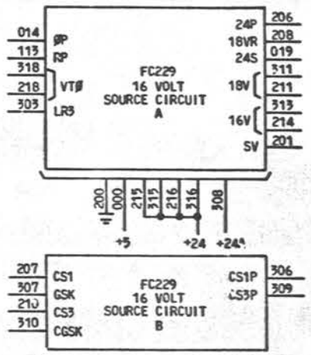
SHEET INDEX

CONTENTS	SHEET NO.	SHEET ISSUE
SHEET INDEX SUPPORTING INFORMATION CURRENT DRAIN USED ON NOTES SYMBOL RECORD OF CHANGES	1	4
COMPONENT LIST CIRCUIT SCHEMATIC CIRCUIT DESCRIPTION	2	4

SYMBOL



SYMBOL

16 VOLT SOURCE
CLEMENT IDENT
A

TERM. MOD	FUNCT	TERM.	LOC
LR3	Ø	303	2G6
ØP	1	014	2B2
RP	1	113	2B2
VTØ	1	218	2C2
VTØ	1	318	2C2
5V	1	201	2E6
16V	Ø	214	2E6
16V	Ø	313	2E6
18V	Ø	211	2D6
18V	Ø	311	2D6
18VR	Ø	208	2B6
24P	Ø	206	2A6
24S	Ø	019	2C6
+5	P	000	2H6
+24	P	215	2H6
+24	P	216	2H6
+24	P	315	2H6
+24	P	316	2H6
+24A	P	308	2H5
GRD	G	200	2H6

16 VOLT SOURCE
ELEMENT IDENT
B

TERM. MOD	FUNCT	TERM.	LOC
CGSK	1	310	2H2
GSK	1	307	2G2
CS1	1	207	2F2
CS3	1	210	2G2
CS1P	Ø	306	2F6
CS3P	Ø	309	2G6

RECORD OF CHANGES				
DWG ISS	PREV FURN	STD	MFR DISC	SEE NOTE

NOTES:

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

IC CODE	GRD TERM.	BAT TERM.		
614E	X	X		
614F	X	X		

3. BATTERY AND GROUND TERMINALS FOR THIS CIRCUIT PACK ARE AS FOLLOWS:

FUNCTION	TERMINAL
+5	000
+24	215
+24	216
+24	315
+24	316
+24A	308
GRD	200

4. CLOSEST RECOMMENDED HORIZONTAL MOUNTING CENTERS IS 0.750 INCH.
5. ⏚ GROUND RETURN.
6. THE INITIAL USE OF THE FC229 CIRCUIT PACK IS IN SD-2H211-01 AND SD-3H11C-01.

DWG ISSUE	DATE ISSUE	DRAWN	APP'D
1	2-25-76	AS LRE	HRH LEG RFG
2A	4-6-76	AS LRE	EBJ LEG RFG
3A	7-13-76	PPL LRE	EBJ BJY RFG
4A	11-2-78	TAB LRE	EBJ GH RFG

SYSTEM USED ON	DESIGN CONTROL
NO. 2 ESS NO. 3 ESS	IH IH

CURRENT DRAIN: 24V@2000mA

SUPPORTING INFORMATION	
CATEGORY	NUMBER
CONNECTOR ON FRAME	947A,C,E
CIRCUIT PACK INFORMATION DRAWING	SD-2H003-01
SERIES FOR LATEST CLASS "A" CHANGE	
ACCEPTABLE SERIES	NO. 2 ESS: 5-6, 6 NO. 3 ESS: 5, 5-6, 6

SHEET INDEX NOTES

1. ONLY THE LATEST ISSUE, OR ISSUES IF CONCURRENT, ARE SHOWN IN THE INDEX.
2. FOR REISSUES, A CHANGE 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.

1T99

FC229 CIRCUIT PACK

16 VOLT SOURCE CIRCUIT

(2)

AT&TCO STANDARD

DWG SIZE	ISSUE
6S	4A

BELL LABORATORIES | CPS-FC229 | 2 Sheets

COMPONENT LIST

CAPACITOR

DESIG	CODE
C1	KS-19774 L5, 0.047
C2	KS-19774 L1, 1000pf
C3	KS-19774 L5, 0.047
[2]C4,C5	KS-19774 L5, 0.1
C6	KS-19774 L1, 0.01

