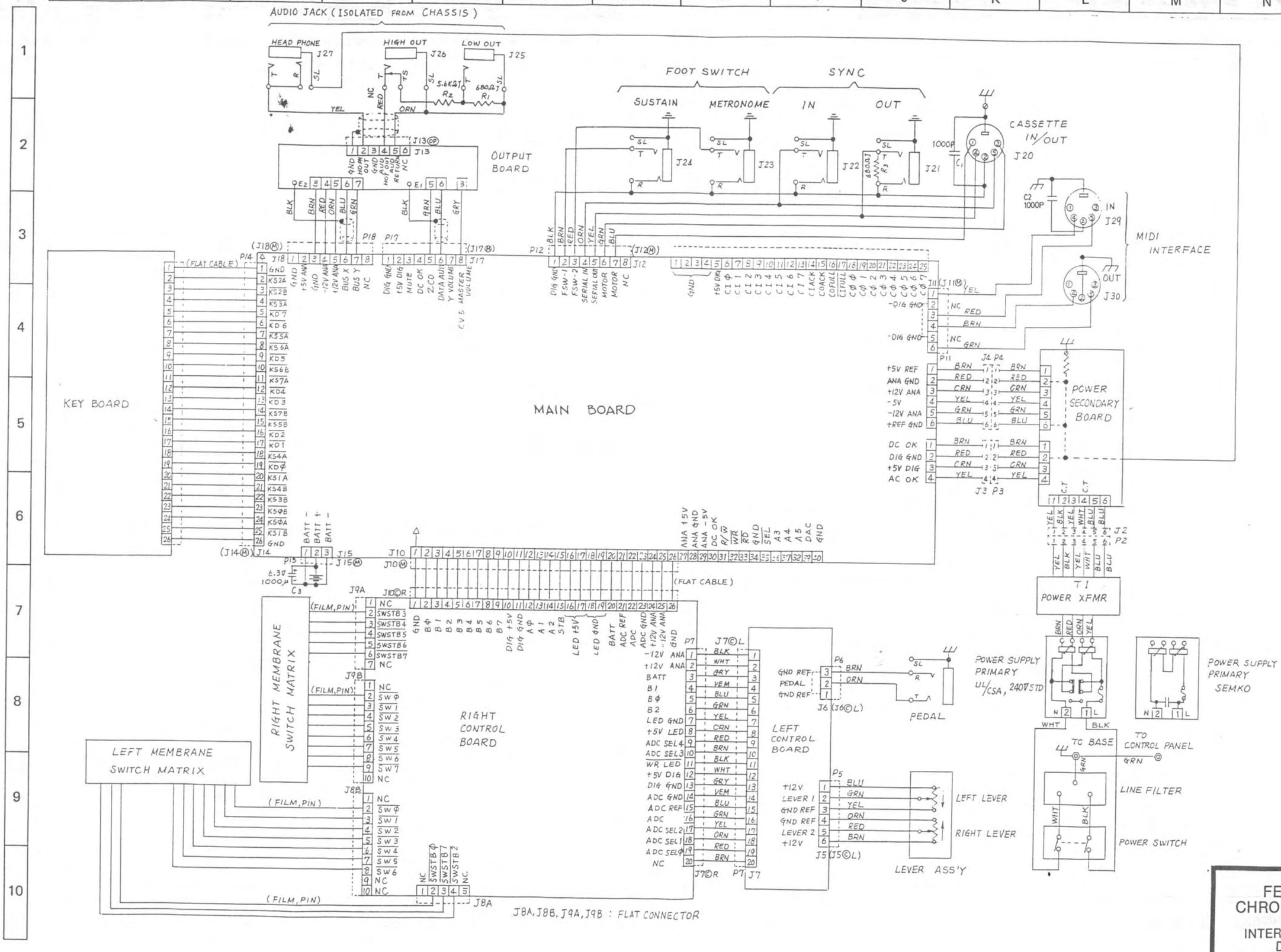
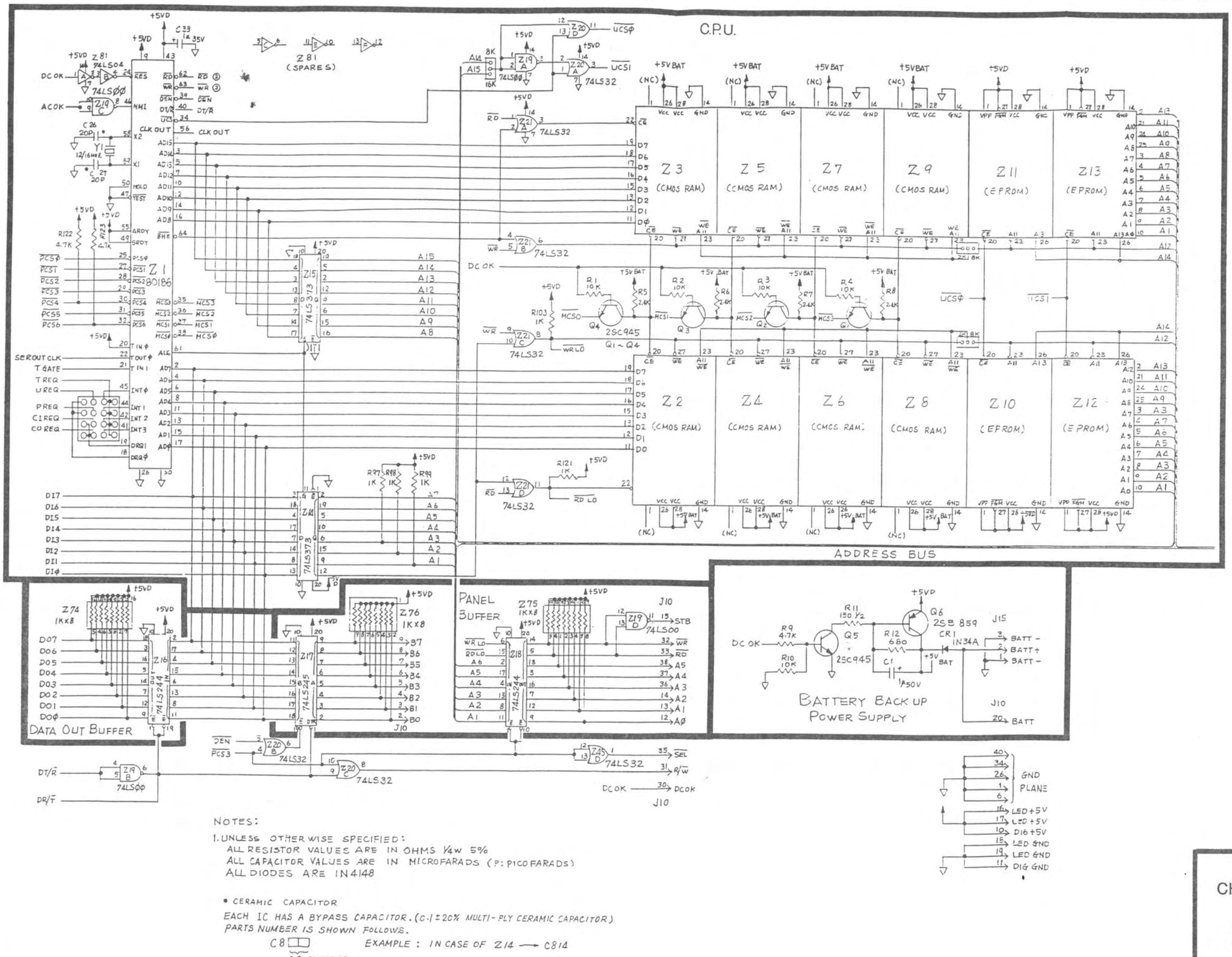


