

CU

Schematics

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PART NO.

MT

ZONE

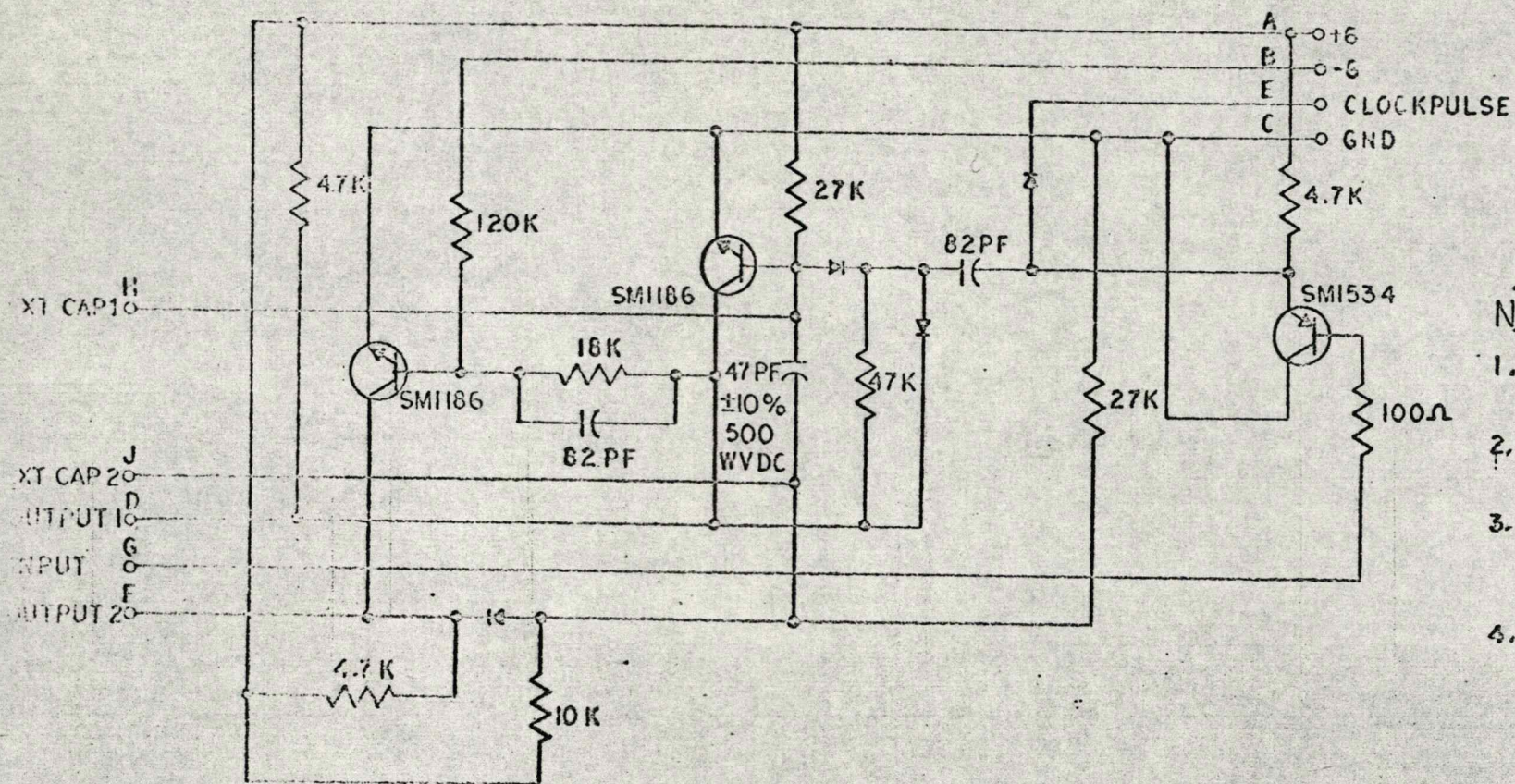
SYL

REVISIONS

DESCRIPTION

DATE

BY



NOTES:

1. ALL DIODES ARE SM1N914.
2. ALL RESISTORS ARE $\pm 5\%$, 1/4W.
3. ALL CAPACITORS ARE $\pm 20\%$, 200WVDC, EXCEPT AS NOTED.
4. MODULE LENGTH 1061.

S. E. ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED			ORIGINAL DATE OF DRAWING OCT 19, 64		BUFFERED INPUT DELAY CIRCUIT BD- 1A		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
		DIMENSIONS ARE IN INCHES			CHECKED					
SATURN USED ON		TOLERANCES ON			DRAWN		BY		DWC	
		FRACTIONS DECIMALS ANGLES			CHECKER		ENGINEER		SIZE	
APPLICATION		MATERIAL			SUBMITTED		WEIGHT CHECKER		DATE	
		HEAT TREATMENT			APPROVED		SCALE		UNIT WEIGHT	
		FINAL PROTECTIVE FINISH			DIRECTOR				CODE	
									SHEET	

4-100 FORM 427-1 (10-64) 57-1000

1. THIS DRAWING IS THE PROPERTY OF THE UNITED STATES GOVERNMENT. IT IS TO BE USED FOR ANY PURPOSE AND BY ANY PERSON OR ORGANIZATION WITHOUT CHARGE. IT IS TO BE RETURNED TO THE OFFICE OF ORIGIN UPON REQUEST. IT IS TO BE KEPT IN A SAFE PLACE TO PREVENT LOSS OR DAMAGE. IT IS TO BE KEPT IN A SAFE PLACE TO PREVENT LOSS OR DAMAGE. IT IS TO BE KEPT IN A SAFE PLACE TO PREVENT LOSS OR DAMAGE.

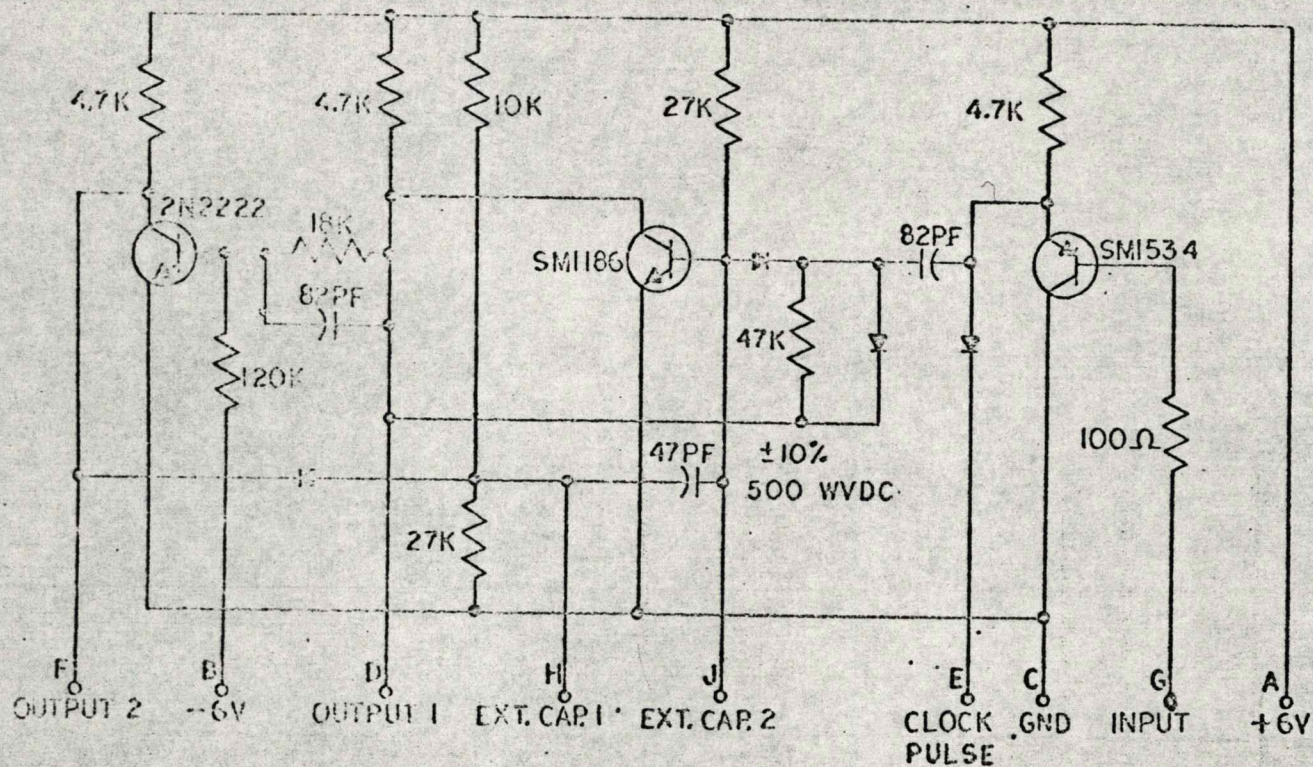
PART NO.

REVISIONS

DESCRIPTION

DATE

BY



NOTES:

1. ALL RESISTORS ARE $\pm 5\%$, $1/4W$.
2. ALL DIODES ARE SM1N914.
3. ALL CAPACITORS ARE $\pm 20\%$, 200WVDC, EXCEPT AS NOTED.
4. MODULE LENGTH: 1.06 IN.