DIODE

DESIG	CODE
[2]CR1,CR2	458B
[2]CR3,CR4	458C
CR5	533B

INTEGRATED CIRCUIT

DESIG	CODE
IC1	614F/F7818UC
IC2	614E/F7815UC
IC3	614F/F7218UC

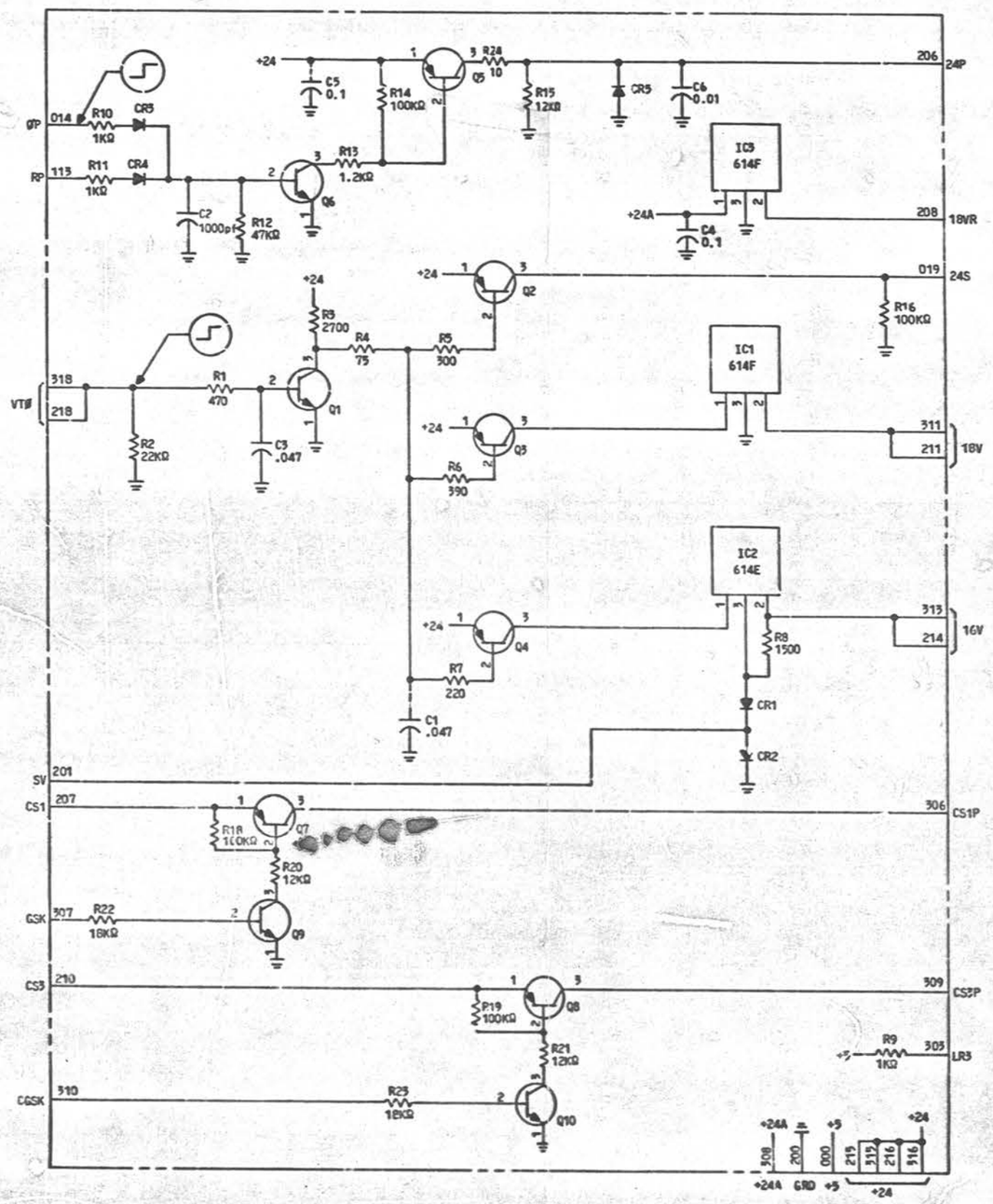
RESISTOR

DESIG	CODE
R1	KS-16645 L2, 470
R2	KS-16645 L2, 22KΩ
R3	KS-16645 L2, 2700
R4	KS-19151 L1, 75
R5	KS-19151 L1, 300
R6	KS-19151 L1, 390
R7	KS-19151 L1, 220
R8	KS-16645 L2, 1500
R9	1KΩ
[2]R10,R11	1KΩ
R12	KS-16645 L2, 47KΩ
R13	KS-19150 L2, 1200
R14	KS-16645 L2, 100KΩ
R15	L1, 12KΩ
R16	L2, 100KΩ
[2]R18,R19	L1, 100KΩ
[7]R20,R21	L1, 12KΩ
[2]R22,R23	L1, 18KΩ
R24	KS-16645 L1, 10

TRANSISTOR

DESIG	CODE
Q1	665
[4]Q2-Q5	58A
Q6	665
[2]Q7,Q8	51C
[2]Q9,Q10	665

16 VOLT SOURCE CIRCUIT



CIRCUIT DESCRIPTION

FUNCTION

THIS PACK PROVIDES SEVERAL SWITCHED AND REGULATED VOLTAGES FOR THE NO.2 AND NO.3 ESS NETWORK CONTROLLERS.

DETAILED DESCRIPTION

A POSITIVE VOLTAGE GREATER THAN 2.4 VOLTS ON THE ØP OR RP TERMINALS WILL CAUSE +24V TO APPEAR ON THE 24P TERMINAL.

REGULATED +18V IS PRESENT AT ALL TIMES ON THE 18VR TERMINAL.

A POSITIVE VOLTAGE GREATER THAN 2.4V ON THE VTØ LEADS WILL CAUSE +24V TO APPEAR ON THE 24S TERMINAL, 18V TO APPEAR ON THE 18V TERMINAL, AND 16.5V TO APPEAR ON THE 16V TERMINAL.

A POSITIVE VOLTAGE GREATER THAN 2.4V ON THE GSK OR CGSK LEADS WILL CAUSE A VOLTAGE CONNECTED ON THE CS1 OR CS3 LEADS TO APPEAR ON THE CS1P OR CS3P LEADS.

LEAD DESIGNATION

NAME	MEANING
ØP	OPERATE
RP	RELEASE
VTØ	VOLTAGE TURN ON
SV	SET VOLTAGE
CS1	CURRENT SOURCE 1
GSK	GRID SKIP
CS3	CURRENT SOURCE 3
CGSK	CONCENTRATOR GROUP SKIP
24P	24 VOLTS PULSED
18VR	18 VOLTS REGULATED
24S	24 VOLTS SWITCHED
18V	18 VOLTS
16V	16 VOLTS
SV	SET VOLTAGE
CS1P	CURRENT SOURCE 1 POSITIVE
CS3P	CURRENT SOURCE 3 POSITIVE
LR3	LOAD RESISTOR

ISSUE 4A

FC229 CIRCUIT PACK (2)

CPS-FC229 SHEET 2

BELL TELEPHONE LABORATORIES INCORPORATED 6S