FENDER MI
CHROMA POLARIS

INTERCONNECTION
DIAGRAM



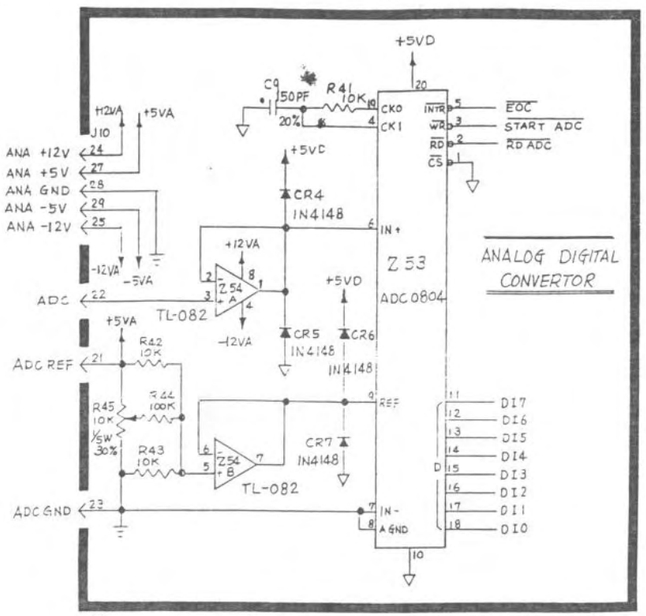
NOTES:

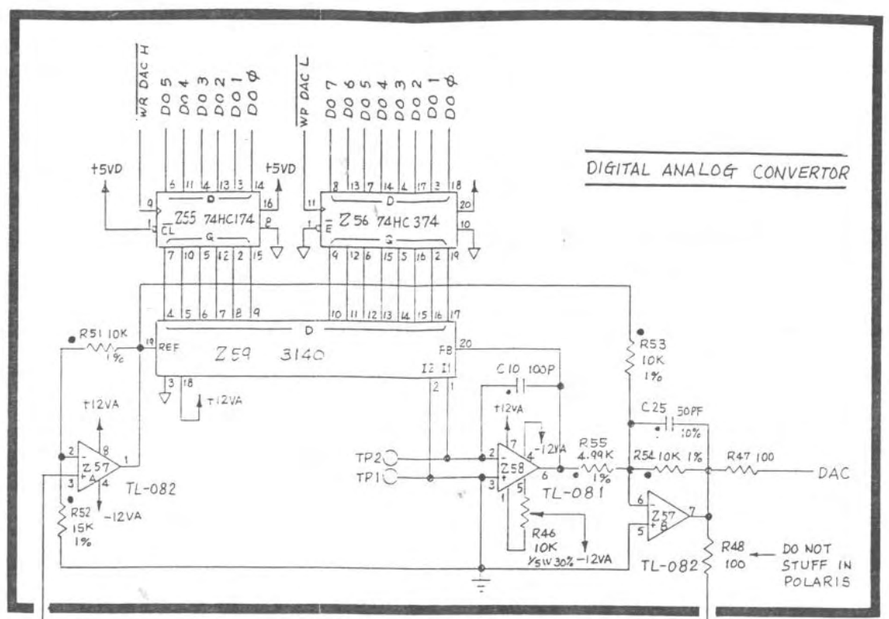
1. UNLESS OTHERWISE SPECIFIED:
   ALL RESISTOR VALUES ARE IN OHMS ¼w 5%
   ALL CAPACITOR VALUES ARE IN MICROFARADS (P: PICOFARADS)
   ALL DIODES ARE IN4148

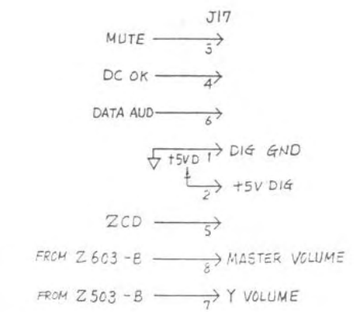
• CERAMIC CAPACITOR
EACH IC HAS A BYPASS CAPACITOR. (0.1 ±20% MULTI-PLY CERAMIC CAPACITOR)
PARTS NUMBER IS SHOWN FOLLOWS.
C8□ EXAMPLE: IN CASE OF Z14 → C814
IC NUMBER

