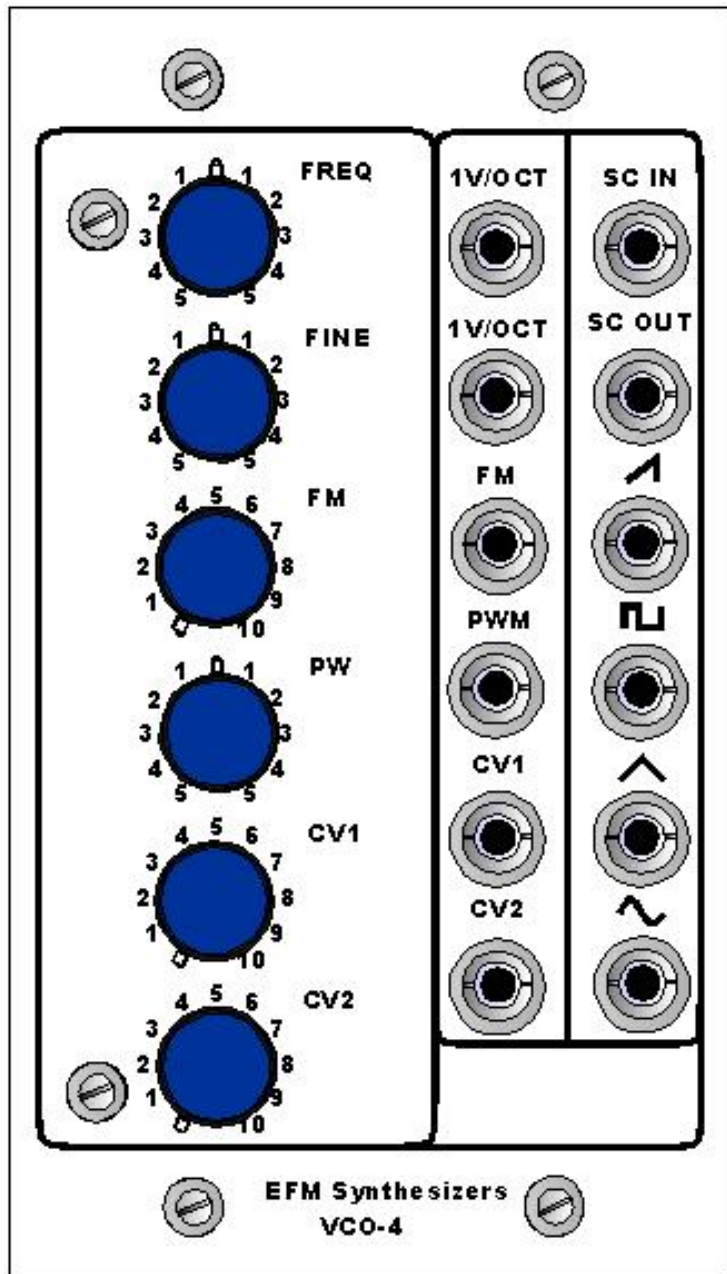


# EFM Synthesizers

VCO 4d



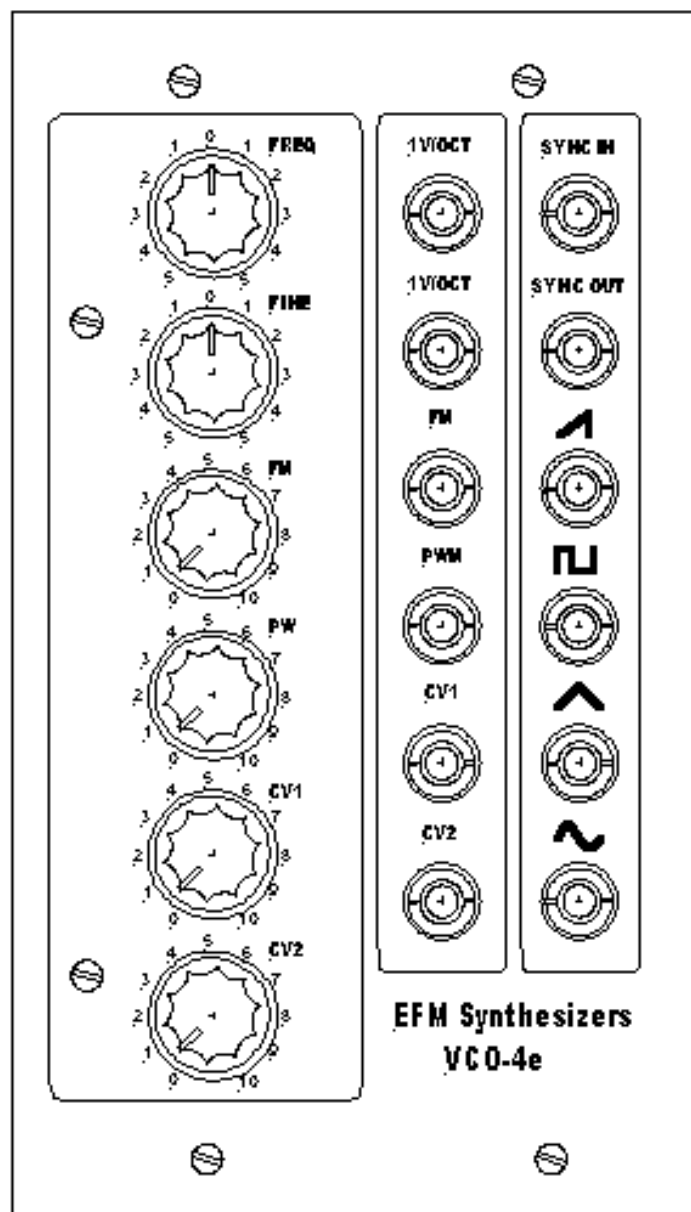
Wide range multi waveform VCO based on the Moog Prodegy oscillators. Features...

