Sound Lab Mini-Synth Mark II Voltage Controlled Oscillator 1 C7 Design by Ray Wilson R36 Coarse Freq Adj. R38 -12V +12V Notes 0 (7)U3 can be any of these: LF442, LF412, LT1112, AD706, OP275 39K 36K 4.7pF PN4391 can be replaced with: 2N5457, J210 or MPF102 R41 All diodes are 1N914 or 1N4148 R37 100K 2 +12V 1M R39 R40 High Freq. Comp. Trim Fine Freq Adj. 9.1K 110K U5-B R43 1 2 TL072 R44 R42 100K R45 4.7K 4.7K D2 100K +12V +/-5V Rect. +12V +/-5V Sawtooth X15 R46 Raw 3 R47 Rect - X14 R49 R50 ≥3.3K Out 10K U5-A 100 ohm 2N3904 2N3904 R51 U3-A TL072 Q7 Q8 R48 LF442 20K 22K Raw Sawtooth Out 4.7M 1V/Oct **←** X17 -12V Scale Trim R52 U3-B R54 -12V LF442 R53 — X18 100K R59 R56 R57 475 ohm 20K 2K 47K 3K PWM C9 Input Exp CV R55 C8 R61 \overline{a} R60 Input X19 +12V 10K 4.7pF AD1A KΒV \d 100K R63 1.2M R62 100pF 47K S2 R58 1M For best results R59 should be R65 U4-A a 2K temperature compensator with +3300 ppm response TL072 100K +12V 10K U4-B placed in thermal contact with TL072 Q7 and Q8. Q7 and Q8 should R67 S3 R64 be a matched pair with VBE matched to within 2mV. -12V C10 100K 100K R69 +12V Pulse Width (a)Lin CV -12V .005uF Polystyrene 10K R66 LFOA SAH R70 X23 D 1M PN4391 **Bypass Caps** 2K To VCO2 X29 +12V C17 R68 R71 100K X29 R72 1 + C12 X24 C11 C13 $\langle a \rangle$ 1K .001uF 10uF ∖.1uF \.1uF C18 R73 100K √100pF 100K 1 + C15 Sync R74 C14 C16 02 10uF .1uF \.1uF <u>'</u>O' 18K Copyright Music From Outer Space 2011 S23