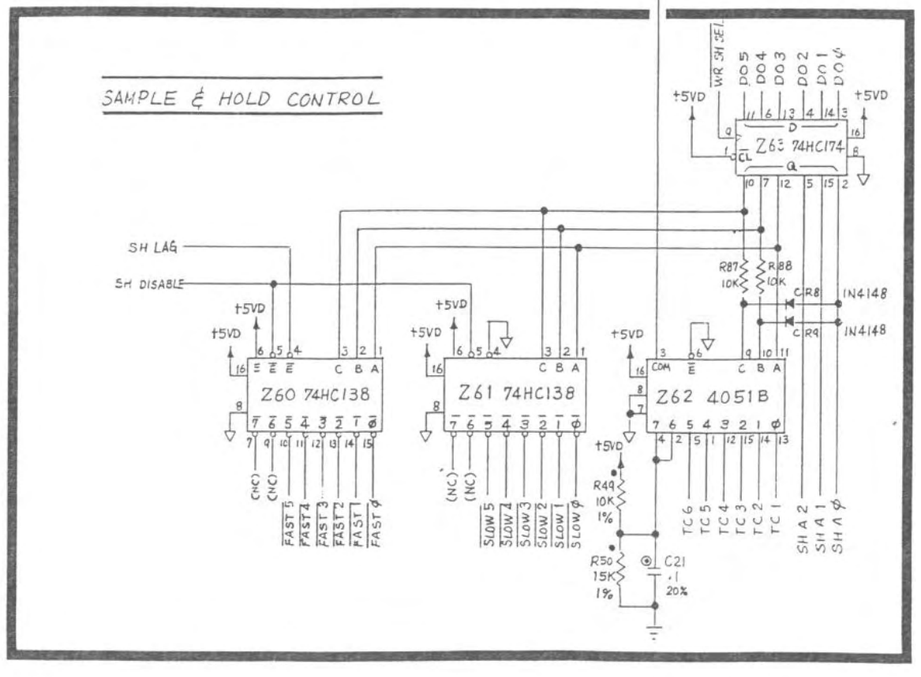
FENDER MI
CHROMA POLARIS

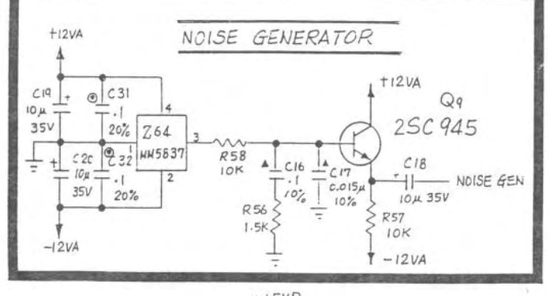
COMPUTER,
MEMORY, DATA &
PANEL BUFFERS,
BAT. BACK-UP

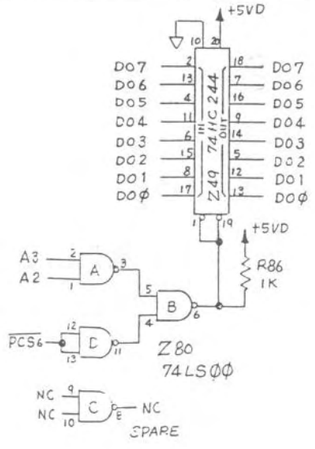


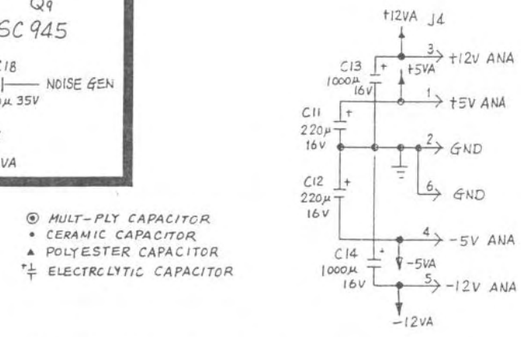












◉ MULT-PLY CAPACITOR
• CERAMIC CAPACITOR
▲ POLYESTER CAPACITOR
⁺⁄₋ ELECTROLYTIC CAPACITOR

EACH IC HAS A BYPASS CAPACITOR (0.1±20% MULTI-PLY CERAMIC) EXCEPT Z54, Z57~Z59, Z64, Z80.
PARTS NUMBER IS SHOWN FOLLOWS.
C8□ (IC NUMBER) EXAMPLE : IN CASE OF Z53 → C853

FENDER MI
CHROMA POLARIS

A/D, D/A, S & H CONTROL, NOISE GEN

A B C D E F G H I J K L M N O

1 2 3 4 5 6 7 8 9

MIDI INTERFACE (IN)

MIDI INTERFACE (OUT)