SPECIFICATIONS RECORDS		UNLESS OTHERWISE SPECIFIED			ORIGINAL DATE OF DRAWING OCT 20, 64		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES			DRAWN BY E. V. GENTRY CHECKED BY [] ENGINEER BY [] SUBMITTED BY [] APPROVED BY [] DIRECTOR BY []			
APPLICATION SATURN USED ON []		MATERIAL [] HEAT TREATMENT [] FINAL PROTECTIVE FINISH []			WEIGHT CHECKER [] SCALE [] DATE [] UNIT WEIGHT [] CODE []		DWG SIZE B SHEET 1 OF 1	

1-10-64 (REVISION 1964)

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 PROVIDED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH THE
 PRESENT DRAWING. THE PRESENT DRAWING IS NOT TO BE USED FOR
 ANY OTHER PURPOSE WITHOUT THE WRITTEN AUTHORIZATION OF THE
 AUTHORITY ISSUING THIS DRAWING. THE PRESENT DRAWING IS NOT TO
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PART NO.

REVISIONS

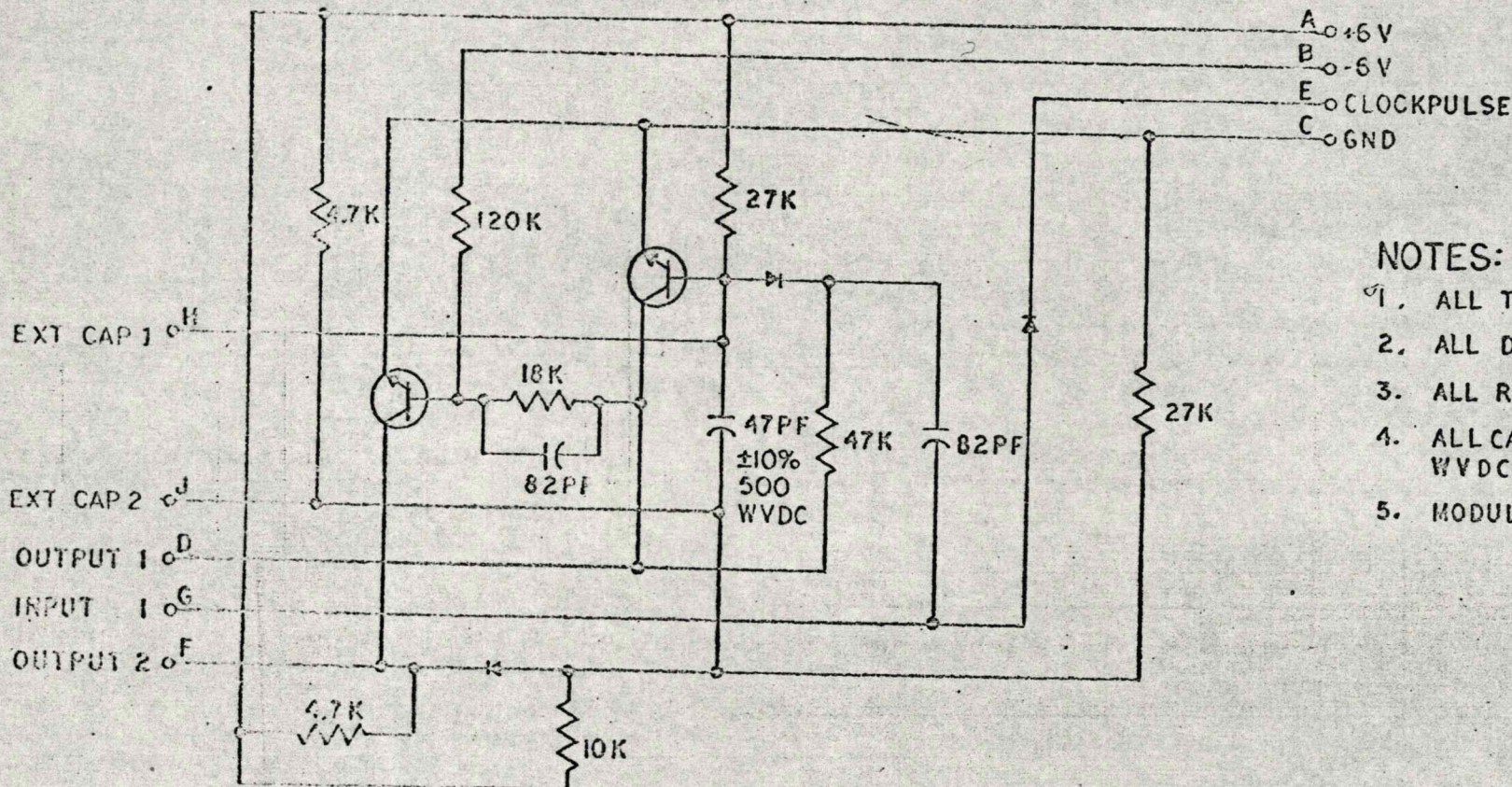
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SYM

DESCRIPTION

DATE

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NOTES:

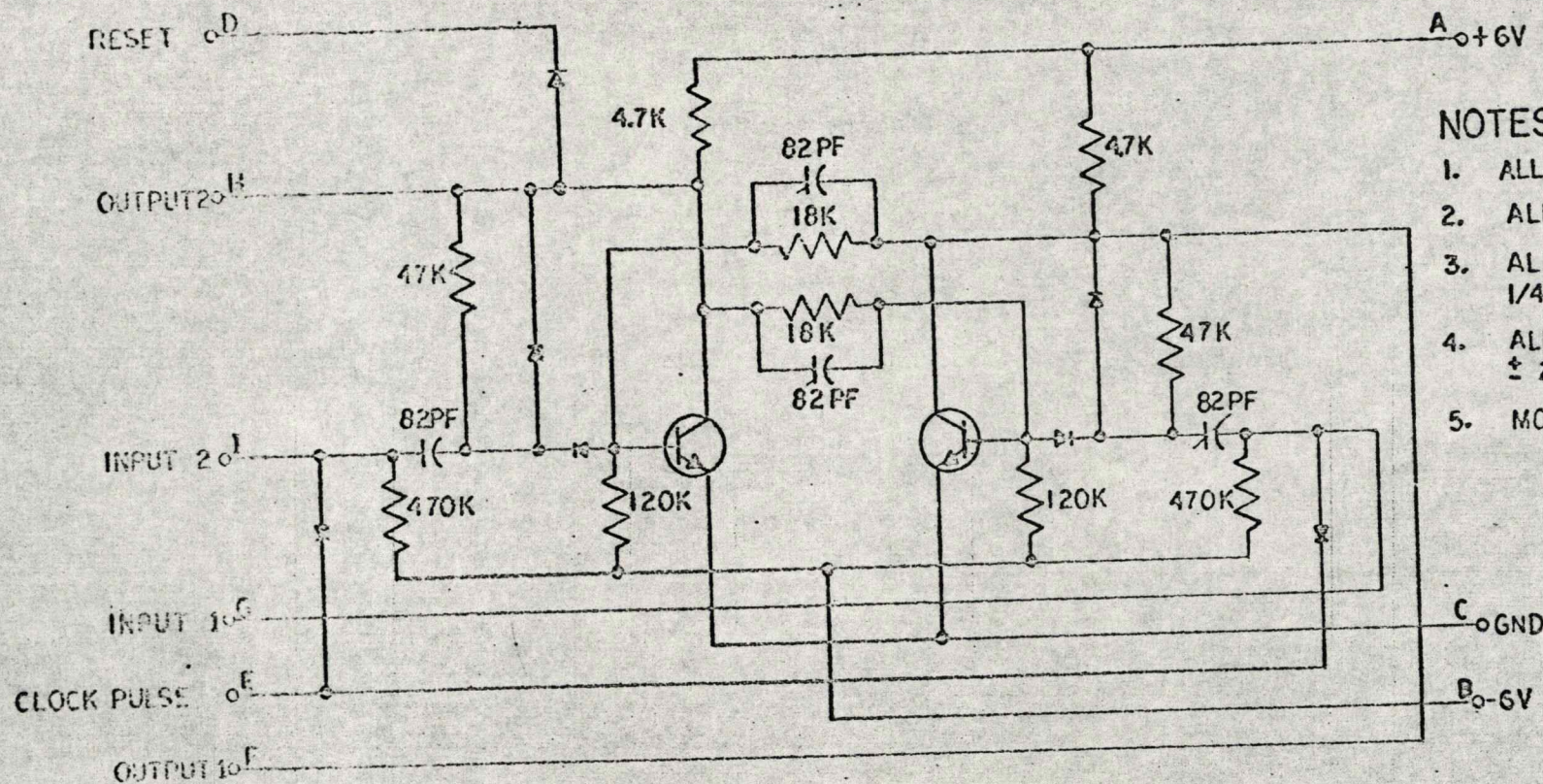
1. ALL TRANSISTORS ARE 5M1000
2. ALL DIODES ARE 5M1N914
3. ALL RESISTORS ARE 5%, 1/4W
4. ALL CAPACITORS ARE 20%, 200 WVDC, EXCEPT AS NOTED.
5. MODULE LENGTH: 100 IN.

