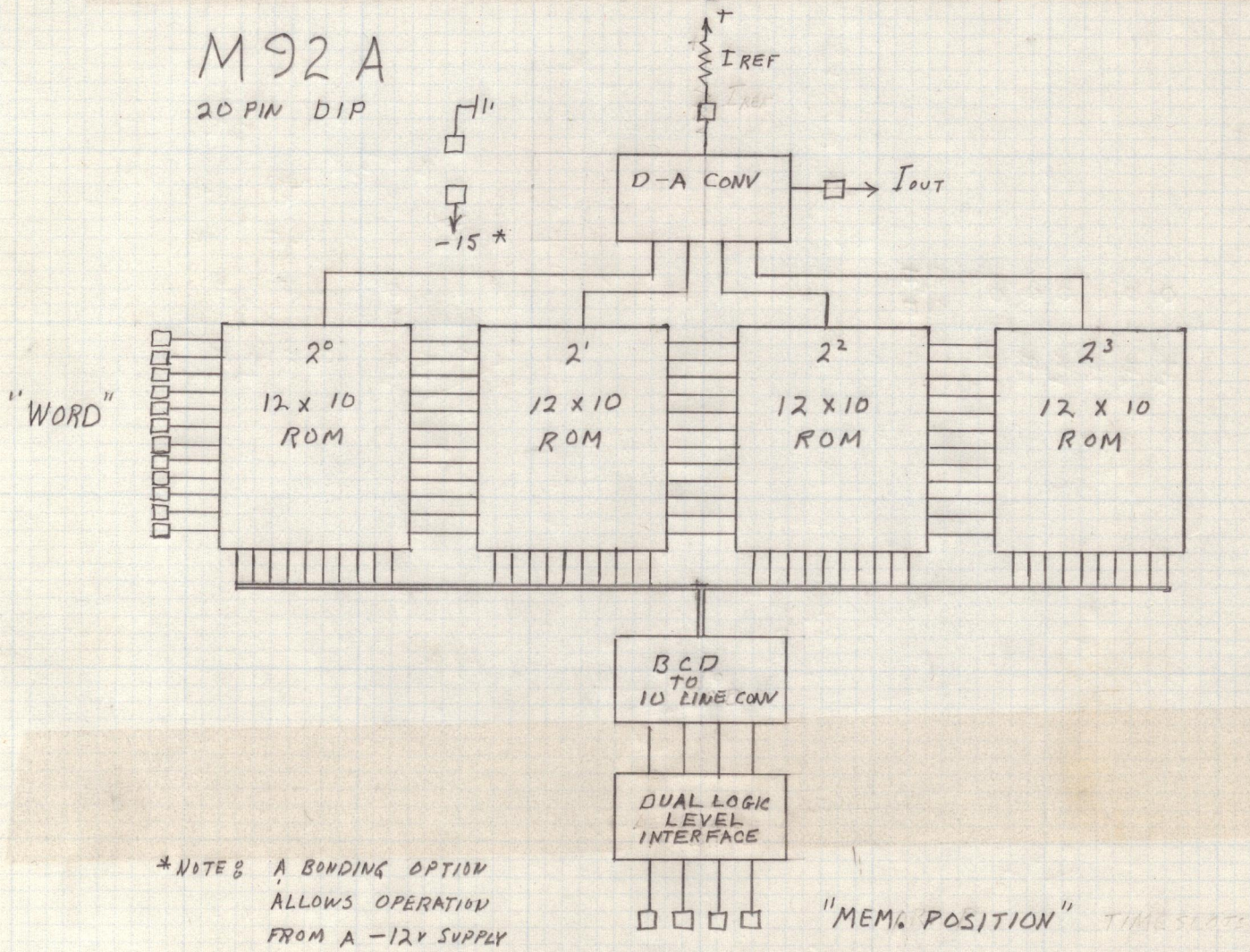


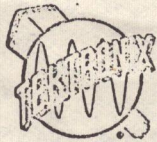
M92 is a 12 x 10 x 4 read only memory coupled to a 4-bit D to A converter with internal precision current sources requiring a single precision external reference. The ten "memory positions" are scanned by a 4-bit B.C.D. coded input which may be 0 to -15 V times 10^{-2} data or 10^{-2} levels or any combination thereof. The 12 "word" lines are 10^{-2} compatible only and are NEG true. Several "word lines" may be true at one time as long as memory locations (time slots) are not shared.

Intended applications are for encoding of CRT readout directly with electrically alterable information. Other variations are possible, such as it may be used to multiplex and encode three, 4-bit words.

Programming is accomplished by inexpensive preohmic and emitter mask changes.



COMPONENT



SPECIFICATION NO 155-0014-01-A

APPROVED September 21, 1971

SUPERSEDES SPEC NO

TEKTRONIX, INC., PN 155-0014-01

OF 5 PAGE 1

MANUFACTURED BY TEKTRONIX, INC.

THIS SPECIFICATION APPLIES TO THE SUBJECT ITEM AS MANUFACTURED BY TEKTRONIX, INC.

1. ITEM NAME and description. INTEGRATED CIRCUIT, silicon, monolithic; analog-to-digital converter; 16-lead dual in-line package. Initial designated M019C:

2. PACKAGE.

Silicone case;* gold-plated Kovar* terminals. Marked with Part Number and EIA Data Code.

3. FUNCTIONAL DESCRIPTION.

This device receives differential input signals on these terminals:

INPUT 'A' Pin 10

INPUT 'B' Pin 7

Depending upon the input-signal amplitude, the binary output appears on one of the output terminals 1 through 10 as follows:

OUTPUT 1 (corresponding to highest input level)	Pin 11	14.00	15V REF 5M 200µA
OUTPUT 2	Pin 6	13.50	200µA
OUTPUT 3	Pin 12	13.00	400µA
OUTPUT 4	Pin 5	12.50	500µA
OUTPUT 5	Pin 13	12.00	600µA
OUTPUT 6	Pin 4	11.50	700µA
OUTPUT 7	Pin 14	11.00	800µA
OUTPUT 8	Pin 3	10.50	900µA
OUTPUT 9	Pin 15	10.00	1000µA
OUTPUT 10 (corresponding to lowest input level)	Pin 2	9.50	1100µA

*In accord with the current issue of Specification PKG-155.

PGS/IS

SPECIFICATION No. 155-0014-01-A

4 ABSOLUTE MAXIMUM RATINGS.

ABSOLUTE MAXIMUM RATINGS OF THIS DEVICE SHALL BE AT LEAST AS EXTENSIVE AS THOSE SHOWN

SYMBOLS	IDENTIFICATIONS	NOTES	VALUES	UNITS
T_{stg}	Storage temperature, range		-55 to +125	$^{\circ}C$
T_A	Operating ambient temperature, range		0 to +70	$^{\circ}C$

5 ELECTRICAL CHARACTERISTICS.

Electrical Characteristics ($T_A = 0$ to $+70^{\circ}C$; $V_{CC} = +5.0$ V ± 1.0 percent; $V_{high} = +15$ V ± 1.0 percent.)

Symbols	Identifications	Notes and Test Conditions ¹	Values		Units
			Min	Max	
I_{CC}	Current drain at pin 8	Ground pins 1, 9, and 16. Connect pin 8 to +15 V.		<8	mA
	First transition voltage	Connect device as shown below. Set S_1 at ground. Reducing pin-10 voltage from +15V, measure pin-10 voltage at which pin-11 current equals pin-6 current.	13.65	13.85	V
	Successive transition voltages. Continue to reduce pin-10 voltage. Note the pin-10 voltage at which the currents are equal in the two pins of each pair indicated. (This is a transition voltage.) Voltage differences between successive transitions shall be as shown.	Pins 11 and 6 Pins 6 and 12 Pins 12 and 5 Pins 5 and 13 Pins 13 and 4 Pins 4 and 14 Pins 14 and 3 Pins 3 and 15 Pins 15 and 2	485	515	mV
	Transition-zone widths	$T_A = +25^{\circ}C$. For each pin pair listed above, measure range of pin-10 voltages for which currents simultaneously exceed 5.0 μA in both pins of pair.		50	mV
Output BV_{CE}	Reverse breakdown voltage (at each output pin in succession, in <u>unselected</u> state)	Connect device as shown below (S_1 at ground) except connect pin under test to fixed source of 10 μA .	5.0		V

NOT FOR SALE

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

TEKTRONIX, INC.

