



MAINTENANCE MANUAL
ORION™
SYSTEM CONTROL

- CONTROL UNIT 334A4581P1/CMD-556BL (SCAN MODEL LOCAL TYPE)
CONTROL UNIT 344A4581P2/CMD-556BR (SCAN MODEL REMOTE TYPE)
CONTROL UNIT 344A4581P3/CMD-556ML (SYSTEM MODEL LOCAL TYPE)
CONTROL UNIT 344A4581P4/CMD-556MR (SYSTEM MODEL REMOTE TYPE)
PANEL CONTROL CMC-638 (Used in P1 through P4)
SWITCH CIRCUIT CDF-368B (Used in P1, P2)
SWITCH CIRCUIT CDF-368M (Used in P3, P4)
REMOTE INTERFACE ADAPTOR NQZ-4882 (Used in P2, P4)

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Table with 2 columns: Description and Page. Includes sections for Description, Circuit Analysis, IC Data, Parts List (Control Units, Panel Control, Switch Circuit, Remote Interface Adapter), Outline Diagrams (Panel Control, Switch Circuit), Interconnection Diagrams (Control Unit Local/Remote Type), and Schematic Diagrams (Panel Control, Switch Circuit Basic/Mid Model).



DESCRIPTION

The **ORION™** mobile radio has two control units available, the **SCAN** model and the **SYSTEM** model (see Figures 1 and 2). Also refer to Assemblies Maintenance Manual **LBI-38909**. Each control unit consists of:

- Switch Circuit A1
- Panel Control A2
- Interconnecting Circuit PC1
- Interconnecting Circuit PC2

The Panel Control and Switch Circuit boards are housed in the Control Unit Assembly of the **ORION** mobile radio. The Switch Board contains the control switches and indicators used to communicate information between the radio and the operator. The Panel Control board interfaces and process signals between the Switch board and the rest of the radio.

The electrical and mechanical connections between the internal circuit boards of the two control units are identical (refer to the Interconnection Diagrams DD00-CMD-556ML for the locally connected control unit and DD00-CMD-556MR for the remote connected control unit.)

The control unit for a locally connected control unit (front mount installation) connects directly to the radio circuit boards through the **Local Control Connector (LCC)**. This connection uses interconnect board PC2 (B19/6PCLD00321).

The control unit for a remote connected control unit (trunk mount installation) also uses PC2 but in addition incorporates a **Remote Interface Adaptor (RIA)**. The **RIA** (NQZ-4882) con-

nects to the back of the control unit on the PC2 and provides the interface for accessories through the **OPTion (OPT)** connector and the **Remote Control Connector (RCC)** connector.

Switch Circuit A1 (CDF-368B for the **SCAN** model and CDF-368M for the **SYSTEM** model) plugs in to Panel Control A2 (CMC-638). These Switch Circuits provide a microphone connector and all push switch combinations for **SCAN** and **SYSTEM** control units.

The Rotary Selector switch (S1) and Power/Volume control (S2) connects to the Panel Control circuit (A1) through circuit board connector PC1(B19//6PCLD00307).

CIRCUIT ANALYSIS

PANEL CONTROL BOARD

The Panel Control Board interfaces between the Switch Board, the Logic Board and the microphone. The board contains microcontroller IC203, EEPROM IC202, Vacuum Fluorescent Display (VFD), VFD driver IC209, Voltage regulators IC207 and IC208, power reset IC206, voltage level converter, light sensor, interface circuitry and back lighting control.

Power enters the board through connector J203 from the Logic Board. Switched A+ (SW A+) is applied to two voltage regulators IC207 and IC209. Regulator IC207 provides +5 Vdc to power the logic circuitry, and IC209 provides +9 Vdc for the backlight LED indicators and voltage converter (refer to Figure 3). Power-on reset is provided by the 5-volt regulator **RESET** line and is applied to the **RESET** input of microcontroller

IC203 on Pin 1. Microphone connections are made to the board through connector J202. No audio processing is performed on the Panel Control Board and the microphone lines **MIC HI** and **ALO** are passed to the Logic Board through connector J203.

Signal lines from the operating control switches, **OPT**, **MENU**, etc., on the Switch Board enter the Panel Control Board at J202. These active low lines are diode protected by diodes CD204 through CD216 and pulled up to 5 volts by resistors R233 through R240. All lines connect directly to microcontroller IC203.

Backlight levels of the operating controls are set by current transistor switches TR202 and TR203. These switches complete the path from +9 volts, through the backlight diodes on the Switch Board and back to ground. Return current from the backlight LED's flows into the Panel Control Board at J202, Pin 9 (**BKLT**). and is tied to the current switches through resistors R220 and R221. The **LGHT-PWR1** and **LGHT-PWR2** lines from the microcontroller IC203, Pins 57 and 58 are connected to switch drivers TR204 and TR205. Depending on the levels of **LGHT-PWR1** and **LGHT-PWR2**, the two current switches are turned on or off in different combinations, effectively placing different values of resistor (R220 and R221) in the return path. Four different backlight levels are possible.

The **RS485+** and **RS485-** lines are connected to the **UART** of the microcontroller through RS485 line driver/receiver. The **RQST** line is bi-directional and provides an indication that data is present on the **RS485** serial data bus. As an output, the line is pulled LOW to indicate that the Control Unit (CU) wishes to transmit a data message to another ter-

minal. As an input a LOW state indicates a data message is to be received by the control unit.

The microcontroller clock frequency is set by crystal X201 which is connected to IC203, Pins 2 and 3.

The EEPROM has a storage capacity of 512 x 8 bits.

The VFD is a sixteen digit, dot matrix display. Serial data to be displayed by the VFD comes from the microcontroller bus is applied to IC209, Pin 16. The clock pulse and CS signal are applied to the VFD driver at Pins 15 (**SCK**) and 14 (**CS**).

SWITCH CIRCUIT

The Switch Circuit Board contains the keypad function LED's, bottom backlight LED's and control switches. This board interfaces to the Panel Control Board through connector J201.

Back lighting is provided for the control switches **OPT**, **MENU**, etc. There are four backlight levels (including off) that are available. These levels are set on the Panel Control Board through the use of two current switches. The amount of current flowing from +9 V through the backlight diodes and returning to ground (**BKLT**) is controlled by the settings of the current switches on the Panel Control Board.

The operating control switches on the front panel are all tied to a bus through connector J101 to the Panel Control Board. The switch states are read by the microcontroller on the Panel Control Board.