ENGINEERING INCHES		UNLESS OTHERWISE SPECIFIED			ORIGINAL DATE OF DRAWING OCT 20, 64		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
		DIMENSIONS ARE IN INCHES	TOLERANCES ON FRACTIONS	DECIMALS	ANGLES	CHECKER STRESS		
SATURN		MATERIAL			ENGINEER		DWG SIZE B	
USED ON		HEAT TREATMENT			SUBMITTED		SCALE	
APPLICATION		FINAL PROTECTIVE FINISH			APPROVED		UNIT WEIGHT	
					DIRECTOR		SHEET	

DELAY CIRCUIT
D-2A

[illegible]

PART NO.	M.F.	REVISIONS		
		DESCRIPTION	DATE	APPROVED
	ZONE SYM			



NOTES:

1. ALL TRANSISTORS ARE SM1190
2. ALL DIODES ARE SM1191
3. ALL RESISTORS ARE $\pm 5\%$,
1/4W.
4. ALL CAPACITORS ARE
 $\pm 20\%$, 200VDC.
5. MODULE LENGTH 0.90IN.

500 ENGINEERING DRAWING		UNLESS OTHERWISE SPECIFIED		ORIGINAL DATE OF DRAWING		FLIP FLOP CIRCUIT F-1A		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES		OCT 20, 64					
SATURN USED ON		MATERIAL HEAT TREATMENT		DESIGNED BY <u>6105</u> CHECKER		WEIGHT CHECKER		DWG SIZE B	
				CHECKED BY ENGINEER					
APPLICATION		FINAL PROTECTIVE FINISH		APPROVED		SCALE		SHEET	
				DIRECTOR		UNIT WEIGHT		OF	

1. ALL DIMENSIONS ARE IN INCHES

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V

PART NO.

REV

ZONE

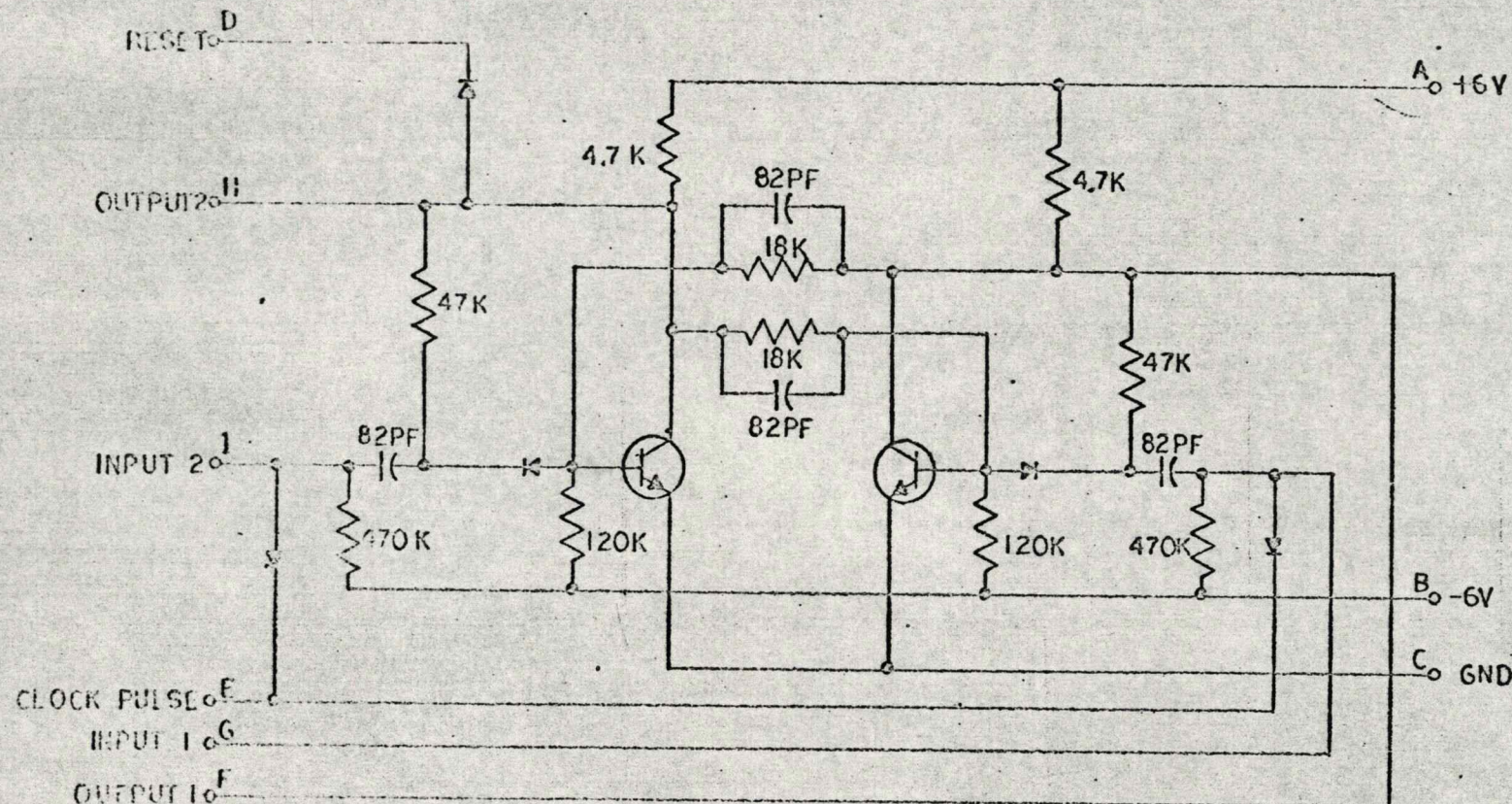
SIM

REVISIONS

DESCRIPTION

DATE

APPROVAL



NOTES:

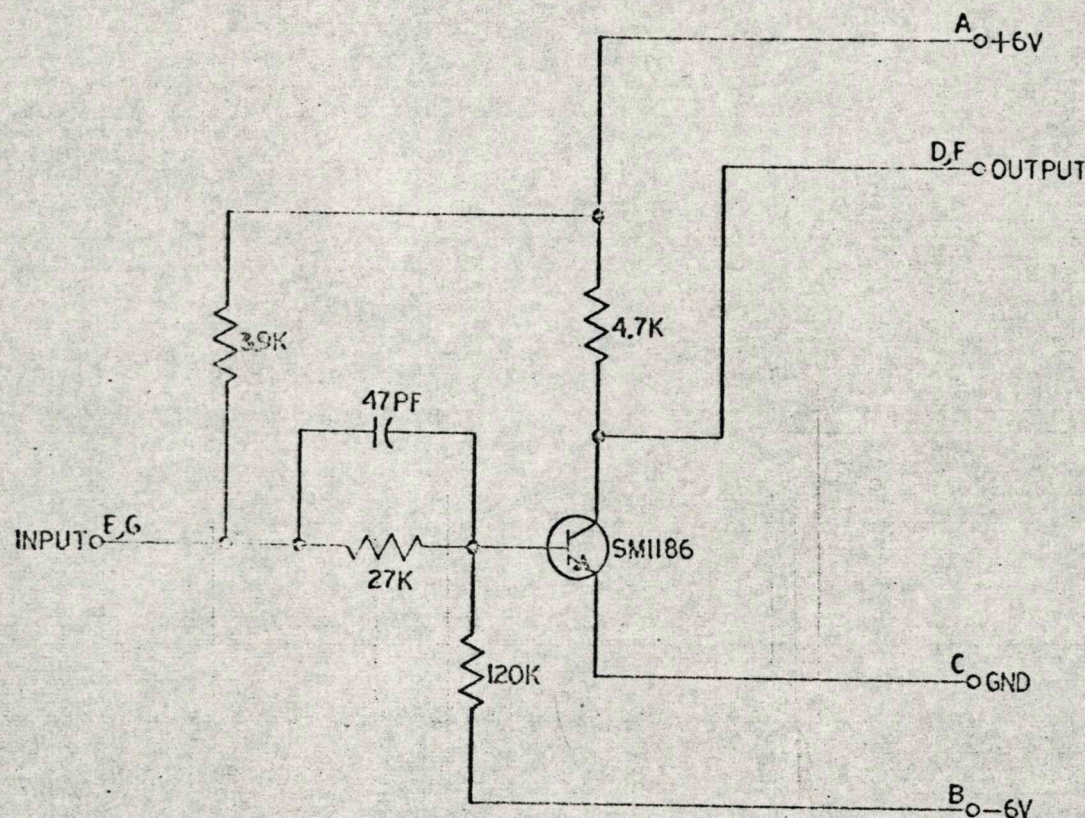
1. ALL TRANSISTORS ARE SM1186.
2. ALL DIODES ARE SM11914.
3. ALL RESISTORS ARE $\pm 5\%$, 1/4W.
4. ALL CAPACITORS ARE $\pm 20\%$, 200WVDC.
5. MODULE LENGTH 0.98 IN.