MIDI INTERFACE

+5VD

R91 390

R92 220

CR10 4001

Z86 6N138

C886 .1 20%

R93 220

R90 1K

R94 220

Z81D 74LSØ4

Z82A 74LSØ4

Z82B 74LSØ4

Z82D 74LSØ4

Z84A 74LS393

Z84B 74LS393

74LSØØ

Z85A 74LSØØ

Z85B 74LSØØ

Z85C 74LSØØ

Z85D 74LSØØ

Z23A 74LS03

Z23B 74LS03

Z47A 74LS74

WR THRU

THRU/OUT

WR RXEN

WR RXDIS

P REQ

U REQ

R95 10K

Z82A 74LS04

Z87 6885Ø

Z83 74LS163

CLK OUT

R89 1K

Z25A 74LS74

Z25B 74LS74

Z23C 74LSØ3

WR RATE

Z27 74LS138

(NC) DATA

(NC) TRL

WR CHROMA

RD CHROMA

WR RATE

WR THRU

WR RXEN

WR RXDIS

ADDRESS BUS

DATA IN/OUT BUS

DATA OUT BUS

J16

R18 2.2K

Z22 74HC374

Z26A 74LS74

Z26B 74LS74

R15 1K

R17 2.2K

Q7 2SC945

Q8 2SC945

R14 10K

R13 10K

Z24 74LS244

CHROMA INTERFACE

CHROMA IN REQ

WR CHROMA

CHROMA OUT REQ

I/O OK

RD CHROMA

DATA IN/OUT BUS

• CERAMIC CAPACITOR

⏚ ELECTROLYTIC CAPACITOR

EACH IC HAS A BYPASS CAPACITOR (0.1±20% MULT-PLY CERAMIC) PARTS NUMBER IS SHOWN FOLLOWS. C8 / IC NUMBER

EXAMPLE: IN CASE OF Z 86 → C886

Z28A 74LS32

Z28B 74LS32

Z28C 74LS139

Z44A 74LS32

Z44B 74LS32

Z45 74LS32

R100 1K

R101 1K

R102 1K

R103 1K

R104 1K

R105 1K

R106 1K

R107 1K

R108 4X1K

RD ADC

CLR T REQ

SET POL

CLR POL

START ADC

WR T SEL

WR DACH

WR DACL

ADDRESS BUS

DATA OUT BUS

CHANNEL CONTROL

Z79* 7X1K

Z78* 7X1K

Z31 74HC259

Z32 74HC138

HI CLKK

LO CLKK

OUT 6

OUT 5

OUT 4

OUT 3

OUT 2

OUT 1

WR SHSEL

WR SYN 6

WR SYN 5

WR SYN 4

WR SYN 3

WR SYN 2

WR SYN 1

NOTE: Z75 F+D+CR-13, R128 NOT USED ON EARLY VERSION

ADDRESS BUS

DATA OUT BUS

STROBE DECODERS, MISC. I/O

Z29 74HC251

Z30 74HC259

SER OUT MUTE

SER IN MUTE

SH LAG

SH DISABLE

SER LEVEL

SER OUT

OUTPUT MUTE

MOTOR

FOOT-SWITCHES

FSW2

FSW1

J12

R38 1K

R39 1K

C2 10 35V

C3 10 (NC) 35V

Z46 1489A

SER POL

THRU/OUT

DATA IN/OUT BUS

DATA OUT BUS

ADDRESS BUS

EOC

UNUSED GATES

KEYBOARD

Z33 74HC175

Z34 74HC244

Z35 74HC138

Z36 74HC138

R115 1K

R116 1K

Z51 8X10K

J14

KS7B KS7A KS6B KS6A KS5B KS5A KS4B KS4A

KS3B KS3A KS2B KS2A KS1B KS1A KSØB KSØA

GND GND GND

KD7 KD6 KD5 KD4 KD3 KD2 KD1 KDØ

Z73 74LSØ4

Z52B 74LS74

J3

AC OK

DC OK

DIG GND

DIG +5V

1µ BY EACH IC

C8 10µ 20% 35V

MOTOR CONTROL

CR2 IN4001

K1

J12

MOTOR

MOTOR

TIMER INTERFACE SERIAL I/O

74HC393

Z37A

Z37B

R21 12K

C29 470P

Z46 1489A

SYNTH 2 CD

Z38 74HC251

WRT SEL

D03 D02 D01 DØØ

74HC175

SER POL

SET POL

CLR POL

T REQ

T GATE

CLR T REQ

Z48A 4066

Z48B 4066

Z48C 4066

Z48D 4066

Z73 74LSØ4

Z42 74LS02

Z43 74LS74

Z52A 74LS74

R22 12K

R23 10K

R24 220K

R25 1K

R26 47K

R27 510 ml2 390K

R125 100K

C28 3.3P 10%

Z40 TL-081

Z41 TL-082

SER OUT

SER OUT CLK

SER LEVEL

SER OUT MUTE

SERIAL OUT

SERIAL IN

DIG GND

CLICK GENERATOR

R28 CR12 15K 4148

R29 1K

R30 1M

R31 15K CR11 4148

R32 1K

R33 1M

R34 4.7K

R35 4.7K

R36 22K

R127 2K

C4 .001 20%

C5 .001 20%

C6 3300P 20%

C7 3300P 20%

HI CLICK

LO CLICK

DATA AUD

R128 1K

R37 33K

R126 33K

CR3 4148

CR13 4148

SER IN MUTE

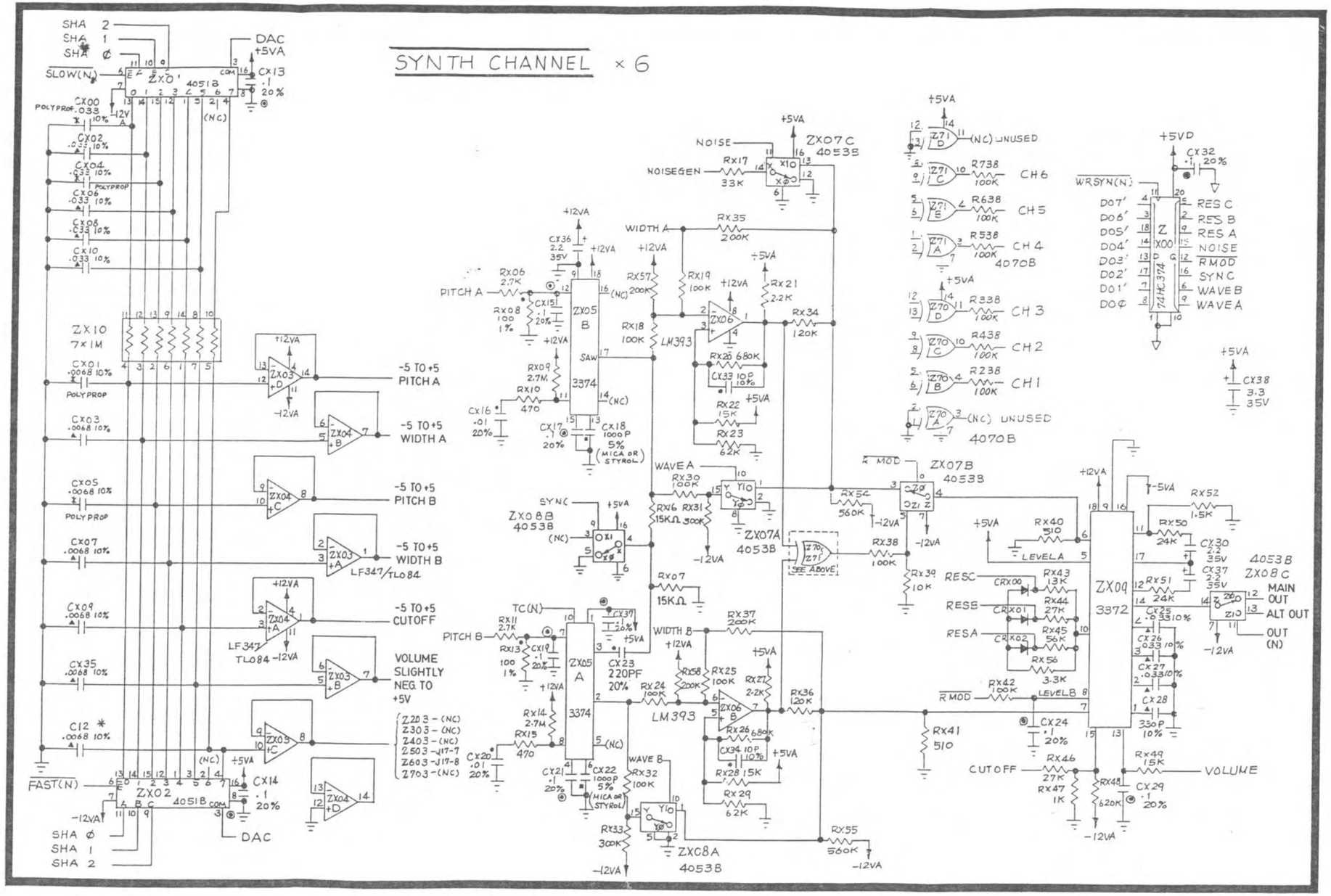
+5VA

* NOT USED

FENDER MI
CHROMA POLARIS

INTERFACE, TIMER, KEYBOARD & CHAN. CONTROL, MISC.

SYNTH CHANNEL × 6



* STUFF IN CHANNEL 5 ONLY (C612), PUT JUMPER IN CHANNEL 5 ONLY, LEAVE CHANNELS 2,3,4 & 7 UNSTUFFED.

EACH IC HAS A BYPASS CAPACITOR (0.1±20% MULTI-PLY CERAMIC) EXCEPT ZX03, ZX04, ZX06, ~ ZX08.

PARTS NUMBER IS SHOWN FOLLOWS.

CX□□ — CHANNEL NO. — CAPACITOR NO.

