SHEET INDEX

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RECORD OF CHANGES

DWG ISS	PREV FURN	STD	MFR DISC	SEE NOTE

NOTES:

1. ⏚ GROUND RETURN.
2. UNLESS OTHERWISE SPECIFIED: RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS. VALUES PRECEDED BY THE SYMBOL +(PLUS) OR -(MINUS) ARE IN VOLTS.
3. BATTERY AND GROUND TERMINALS FOR INTEGRATED CIRCUITS.

IC CODE	BAT TERM +5	BAT TERM -48	GRD TERM
54LS136	16		8
54LS280	14		7
54LS240	20		10
Z1-Z8	1	18	-
Z9-Z16	-	-	9-16

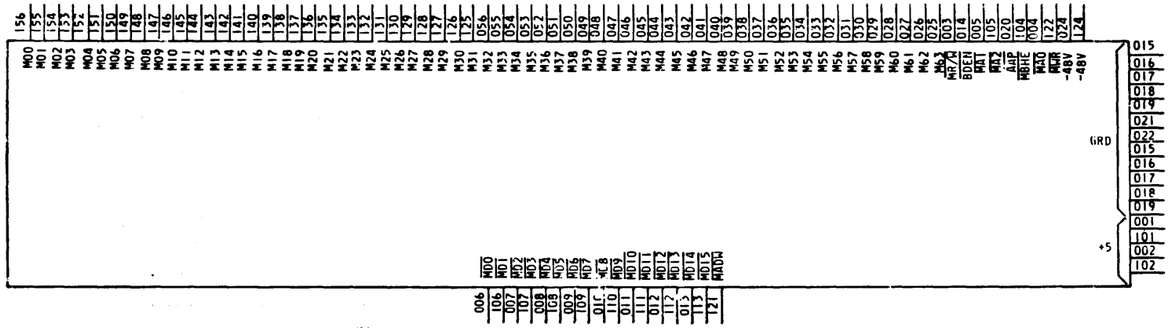
4. BATTERY AND GROUND TERMINALS FOR THIS CIRCUIT PACK ARE:

FUNCTION	TERMINALS
+5	001,002,101,102
GRD	015,115,016,116, 017,117,018,118, 019,119,021,022

5. ALL RESISTORS ARE KS-20616,L1A.
6. POWER AND CURRENT CALCULATIONS:
   POWER DISSIPATION 350mW TYP 630mW MAX
   CURRENT DRAIN 70mA TYP 115mA MAX
7. 239A NETWORK HAS BEEN ASSIGNED AN EXPERIMENTAL NUMBER F60707. INITIAL BOARDS ARE EXPECTED TO BE EQUIPPED WITH PARTS OF THIS NUMBER.

DWG ISSUE	DATE ISSUE	DRAWN	APPD
1	2-29-84	CDI DP	JS GWK RW

SYMBOL



SYSTEM USED ON	DESIGN CONTROL
COMMON	CB

SUPPORTING INFORMATION

CATEGORY	NO.

SHEET INDEX NOTES

1. ONLY THE LATEST ISSUE, OR ISSUES IF CONCURRENT, ARE SHOWN IN THE INDEX.
2. FOR REISSUES, A CHANGED OR NEW SHEET IS ASSIGNED THE SAME ISSUE NUMBER AS SHEET 1.
3. THE ISSUE NUMBER OF SHEET 1 IS RECOGNIZED AS THE ISSUE NUMBER OF THE WHOLE DRAWING.

IN99

SL62 CIRCUIT PACK

SCAN BOARD CIRCUIT

AT&TCO STANDARD

DWG SIZE 6S | ISSUE 1

BELL LABORATORIES | CPS-SL62 | 8 SHEETS

E-7999-A/8-701 PRINTED IN U.S.A.