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED		ORIGINAL DATE OF DRAWING OCT. 20, 64		FLIP FLOP CIRCUIT F-2A		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
		DIMENSIONS ARE IN INCHES		DESIGNED BY L. W. GENTRY					
SATURN USED ON APPLICATION		TOLERANCES ON FRACTIONS DECIMALS ANGLES		CHECKED BY		STRESS ENGINEER		DWG SIZE B	
		MATERIAL		SUBMITTED		WEIGHT CHECKER		DATE	
APPLICATION		HEAT TREATMENT		APPROVED		UNIT WEIGHT		CODE	
		FINAL PROTECTIVE FINISH		DIRECTOR		SHEET		C	

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V7

PART NO.		REVISIONS			
ZONE	SYM	DESCRIPTION	DATE	BY	APP



NOTES:

1. TWO CIRCUITS PER MODULE.
2. ALL RESISTORS ARE $\pm 5\%$, $\frac{1}{4}$ W.
3. ALL CAPACITORS ARE $\pm 20\%$, 200 WVDC.
4. MODULE LENGTH: 0.88 IN.

ALL ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED			ORIGINAL DATE OF DRAWING OCT 22, 64		INVERTER CIRCUIT I-7		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES			DRAFTSMAN G. E. SWEN CHECKER ENGINEER					
MATERIAL		HEAT TREATMENT			SUBMITTED		WEIGHT CHECKER		DATE	CODE
SATURN USED ON		FINAL PROTECTIVE FINISH			APPROVED		SCALE		UNIT WEIGHT	
APPLICATION					DIRECTOR					

A

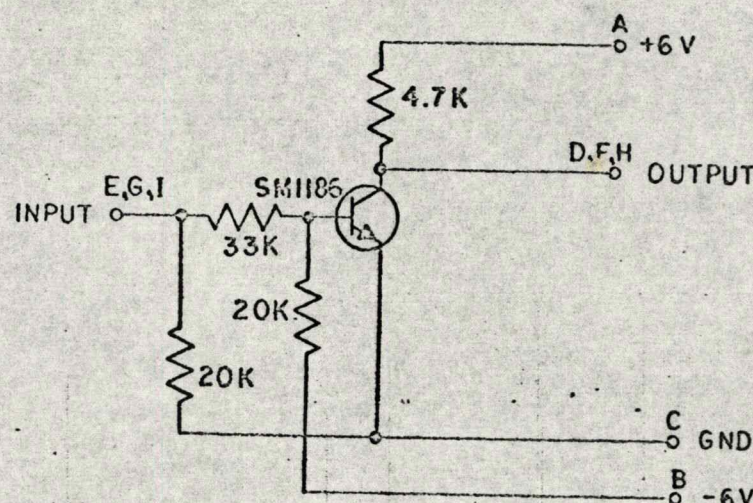
1. TITLE - WILLIAM JAMES HENRY HARRIS b. 11-11-1917, ELIZABETH, N.J.
 2. ALIASES - WILLIAM JAMES HARRIS b. 11-11-1917, ELIZABETH, N.J.
 3. DATE OF BIRTH - 11-11-1917
 4. PLACE OF BIRTH - ELIZABETH, N.J.
 5. SEX - MALE
 6. RACE - WHITE
 7. HEIGHT - 5' 10"
 8. WEIGHT - 175
 9. EYES - BROWN
 10. HAIR - BROWN
 11. BUILD - SLIM
 12. OCCUPATION - SALES
 13. EDUCATION - HIGH SCHOOL
 14. RELIGION - CATHOLIC
 15. MARITAL STATUS - MARRIED
 16. NAME OF SPOUSE - MARY ELIZABETH HARRIS
 17. DATE OF MARRIAGE - 1945
 18. NAME OF CHILDREN - JOHN JAMES HARRIS
 19. DATE OF BIRTH OF CHILDREN - 1948
 20. ADDRESS - 1234 5TH AVE, NEW YORK, N.Y.
 21. TELEPHONE - NY 1-2345
 22. EMPLOYER - ABC COMPANY
 23. SOCIAL SECURITY NUMBER - 123-45-6789
 24. DRIVERS LICENSE - NY 123456789
 25. MILITARY SERVICE - U.S. ARMY
 26. DATE OF DISCHARGE - 1946
 27. REASON FOR DISCHARGE - DISCHARGED
 28. GRADE - PRIVATE
 29. BRANCH - INFANTRY
 30. SERVICE NUMBER - 12345678
 31. DATE OF ENTRY - 1944
 32. DATE OF DEPARTURE - 1946
 33. REASON FOR ENTRY - RECRUITED
 34. REASON FOR DEPARTURE - DISCHARGED
 35. GRADE - PRIVATE
 36. BRANCH - INFANTRY
 37. SERVICE NUMBER - 12345678
 38. DATE OF ENTRY - 1944
 39. DATE OF DEPARTURE - 1946
 40. REASON FOR ENTRY - RECRUITED
 41. REASON FOR DEPARTURE - DISCHARGED
 42. GRADE - PRIVATE
 43. BRANCH - INFANTRY
 44. SERVICE NUMBER - 12345678
 45. DATE OF ENTRY - 1944
 46. DATE OF DEPARTURE - 1946
 47. REASON FOR ENTRY - RECRUITED
 48. REASON FOR DEPARTURE - DISCHARGED
 49. GRADE - PRIVATE
 50. BRANCH - INFANTRY
 51. SERVICE NUMBER - 12345678
 52. DATE OF ENTRY - 1944
 53. DATE OF DEPARTURE - 1946
 54. REASON FOR ENTRY - RECRUITED
 55. REASON FOR DEPARTURE - DISCHARGED
 56. GRADE - PRIVATE
 57. BRANCH - INFANTRY
 58. SERVICE NUMBER - 12345678
 59. DATE OF ENTRY - 1944
 60. DATE OF DEPARTURE - 1946
 61. REASON FOR ENTRY - RECRUITED
 62. REASON FOR DEPARTURE - DISCHARGED
 63. GRADE - PRIVATE
 64. BRANCH - INFANTRY
 65. SERVICE NUMBER - 12345678
 66. DATE OF ENTRY - 1944
 67. DATE OF DEPARTURE - 1946
 68. REASON FOR ENTRY - RECRUITED
 69. REASON FOR DEPARTURE - DISCHARGED
 70. GRADE - PRIVATE
 71. BRANCH - INFANTRY
 72. SERVICE NUMBER - 12345678
 73. DATE OF ENTRY - 1944
 74. DATE OF DEPARTURE - 1946
 75. REASON FOR ENTRY - RECRUITED
 76. REASON FOR DEPARTURE - DISCHARGED
 77. GRADE - PRIVATE
 78. BRANCH - INFANTRY
 79. SERVICE NUMBER - 12345678
 80. DATE OF ENTRY - 1944
 81. DATE OF DEPARTURE - 1946
 82. REASON FOR ENTRY - RECRUITED
 83. REASON FOR DEPARTURE - DISCHARGED
 84. GRADE - PRIVATE
 85. BRANCH - INFANTRY
 86. SERVICE NUMBER - 12345678
 87. DATE OF ENTRY - 1944
 88. DATE OF DEPARTURE - 1946
 89. REASON FOR ENTRY - RECRUITED
 90. REASON FOR DEPARTURE - DISCHARGED
 91. GRADE - PRIVATE
 92. BRANCH - INFANTRY
 93. SERVICE NUMBER - 12345678
 94. DATE OF ENTRY - 1944
 95. DATE OF DEPARTURE - 1946
 96. REASON FOR ENTRY - RECRUITED
 97. REASON FOR DEPARTURE - DISCHARGED
 98. GRADE - PRIVATE
 99. BRANCH - INFANTRY
 100. SERVICE NUMBER - 12345678
 101. DATE OF ENTRY - 1944
 102. DATE OF DEPARTURE - 1946
 103. REASON FOR ENTRY - RECRUITED
 104. REASON FOR DEPARTURE - DISCHARGED
 105. GRADE - PRIVATE
 106. BRANCH - INFANTRY
 107. SERVICE NUMBER - 12345678
 108. DATE OF ENTRY - 1944
 109. DATE OF DEPARTURE - 1946
 110. REASON FOR ENTRY - RECRUITED
 111. REASON FOR DEPARTURE - DISCHARGED
 112. GRADE - PRIVATE
 113. BRANCH - INFANTRY
 114. SERVICE NUMBER - 12345678
 115. DATE OF ENTRY - 1944
 116. DATE OF DEPARTURE - 1946
 117. REASON FOR ENTRY - RECRUITED
 118. REASON FOR DEPARTURE - DISCHARGED
 119. GRADE - PRIVATE
 120. BRANCH - INFANTRY
 121. SERVICE NUMBER - 12345678
 122. DATE OF ENTRY - 1944
 123. DATE OF DEPARTURE - 1946
 124. REASON FOR ENTRY - RECRUITED
 125. REASON FOR DEPARTURE - DISCHARGED
 126. GRADE - PRIVATE
 127. BRANCH - INFANTRY
 128. SERVICE NUMBER - 12345678
 129. DATE OF ENTRY - 1944
 130. DATE OF DEPARTURE - 1946
 131. REASON FOR ENTRY - RECRUITED
 132. REASON FOR DEPARTURE - DISCHARGED
 133. GRADE - PRIVATE
 134. BRANCH - INFANTRY
 135. SERVICE NUMBER - 12345678
 136. DATE OF ENTRY - 1944
 137. DATE OF DEPARTURE - 1946
 138. REASON FOR ENTRY - RECRUITED
 139. REASON FOR DEPARTURE - DISCHARGED
 140. GRADE - PRIVATE
 141. BRANCH - INFANTRY
 142. SERVICE NUMBER - 12345678
 143. DATE OF ENTRY - 1944
 144. DATE OF DEPARTURE - 1946
 145. REASON FOR ENTRY - RECRUITED
 146. REASON FOR DEPARTURE - DISCHARGED
 147. GRADE - PRIVATE
 148. BRANCH - INFANTRY
 149. SERVICE NUMBER - 12345678
 150. DATE OF ENTRY - 1944
 151. DATE OF DEPARTURE - 1946
 152. REASON FOR ENTRY - RECRUITED
 153. REASON FOR DEPARTURE - DISCHARGED
 154. GRADE - PRIVATE
 155. BRANCH - INFANTRY
 156. SERVICE NUMBER - 12345678
 157. DATE OF ENTRY - 1944
 158. DATE OF DEPARTURE - 1946
 159. REASON FOR ENTRY - RECRUITED
 160. REASON FOR DEPARTURE - DISCHARGED
 161. GRADE - PRIVATE
 162. BRANCH - INFANTRY
 163. SERVICE NUMBER - 12345678
 164. DATE OF ENTRY - 1944
 165. DATE OF DEPARTURE - 1946
 166. REASON FOR ENTRY - RECRUITED
 167. REASON FOR DEPARTURE - DISCHARGED
 168. GRADE - PRIVATE
 169. BRANCH - INFANTRY
 170. SERVICE NUMBER - 12345678
 171. DATE OF ENTRY - 1944
 172. DATE OF DEPARTURE - 1946
 173. REASON FOR ENTRY - RECRUITED
 174. REASON FOR DEPARTURE - DISCHARGED
 175. GRADE - PRIVATE
 176. BRANCH - INFANTRY
 177. SERVICE NUMBER - 123