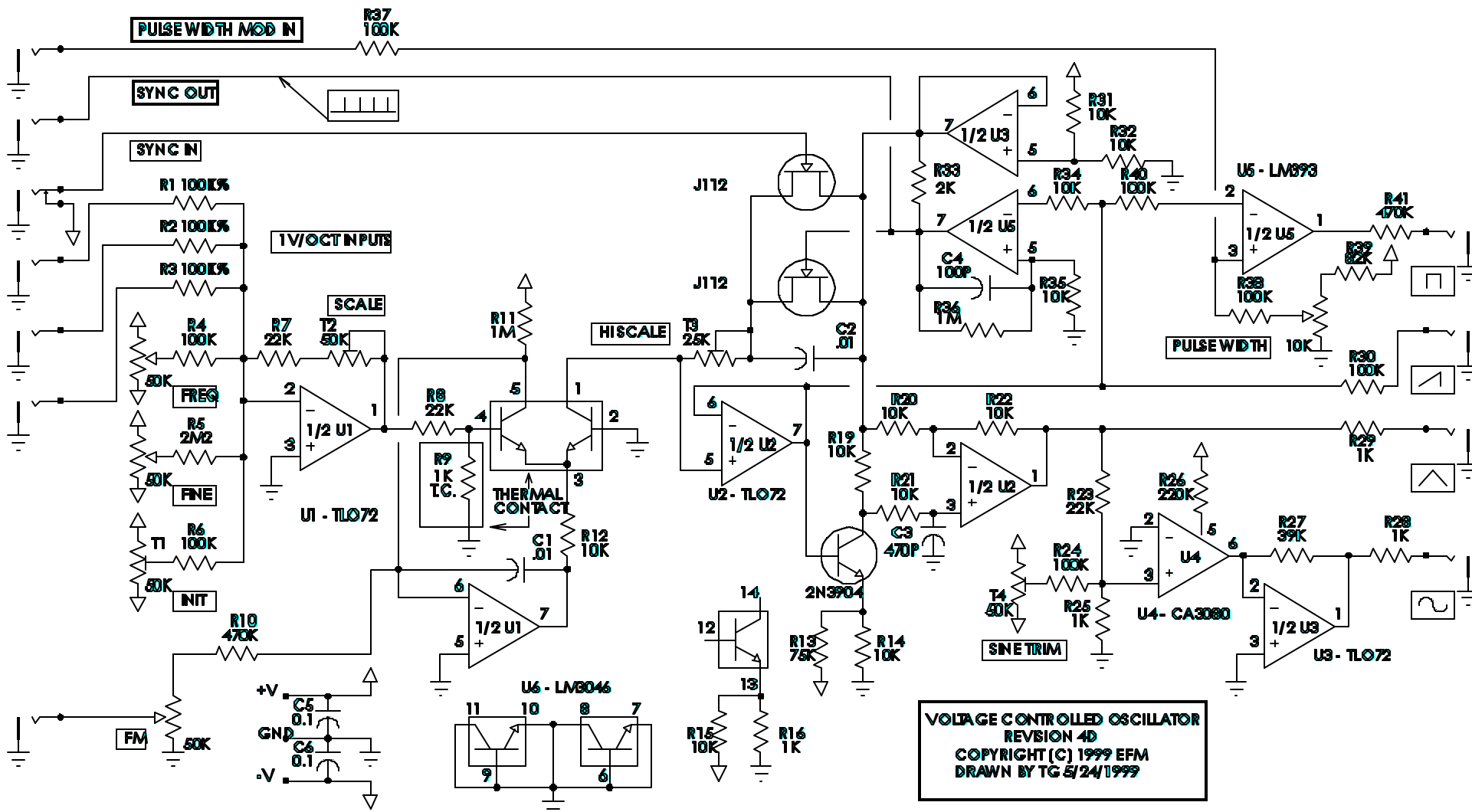
- Saw , Variable PW, Tri and Sine outputs
- Improved Stability over the VCO4d
- Syncable
- +/-12 or +/- 15V