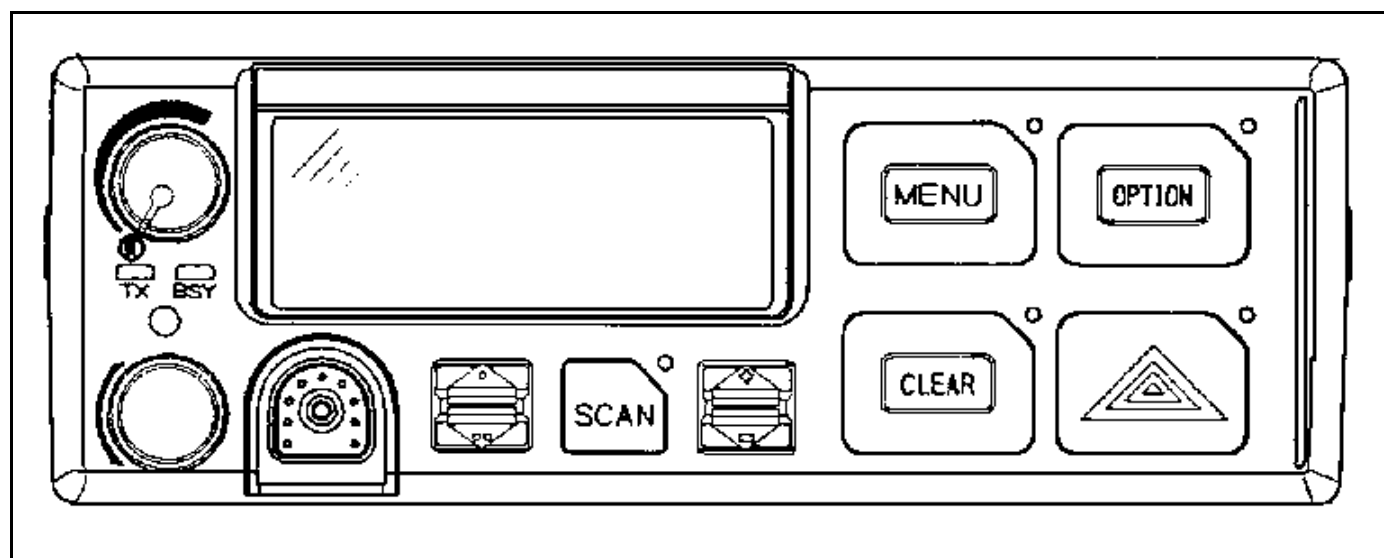


Figure 1 - SCAN Model Control Unit

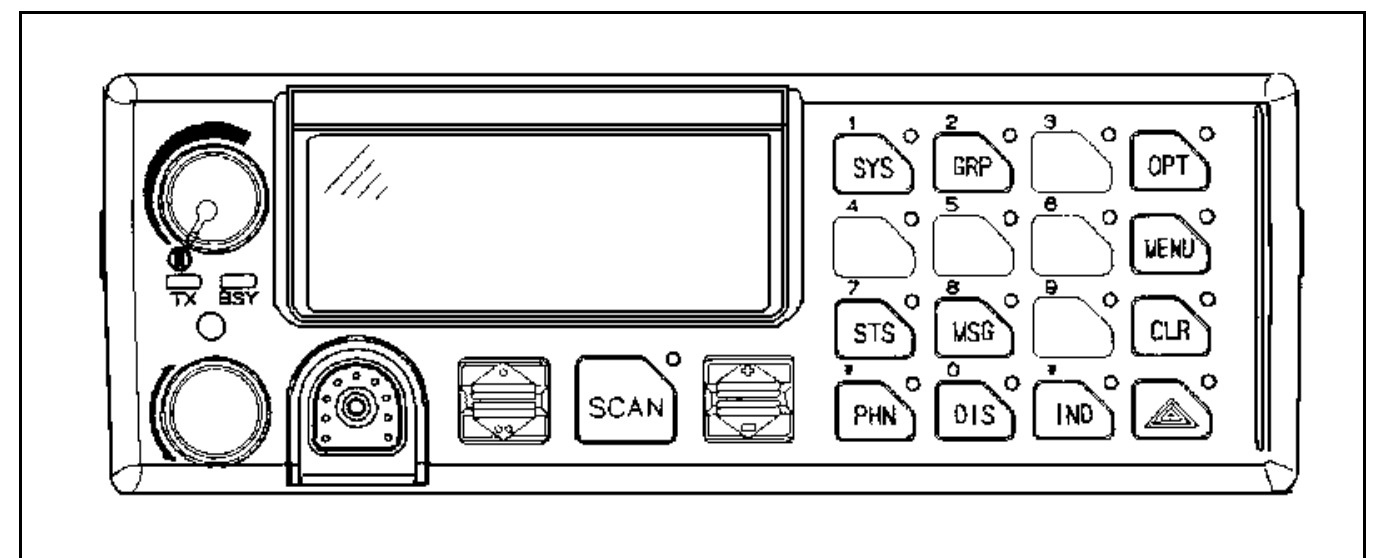


Figure 2 - SYSTEM Control Unit

A shift register is used to receive the serial data signal and provide a parallel output used to drive the keypad function LED's.

REMOTE INTERFACE ADAPTOR

The Remote Interface Adaptor (RIA) Board interfaces between the Panel Control Board, the option connector and the Remote Control Cable through the RCCC connector. The RIA board contains the LCC, ORCC and RCCC connectors. No active circuitry is on the RIA board.