The circuit diagram shows a two-stage transistor amplifier. The first stage uses a 2N2222 transistor. Its base is connected to the input (labeled 'C INPUT') through a 390K resistor. The emitter is connected to ground (labeled 'B GND') through a 22K resistor. The collector is connected to the base of the second transistor, 5M1186, through a 10K resistor. The base of the 5M1186 transistor is connected to ground through a 15K resistor. The emitter of the 5M1186 transistor is connected to ground. The output of the second stage is taken from the collector, labeled 'D OUTPUT +6V'.

1. ALL RESISTORS ARE 1/4W.
2. MODULE LENGTH 0.58 IN.

[illegible]

NOTE: IN ORDER TO OBTAIN THE BEST COPY OF THIS DOCUMENT, THE FOLLOWING DATA
SHOULD BE USED: NAME, LAST, FIRST, MIDDLE, INITIAL, AND SUFFIX; DATE OF BIRTH;
PLACE OF BIRTH; EDUCATION; OCCUPATION; AND ANY OTHER DATA OF INTEREST.
IF THE SUBJECT HAS NO BIRTH RECORD, THE DATE OF DEATH SHOULD BE USED.
IF THE SUBJECT IS DECEASED, THE DATE OF DEATH SHOULD BE USED.
IF THE SUBJECT IS A FUGITIVE, THE DATE OF FUGITIVE STATUS SHOULD BE USED.
IF THE SUBJECT IS A PRISONER, THE DATE OF PRISONER STATUS SHOULD BE USED.
IF THE SUBJECT IS A MENTAL PATIENT, THE DATE OF MENTAL PATIENT STATUS SHOULD BE USED.
IF THE SUBJECT IS A JUVENILE, THE DATE OF JUVENILE STATUS SHOULD BE USED.
IF THE SUBJECT IS A MARRIED PERSON, THE DATE OF MARRIAGE SHOULD BE USED.
IF THE SUBJECT IS A DIVORCED PERSON, THE DATE OF DIVORCE SHOULD BE USED.
IF THE SUBJECT IS A WIDOWED PERSON, THE DATE OF WIDOW STATUS SHOULD BE USED.
IF THE SUBJECT IS A SINGLE PERSON, THE DATE OF SINGLE STATUS SHOULD BE USED.
IF THE SUBJECT IS A SEPARATED PERSON, THE DATE OF SEPARATION SHOULD BE USED.
IF THE SUBJECT IS A RECENTLY DIVORCED PERSON, THE DATE OF RECENT DIVORCE SHOULD BE USED.
IF THE SUBJECT IS A RECENTLY WIDOWED PERSON, THE DATE OF RECENT WIDOW STATUS SHOULD BE USED.
IF THE SUBJECT IS A RECENTLY SEPARATED PERSON, THE DATE OF RECENT SEPARATION SHOULD BE USED.
IF THE SUBJECT IS A RECENTLY MARRIED PERSON, THE DATE OF RECENT MARRIAGE SHOULD BE USED.
IF THE SUBJECT IS A RECENTLY JUVENILE PERSON, THE DATE OF RECENT JUVENILE STATUS SHOULD BE USED.
IF THE SUBJECT IS A RECENTLY PRISONER PERSON, THE DATE OF RECENT PRISONER STATUS SHOULD BE USED.
IF THE SUBJECT IS A RECENTLY MENTAL PATIENT PERSON, THE DATE OF RECENT MENTAL PATIENT STATUS SHOULD BE USED.
IF THE SUBJECT IS A RECENTLY FUGITIVE PERSON, THE DATE OF RECENT FUGITIVE STATUS SHOULD BE USED.
IF THE SUBJECT IS A RECENTLY DECEASED PERSON, THE DATE OF RECENT DEATH SHOULD BE USED.
IF THE SUBJECT IS A RECENTLY BORN PERSON, THE DATE OF RECENT BIRTH SHOULD BE USED.
IF THE SUBJECT IS A RECENTLY EDUCATED PERSON, THE DATE OF RECENT EDUCATION SHOULD BE USED.
IF THE SUBJECT IS A RECENTLY OCCUPATIONAL PERSON, THE DATE OF RECENT OCCUPATION SHOULD BE USED.
IF THE SUBJECT IS A RECENTLY INTERESTED PERSON, THE DATE OF RECENT INTEREST SHOULD BE USED.

[illegible]

NOTES:

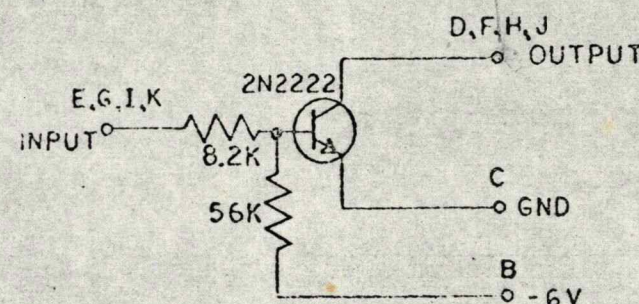
1. THREE CIRCUITS PER MODULE
2. ALL RESISTORS ARE 15%,
1/4W.
3. MODULE LENGTH 0.98 IN.

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED		ORIGINAL DATE OF DRAWING OCT 19 64		INVERTER CIRCUIT		GEORGE C. MARSHALL SPACE FLIGHT CENTER	
		DIMENSIONS ARE IN INCHES		CHECKER					
SATURN		TOLERANCES ON FRACTIONS		K. SMITH		ENGINEER		NATIONAL AERONAUTICS AND SPACE ADMINISTRATION	
		DECIMALS		ENGINEER		ENGINEER			
NEXT ASSY USED ON APPLICATION		MATERIAL		SUBMITTED		I-9		HUNTSVILLE, ALABAMA	
		HEAT TREATMENT		APPROVED					
		FINAL PROTECTIVE FINISH		DIRECTOR		WEIGHT CHECKER		DWG SIZE	
						DATE		B	
						CODE			
						SCALE		SHEET	
						UNIT WEIGHT		OF	

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NOTES: 1. THIS DRAWING IS THE PROPERTY OF THE U.S. GOVERNMENT AND IS TO BE REPRODUCED IN WHOLE OR IN PART WITHOUT LIMITATION. 2. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED. 3. TOLERANCES ARE IN INCHES UNLESS OTHERWISE SPECIFIED. 4. ANGLES ARE IN DEGREES UNLESS OTHERWISE SPECIFIED. 5. MATERIAL IS AS SPECIFIED IN THE DRAWING UNLESS OTHERWISE SPECIFIED. 6. FINISH IS AS SPECIFIED IN THE DRAWING UNLESS OTHERWISE SPECIFIED. 7. THIS DRAWING IS THE PROPERTY OF THE U.S. GOVERNMENT AND IS TO BE REPRODUCED IN WHOLE OR IN PART WITHOUT LIMITATION.

