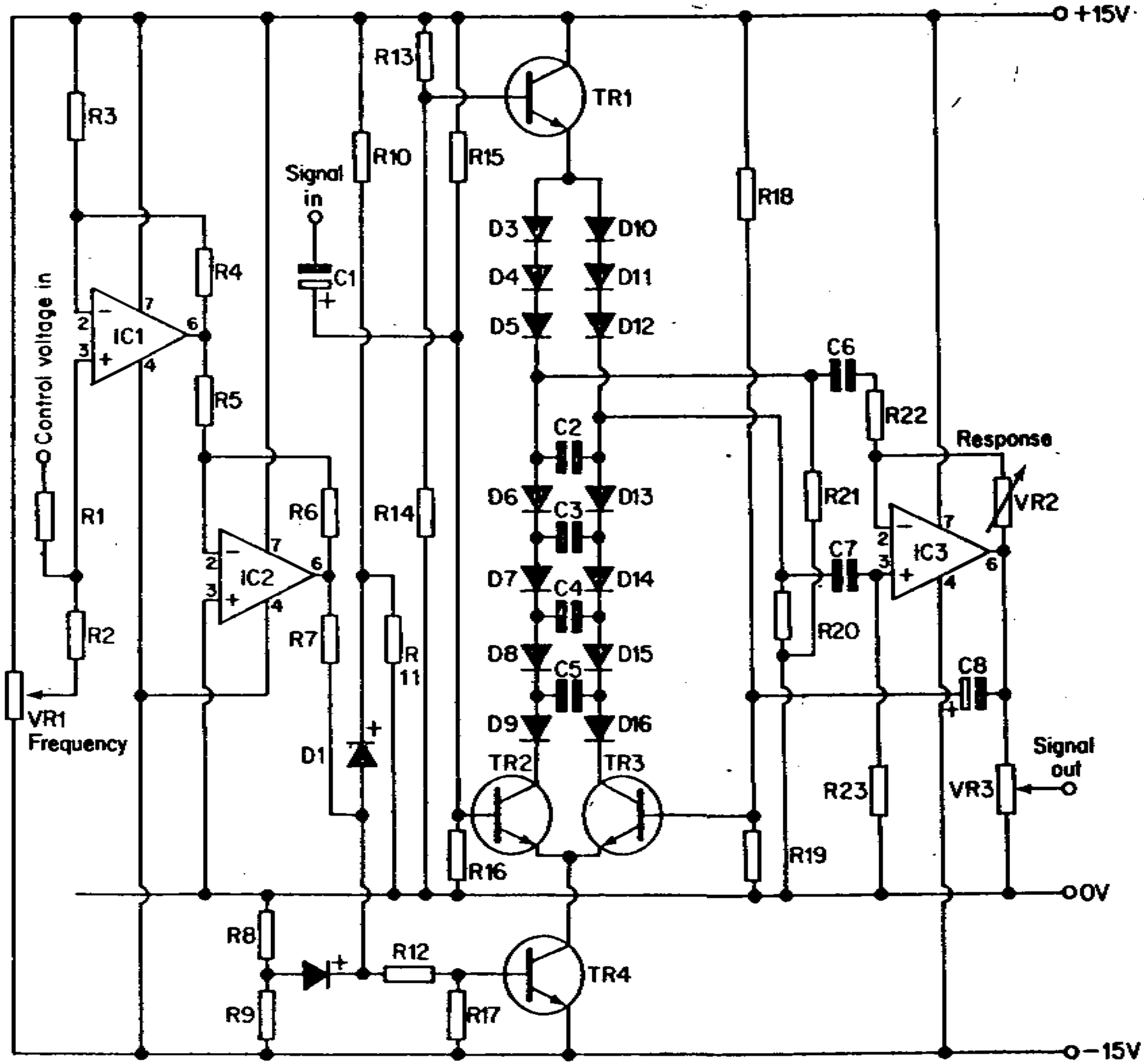


COMPONENTS

R1	3K3
R2	15K
R3	33K
R4	10K
R5	22K
R6	10K
R7	2K7
R8	2K2
R9	12K
R10	12K
R11	3K3
R12	12K
R13	22K
R14	39K
R15	12K
R16	3K3
R17	560Ω
R18	12K
R19	3K3
R20	390K
R21	390K
R22	56K
R23	56K

All ± 10% ¼W carbon

VR1 10K lin.
VR2 500K lin.
VR3 5K log.