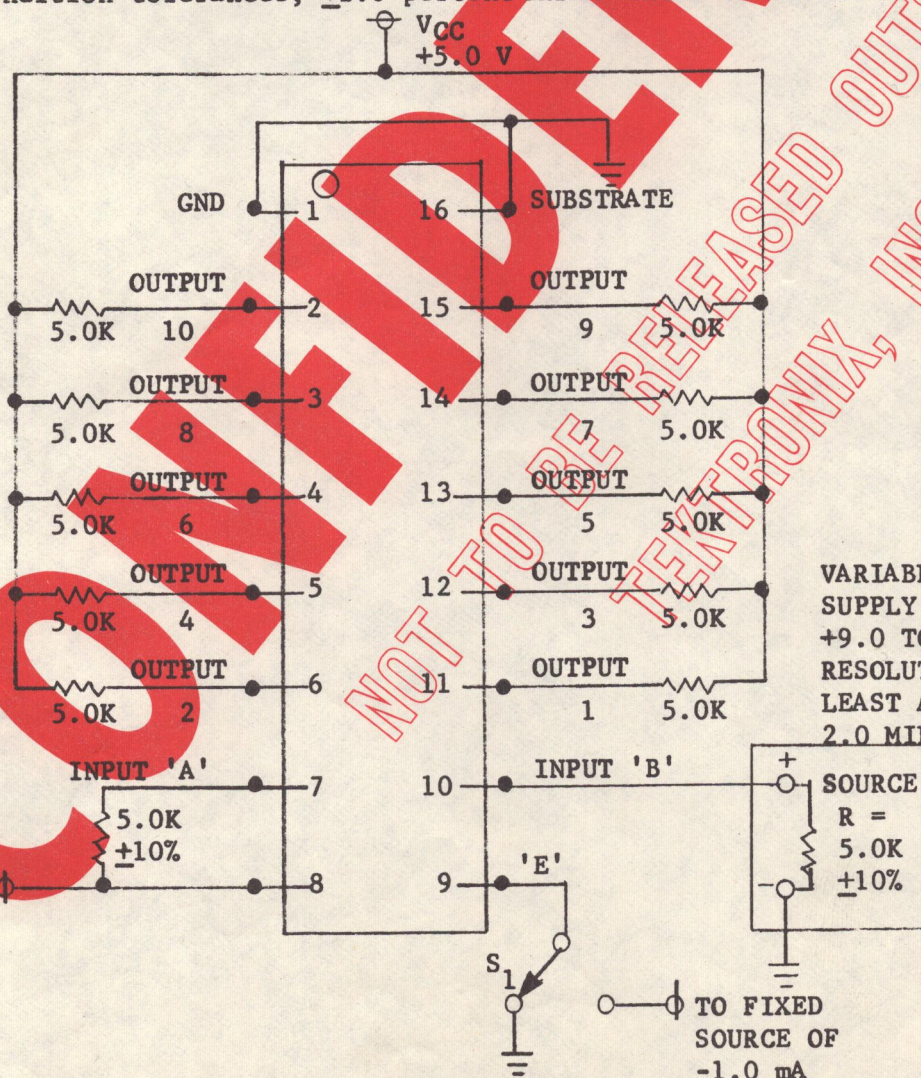
TEKTRONIX, INC.

SPECIFICATION NO. 155-0014-01-A

Of 5 Page 3

ELECTRICAL CHARACTERISTICS			Values		Units
Symbols	Identifications	Notes and Test Conditions ¹	Min	Max	
$V_{CE(sat)}$ Output	Output saturation voltage. Measure voltage at each output pin selected in succession	Connect device as shown below. Set S_1 at ground.		200	mV
$A_{i(out)}$	Output current gain (current-steering mode). Measure current at each output pin <u>selected in succession</u> .	Connect device as shown below (S_1 at 1.0mA) except replace output-pin 5.0-k resistors with low-resistance current meters leading to +1.0 V.	0.9	Corresponds to output current of 0.9 mA.	

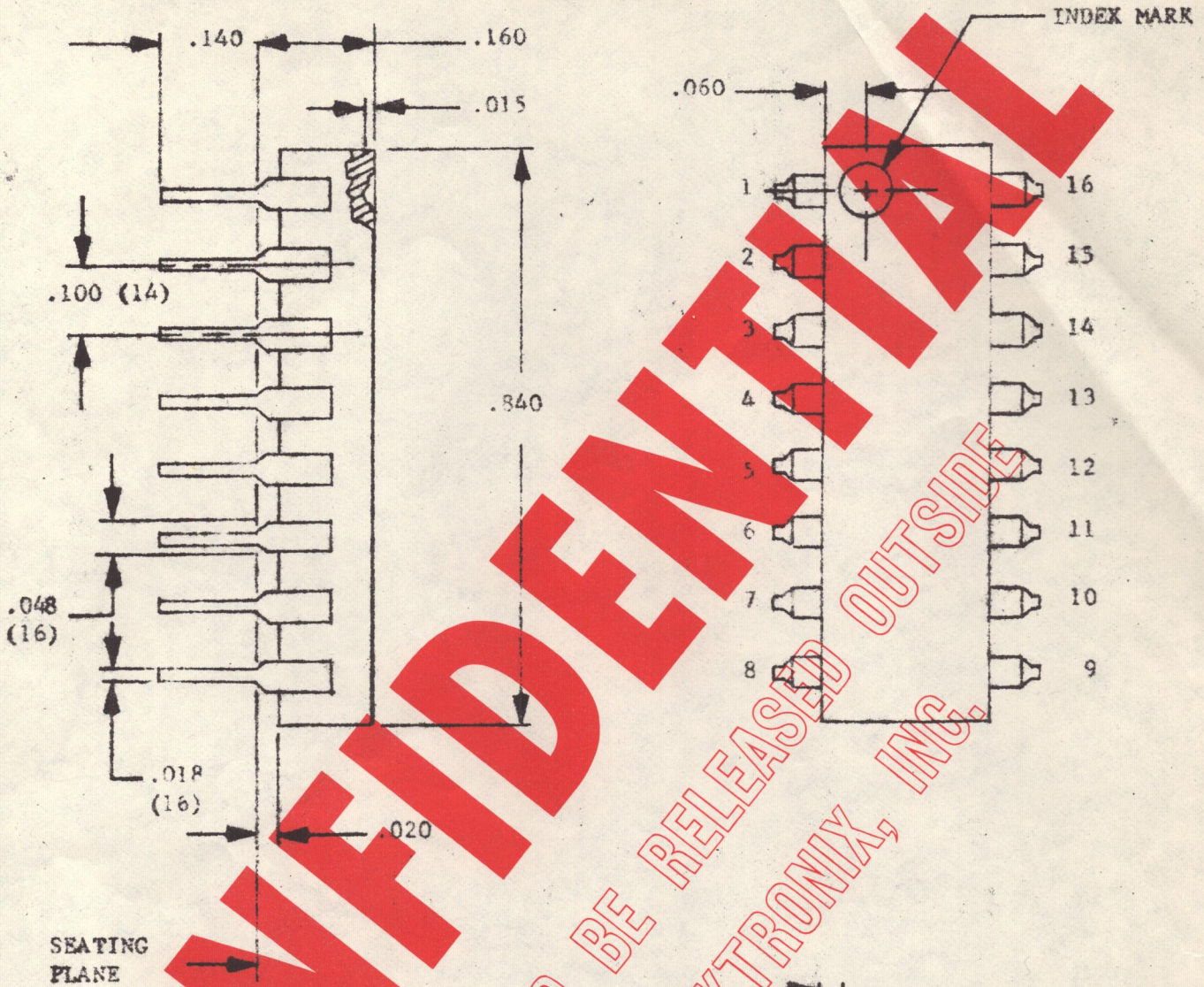
¹Test-condition tolerances, ± 1.0 percent unless shown otherwise.