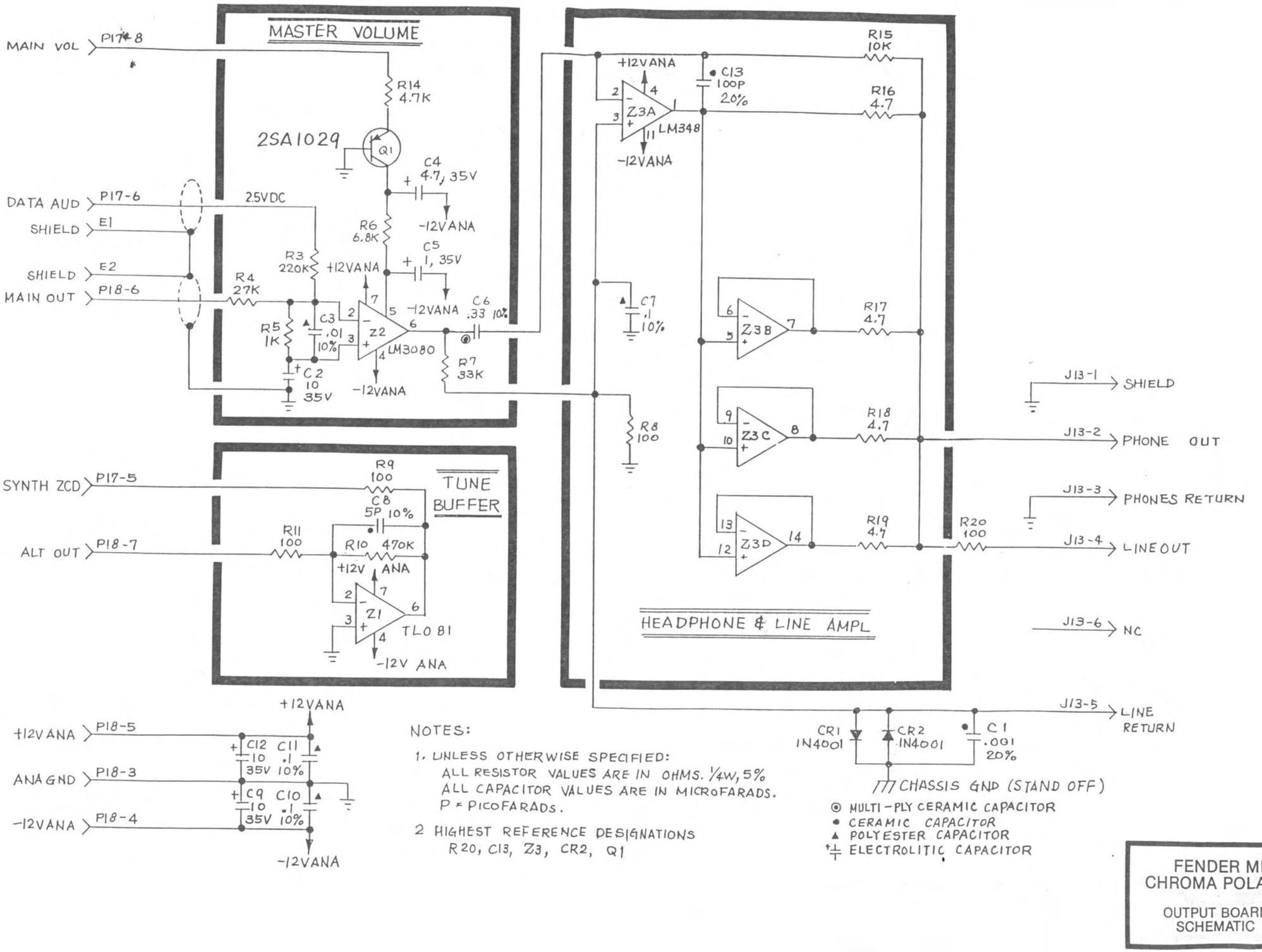
EXAMPLE: C637, C737

* POLYPROPYLENE CAPACITOR
◉ MULT-PLY CERAMIC CAPACITOR
• CERAMIC CAPACITOR
▲ POLYESTER CAPACITOR
■ POLYSTYROL CAPACITOR
+|– ELECTROLYTIC CAPACITOR

• METAL FILM RESISTOR

NOTE: SUBSTITUTE CHANNEL NUMBERS 1 THRU 6 FOR "X'S" IN REFERENCE DESIGNATIONS.

FENDER MI
CHROMA POLARIS
SYNTH. CHANNEL



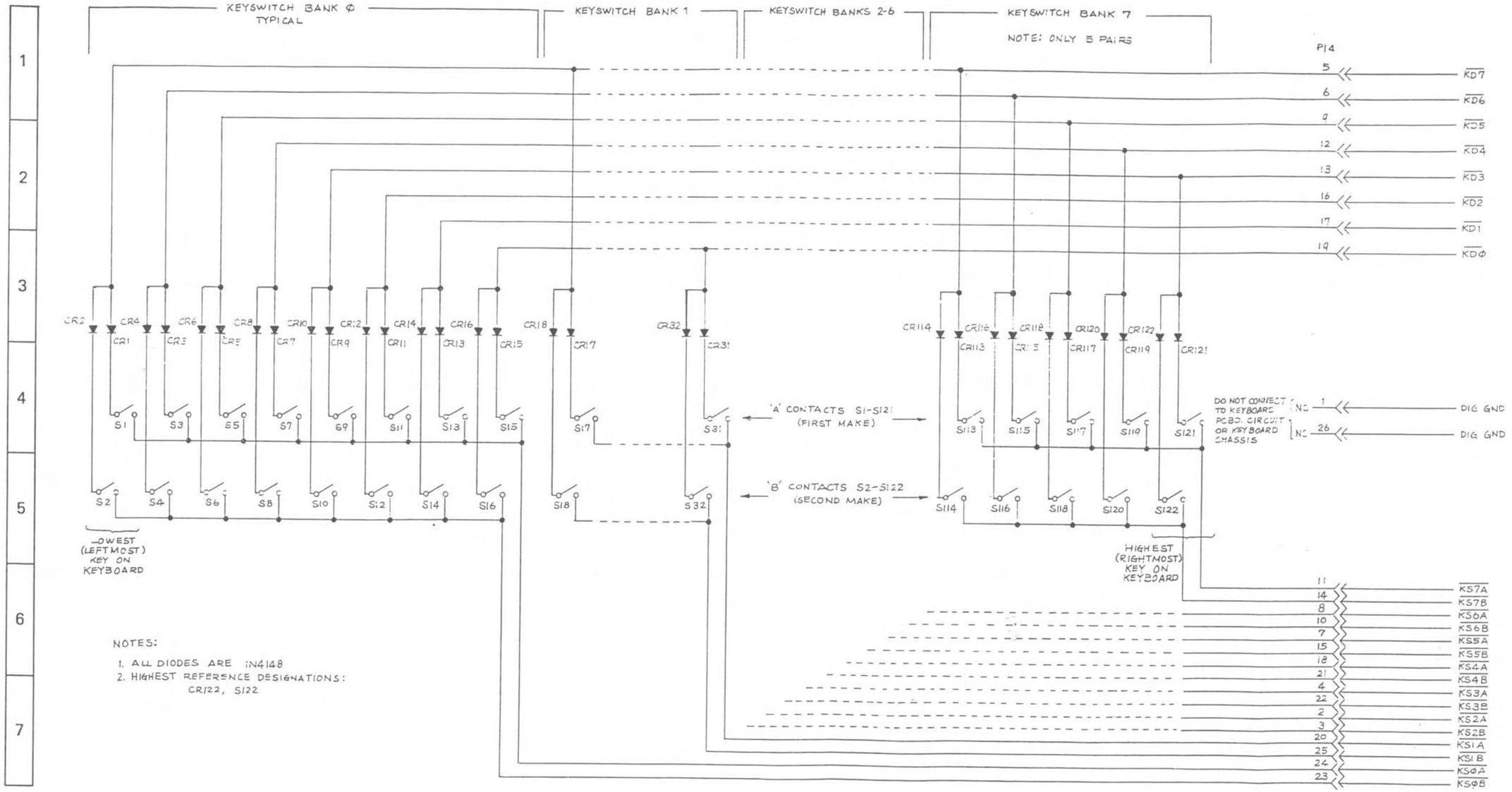
NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   ALL RESISTOR VALUES ARE IN OHMS. 1/4W, 5%
   ALL CAPACITOR VALUES ARE IN MICROFARADS.
   P = PICOFARADS.
2. HIGHEST REFERENCE DESIGNATIONS
   R20, C13, Z3, CR2, Q1