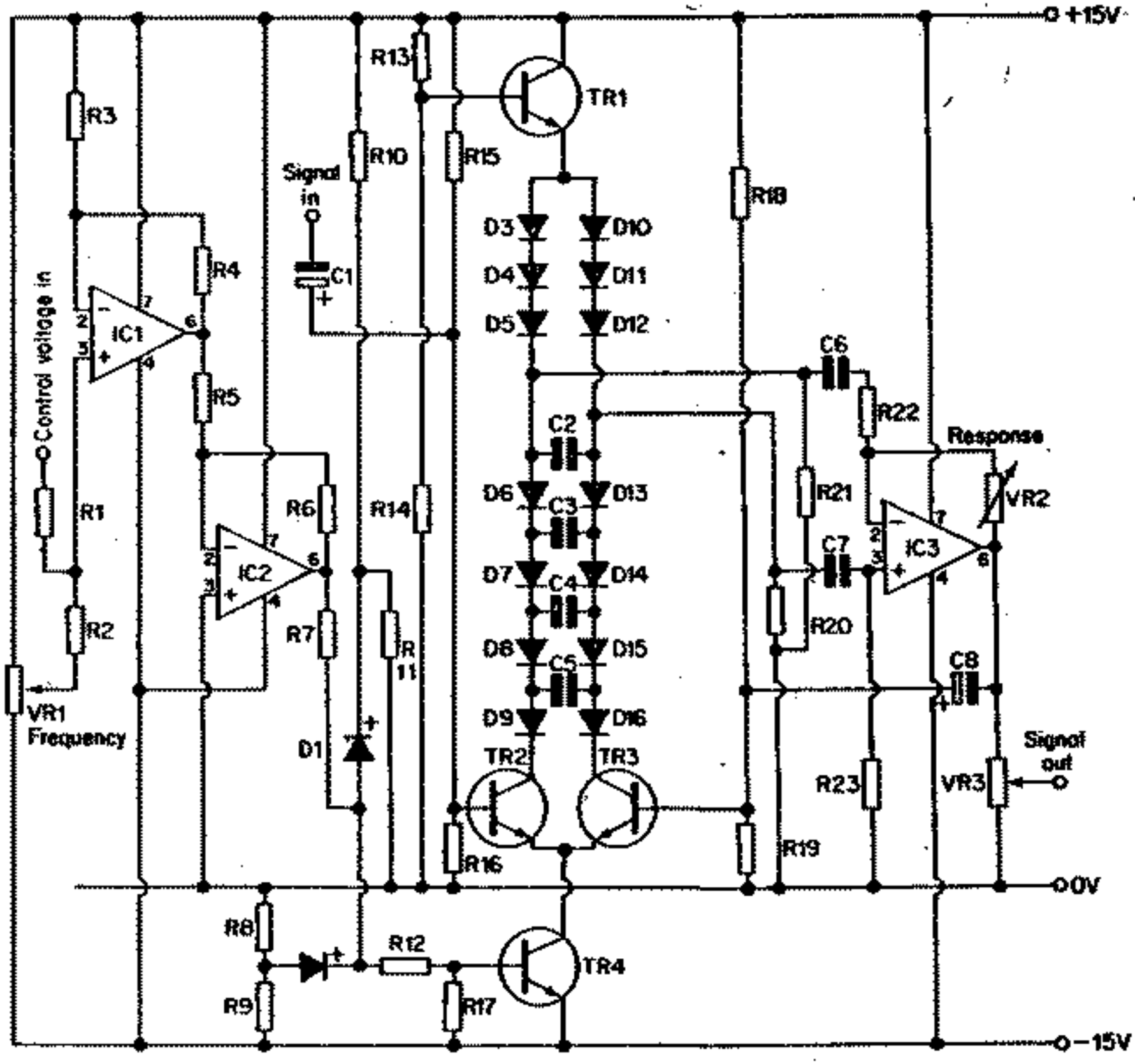
C1 4·7µF 25V elect.
C2 0·01µF
C3 0·01µF
C4 0·01µF
C5 0·01µF
C6 0·22µF
C7 0·22µF
C8 4·7µF 25V elect.