PART NO.		REVISED		REVISIONS		DESCRIPTION		DATE		APPROVED	



NOTES:

1. FOUR CIRCUITS PER MODULE.
2. ALL RESISTORS ARE $\pm 5\%$, $1/4$ W.
3. MODULE LENGTH: 1.18 IN.

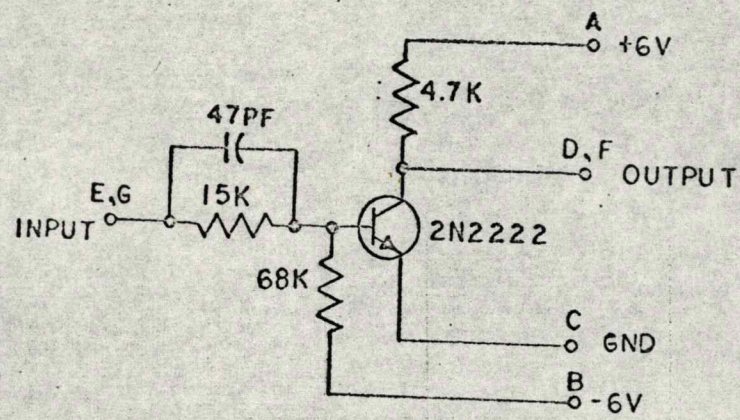
UNLESS OTHERWISE SPECIFIED			ORIGINAL DATE OF DRAWING		INVERTER CIRCUIT 1-10		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA					
DIMENSIONS ARE IN INCHES			OCT. 19, 64									
TOLERANCES OR			CHECKER									
FRACTIONS			ENGINEER									
DECIMALS			SUBMITTED		WEIGHT CHECKER		DATE					
ANGLES			APPROVED		SCALE		UNIT WEIGHT					
MATERIAL			DIRECTOR									
HEAT TREATMENT												
FINAL PROTECTIVE FINISH												

DESIGN ENGINEERING
SECTION
SATURN
USED ON
APPLICATION

ENG
5-20
B

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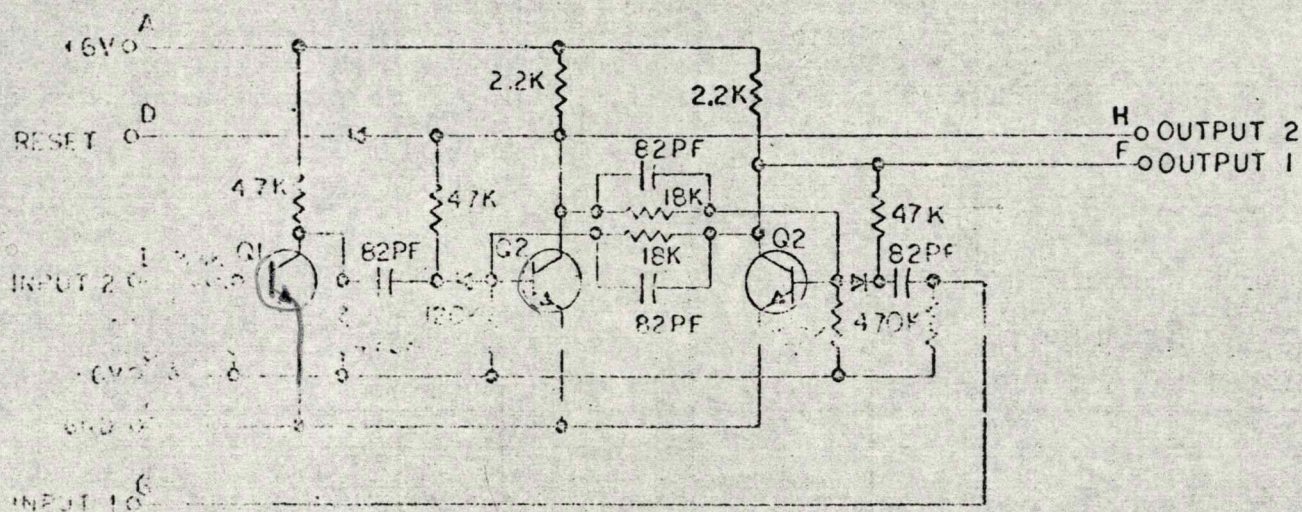
PART NO.		REVISIONS			
ZONE	SYM	DESCRIPTION	DATE	BY	CHK



NOTES:

1. TWO CIRCUITS PER MODULE
2. ALL RESISTORS ARE $\pm 5\%$ 1/4 W.
3. ALL CAPACITORS ARE $\pm 20\%$ 200 WVDC.
4. MODULE LENGTH: 0.76 IN.

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED			ORIGINAL DATE OF DRAWING OCT 20, 64		INVERTER CIRCUIT I-II		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
		DIMENSIONS ARE IN INCHES			DRAWN BY S.A. FROST	CHECKED BY				
SATURN		TOLERANCES ON			CHECKED BY	STRESS				
REPLICATION		FRACTIONS DECIMALS ANGLES			ENGINEER	ENGINEER				
USED ON		MATERIAL			SUBMITTED		WEIGHT CHECKER		DATE	
		HEAT TREATMENT			APPROVED		SCALE		CODE	
		FINAL PROTECTIVE FINISH			DIRECTOR		LAST WEIGHT		SHEET	

[illegible][illegible]

1. Q2 IS SM1186.
2. Q1 IS USA2N2222.
3. ALL DIODES ARE SM1186.
4. MODULE LENGTH: 128 IN.

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED		ORIGINAL DATE OF DRAWING DEC 10, 64		INVERTER FLIP FLOP 1F-1		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
		DIMENSIONS ARE IN INCHES. FRACTIONS DECIMALS ANGLES		DRAWN BY: CHECKER: ENGINEER: SUPERVISOR:					
SATURN		MATERIAL		SUBMITTED		WEIGHT CHECKER		DATE	
USED ON		HEAT TREATMENT		APPROVED		SCALE		UNIT WEIGHT	
APPLICATION		FINAL PROTECTIVE FINISH		DIRECTOR		SHEET		OF	

[illegible]

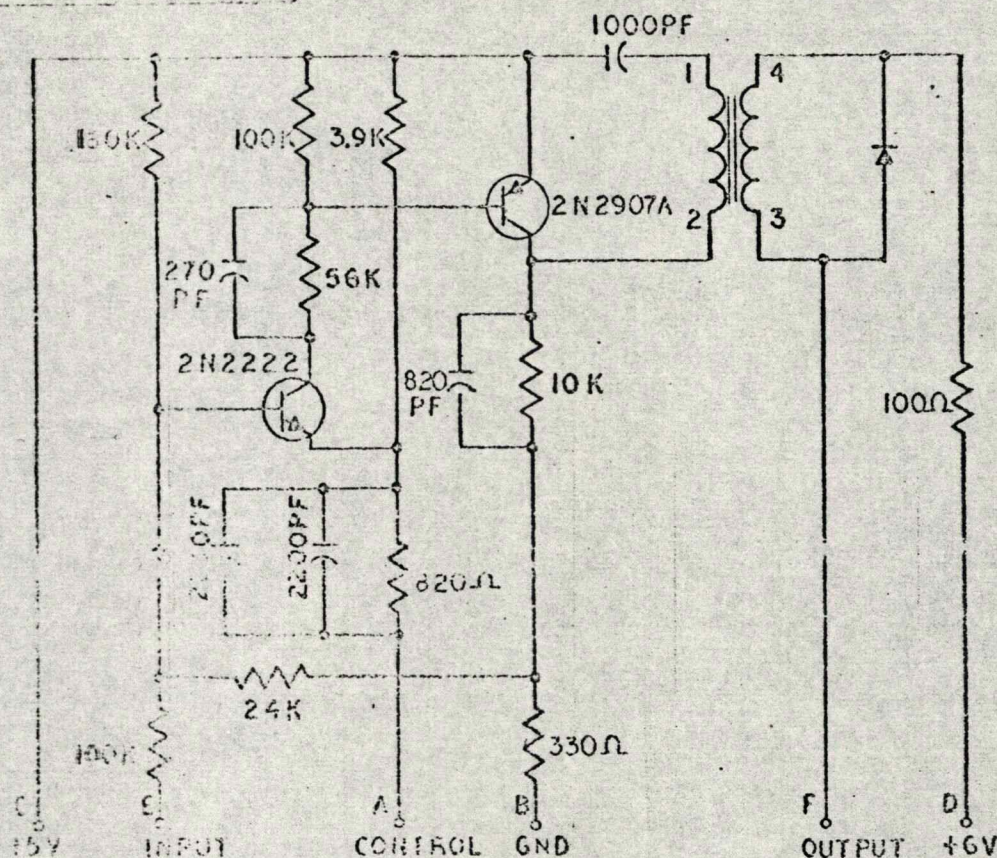
NOT ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES	ORIGINAL DATE OF DRAWING OCT 21, 64 DRAFTSMAN C. N. POWEN CHECKER ENGINEER	EXCLUSIVE OR MI-2	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
	MATERIAL HEAT TREATMENT FINAL PROTECTIVE FINISH	SUBMITTED APPROVED DIRECTOR		
SATURN USED ON APPLICATION			DWG SIZE B	

SPACE FLIGHT CENTER

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V

REVISIONS				
DATE	DESCRIPTION	SYM	ZONE	APP



NOTES:

1. ALL RESISTORS ARE 5% TOL.
2. ALL DIODES ARE SM1891A.
3. ALL CAPACITORS ARE 220VDC.
4. TRANSFORMER IS 50M07120-1
5. MODULE LENGTH IS 1.18 IN.