PART OF CPS SL62

SCAN BOARD

R15 4.7kΩ +5

R17 10kΩ

R16 10kΩ

R14 4.7kΩ +5

R11 110kΩ

R12 49.9kΩ +5

C11 .047

-48V

BDEN

AAP 020

MBHE 104

MA0 004

MR/W 003

MA1 005

MA2 105

MA3 122

IC1 LS138 A

IC2 LS280 A

IC11 LS240 A

NC

CS3 CS2 CS1 CS0 4C0,6C0

PE

PG

PSTB0 PSTB1 PSTB2 PSTB3 4F0,6F0

R9 2.49kΩ

R1 750

R5 2.49kΩ

R2 R6

R3 R7

R4 R8

R10 2.49kΩ

Q1 Q2 Q3 Q4

SL62 CIRCUIT PACK		DWG SIZE 6S	ISSUE 1
BELL LABORATORIES	CPS-SL62		SHEET 2

PART OF CPS SL62

SCAN BOARD

M00 M01 M02 M03 M04 M05 M06 M07 — 156 155 154 153 152 151 150 149

M16 M17 M18 M19 M20 M21 M22 M23 — 140 139 138 137 136 135 134 133

M32 M33 M34 M35 M36 M37 M38 M39 — 056 055 054 053 052 051 050 049

M48 M49 M50 M51 M52 M53 M54 M55 — 040 039 038 037 036 035 034 033

0-7
16-23
32-39

OIP0-7
OIP16-23
OIP32-39
OIP48-55
4A0-A7

CR1-8

-48
+5

Z1

24kΩ -48
300kΩ
56kΩ +5

OIP0
OIP7

CR17-24
Z5
OIP16
OIP23
Z13

CR33-40
Z2
OPI32
OPI39
Z10

CR49-56
Z6
OIP48
OIP55
Z14

Z9
Z9A-H
.047

SL62 CIRCUIT PACK

DWG SIZE 6S

ISSUE 1

BELL LABORATORIES

CPS - SL62

SHEET 3

PART OF CPS SL62

SCAN BOARD

3A9: OIP0 2, OIP1 4, OIP2 6, OIP3 8, OIP4 17, OIP5 15, OIP6 13, OIP7 11

3A9: OIP16 2, OIP17 4, OIP18 6, OIP19 8, OIP20 17, OIP21 15, OIP22 13, OIP23 11

3A9: OIP32 2, OIP33 4, OIP34 6, OIP35 8, OIP36 17, OIP37 15, OIP38 13, OIP39 11

3A9: OIP48 2, OIP49 4, OIP50 6, OIP51 8, OIP52 17, OIP53 15, OIP54 13, OIP55 11

IC3 LS240 A

IC5 LS240 A

IC7 LS240 A

IC9 LS240 A

2C9: $\overline{CS0}$, $\overline{CS1}$, $\overline{CS2}$, $\overline{CS3}$

CS1, CS2, CS3

2F9: PSTB0, PSTB1, PSTB2, PSTB3

PSTB0, PSTB1, PSTB2, PSTB3

006 $\overline{MD0}$, 106 $\overline{MD1}$, 007 $\overline{MD2}$, 107 $\overline{MD3}$, 008 $\overline{MD4}$, 108 $\overline{MD5}$, 009 $\overline{MD6}$, 109 $\overline{MD7}$