6 MECHANICAL AND ENVIRONMENTAL TESTS. In accord with current issue of Specification ENV-155.

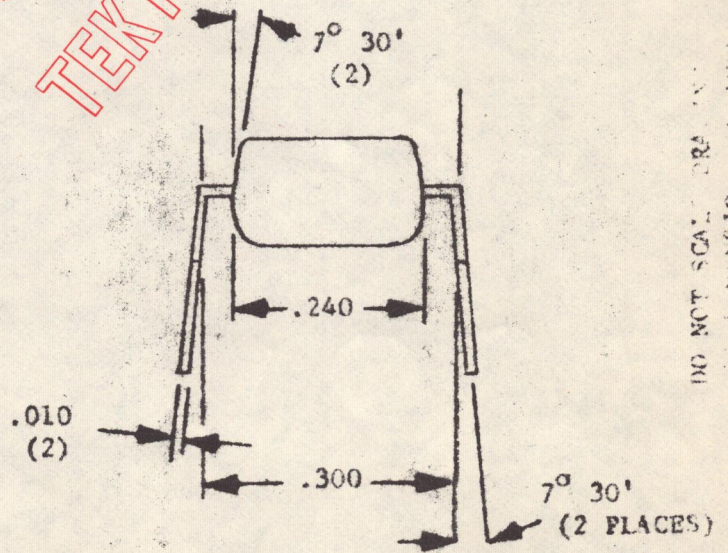
7 INSPECTION-AND-TESTING CONDITIONS. Unless otherwise specified, 25°C, 760 millimeters mercury, relative humidity not greater than 55 percent.

OUTLINE DRAWING

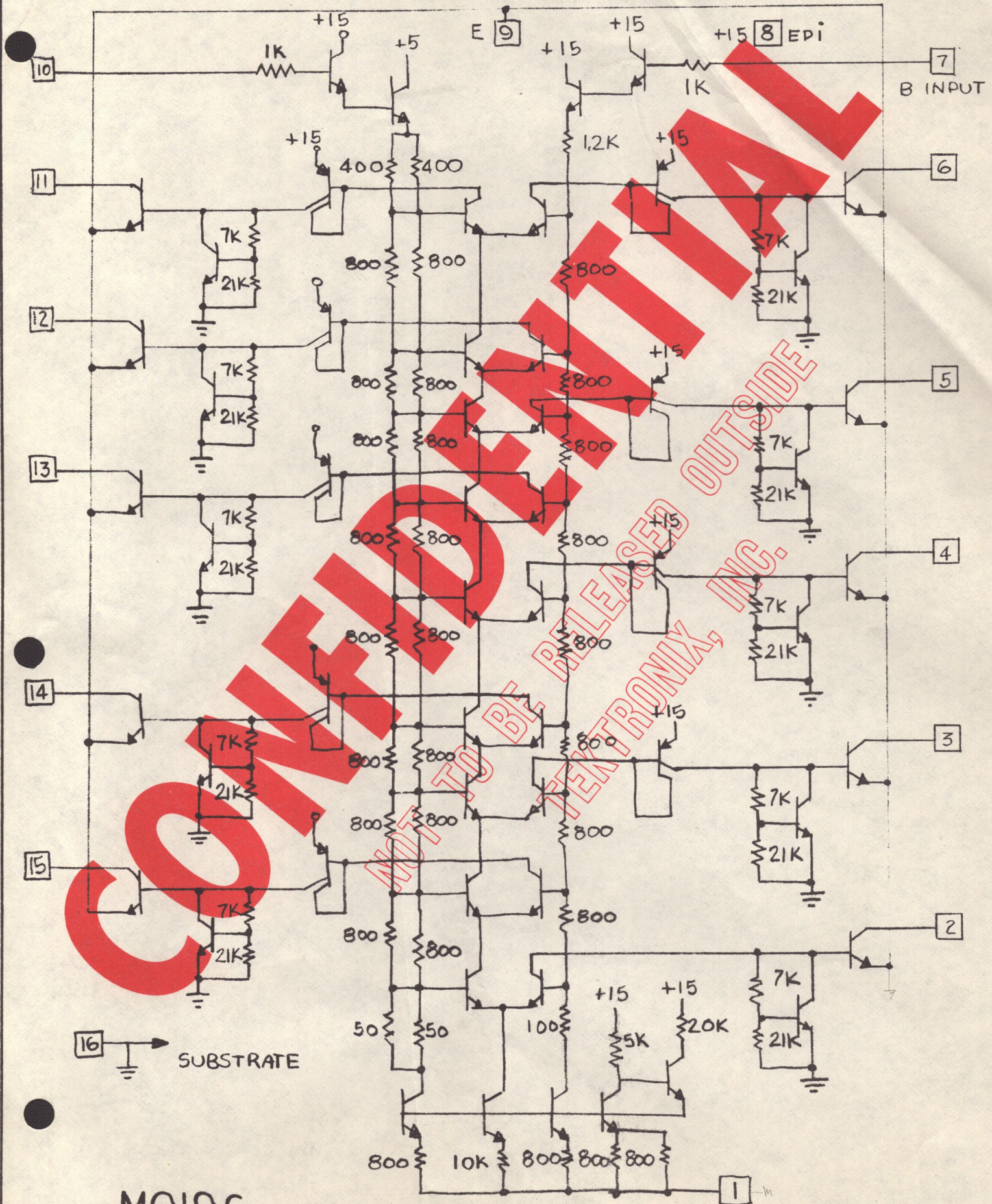


NOTES:

1. DIMENSIONS SHOWN ARE REFERENCE VALUES ONLY.
2. FOR DIMENSIONS WITH TOLERANCES, SEE DRAWING NUMBER 155-0000-00.



DO NOT SCALE DRAWING
ALL DIMENSIONS IN INCH



MO19C

Aφ M92 PROGRAMMING - No. 1. ^{VOX} C3A

MEM POS	WORD	A Hi (1+2 ^{1/2})				A Lo (5 ^{1/2})			
		TS2 B Lo	TS4 C Lo	TS5 B+C Lo	TS6 D Lo	TS2 B Lo	TS4 C Lo	TS5 B+C Lo	TS6 D Lo
		3	5	7	9	4	6	8	10
	1	0	0	.3	.1	0	0	0	.5
	2	0	.3	.1	.1	0	0	.5	.1
	3	0	.2	.1	.1	0	0	.3	.1
	4	0	0	.5	.1	0	0	0	.9
	5	0	0	.3	.1	0	0	0	.5
	6	0	0	.2	.1	0	0	0	0
	7	0	.2	.1	.1	0	0	0	0
2's	8	0	0	.6	.1	0	0	0	0
	9	0	0	.3	.1	0	0	0	0
	10	0	0	.2	.1	0	0	0	0
	11	.5	0	0	0	.5	0	0	0
	12	.4	0	0	0	.4	0	0	0

CURRENTS SHOWN IN mA. OUT.

L₀ = -15V.

John Pace 10-17-72

R3

M92A

V04

(1-10) MEM POS	A=0			A=1		
	T54	T55	T58	T54	T55	T58
	B	C	D	B	C	D
	3	5	9	4	6	10
W1	.9			.9	.9	
W2				.9		
W3				.9		
W4	.9			.9	.9	
W5	.9			.9	.9	
W6	.9					
W7						
W8	.9					
W9	.9					
W10	.9					
W11			.2			.2
W12			.4			.4

(IN MA)

"SPACE"
MUST NOT BE
GREATER THAN
1.02 TO WORK
IN 7704A



THIS SPECIFICATION APPLIES TO THE SUBJECT ITEM AS MANUFACTURED BY TEKTRONIX, INC.

1. ITEM NAME AND DESCRIPTION

INTEGRATED CIRCUIT: silicon, monolithic; digital, to analog converter; 20-lead dual in-line package. Initially designated M92A. Six types being made:

M92A	(R)	designated	155-0086-00
M92A	(C1)	designated	155-0087-00
M92A	(C2)	designated	155-0088-00
M92A	(C3)	designated	155-0089-00
<u>M92A</u>	<u>(C3A)</u>	<u>designated</u>	<u>155-0104-00</u>
M92A	(R3)	designated	155-0105-00

This specification is for the underlined version.