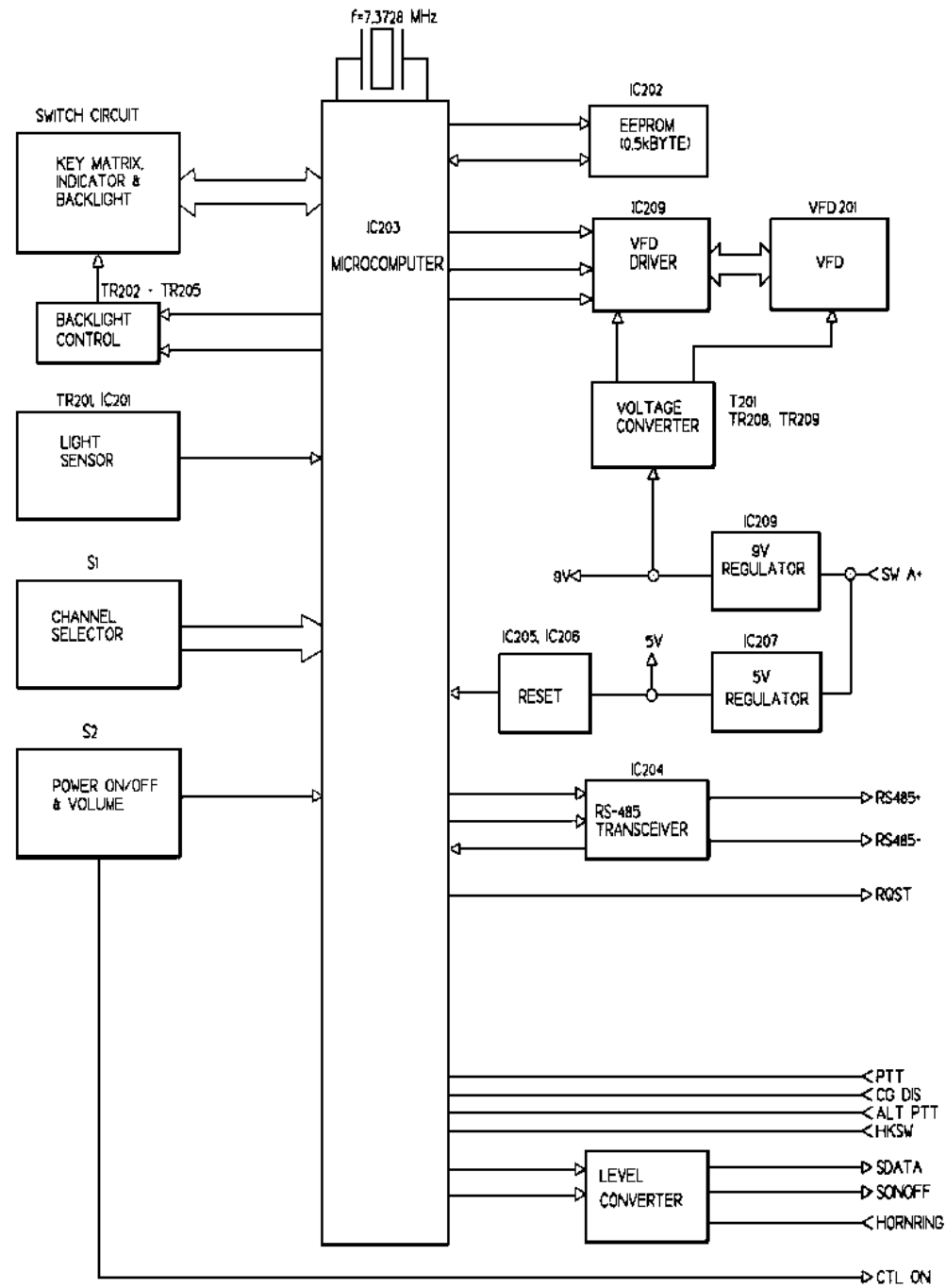
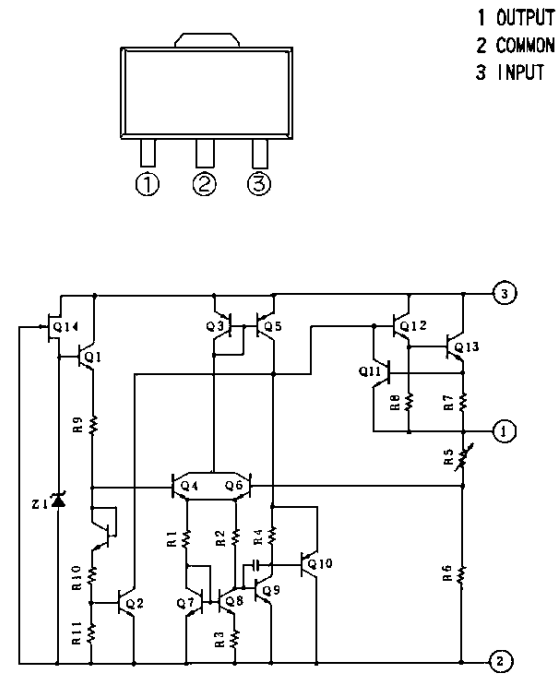
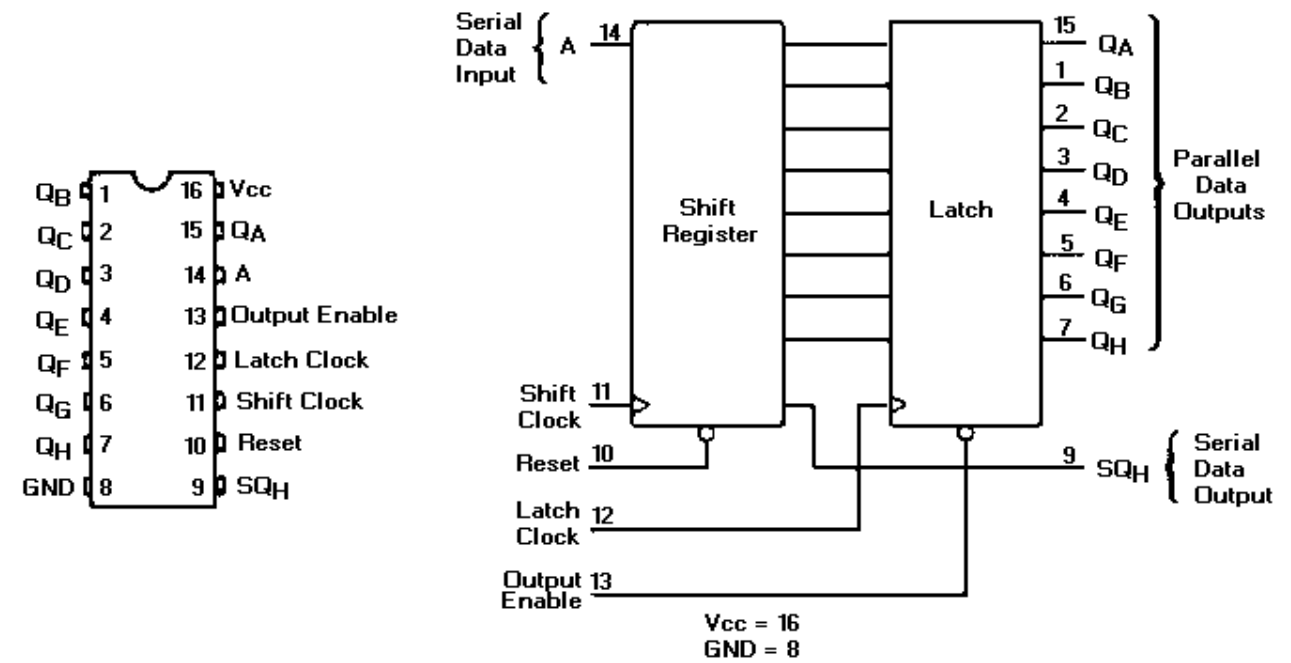


Figure 3 - Block Diagram

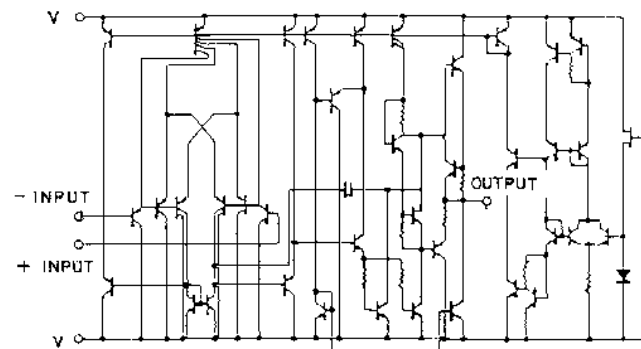
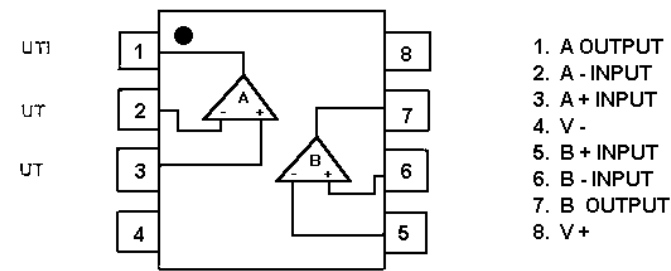
**LINEAR: POSITIVE VOLTAGE REGULATOR IC101
B19/5DAAD00664 (TA7805F)**