SIGNAL ISOLATOR CIRCUIT SI-1		UNLESS OTHERWISE SPECIFIED	
		DIMENSIONS ARE IN INCHES	
TOLERANCES ON		DECIMALS	ANGLES
TRACTIONS			
MATERIAL			
HEAT TREATMENT			
FINISH PROTECTIVE FINISH			
ORIGINAL DATE OF DRAWING OCT 15, 64			
ELECTRONIC CHECKER		CHECKER	
ENGINEER		ENGINEER	
SUBMITTED			
APPROVED			
DIRECTOR			
WEIGHT CHECKER		DATE	CODE
SCALE		UNIT WEIGHT	
SHEET		OF	

GEORGE C. MARSHALL
SPACE FLIGHT CENTER
NATIONAL AERONAUTICS
AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

DWG
SIZE
B

A

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FILL OUT AN ENTRY CARD AND MAIL IT TO THE SECRETARY OF THE CONTEST.
PLEASE PRINT YOUR NAME, ADDRESS, PHONE NUMBER, AND THE NAME OF THE
PRINTING PLANT OR FIRM THAT PRINTED YOUR CARD. IF YOU WANT TO
ENTER THE CONTEST, PLEASE MAIL YOUR CARD TO THE SECRETARY OF THE
CONTEST, 1000 N. 10TH ST., SUITE 100, MINNEAPOLIS, MN 55401.
IF YOU WANT TO ENTER THE CONTEST, PLEASE MAIL YOUR CARD TO THE
SECRETARY OF THE CONTEST, 1000 N. 10TH ST., SUITE 100, MINNEAPOLIS, MN 55401.
IF YOU WANT TO ENTER THE CONTEST, PLEASE MAIL YOUR CARD TO THE
SECRETARY OF THE CONTEST, 1000 N. 10TH ST., SUITE 100, MINNEAPOLIS, MN 55401.
IF YOU WANT TO ENTER THE CONTEST, PLEASE MAIL YOUR CARD TO THE
SECRETARY OF THE CONTEST, 1000 N. 10TH ST., SUITE 100, MINNEAPOLIS, MN 55401.

The diagram shows a two-stage audio amplifier. The first stage is a common-emitter amplifier using a 2N2222 transistor. Its base is biased by a voltage divider consisting of an 180K resistor connected to the positive supply and a 100K resistor connected to ground. A 270PF capacitor is connected in parallel with the 100K resistor. The emitter of the 2N2222 is connected to ground through a 24K resistor. The collector of the 2N2222 is connected to the base of the second stage, a 2N2907A transistor. The base of the 2N2907A is biased by a voltage divider consisting of a 100K resistor connected to the positive supply and a 56K resistor connected to ground. A 820PF capacitor is connected in parallel with the 56K resistor. The emitter of the 2N2907A is connected to ground through a 1K resistor. The collector of the 2N2907A is connected to a 100PF capacitor and a 10K resistor. The output of the amplifier is taken from the collector of the 2N2907A through a 100PF capacitor. The circuit is powered by a 9V battery.

1. ALL DIODES ARE 5M1N914.
2. ALL RESISTORS ARE $1/4W, \pm 5\%$.
3. ALL CAPACITORS ARE $\pm 20\%, 200 W50C$.
4. TRANSFORMER IS 50M67126-1.
5. MODULE LENGTH: 1.18 IN.

ALL DIMENSIONS IN INCHES	UNLESS OTHERWISE SPECIFIED		ORIGINAL DATE OF DRAWING	SIGNAL ISOLATOR SI-2	GEORGE O. WILSON SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
	DIMENSIONS ARE IN INCHES TOLERANCES ON FINISHES	DECIMALS	ANGLES		
ALL DIMENSIONS IN INCHES	MATERIAL	SUBMITTED		WEIGHT CHECKER	DATE
	HEAT TREATMENT	APPROVED			
ALL DIMENSIONS IN INCHES	FINAL PROTECTIVE FINISH	DIRECTOR		SCALE	PART WEIGHT
ALL DIMENSIONS IN INCHES	USED ON	SHEET		DWG 57F	B
ALL DIMENSIONS IN INCHES	APPLICATION	SHEET		SHEET	SHEET