FENDER MI
CHROMA POLARIS

OUTPUT BOARD
SCHEMATIC

A	B	C	D	E	F	G	H	I	J	K	L	M	N

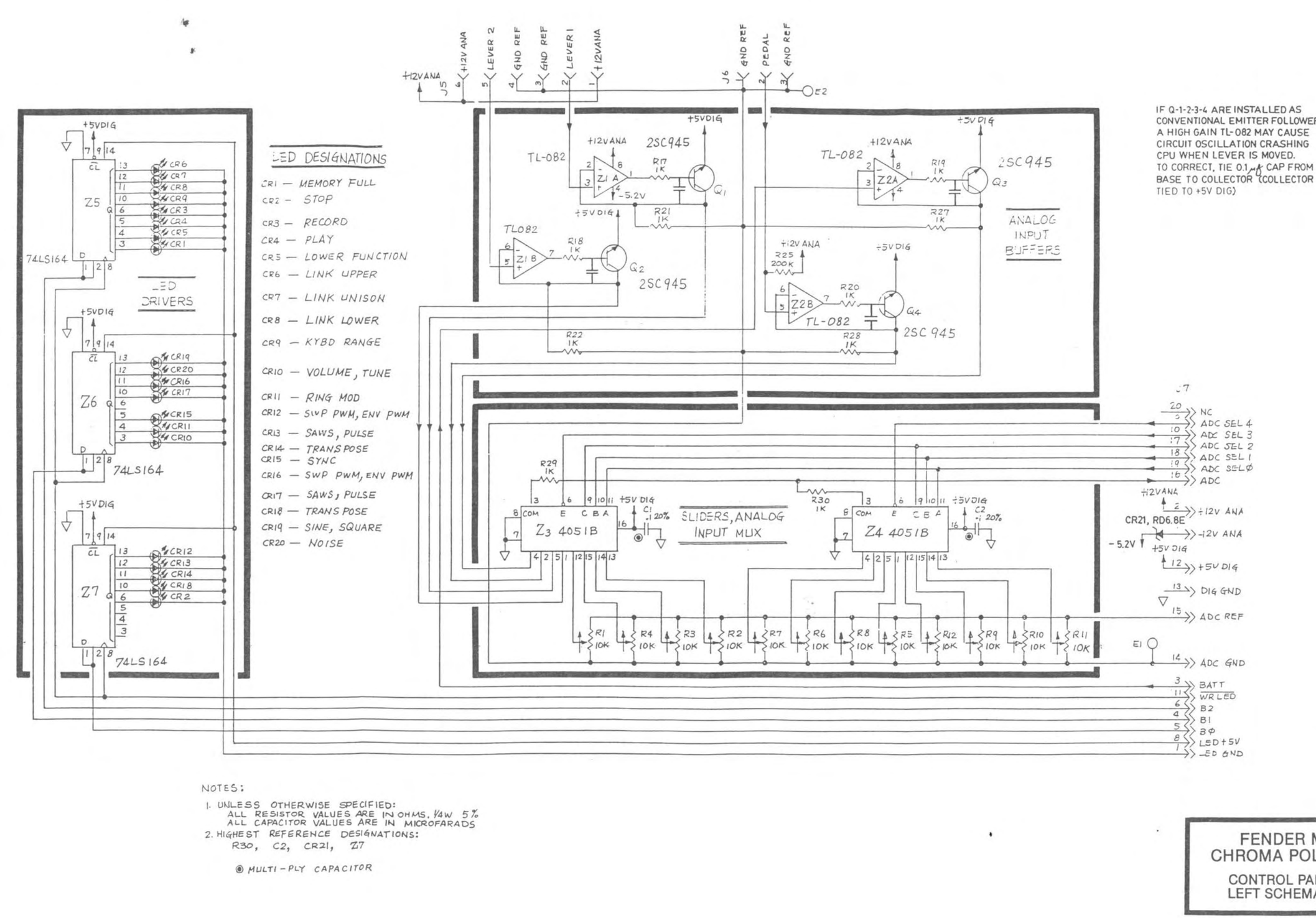


NOTES:

1. ALL DIODES ARE 1N4148
2. HIGHEST REFERENCE DESIGNATIONS: CR122, S122

FENDER MI
CHROMA POLARIS

KEYBOARD
SCHEMATIC



IF Q-1-2-3-4 ARE INSTALLED AS CONVENTIONAL EMITTER FOLLOWERS A HIGH GAIN TL-082 MAY CAUSE CIRCUIT OSCILLATION CRASHING CPU WHEN LEVER IS MOVED. TO CORRECT, TIE 0.1 μf CAP FROM BASE TO COLLECTOR (COLLECTOR TIED TO +5V DIG)