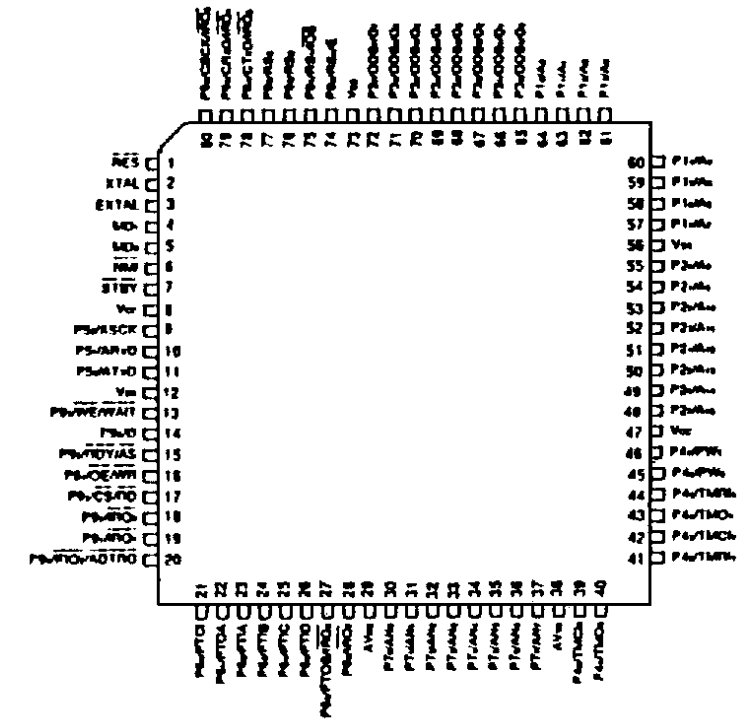
**DIGITAL, 8 BIT SHIFT REGISTER IC102
B19/5DAAJ01028 (MC74HC595AF)**



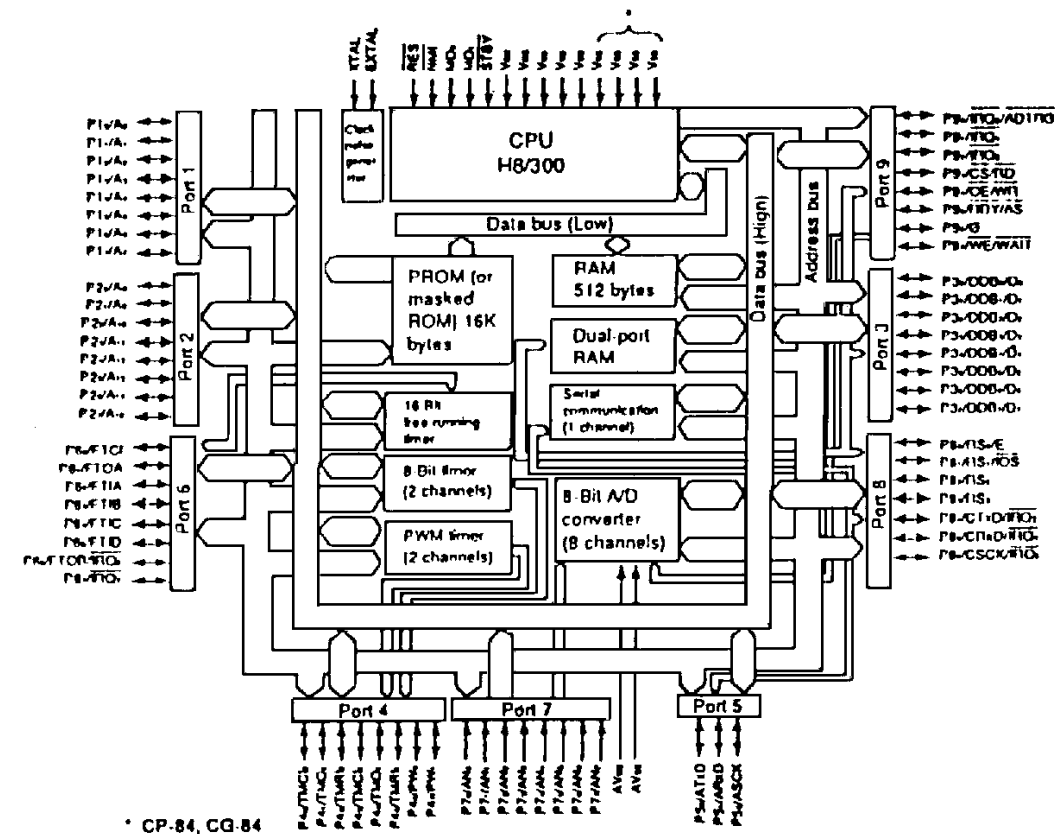
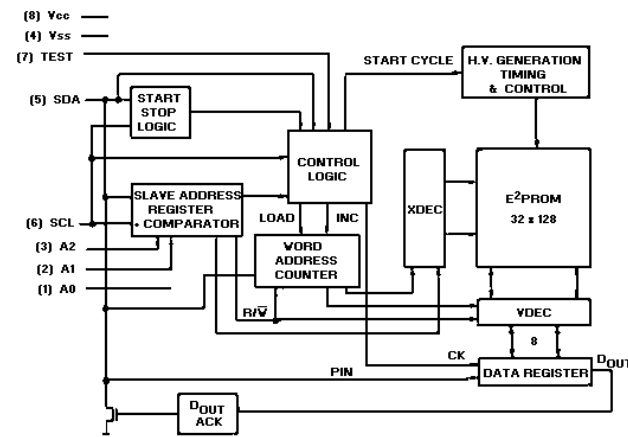
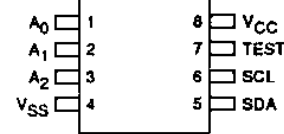
LINEAR: DUAL OPERATIONAL AMPLIFIER IC201
B19/5DAAN00202 (NJM3404M)



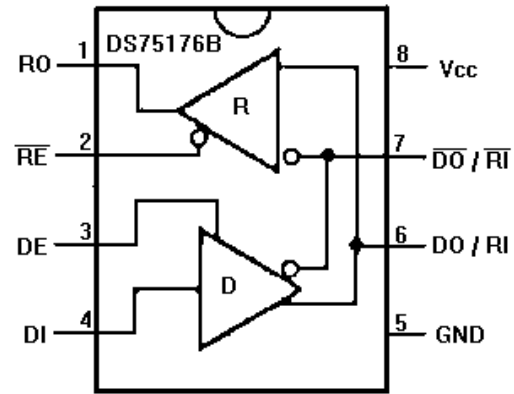
DIGITAL: MICROCOMPUTER IC203
B19/5DDAF02006 (HD6473308RF-10)