## VCO4d Voltage Controlled Oscillator

R1-3 - 100K 1% resistor  
 R4 - 2.2M 5% resistor  
 R5,6,24,30,37,38,40 - 100K 5% resistor  
 R7,8,23 - 22K 5% resistor  
 R9 - 1K TC  
 R10,41 - 470K 5% resistor  
 R11 - 1M 5% resistor  
 R12,16,22,34,35 - 10K 5% resistor  
 R13 - 75K 5% resistor  
 R14,19,20,21,31,32 - 10K1% resistor  
 R15,25,28,29 - 1K 5% resistor5  
 R23 - 22K 5% resistor  
 R26 - 220K 5% resistor  
 R27 - 39K 5% resistor  
 R33 - 2K 5% resistor  
 R36 - 1M 5% resistor  
 R39 - 82K 5% resistor  
 T1,2,4 - 50K Multi-Turn Cermet Trimmer  
 T3 -25K Multi-Turn Cermet Trimmer  
 P1-6 - 50K Linear  
 C1,2 - .01uF Polyester  
 C3 - 470pF Ceramic Disk  
 C4 - 100pF Ceramic Disk  
 C5,C6 - 0.1uF Ceramic Disk  
 Q1,Q2 - J111 or J112 Fet Transistor  
 Q3 - 2N3904 NPN Transistor  
 U1,U2,U3 - TLO72 Dual Bi-Fet Opamp  
 U4 - CA3080 OTA  
 U5 - LM393 Dual Comparator  
 U6 - CA3046 Transistor Array





**PULSE WIDTH MOD IN**

**SYNC OUT**

**SYNC N**

**TV/OCT INPUTS**

**SCALE**

**HISCALE**

**PULSE WIDTH**

**SINETRIM**

**U6 - LM9046**

**U4 - CA3080**

**U5 - LM993**

**U1 - TLO72**

**U2 - TLO72**

**U3 - TLO72**

**THERMAL CONTACT**

**FM**

**+V**

**GND**

**-V**

**INIT**

**FINE**

**FREQ**

**50K**

**T1**

**R6**

**50K**

**R5**

**2M2**

**R4**

**100K**

**R3**

**100K**

**R2**

**100K**

**R1**

**100K**

**R7**

**22K**

**T2**

**50K**

**R10**

**470K**

**R11**

**1M**

**R8**

**22K**

**R9**

**1K**

**T.C.**

**R12**

**10K**

**C1**

**0.1**

**C2**

**0.1**

**C3**

**470P**

**R13**

**75K**

**R14**

**10K**

**R15**

**10K**

**R16**

**1K**

**R17**

**10K**

**R18**

**10K**

**R19**

**10K**

**R20**

**10K**

**R21**

**10K**

**R22**

**10K**

**R23**

**22K**

**R24**

**100K**

**R25**

**1K**

**R26**

**220K**

**R27**

**39K**

**R28**

**1K**

**R29**

**1K**

**R30**

**100K**

**R31**

**10K**

**R32**

**10K**

**R33**

**2K**

**R34**

**10K**

**R35**

**10K**

**R36**

**1M**

**R37**

**100K**

**R38**

**100K**

**R39**

**22K**

**R40**

**100K**

**R41**

**470K**

**J112**

**J112**

**T3**

**25K**

**C4**

**100P**

**2N3904**

**U1**

**1/2 U1**

**1/2 U2**

**1/2 U3**

**1/2 U5**

**1/2 U5**

**1/2 U3**

**1/2 U3**

**1/2 U2**

**1/2 U1**

**1/2 U1**

**1/2 U1**

**1/2 U1**

**1/2 U1**

**1/2 U1**