TR1–TR4 BC109C

D1–D16 1N914

IC1–IC3 741 8 pin d.i.l.

Fig. 3.9 Voltage-controlled filter



COMPONENTS

R1	3K3
R2	15K
R3	33K
R4	10K
R5	22K
R6	10K
R7	2K7
R8	2K2
R9	12K
R10	12K
R11	3K3
R12	12K
R13	22K
R14	39K
R15	12K
R16	3K3
R17	560Ω
R18	12K
R19	3K3
R20	390K
R21	390K
R22	56K
R23	56K

All ± 10% ¼W carbon

VR1 10K lin.
VR2 500K lin.
VR3 5K log.

C1	4·7µF 25V elect.
C2	0·01µF
C3	0·01µF
C4	0·01µF
C5	0·01µF
C6	0·22µF
C7	0·22µF
C8	4·7µF 25V elect.

TR1–TR4 BC109C

D1–D16 1N914

IC1–IC3 741 8 pin d.i.l.

Fig. 3.9 Voltage-controlled filter

Anti-log decay control summer

Clamped integrator for attack & decay slope

RC integrator for on & off times

Hysteretic switch

Linear modulator

+12V

R137 15k

Q43

C47 1000p

R140 470R

C48 2.5µ

R146 1k0

Q47

R153 15k

C49 1000p

Q50

C46 1µ tantulum

Q40

R138 470R

2N5163 selected

Q45

R143 1M

2N5461

Q48

PR13 10k

C50 33µ

D29x DK10

R130 1k0

Q44

R147 33k

PR12 100k

R129 47k

Q38

Q39

Q41

Q42

R145 8k2

Q46

1N4148

DK10

D26

D27

R151 220R

Q49

R152 10k

C50x 330p

R155 47k

R157 220R

R133 2k7

R135 2k2

PR13x 2M5

R154 120k

R156 2k7

C51 33µ

R131 56k

R132 10k

R134 2k7

D25 1N4148

R136 47k

R139 1k8

R141 10k

R142 2k2

R144 8k2

R148 12k

R149 8k2

R150 8k2

-9V

B31

B27

B28

B30

B26

Off

B27

B22

B21

B23

B32

1

+12V

VR8 10k LIN

Decay

PB28

VR10 1M LOG

Attack

L2 24V 20mA

-9V

Trapezoid

PB11

VR12 5k LOG

R306 1k0

VR7 1M LOG

D30

DK10

VR9 1M LOG

D31

DK10

On

SK2/5

PB20

PB12

Level

VR11 5k LOG

-9V

Notes:
VCS3 Mk I: all NPNs 2N5172, all PNPs 2N4288
VCS3 Mk II: all NPNs BC169C, all PNPs BC258B

EMS VCS3

Envelope Shaper (Board B)

HINTON INSTRUMENTS
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Drawing 5 of 6
Assembly: VSC3 I & II, Synthi A
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NOISE GENERATOR

Noise Source

Amplifier

Tone Network

METER AMPLIFIER

DC voltage follower

Rectifier

+12V

R278
47k

Q108

R283
330R

R279
2k7

C76
100µ

Q107

R280
470k

Q106

C71
16µ

R284 1k0

R285
2k7

R287
2k7

PR22
10k

C73
0.047µ

C72
330p

R281
1k0

R286
2k7

C74
0.047µ

Q109

C77
100µ

C75
100µ

R282
1k0

Q58

R174
18k

PR14
10k

C56
16µ

Q57

D29
DK10

R170
470k

D28
1N4148

R173
1k8

R171
120k

R172
120k

R175
470R

-9V

C31

C29

C30

C9

C7

C27

C32

C28

VR27
10k lin

VR26
5k log

SK2/4

SK2/2

SK2/7

PB17
(MkII: PB18)

J9

Scope

1mA

PB7

Colour

Level

EMS VCS3

Noise Generator & Meter Amplifier (Board C)

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Drawing 4 of 6
Assembly: VSC3 I & II, Synthi A
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Anti-log frequency control summer