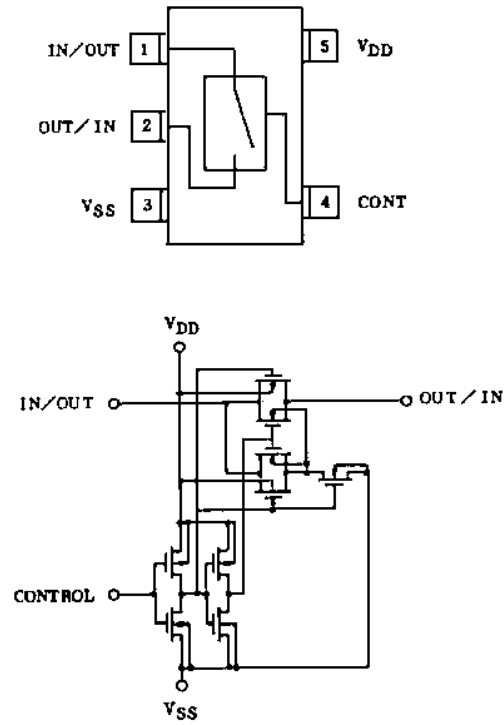
DIGITAL: EEPROM IC202
B19/5DDEH00013 (AT24C04N-10S1)



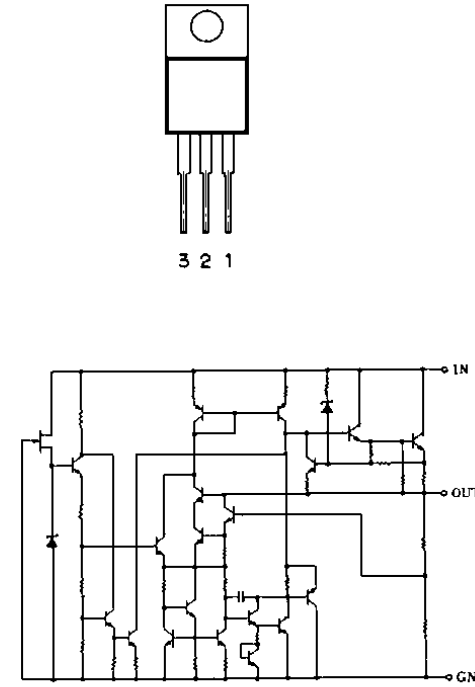
RS-485 TRANSCEIVER IC204
B19/5DDAW000357 (DS75176BM)



DIGITAL: BILATERAL SWITCH IC205
B19/5DAAJ00962 (SC14S66F)

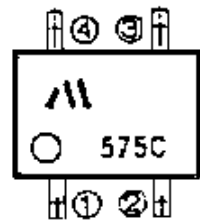


LINEAR: POSITIVE VOLTAGE REGULATOR IC207
B19/5DAAN00055 (NJM7805A)

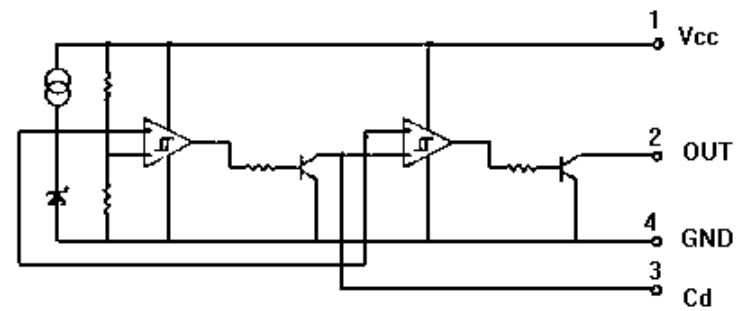


1 OUT
 2 GND
 3 IN

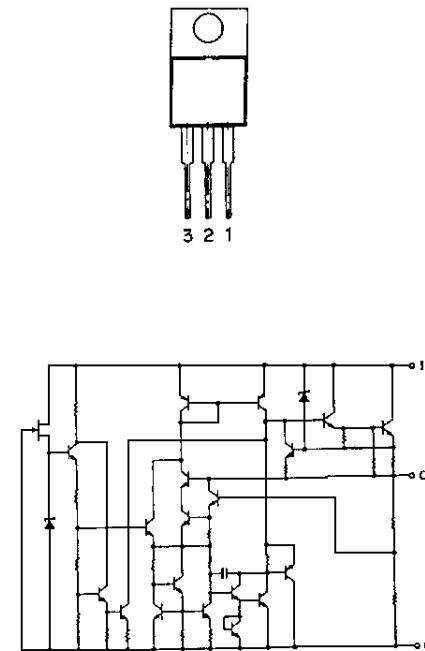
LINEAR; SYSTEM RESET IC206
B19/5DADX00002 (PST575CMT)