2. PACKAGE

Silicon;* gold-plated Kovar* terminals, marked with Part Number and EIA Date Code. 20-lead, 10 pin dual in-line package.

3. FUNCTIONAL DESCRIPTION

a. Terminal Identifications.

<u>Pin No.</u>	<u>Function</u>	<u>Pin No.</u>	<u>Function</u>
1	Word 11	11	Word 3
2	Word 10	12	Word 2
3	Word 9	13	Word 1
4	Word 8	14	Time Slot A
5	Word 7	15	Time Slot B
6	V _{ee} -15	16	Time Slot D
7	V _{cc} Gnd.	17	Time Slot C
8	Word 6	18	Reference Current
9	Word 5	19	Output Current
10	Word 4	20	Word 12

TEKTRONIX, INC.

SPECIFICATION NO

155-0104-00

OF 7 PAGE 2

ELECTRICAL CHARACTERISTICS (FOR AN AMBIENT TEMPERATURE OF 25 °C EXCEPT WHERE A DIFFERENT TEMPERATURE MAY BE SHOWN)				VALUES		UNITS
SYMBOLS	IDENTIFICATIONS	NOTES AND TEST CONDITIONS ¹	MIN	MAX		
I_{EE}	Negative Supply Current	V_{EE} -15 V	4	10	mA	
INPUTS						
I_{IH}	Word Current	V_{IH} 5 V	50	200	μ A	
I_{IL}	Word Current	V_{IL} 0 V	50	200	μ A	
V_{IH}	Word Voltage		2.0	5.	V	
V_{IL}	Word Voltage		0.0	0.8	V	
I_{IH}	Time Slot Current	V_{IH} 5		500	μ A	
I_{IH}	Time Slot Current	V_{IH} 2.4		40	μ A	
I_{IL}		V_{IL} 0		40	μ A	
V_{IH}^{true}	Time Slot Voltage		2	5	V	
V_{IL}	Time Slot Voltage		0	0.8	V	
	or					
I_{IH}	Time Slot Current	V_{IH} 0		10	μ A	
I_{IL}	Time Slot Current	V_{IL} -15		-200	μ A	
V_{IH}	Time Slot Voltage		0	-7	V	
V_{IL}	Time Slot Voltage		-12	-15	V	
I_{REF}	Reference Current		396	404	μ A	
V_{REF}	Reference Voltage	I_{REF} 400 A	-100	+50	mV	

TEKTRONIX, INC.

SPECIFICATION NO 155-0104-00

OF 7 PAGE 3

ELECTRICAL CHARACTERISTICS (FOR AN AMBIENT TEMPERATURE OF 25 °C EXCEPT WHERE A DIFFERENT TEMPERATURE MAY BE SHOWN)			VALUES		UNITS
SYMBOLS	IDENTIFICATIONS	NOTES AND TEST CONDITIONS ¹	MIN	MAX	
I_o	OUTPUT CURRENT	Programmed Output See Truth Table 0 100 200 300 400 500 600 700 800 900 1000 Temp Amb 0 to 70°C	0 80 180 280 380 480 580 680 780 880 980	20 120 220 320 420 520 620 720 820 920 1040	μA μA μA μA μA μA μA μA μA μA μA

TEKTRONIX, INC.

SPECIFICATION NO. 155-0104-00

OF 7 PAGE 4

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1							3		1	5						
2				3			1	5	1	1						
3				2			1	3	1	1						
4							5		1	9						
5							3		1	5						
6							2		1							
7				2			1		1							
8							6		1							
9							3		1							
10							2		1							
11			5	5												
12			4	4												

Time Slot Logic:

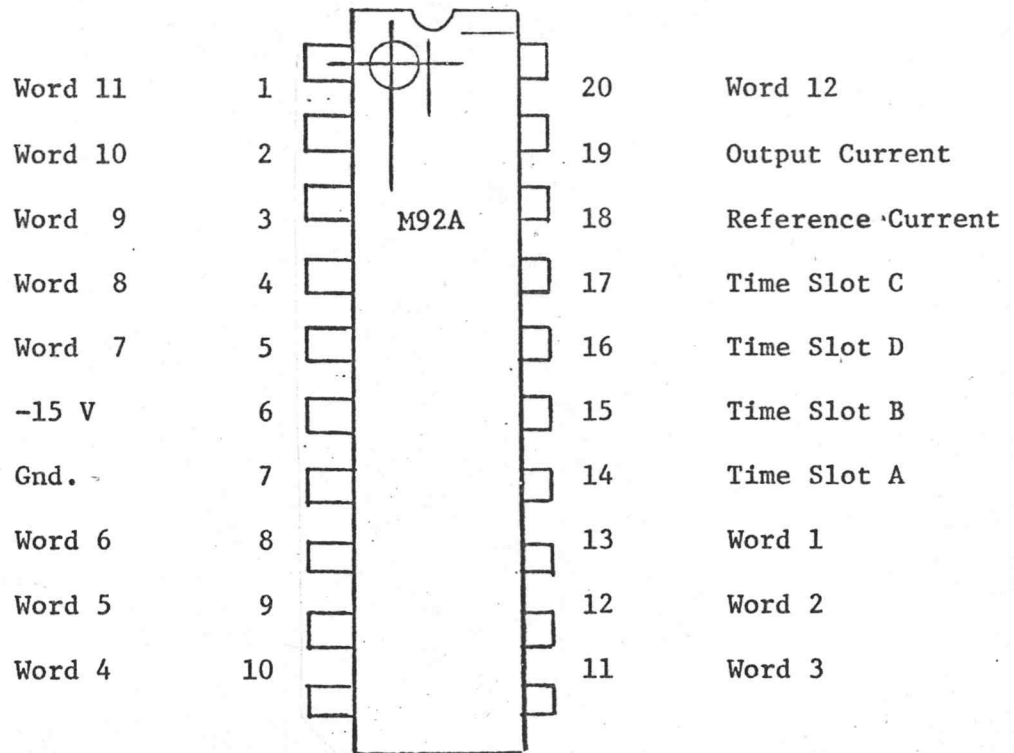
		Pin			
		14	15	17	16
		A	B	C	D
Time Slot	1	0	0	0	0
	2	1	0	0	0
	3	0	1	0	0
	4	1	1	0	0
	5	0	0	1	0
	6	1	0	1	0
	7	0	1	1	0
	8	1	1	1	0
	9	0	0	0	1
	10	1	0	0	1

11 or greater NOT ALLOWED

TEKTRONIX, INC.