SL62 CIRCUIT PACK		DWG SIZE 6S	ISSUE 1
BELL LABORATORIES	CPS-SL62		SHEET 4

PART OF CPS SL62

M08 M09 M10 M11 M12 M13 M14 M15 — 148 147 146 145 144 143 142 141

M24 M25 M26 M27 M28 M29 M30 M31 — 132 131 130 129 128 127 126 125

M40 M41 M42 M43 M44 M45 M46 M47 — 048 047 046 045 044 043 042 041

M56 M57 M58 M59 M60 M61 M62 M63 — 032 031 030 029 028 027 026 025

8-15
24-31
40-47

OIP8-15
OIP24-31
OIP40-47
OIP56-63
6A0,A2,A4,A6

CR9-16
CR25-32
CR41-48
CR57-64

-48
+5

Z3

B 18 17 16 15 14 13 12 11 10

-48 24kΩ
300kΩ
+5 56kΩ
-48 24kΩ
300kΩ
+5 56kΩ

2 3 4 5 6 7 8 9

OIP8
OIP15

C 8 7 6 5 1 2 3 4

Z11
Z11A-H .047

9 10 11 12 16 15 14 13

Z7
Z4
Z8

OIP24
OIP31
OIP40
OIP47
OIP56
OIP63

Z15
Z12
Z16

SL62 CIRCUIT PACK		DWG SIZE 6S	ISSUE 1
BELL LABORATORIES	CPS - SL62		SHEET 5

PART OF CPS SL62

SCAN BOARD

5A9 OIP8 2, OIP9 4, OIP10 6, OIP11 8, OIP12 17, OIP13 15, OIP14 13, OIP15 11

5A9 OIP24 2, OIP25 4, OIP26 6, OIP27 8, OIP28 17, OIP29 15, OIP30 13, OIP31 11

5A9 OIP40 2, OIP41 4, OIP42 6, OIP43 8, OIP44 17, OIP45 15, OIP46 13, OIP47 11

5A9 OIP56 2, OIP57 4, OIP58 6, OIP59 8, OIP60 17, OIP61 15, OIP62 13, OIP63 11

IC4 LS240 A

IC6 LS240 A

IC8 LS240 A

IC10 LS240 A

2C9 CS0, CS1, CS2, CS3

2F9 PSTB0, PSTB1, PSTB2, PSTB3

PSTB0 PSTB1 PSTB2 PSTB3

I10 I11 I12 I13 I14 I15

MOD8 MOD9 MOD10 MOD11 MOD12 MOD13 MOD14 MOD15

SL62 CIRCUIT PACK		DWG SIZE 6S	ISSUE 1
BELL LABORATORIES	CPS-SL62		SHEET 6

PART OF CPS SL62

SCAN BOARD

COMPONENT LIST

CIRCUIT, INTEGRATED

CP LOC	IC1		IC2		IC3		IC4		IC5		IC6	
CODE	WA-LS138		KS-21285,L45 OR SN54LS280J-00X		WA-LS240		WA-LS240		WA-LS240		WA-LS240	
ELEMENT	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC
A		2C4		2D6		4C1		6C1		4C3		6C3
B												
C												
D												
E												
F												
G												
H												
I												
J												

CP LOC	IC7		IC8		IC9		IC10		IC11			
CODE	WA-LS240		WA-LS240		WA-LS240		WA-LS240		WA-LS240			
ELEMENT	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC	DESIG	SH LOC		
A		4C6		6C6		4C8		6C8		2F2		
B												
C												
D												
E												
F												
G												
H												
I												
J												

* TEXAS INSTRUMENTS

CAPACITOR

DESIG	CODE
C1	6018,10
C2	KS-20736,L4,0.1
C11	KS-20736,L4,0.47

DIODE

DESIG	CODE
[64] CR1-CR64	533C

NETWORK

DESIG	CODE
[8] Z1-Z8	239A (ROTS DIP) (SEE NOTE 7 ON SHEET 1)
[8] Z9-Z16	926CX7R473M050B (SPRAGUE) (CAP DIP .047uF)

RESISTOR

DESIG	CODE
[4] R1-R4	KS-20616,L1A,750
[6] R5-R10	KS-20616,L1A,2.49kΩ
R11	KS-20616,L1A,110kΩ
R12	KS-20616,L1A,49.9kΩ
R14	KS-20616,L1A,4.7kΩ
R15	KS-20616,L1A,4.7kΩ
R16	KS-20616,L1A,10kΩ
R17	KS-20616,L1A,10kΩ

TRANSISTOR

DESIG	CODE
[4] Q1-Q4	A8T4026 (TI) (PLASTIC CASE)

INPUT/OUTPUT INFORMATION

CIRCUIT DESCRIPTION

1. EACH SCAN BOARD RECEIVES 64 SCAN INPUT LINES. EACH INPUT LINE HAS A DIODE (533C), A RESISTOR NETWORK (239A), AND A CAPACITOR NETWORK (SPRAGUE) CONNECTED TO IT FOR THE FOLLOWING REASONS:

   A. THE DIODE LIMITS THE AMOUNT OF NEGATIVE PEAK VOLTAGE ON THE RESISTOR NETWORK. ALSO, IN THE CASE OF DUAL CONTROLLERS CONNECTED TO THE SAME SCAN INPUTS, A FAILURE ON ONE BOARD DOES NOT BRING THE OTHER SYSTEM SCAN BOARD DOWN.