1. VCC
 2. OUT
 3. Cd
 4. GND



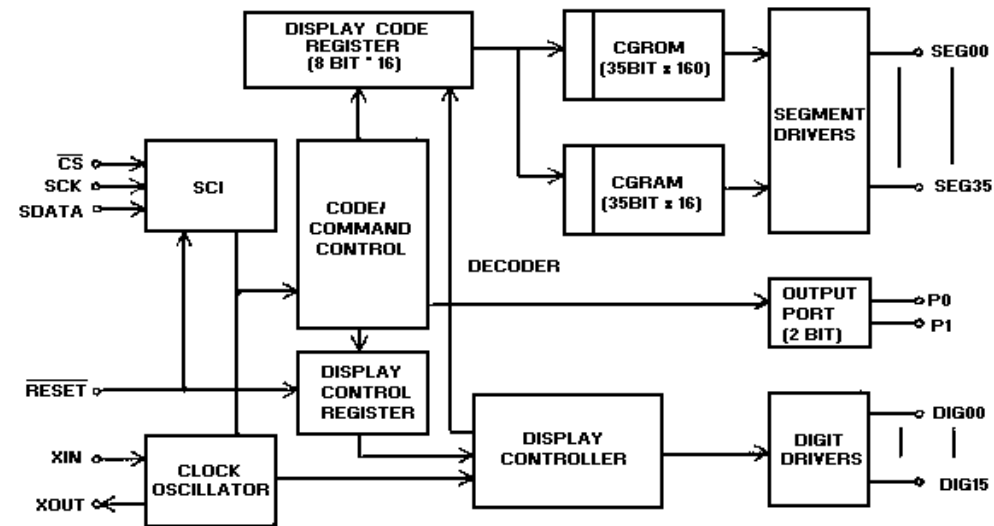
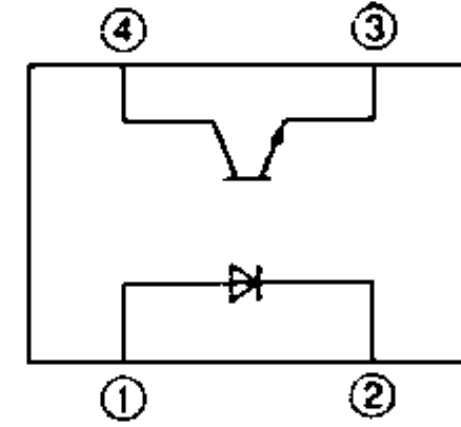
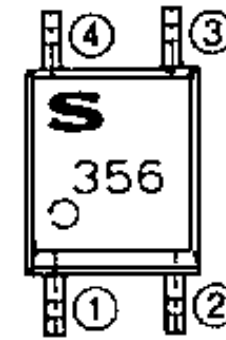
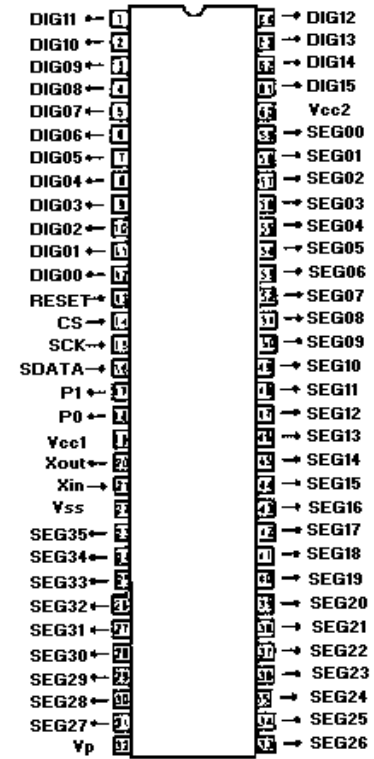
LINEAR: POSITIVE VOLTAGE REGULATOR IC208
B19/5DAAN00069 (NJM7809A)



1 OUT
 2 GND
 3 IN

DIGITAL: VFD CONTROLLER IC209
B19/5DAAB00254 (M66004FP)

LINEAR: PHOTOCOUPLER IC210, IC211
B19/5TZAH00346 (PC356T)



CONTROL UNIT
344A4581P1/CMD-556BL
(SCAN MODEL LOCAL TYPE)

SYMBOL	EGE PART NO.	DESCRIPTION
A1	B19/CDF-368B	SWITCH CIRCUIT CDF-368B.
A2	B19/CMC-638	PANEL CONTROL CMC-638.
PC1	B19/6PCLD00307	FPC.
PC2	B19/6PCLD00321	FPC.
S1	B19/5SZJC00017	ROTARY SWITCH KER16-28.
S2	B19/5RVAC00106	VOLUME V12M4-5(PVB)S(12V2A)15F.

CONTROL UNIT
344A4581P2/CMD-556BR
(SCAN MODEL REMOTE TYPE)

SYMBOL	EGE PART NO.	DESCRIPTION
A1	B19/CDF-368B	SWITCH CIRCUIT CDF-368B.
A2	B19/CMC-638	PANEL CONTROL CMC-638.
A3	B19/NQZ-4882	RIA NQZ-4882
PC1	B19/6PCLD00307	FPC.
PC2	B19/6PCLD00321	FPC.
S1	B19/5SZJC00017	ROTARY SWITCH KER16-28.
S2	B19/5RVAC00106	VOLUME V12M4-5(PVB)S(12V2A)15F.

CONTROL UNIT
344A4581P3/CMD-556ML
(SYSTEM MODEL LOCAL TYPE)

SYMBOL	EGE PART NO.	DESCRIPTION
A1	B19/CDF-368M	SWITCH CIRCUIT CDF-368M.
A2	B19/CMC-638	PANEL CONTROL CMC-638.
PC1	B19/6PCLD00307	FPC.
PC2	B19/6PCLD00321	FPC.
S1	B19/5SZJC00017	ROTARY SWITCH KER16-28.
S2	B19/5RVAC00106	VOLUME V12M4-5(PVB)S(12V2A)15F.

CONTROL UNIT
344A4581P4/CMD-556MR
(SYSTEM MODEL REMOTE TYPE)

SYMBOL	EGE PART NO.	DESCRIPTION
A1	B19/CDF-368M	SWITCH CIRCUIT CDF-368M.
A2	B19/CMC-638	PANEL CONTROL CMC-638.
A3	B19/NQZ-4882	RIA NQZ-4882
PC1	B19/6PCLD00307	FPC.
PC2	B19/6PCLD00321	FPC.
S1	B19/5SZJC00017	ROTARY SWITCH KER16-28.
S2	B19/5RVAC00106	VOLUME V12M4-5(PVB)S(12V2A)15F.

PANEL CONTROL
CMC-638
(Used in P1, P2, P3, P4)

SYMBOL	EGE PART NO.	DESCRIPTION
		----- CAPACITORS -----
C201 Thru C226	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW temp coef +350/-1000 PPM.
C227 And C228	B19/5CAAD00952	Ceramic: 27 pF ±5% 50 VDCW temp coef +350/-1000 PPM.
C229 And C230	B19/5CAAD01586	Ceramic: 0.1 µF +80/-20%, 25 VDCW.
C231 And C232	B19/5CEAA03234	Polypropylene: 10 µF ±20% 16 VDCW.
C233	B19/5CAAA00838	Ceramic: 1000 pF ±10% 50 VDCW temp coef 15%.
C234	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW temp coef +350/-1000 PPM.
C235	B19/5CAAD01586	Ceramic: 0.1 µF +80-20%, 25 VDCW.
C236	B19/5CEAA02858	Electrolytic: 1 µF ±20% 16V.
C237	B19/5CEAA03234	Polypropylene: 10 µF ±20% 16 VDCW.
C238	B19/5CAAD01586	Ceramic: 0.1 µF +80/-20%, 25 VDCW.
C239	B19/5CEAA03234	Polypropylene: 10 µF20% 16 VDCW.
C240 And C241	B19/5CAAD01586	Ceramic: 0.1 µF +80/-20%, 25 VDCW.
C242	B19/5CEAA03234	Polypropylene: 10 µF ±20% 16 VDCW.
C243 Thru C247	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW temp coef +350/-1000 PPM.
C248	B19/5CAAD00959	Ceramic: 0.01 µF ±10% 50 VDCW, temp coef ±15%.
C249	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW temp coef +350/-1000 PPM.
C250	B19/5CEAA02858	Electrolytic: 1 µF ±20% 16V.
C251	B19/5CEAA02912	Polypropylene: 10 µF20% 50 VDCW.
C252	B19/5CEAA02888	Tantalum: 47 µF ±20% 16 VDCW.
C253	B19/5CEAA03372	Tantalum: 3.3 µF ±20% 16 VDCW.
C254	B19/5CAAD00838	Ceramic: 1000 pF ±10% 50 VDCW temp coef ±15%.
C255	B19/5CAAA00959	Ceramic: 0.01 µF ±10% 50 VDCW, temp coef ±15%.
C256	B19/5CAAD01586	Ceramic: 0.1 µF +80/-20%, 25 VDCW.
C257	B19/5CEAA02316	Tantalum: 22 µF ±20% 16 VDCW.
		----- DIODES -----
CD201	B19/5TZAD00560	Optoelectronic: orange sim to TOSHIBA TLO205.
CD202	B19/5TZAD00296	Optoelectronic: red sim to TOSHIBA TLR205.
CD203	B19/5TXAD00290	Silicon fast recovery (2 diodes in cathode common); sim to TOSHIBA ISS184.
CD204 Thru CD219	B19/5TXAD00320	Silicon fast recovery (2 diodes in series); sim to TOSHIBA 1SS226.
CD220	B19/5TXCW00082	Zener: 5.1 V; sim to ROHM RLS25.1B.
CD221	B19/5TXCW00083	Silicon Epitaxial Planar Diode: sim to ROHM RLS92.
CD222	B19/5TXCW00084	Silicon Epitaxial Planar Diode: sim to ROHM RLS245.
CD223	B19/5TXCW00082	Zener: 5.1 V; sim to ROHM RLS25.1B.
CD225 And CD226	B19/5TXAD00320	Silicon fast recovery (2 diodes in series);sim to TOSHIBA 1SS226.
		-----INTEGRATED CIRCUITS -----
IC201	B19/5DAAN00202	Linear, Dual OP AMP; sim to NEW JRC NJM3404M.
IC202	B19/5DDEH00013	Digital: EEPROM; sim to ATMEL AT24C04N-10SI.
IC203	B19/5DDAF02006	Digital: Microcomputer; sim to HITACHI HD6473308RF-10.
IC204	B19/5DDAW00357	RS-485 Transceiver: sim to NS DS75176BM.
IC205	B19/5DAAJ00962	Digital: Bilateral; sim to MOTOROLA SC14S66F.
IC206	B19/5DADX00002	Linear: System Reset IC; sim to MITSUMI PST575CMT.