SPECIFICATION NO. 155-0104-00

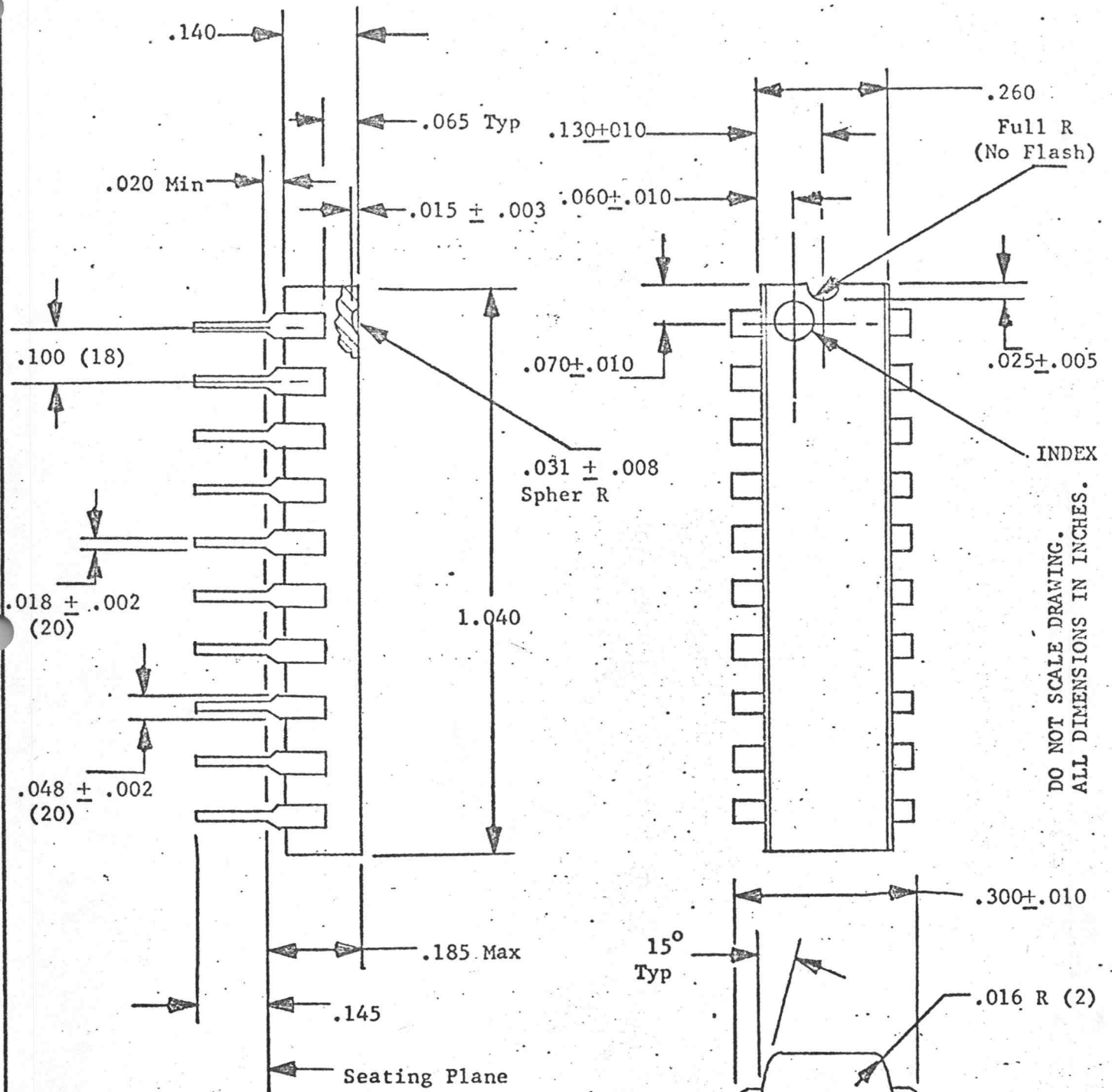
OF 7 PAGE 5



TEKTRONIX, INC.

SPECIFICATION NO. 155-0104-00

Of 7 Page 6

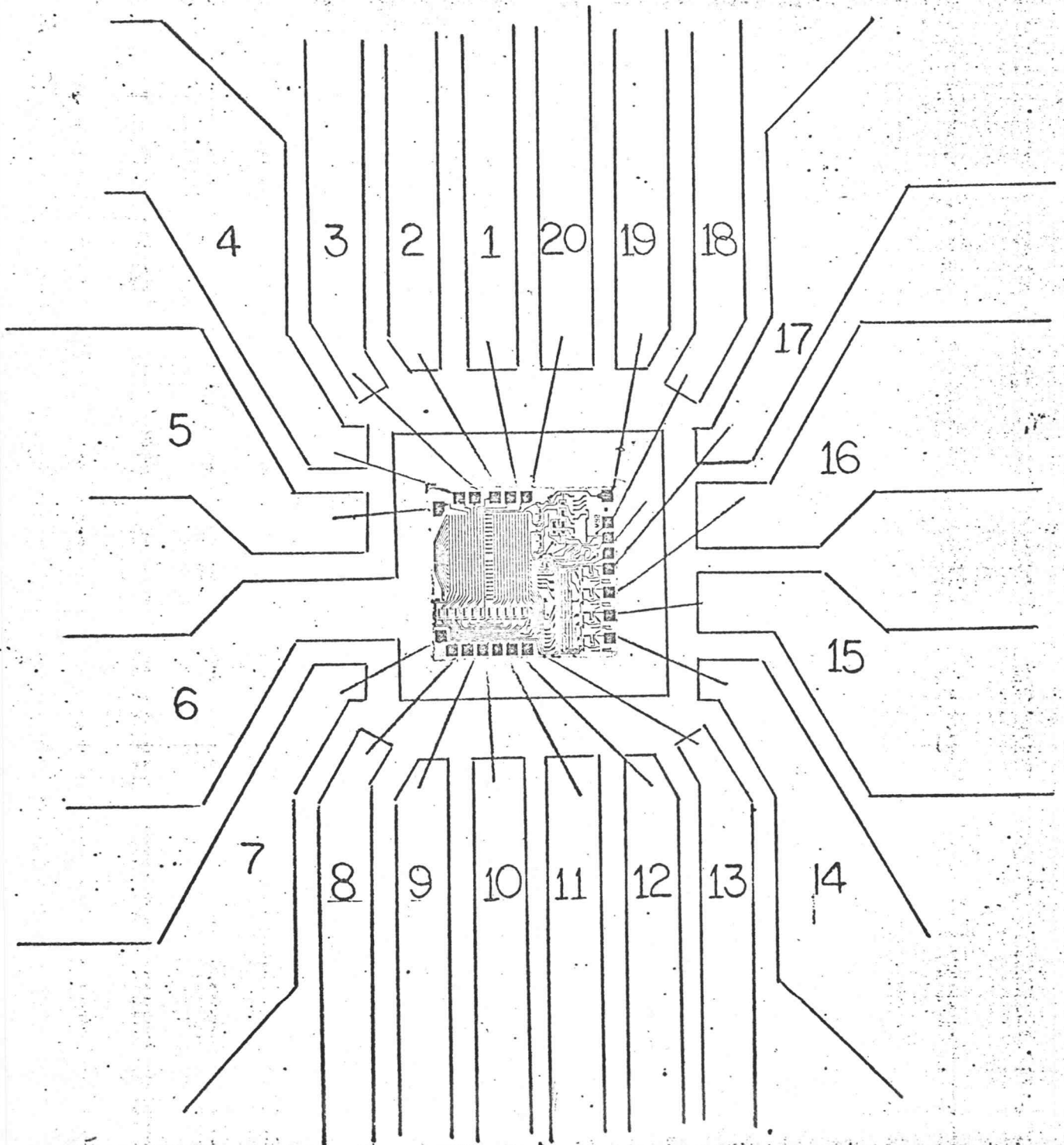


DO NOT SCALE DRAWING.
ALL DIMENSIONS IN INCHES.

NOTES:

1. DIMENSIONS SHOWN ARE REFERENCE VALUES ONLY.
2. FOR DIMENSIONS WITH TOLERANCES, SEE DRAWING NUMBER 155-0000-01

M92 BONDING DIAGRAM





THIS SPECIFICATION APPLIES TO THE SUBJECT ITEM AS MANUFACTURED BY TEKTRONIX, INC.

1. ITEM NAME AND DESCRIPTION

INTEGRATED CIRCUIT, silicon, monolithic; digital to analog converter; 20-lead dual in-line package. Initially designated M92A.

Six types being made:

M92A	(R)	designated	155-0086-00
M92A	(C1)	designated	155-0087-00
M92A	(C2)	designated	155-0088-00
M92A	(C3)	designated	155-0089-00
M92A	(C3A)	designated	155-0104-00
M92A	(R3)	designated	155-0105-00

This specification is for the underlined version.

2. PACKAGE

Silicon;* gold-plated Kovar* terminals, marked with Part Number and EIA Date Code. 20-lead, 10 pin dual in-line package.

3. FUNCTIONAL DESCRIPTION

a. Terminal Identifications

<u>Pin No.</u>	<u>Function</u>	<u>Pin No.</u>	<u>Function</u>
1	Word 11	11	Word 3
2	Word 10	12	Word 2
3	Word 9	13	Word 1
4	Word 8	14	Time Slot A
5	Word 7	15	Time Slot B
6	V ₃₃ -15	16	Time Slot D
7	V _{cc}	17	Time Slot C
8	Word 6	18	Reference Current
9	Word 5	19	Output Current
10	Word 4	20	Word 12

TEKTRONIX, INC.