Ramp integrator

Hysteretic switch

Triangle to sine shaper

+12V

-9V

Frequency

VR15 10k lin

sot

C22

R180 47k

C26

R179 12k

PR15 100k

R178 220k

Rx 220k

R161 68k

C57 1000p

PR16 100R

R176 1k0

R177 omit

Q59

Q60

Q61

Q62

Q63

Q64

C58 33p

R183 120k

Q65

ME9002

C59 0.015µ

R186 8k2

R191 10k

D30

R182 1k2

R184 8k2

R185 4k7

R188 47k

R190 2k7

R187 10k

Q66

R189 470R

R193 10k

PR17 10k

R192 22k

R194 2k7

Q68

D31

R198 9k1

Q67 ME9002

D32

D33

C61 omit

33p

Q69

R200 15k

Q70

Q71

R204 10k

R203 10k

Q72

R199 22k

R201 47k

R202 5k6

R205 2k7

5k6

8k2

D34 D35 D36 D37 D38 D39 D40 D41

R206 68k

C62 100p

R208 220R

C23

Sine Level

VR11 5k log

R207 27k

R197 68k

C10

VR38 10k lin

Sine Shape

C24

VR13 5k log

(MkII only)

3k3

2k7

Ramp Level

PB25

PB2

PB3

PB1

Notes:
VCS3 Mk I: all NPNs 2N5172, all PNPs 2N4288
VCS3 Mk II: all NPNs BC169C, all PNPs BC258B
All diodes 1N914, 1N4148, etc.
Replace Q59 + Q60 with LM194CH
Replace R176 with Q81 TC resistor
Replace R179 with 15k 1% or better if matrix true summing is fitted.

Adjust sine purity PR17 before calibrating frequency

EMS VCS3

Oscillator 1 (Board C)

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Drawing 1 of 6
Assembly: VSC3 I & II, Synthi A
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Channel 1

Tone Control

Control Voltage Summer

FET Modulator

1W Amplifier

Channel 2

Tone Control

Control Voltage Summer

FET Modulator

1W Amplifier

+ve

+11V

-9V

R34 470R

R33 10k

Q12 2N5172

R35 2k7

C18 0.047µ

R37 2k7

R38 2k7

16µ C16

R36 2k7

C17 0.047µ

R39 220k

Q13 2N4288

R40 47k

R41 10k

D8 1N4148

PR4 2M5

R42 470k

C19 16µ

R48 100k

Q14 2N5163

R45 3k3

R46 15k

Q15 2N4288

IC2 PA234

R43 1k0

R44 1k0

C22 16µ

C21

R51 8k2

R52 1k0

R54 1k0

R53 1k0

R55 1k0

C20 1000p

R47 100k

R50 15R

R49 47R

C23 100µ

R58 2k7

R57 470R

R56 10k

Q16 2N5172

C24 16µ

R60 2k7

R61 2k7

R59 2k7

C26 0.047µ

C25 0.047µ

R62 220k

Q17 2N4288

D9 1N4148

PR5 2M5

R65 470k

C27 16µ

R71 100k

Q18 2N5163

R68 3k3

R69 15k

Q19 2N4288

IC3 PA234

C30 16µ

R66 10k

R67 10k

C29

R63 47k

R64 10k

C27X 10µ

C28 1000p

R70 100k

R72 47R

R73 15R

S1

LS1

S2

LS2

Mute

Mute

VR29 10k Lin

VR33 5k Log

VR32 1k Lin

VR28 10k Lin

VR30 5k Log

VR31 1k Lin

R302 10k

R303 56k

PB31

C103 10µ

R304 10k

R305 56k

PB32

C104 10µ

PB18

PB19

A8 A6 A7 A5 A16 A15 A11 A12 A21 A20 A14 A17 A18 A19 A23 A22 A9 A10 A13 A12

J5 Control Output Ch1

Output 1 Filter

Output 1 Level

Pan (ext)

J8 J7 Signal Outputs

J6 Control Output Ch2

Output 2 Filter

Output 2 Level

Pan (ext)

J10 Stereo Headphones

Note: Used on VSC3 Mk I and Synthi A Mk I only

EMS VCS3

Output Amplifiers (Board A)