SYMBOL	EGE PART NO.	DESCRIPTION
IC207	B19/5DAAN00055	Linear: Positive Voltage Regulator; sim to NEW JRC NJM7805A.
IC208	B19/5DAAN00069	Linear: Positive Voltage Regulator; sim to NEW JRC NJM7809A.
IC209	B19/5DAAB00254	Digital: VFD Controller; sim to MITSUBISI M66004FP.
IC210 And IC211	B19/5TZA00346	Linear: Photocoupler; sim to SHARP PC356T.
		----- CONNECTORS -----
J201	B19/5JBAX00019	Connector: 12 pins.
J202	B19/5JBAX00011	Connector: 30 pins.
J203	B19/5JBAX00020	Connector: 18 pins.
		-----COILS -----
L201 And L202	B19/5LCAT00008	Choke Coil: 10 µH .
		-----RESISTORS -----
R201 And R202	B19/5REAG01827	Metal film: 470 ohms ±5%, 150 VDCW 1/10W.
R203	B19/5REAG01854	Metal film: 100 ohms ±5%, 150 VDCW 1/2W.
R204 And R205	B19/5REAG01814	Metal film: 1K ohms ±5%, 150 VDCW 1/4W.
R206	B19/5REAG02609	Metal film: 560K ohms ±5%, 150 VDCW 1/4W.
R207 Thru R219	B19/5REAG01854	Metal film: 100 ohms ±5%, 150 VDCW 1/2W.
R220	B19/5REAG03419	Metal film: 47 ohms ±5%, 200 VDCW 1/2W.
R221	B19/5REAG03255	Metal film: 100 ohms ±5%, 200 VDCW 1/4W.
R222	B19/5REAG01823	Metal film: 4.7K ohms ±5%, 150 VDCW 1/10W.
R223 Thru R242	B19/5REAG02017	Metal film: 10K ohms ±5%, 150 VDCW 1/10W.
R243	B19/5REAG01823	Metal film: 4.7k ohms ±5%, 150 VDCW 1/10W.
R244	B19/5REAG01854	Metal film: 100 ohms ±5%, 150 VDCW 1/10W.
R245 And R246	B19/5REAG01823	Metal film: 4.7k ohms ±5%, 150 VDCW 1/10W.
R247	B19/5REAG01814	Metal film: 1K ohms ±5%, 150 VDCW 1/10W.
R248 And R249	B19/5REAG02017	Metal film: 10K ohms ±5%, 150 VDCW 1/10W.
R250 Thru R253	B19/5REAG01854	Metal film: 100 ohms ±5%, 150 VDCW 1/10W.
R254	B19/5REAG02017	Metal film: 10K ohms ±5%, 150 VDCW 1/10W.
R255	B19/5REAG02022	Metal film: 15K ohms ±5%, 150 VDCW 1/10W.
R256	B19/5REAG02011	Metal film: 2.2K ohms ±5% 150 VDCW.1/10W.
R257	B19/5REAG01854	Metal film: 100 ohms ±5%, 150 VDCW 1/10W.
R258	B19/5REAG02022	Metal film: 33K ohms ±5%, 150 VDCW 1/10W.
R259	B19/5REAG04039	Metal film: 68 ohms ±5%, 200 VDCW 1/4W.
R260	B19/5REAG01823	Metal film: 1.8k ohms ±5%, 150 VDCW 1/10W.
R261 And R263	B19/5REAG01816	Metal film: 22K ohms ±5%, 150 VDCW 1/10W.
R264	B19/5REAG02006	Metal film: 2.7K ohms ±5%, 150 VDCW 1/10W.
R265	B19/5REAG01816	Metal film: 22K ohms 5%,150 VDCW 1/10W.
R266	B19/5REAG02006	Metal film: 2.7K ohms ±5%, 150 VDCW 1/10W.
R267	B19/5REAG01816	Metal film: 22K ohms 5%,150 VDCW 1/10W.
R268	B19/5REAG02006	Metal film: 2.7K ohms ±5%, 150 VDCW 1/10W.
		----- SWITCH -----
S201	B19/5SAFB00002	Slide switch: sim to SMK JSC1210-0111.
		-----TRANSFORMER -----
T201	B19/5LRAK00004	Transformer: sim to SUMIDA IS625.