SPECIFICATION NO 155-0105-00

OF 7 PAGE 2

ELECTRICAL CHARACTERISTICS (FOR AN AMBIENT TEMPERATURE OF 25 °C EXCEPT WHERE A DIFFERENT TEMPERATURE MAY BE SHOWN)			VALUES		UNITS
SYMBOLS	IDENTIFICATIONS	NOTES AND TEST CONDITIONS ¹	MIN	MAX	
I_{EE}	Negative Supply Current	V_{EE} -15 V	4	10	mA
INPUTS					
I_{IH}	Word Current	V_{IH} 5 V	50	200	μ A
I_{IH}	Word Current	V_{IL} 0 V	50	200	μ A
V_{IH}	Word Voltage		2.0	5.	V
V_{IL}	Word Voltage		0.0	0.8	V
I_{IH}	Time Slot Current	V_{IH} 5		500	μ A
I_{IH}	Time Slot Current	V_{IH} 2.4		40	μ A
I_{IL}	Time Slot Current	V_{IL} 0		40	μ A
V_{IH}^{true}	Time Slot Voltage		2	5	V
V_{IL}	Time Slot Voltage		0	0.8	V
- - - or - - -					
I_{IH}	Time Slot Current	V_{IH} 0		10	μ A
I_{IL}	Time Slot Current	V_{IL} -15		-200	μ A
V_{IH}	Time Slot Voltage		0	-7	V
V_{IL}	Time Slot Voltage		-12	-15	V
I_{REF}	Reference Current		396	404	μ A
V_{REF}	Reference Voltage	I_{REF} 400 A	-100	+50	mV

TEKTRONIX, INC.

SPECIFICATION NO 155-0105-00

OF 7 PAGE 3

ELECTRICAL CHARACTERISTICS (FOR AN AMBIENT TEMPERATURE OF 25 °C EXCEPT WHERE A DIFFERENT TEMPERATURE MAY BE SHOWN)			VALUES		UNITS
SYMBOLS	IDENTIFICATIONS	NOTES AND TEST CONDITIONS ¹	MIN	MAX	
I_o	OUTPUT CURRENT	Programmed Output See Truth Table <div style="display: flex; justify-content: space-between;"> 0 0 20 </div> <div style="display: flex; justify-content: space-between;"> 100 80 120 </div> <div style="display: flex; justify-content: space-between;"> 200 180 220 </div> <div style="display: flex; justify-content: space-between;"> 300 280 320 </div> <div style="display: flex; justify-content: space-between;"> 400 380 420 </div> <div style="display: flex; justify-content: space-between;"> 500 480 520 </div> <div style="display: flex; justify-content: space-between;"> 600 580 620 </div> <div style="display: flex; justify-content: space-between;"> 700 680 720 </div> <div style="display: flex; justify-content: space-between;"> 800 780 820 </div> <div style="display: flex; justify-content: space-between;"> 900 880 920 </div> <div style="display: flex; justify-content: space-between;"> 1000 980 1040 </div>			μA
		Temp Amb 0 to 70°C			

TEKTRONIX, INC.

SPECIFICATION NO. 155-0105-00

OF 7 PAGE 4

TS

WORD

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1			9	9		9										
2				9												
3				9												
4			9	9		9										
5			9	9		9										
6			9													
7																
8			9													
9			9													
10			9													
11									2	2						
12									4	4						

M92

R3

155-0105-00

Time Slot Logic:

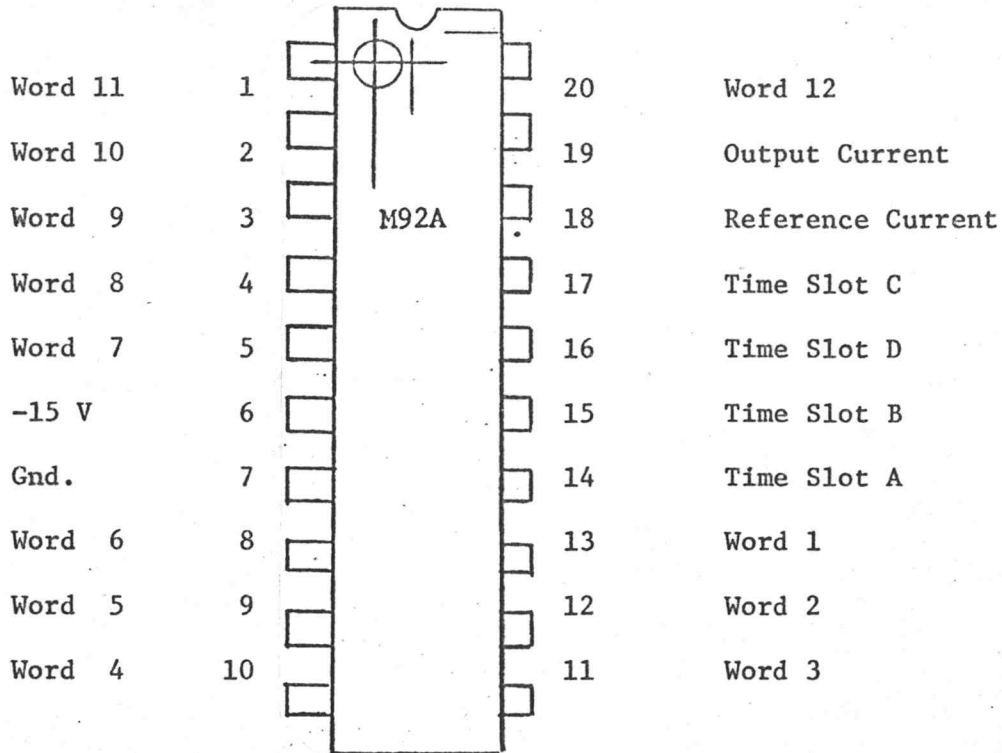
	Pin			
	14	15	16	17
	A	B	C	D
1	0	0	0	0
2	1	0	0	0
3	0	1	0	0
4	1	1	0	0
5	0	0	1	0
6	1	0	1	0
7	0	1	1	0
8	1	1	1	0
9	0	0	0	1
10	1	0	0	1

11 or greater NOT ALLOWED

TEKTRONIX, INC.