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Drawing 7 of 7
Assembly: VSC3 I & II, Synthi A
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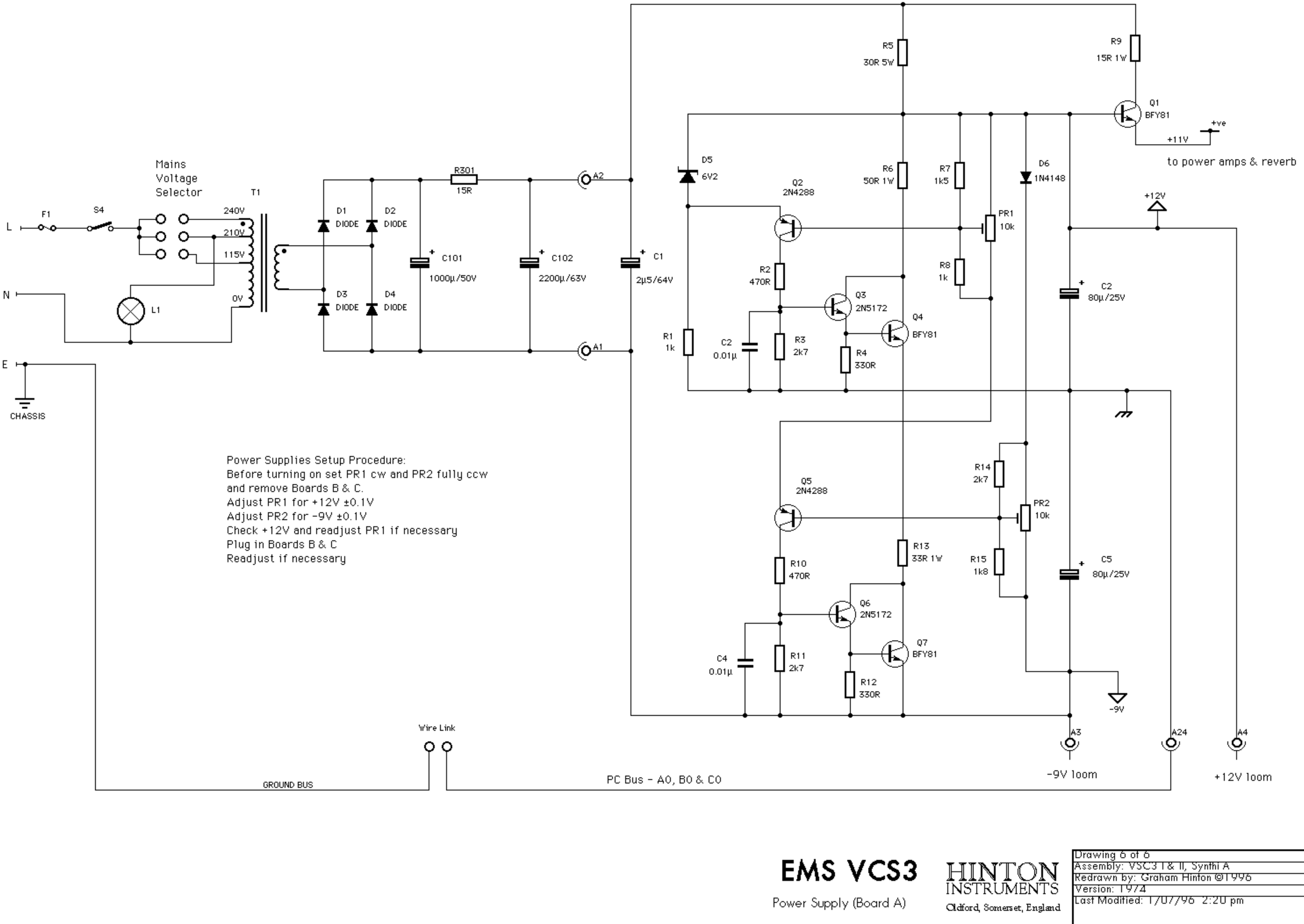

Power Supplies Setup Procedure:
Before turning on set PR1 cw and PR2 fully ccw
and remove Boards B & C.
Adjust PR1 for +12V ±0.1V
Adjust PR2 for -9V ±0.1V
Check +12V and readjust PR1 if necessary
Plug in Boards B & C
Readjust if necessary

EMS VCS3

Power Supply (Board A)

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Drawing 6 of 6
Assembly: VSC3 I & II, Synthi A
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