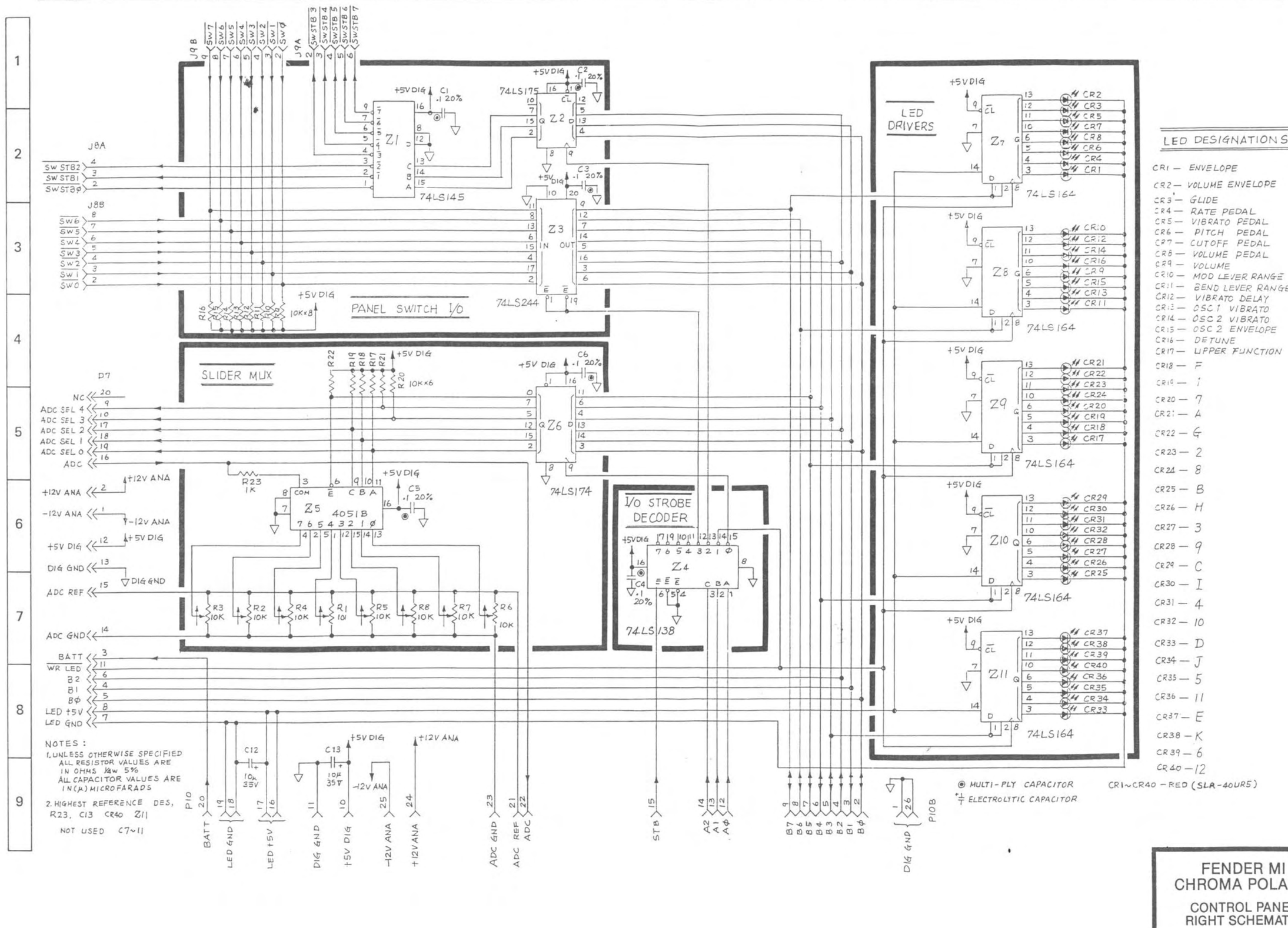
NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   ALL RESISTOR VALUES ARE IN OHMS, ¼W 5%
   ALL CAPACITOR VALUES ARE IN MICROFARADS
2. HIGHEST REFERENCE DESIGNATIONS:
   R30, C2, CR21, Z7

◉ MULTI-PLY CAPACITOR

FENDER MI
CHROMA POLARIS

CONTROL PANEL
LEFT SCHEMATIC


PANEL SWITCH I/O
SLIDER MUX
I/O STROBE DECODER
LED DRIVERS
74LS145
74LS175
74LS244
74LS174
74LS138
74LS164
LED DESIGNATIONS
CR1 — ENVELOPE
CR2 — VOLUME ENVELOPE
CR3 — GLIDE
CR4 — RATE PEDAL
CR5 — VIBRATO PEDAL
CR6 — PITCH PEDAL
CR7 — CUTOFF PEDAL
CR8 — VOLUME PEDAL
CR9 — VOLUME
CR10 — MOD LEVER RANGE
CR11 — BEND LEVER RANGE
CR12 — VIBRATO DELAY
CR13 — OSC 1 VIBRATO
CR14 — OSC 2 VIBRATO
CR15 — OSC 2 ENVELOPE
CR16 — DETUNE
CR17 — UPPER FUNCTION
CR18 — F
CR19 — 1
CR20 — 7
CR21 — A
CR22 — 6
CR23 — 2
CR24 — 8
CR25 — B
CR26 — H
CR27 — 3
CR28 — 9
CR29 — C
CR30 — I
CR31 — 4
CR32 — 10
CR33 — D
CR34 — J
CR35 — 5
CR36 — 11
CR37 — E
CR38 — K
CR39 — 6
CR40 — 12
NOTES :
1. UNLESS OTHERWISE SPECIFIED ALL RESISTOR VALUES ARE IN OHMS ¼w 5% ALL CAPACITOR VALUES ARE IN(μ) MICROFARADS
2. HIGHEST REFERENCE DES, R23, C13 CR40 Z11
NOT USED C7~11
◉ MULTI-PLY CAPACITOR
ELECTROLYTIC CAPACITOR
CR1~CR40 — RED (SLR-40UR5)
FENDER MI
CHROMA POLARIS
CONTROL PANEL
RIGHT SCHEMATIC

PRIMARY BOARD
(CSA/LA/UL 120/240 V STANDARD)

OFF BOARD

SHIELD

J1 2 N

R2 MOV 150 VAC

240 120

S1

R1 MOV 150 VAC

F1 L 3/4 A 250V (3/8 A 250V FOR 240 V STD)

E4 E3 E2 E1

YEL ORN RED BRN

P2 J2

BLU 6 6 BLU

BLU/WHT 4 4 YEL

BLU 5 5 GRN

YEL 3 3 ORN

YEL/BLK 2 2 RED

YEL 1 1 BRN

F2 3.15AT

F3 3.15AT

#2~5 USED ON SEMKO ONLY

F4 250MAT

F5 250MAT

C16 .1 20%

S2 P1 WHT 2

BLK 1

N L E GRN

LINE FILTER

PRIMARY BOARD
(240V SEMKO)

S2 N E6 WHT

E5 BLK L

C1 .22 20%

R2 MOV 150 VAC

R1 MOV 150 VAC

F1 400 MAT

E4 E3 E2 E1

Q1 = 2SA1029 OR 2SA1015
Q2 = 2SC945 OR 2SC1815

NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   ALL RESISTOR VALUES ARE IN OHMS, 1/4W 5%
   ALL CAPACITOR VALUES ARE IN μF (MICROFARADS)
2. HIGHEST REFERENCE DESIGNATIONS:
   C14 R26 Z7 CR10 Q2