SPECIFICATION NO. 155-0105-00

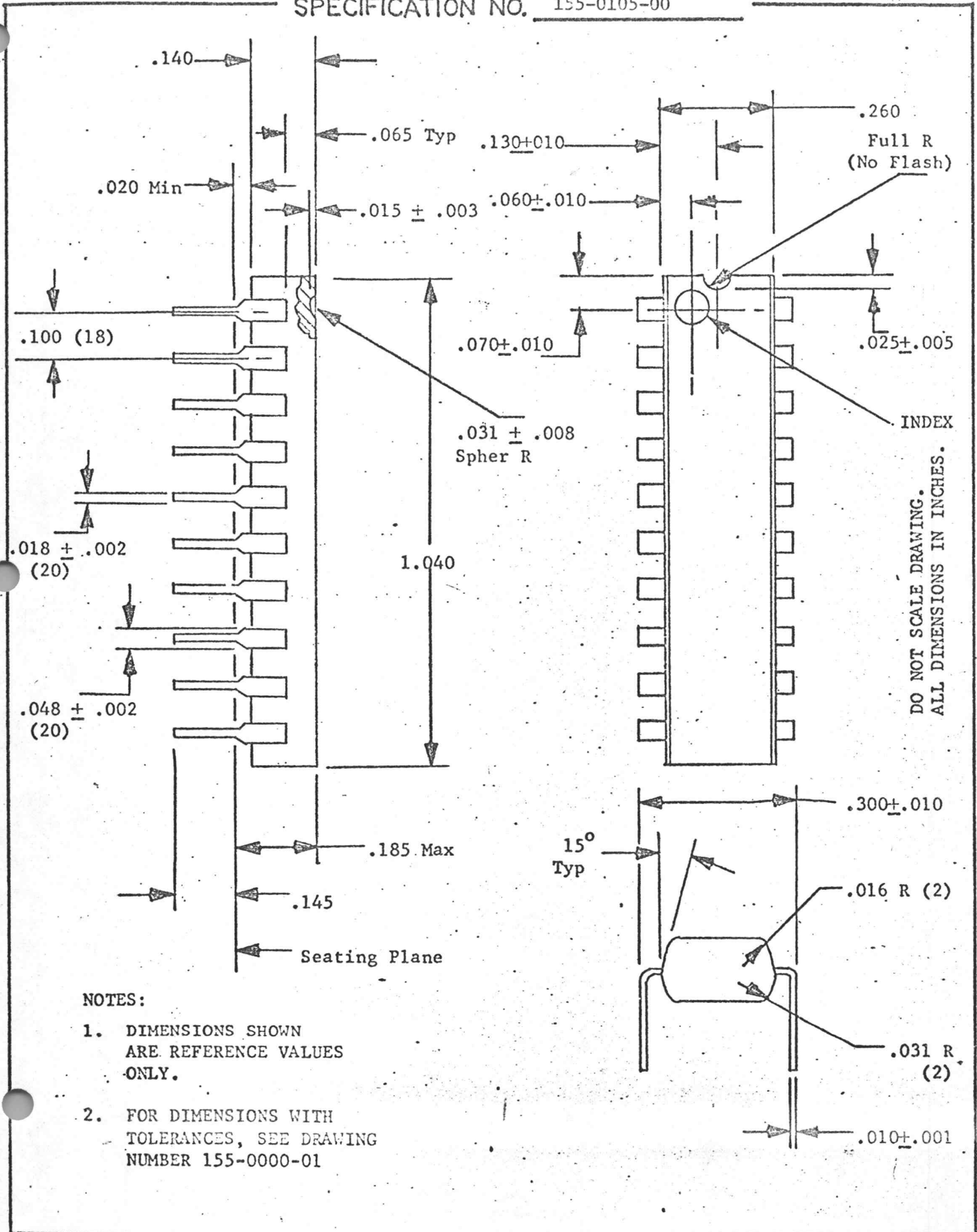
OF 7 PAGE 5



TEKTRONIX, INC.

SPECIFICATION NO. 155-0105-00

Of 7 Page 6

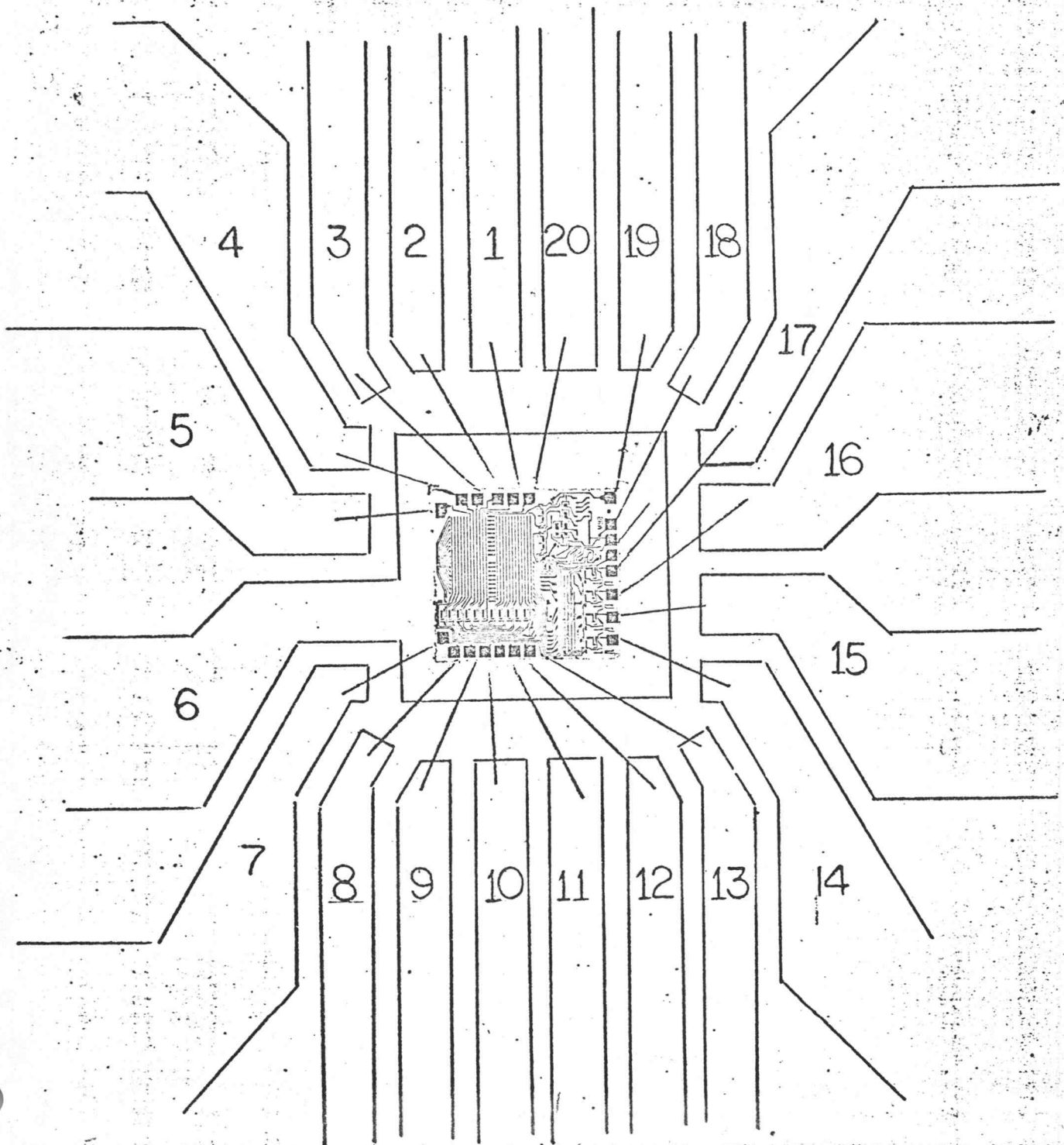


DO NOT SCALE DRAWING.
ALL DIMENSIONS IN INCHES.

NOTES:

1. DIMENSIONS SHOWN ARE REFERENCE VALUES ONLY.
2. FOR DIMENSIONS WITH TOLERANCES, SEE DRAWING NUMBER 155-0000-01

M92 BONDING DIAGRAM

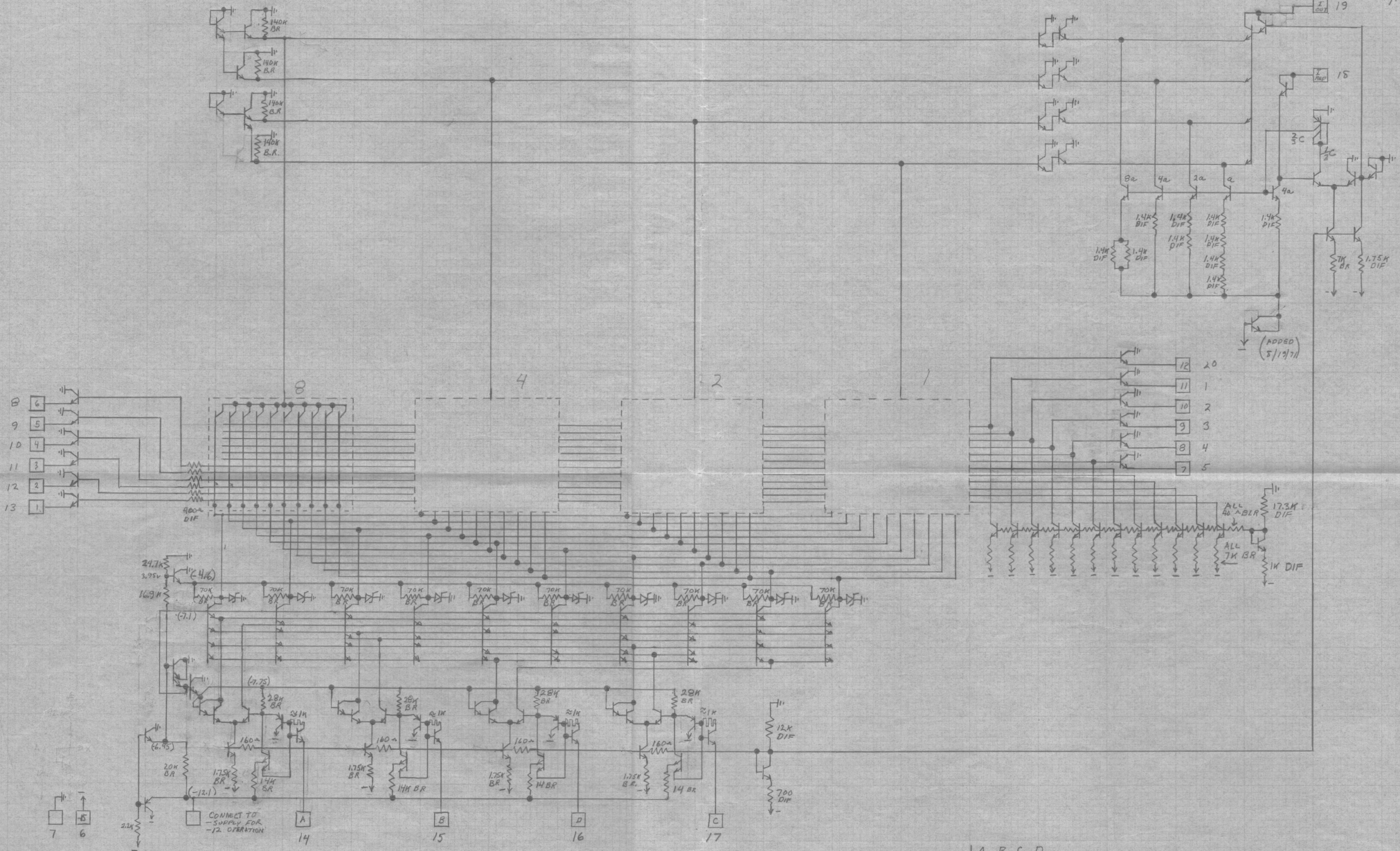


12x10x4 ROM
+ D-A CONVERTER
WITH INTERNAL I
SORCES

LEGEND GENERATOR
M 92 A

R. J. MCCOY
M. METCALF

5/14/71
5/25/71
5/26/71
7/19/72



$I_{REF} = 400 \mu A$

SUPPLY $I_{REF} \approx 5.5 \text{ mA}$

INPUTS 1-12 DECISION LEVEL SET @ 1.2V @ 25°C ($\approx 4 \text{ mV}/^\circ\text{C}$ DRIFT) (100 μA DESIGN CENTER) 20

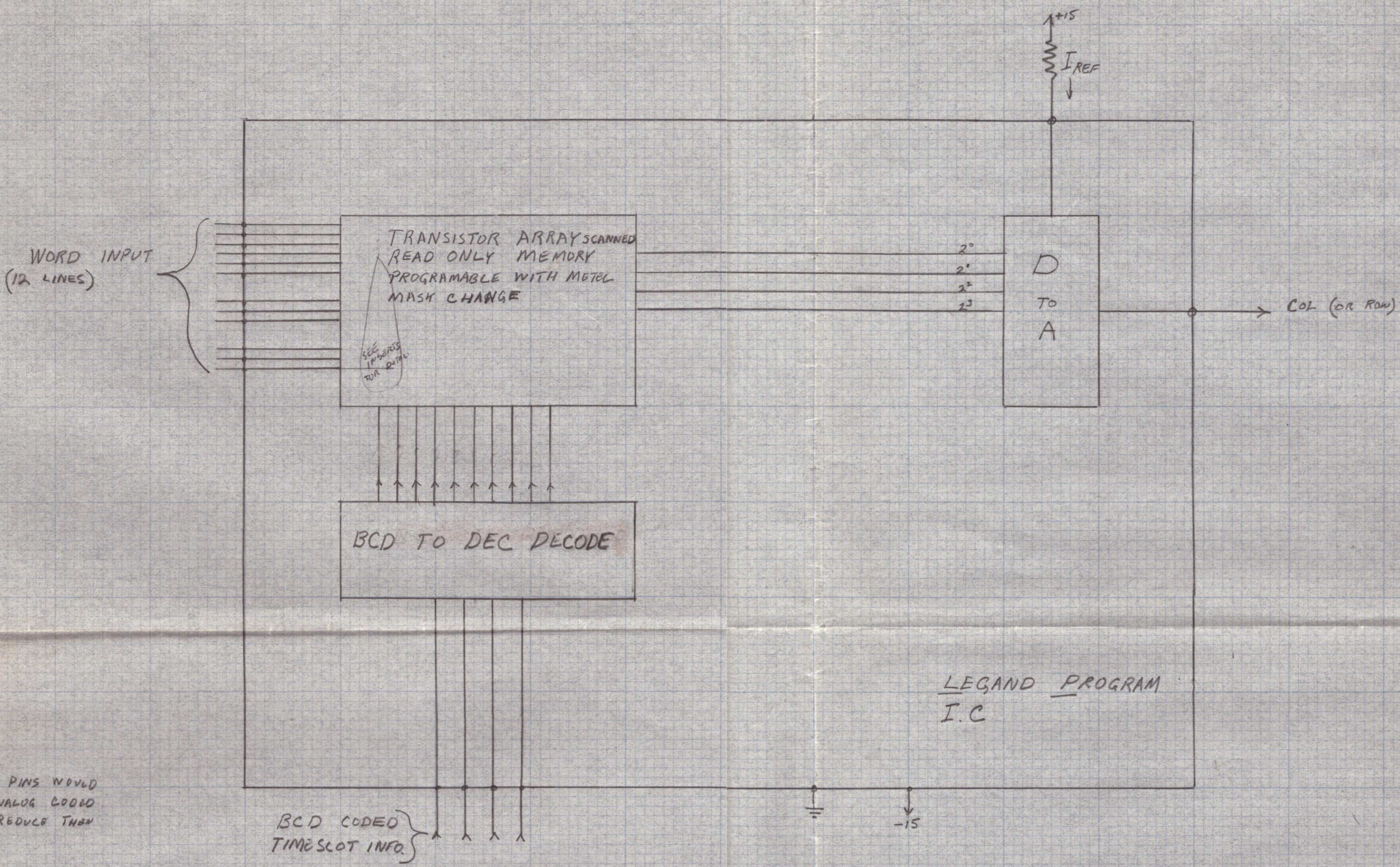
BASED ON $V_{BE} = 0.65 \text{ V}$ & $V_{BE} = 6.45 \text{ V}$ @ 0V

INPUTS [A → D] $+1.7 \text{ V}$ $-4 \text{ mV}/^\circ\text{C}$ @ +15 SUPPLY [$+1.8 \text{ V}$ $-2 \text{ mV}/^\circ\text{C}$ @ -12 SUPPLY] [OR WITH 0-15 INPUT, -0.3 V , $+8 \text{ mV}/^\circ\text{C}$ ($I_{IN} \approx 10 \text{ nA}$), -12 V , -15 V]

	A	B	C	D	
1	0	0	0	0	0 = #7, 1 = #5 or #5
2	1	0	0	0	
3	0	1	0	0	
4	1	1	0	0	READ OUT POSITIONS
5	0	0	1	0	
6	1	0	1	0	
7	0	1	1	0	
8	1	1	1	0	
9	0	0	0	1	
10	1	0	0	1	

R. J. McCoy 2/17/71
 PROPOSED READ-OUT SYSTEM

PC SIZE 60 X 60
 COST TO CHANGE MAIN PROGRAM \approx 200 +
 BY PRE-ORNIC MASK CHANGE



IF I.C. THESE PINS WOULD HAVE TO BE ANALOG LOADED IN ORDER TO REDUCE THEM TO TWO

(APPROX DIMENSIONS 35 X 35 MILS)

TRANSISTOR ARRAY SCANNED READ ONLY MEMORY DETAILS
 ARRAY IS PROGRAMMED BY SELECTIVELY METALIZING EMITTERS