   B. THE CAPACITOR IS USED FOR NOISE FILTERING OF HIGH AMPLITUDE VOLTAGE SPIKES.

   C. THE RESISTOR NETWORK CONVERTS -48 VOLTS TO AN ACCEPTABLE TTL LEVEL INPUT FOR THE LS240'S.

2. OUTPUTS FROM THE R-C NETWORKS ARE CONNECTED TO THE INPUTS OF THE LS240'S. THE OUTPUTS OF THE LS240'S ARE CONNECTED TO THE DATA BUS. LATCHING OF THE DATA IS DONE ON THE MATRIX INTERFACE BOARD (MIF). DATA PARITY IS ALSO CHECKED ON MIF BOARD.

3. POWER IS APPLIED TO THE LS240'S ONLY WHEN THE BOARD IS ENABLED. TRANSISTORS HAVING HIGH SATURATION AND LOW V_{CE} CHARACTERISTICS ARE USED.

4. THE LS138 IS USED TO CREATE CHIP SELECTS (CS0-CS3) ENABLING 2 OUT OF 8 LS240'S; OPERATING 16 SCAN INPUTS PER BOARD ACCESS. ADDRESS PARITY (AAP) IS ROUTED THROUGH THE LS138 SO THAT NO CHIP SELECT IS CREATED IF PARITY IS INCORRECT.

5. A LS280 IS USED TO CHECK PARITY OVER $\overline{A0}$, $\overline{BHE}$, -48V POWER SUPPLY, $\overline{MR/W}$, $\overline{MWR}$ AND THE DECODER OUTPUTS ($\overline{CS0}$-$\overline{CS3}$). PARITY FAILURE IS SENSED ON $\overline{MADW}$.

SL62 CIRCUIT PACK	DWG SIZE 6S	ISSUE 1
BELL LABORATORIES	CPS - SL62	SHEET 7

PART OF CPS SL62

BLOCK DIAGRAM

M00 M01 M02 M03 M04 M05 M06 M07
156 155 154 153 152 151 150 149

M08 M09 M10 M11 M12 M13 M14 M15
148 147 146 145 144 143 142 141

M16 M17 M18 M19 M20 M21 M22 M23
138 137 136 135 134 133

M24 M25 M26 M27 M28 M29 M30 M31
132 131 130 129 128 127 126 125

M32 M33 M34 M35 M36 M37 M38 M39
056 055 054 053 052 051 050 049

M40 M41 M42 M43 M44 M45 M46 M47
048 047 046 045 044 043 042 041

M48 M49 M50 M51 M52 M53 M54 M55
039 038 037 036 035 034 033

M56 M57 M58 M59 M60 M61 M62 M63
032 031 030 029 028 027 026 025

CR1-8 · CR9-16 · CR17-24 · CR25-32 · CR33-40 · CR41-48 · CR49-56 · CR57-64

+5 · -48

Z1 · Z5 · Z2 · Z6 · Z3 · Z7 · Z4 · Z8 · Z9 · Z13 · Z10 · Z14 · Z11 · Z15 · Z12 · Z16

IC3 · IC4 · IC5 · IC6 · IC7 · IC8 · IC9 · IC10

G1 · G2

R17 · R15 · R16 · R14 · R10 · R9 · R11 · R12 · C11

020 AAP · 014 BDEN · 003 MR/W · 005 MA1 · 105 MA2 · 122 MWR · 104 MSHE · 004 MA0 · 024 · 124 -48V

IC1 LS138 · IC11 LS240 · IC2 LS280

2GB · 2GA · G1 · A · B · C · Y1 Y2 Y4 Y7 NC · Y0 Y3 Y5 Y6

(CS0) (CS1) (CS2) (CS3)

R1 · R5 · Q1 · R2 · R6 · Q2 · R3 · R7 · Q3 · R4 · R8 · Q4

(PSTB0) A · (PSTB1) B · (PSTB2) C · (PSTB3) D

C D E F · H I B G · PE NC · PO

006 MD0 · 106 MD1 · 007 MD2 · 107 MD3 · 008 MD4 · 108 MD5 · 009 MD6 · 109 MD7

010 MD8 · 110 MD9 · 011 MD10 · 111 MD11 · 012 MD12 · 112 MD13 · 013 MD14 · 113 MD15

121 PARITY

SL62 CIRCUIT PACK	DWG SIZE 6S	ISSUE 1
BELL LABORATORIES · CPS-SL62	SHEET 6	