ANALOG SUPPLIES

CR1 CR2 CR3 CR4 IN4002 ×4

Z1 LM340T C1 1000 50V C5 1 50V C9 .1 20%

Z2 LM7912CT C2 1000 50V C6 33 25V C11 33 25V

Z3 LM317T R2 221 1% R3 1.4K 1% R4 953 1% R5 2.5K, 1/2W 30% LIN C15 10 35V C10 33 25V

Z4 LM7905CT C12 33 25V R26 1K

CR5 MR750 CR6 MR750 C3 10000 16V C13 .1 20%

Z5 LM350K C18 6.3V 22 R8 464 1% R6 121 1% R7 976 1% R9 2.5K, 1/2W 30% LIN C14 33 25V

DIGITAL SUPPLY

P4
1 +5V REF 1.5A
6 +REF GND
3 +12V ANA
2 ANA GND
5 -12V ANA 1.5A
4 -5V 1.5A

P3
3 +5V DIG 3A
2 DIG GND
R24 1M 1W
E1 CHASSIS GND

AC OK CIRCUIT

R10 10K 1/2W

+5V DIG

R12 4.7K

2SA1029 Q1

R13 1K

R14 560K R16 2.2K

CR7 IN4002 CR8 IN4002

R11 120K

C4 3.3 35V

CR9 IN4148

Q2 2SC 945

R15 1.5K

4 AC OK

DC OK CIRCUIT

+5V DIG

R17 10K 1/2W 30% LIN R18 10K R19 1K R20 3K

CR10 10MA

Z7 LM311

C17 6.3V

Z6 AD589KH 1.2V

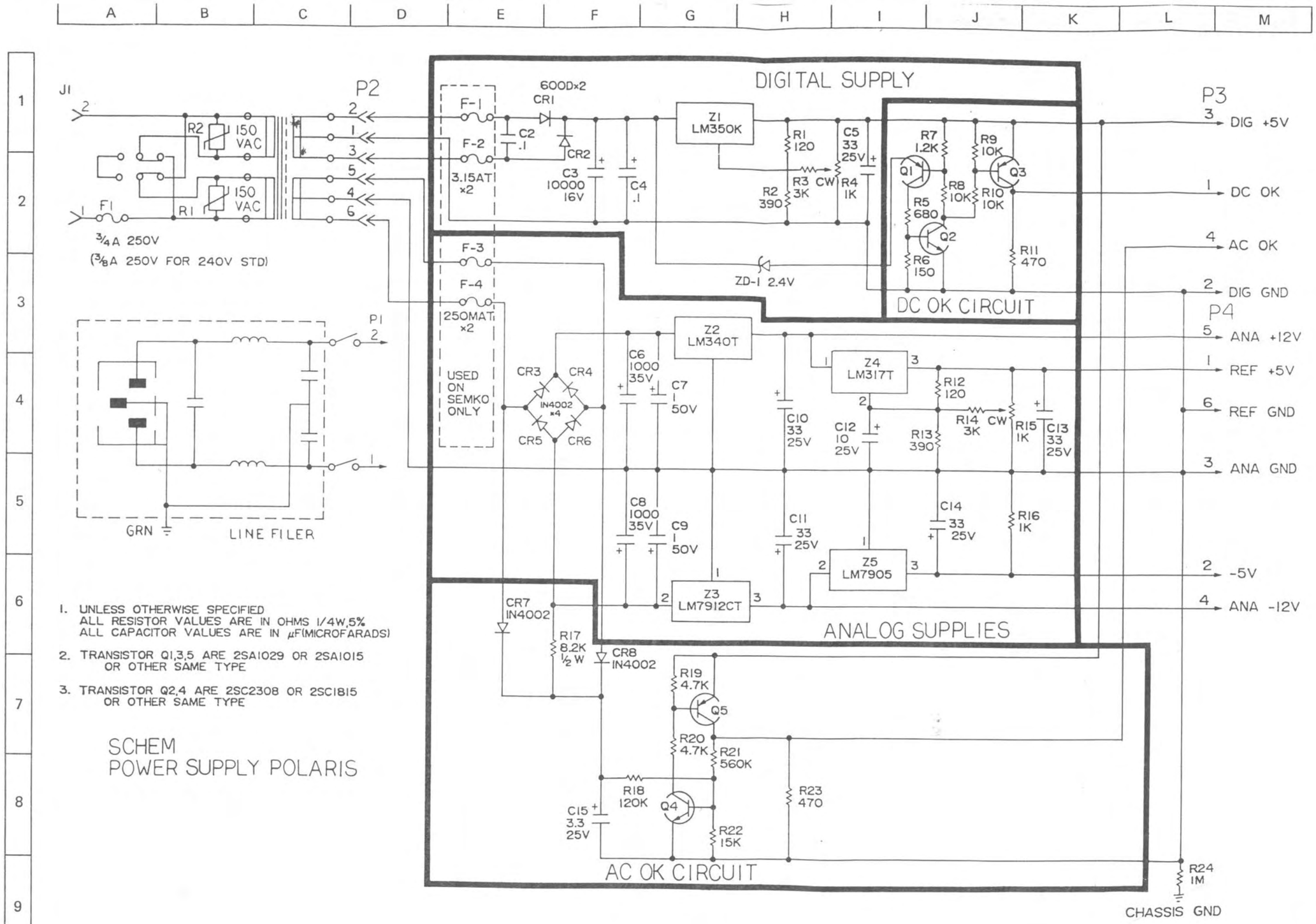
R21 100K R22 1K R23 470

1 DC OK

• METAL FILM RESISTOR
VARISTOR
◉ MULTI-PLY CERAMIC CAPACITOR
* POLYPROPYLENE CAPACITOR
+ ELECTROLYTIC CAPACITOR

FENDER MI
CHROMA POLARIS

POWER SUPPLY
SCHEMATIC
(EARLY VERSION)



1. UNLESS OTHERWISE SPECIFIED
   ALL RESISTOR VALUES ARE IN OHMS 1/4W,5%
   ALL CAPACITOR VALUES ARE IN μF(MICROFARADS)
2. TRANSISTOR Q1,3,5 ARE 2SA1029 OR 2SA1015
   OR OTHER SAME TYPE
3. TRANSISTOR Q2,4 ARE 2SC2308 OR 2SC1815
   OR OTHER SAME TYPE

SCHEM
POWER SUPPLY POLARIS

FENDER MI
CHROMA POLARIS

POWER SUPPLY
SCHEMATIC
(LATE VERSION)