4

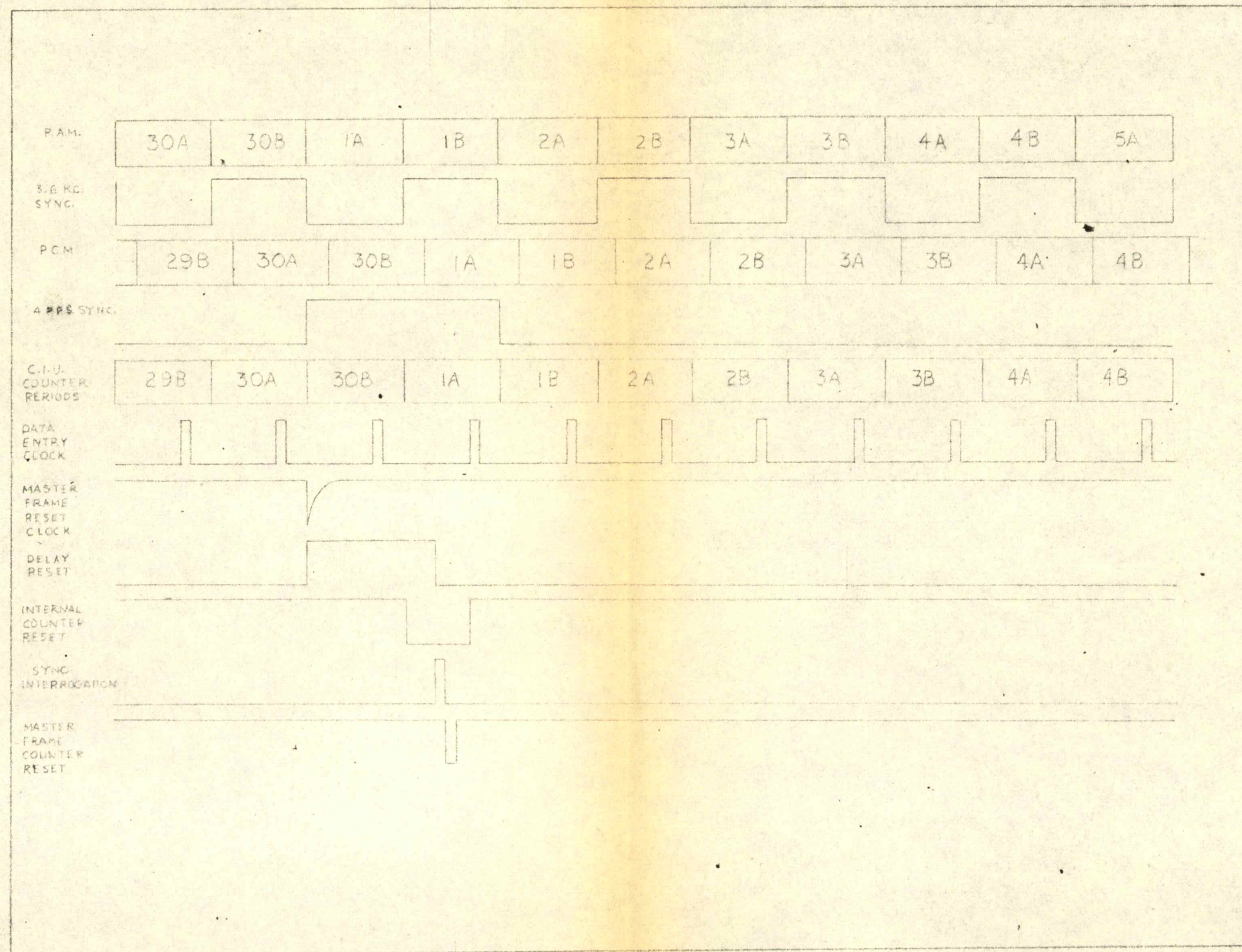


FIG. 2A TIMING DIAGRAM COMPUTER INTERFACE

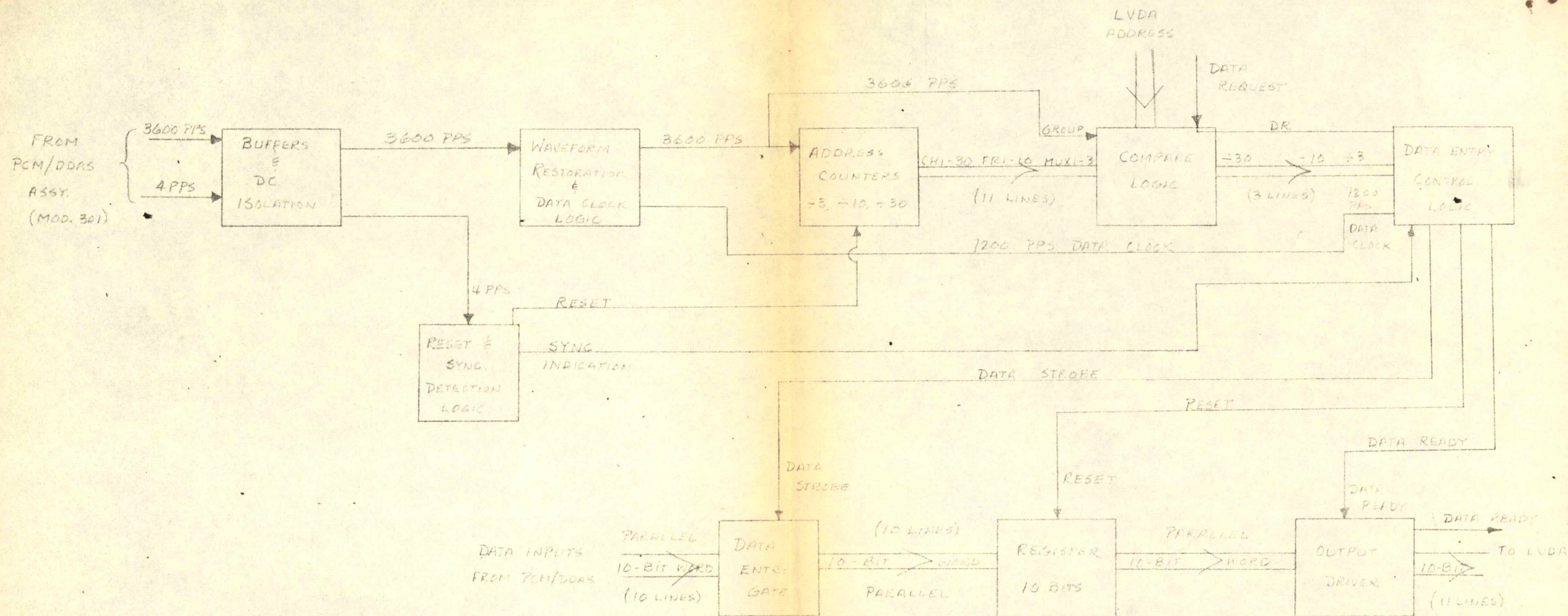
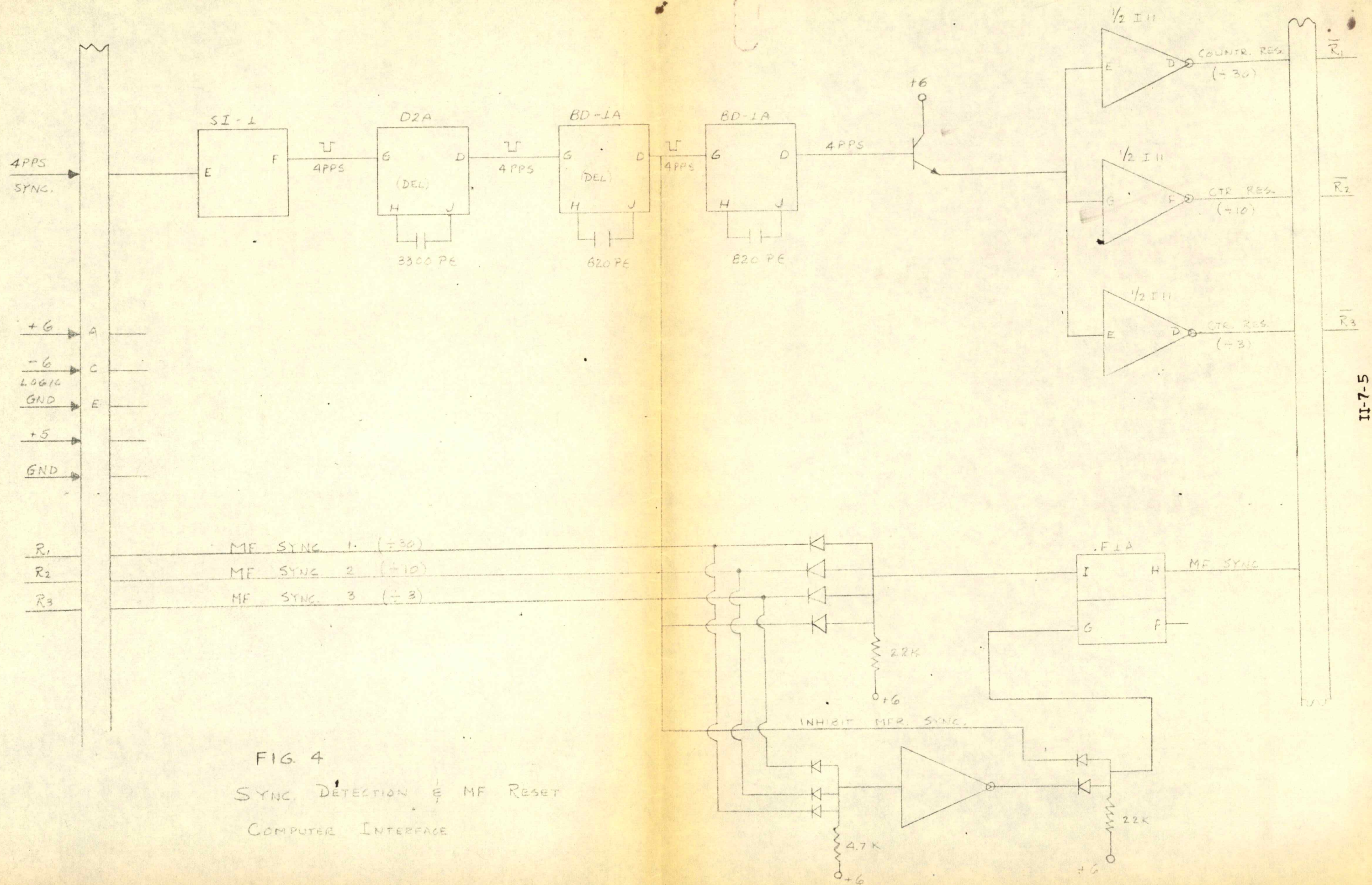


FIG. 1
BLOCK DIAGRAM
COMPUTER INTERFACE



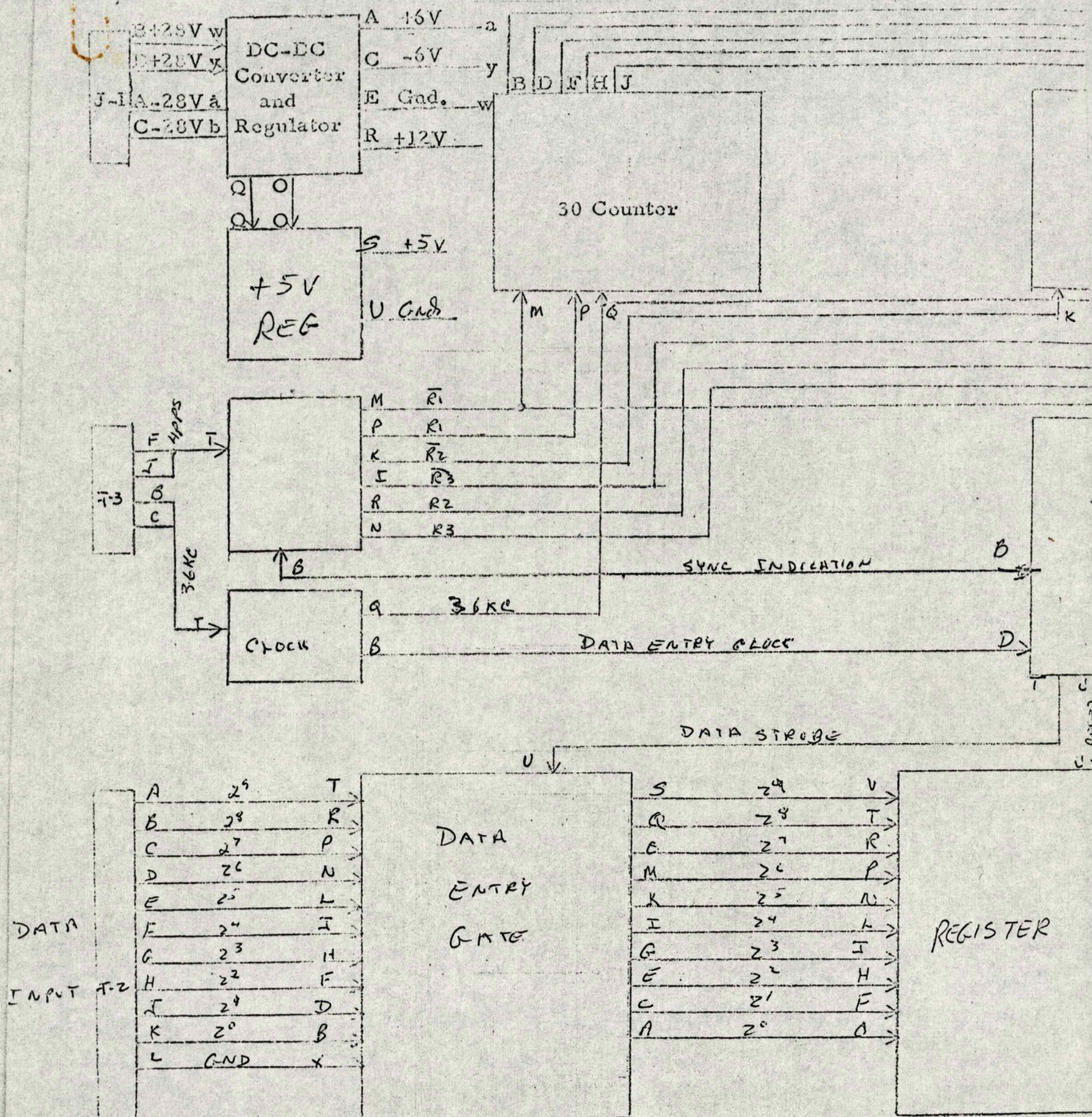


FIGURE E-4 PC CARD INTERCONNECT-