SYMBOL	EGE PART NO.	DESCRIPTION
		----- TRANSISTOR -----
TR201	B19/5TZA00303	Phototransistor: sim to SHARP PT370.
TR202 And TR203	B19/5TDAB00054	Silicon NPN: sim to NEC 2SD596 (DV3.)
TR204 And TR205	B19/5TCAZ00011	Silicon, NPN: sim to SANYO 2SC3398 (DTC114EK)
TR206 And TR207	B19/5TBAB00055	Silicon, PNP: sim to NEC 2SB624 (BV3).
TR208	B19/5TCAF00426	Silicon, NPN: sim to TOSHIBA 2SC2712.
TR209	B19/5TCAF00712	Silicon, NPN: sim to TOSHIBA 2SC2873.
TR210 And TR211	B19/5TKAD00169	N-Channel Field Effect: sim to NEC 2SK1582.
TR212	B19/5TCAB01457	Silicon, NPN: sim to NEC 2SC3736.
TR213	B19/5TKAD00169	N-Channel Field Effect: sim to NEC 2SK1582.
		----- VACUUM FLUORESCENT DISPLAY -----
VFD201	B19/5NZBZ00001	VFD: sim to ISE ELECTRONICS DH0827A.
		-----CRYSTAL -----
X201	B19/5XHAL00002	Crystal: F=7.3728 MHz.

SWITCH CIRCUIT
CDF-368B
(Used in P1, P2)

SYMBOL	EGE PART NO.	DESCRIPTION
-----CAPACITORS-----		
C101 Thru C103	B19/5CAAD01586	Ceramic: 0.1 F ±5% 50 VDCW, temp coef 030 PPM.
C104 Thru C110	B19/5CAAD02263	Ceramic:1000 pF +80%,-20% 50 VDCW, temp coef +22%, -82%.
----- DIODES -----		
CD101 Thru CD103	B19/5TXAD00637	Silicon:fast recovery (2 diodes in cathode common); sim to TOSHIBA 1SS300.
CD104 Thru CD105	B19/5TZET00009	Optoelectronic:orange, sim to CITIZEN CL-150D-CD.
CD106	B19/5TZET00022	Optoelectronic:red, sim to CITIZEN CL-150UR-CD.
CD107 And CD108	B19/5TZET00009	Optoelectronic:orange, sim to CITIZEN CL-150D-CD.
CD109	B19/5TZET00022	Optoelectronic:red, sim to CITIZEN CL-150UR-CD.
CD110 And CD111	B19/5TZET00009	Optoelectronic:orange, sim to CITIZEN CL-150D-CD.
CD112	B19/5TZET00022	Optoelectronic:red, sim to CITIZEN CL-150UR-CD.
CD113 And CD114	B19/5TZET00009	Optoelectronic:orange, sim to CITIZEN CL-150D-CD.
CD115	B19/5TZET00022	Optoelectronic:red, sim to CITIZEN CL-150UR-CD.
CD116 And CD117	B19/5TZET00009	Optoelectronic:orange, sim to CITIZEN CL-150D-CD.
----- INTEGRATED CIRCUITS -----		
IC101	B19/5DAAD00664	Linear:Positive Voltage Regulator;sim to TOSHIBA TA78L05F.
IC102	B19/5DAAJ01028	Digital,8 BIT Shift Register;sim to MOTOROLA MC74HC595AF.
----- CONNECTORS -----		
J101	B19/5JBAX00007	Connector:30 pins.
J102	B19/5JWHZ00048	Connector:9 pins.
----- RESISTORS -----		
R101	B19/5RDAC02443	Metal film: 390 ohms ±5%, 100 VDCW 1/8W.
R102	B19/5RDAC02147	Metal film: 3.3K ohms ±5%, 100 VDCW 1/8W.
R103	B19/5RDAC02257	Metal film: 470 ohms ±5%, 100 VDCW 1/8W.
R104	B19/5RDAC02147	Metal film: 3.3K ohms ±5%, 100 VDCW 1/8W.
R105	B19/5RDAC02257	Metal film: 470 ohms ±5%, 100 VDCW 1/8W.
R106	B19/5RDAC02147	Metal film: 3.3K ohms ±5%, 100 VDCW 1/8W.
R107	B19/5RDAC02257	Metal film: 470 ohms ±5%, 100 VDCW 1/8W.
R108 And R109	B19/5RDAC02147	Metal film: 3.3K ohms ±5%, 100 VDCW 1/8W.
----- TRANSISTOR -----		
TR101 Thru TR104	B19/5TCAZ00011	Silicon NPN: sim to SANYO 2SC3398-TB.

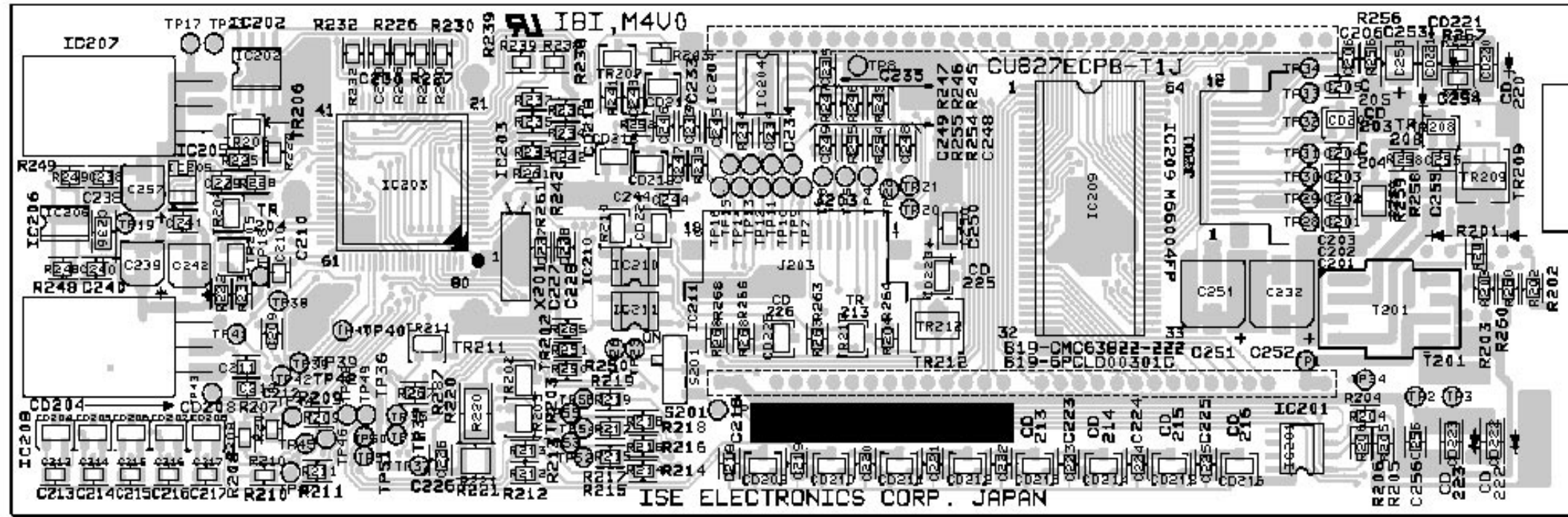
REMOTE INTERFACE ADAPTER
NQZ-4882
(Used n P2, P4)

SYMBOL	EGE PART NO.	DESCRIPTION
----- CONNECTORS -----		
J1	B19/5JBAH00336	Connector: 25 Pins.
J2	B19/5JBAX00020	Connector: 18 Pins.
J3	B19/5JBAH00335	Connector: 25 Pins.

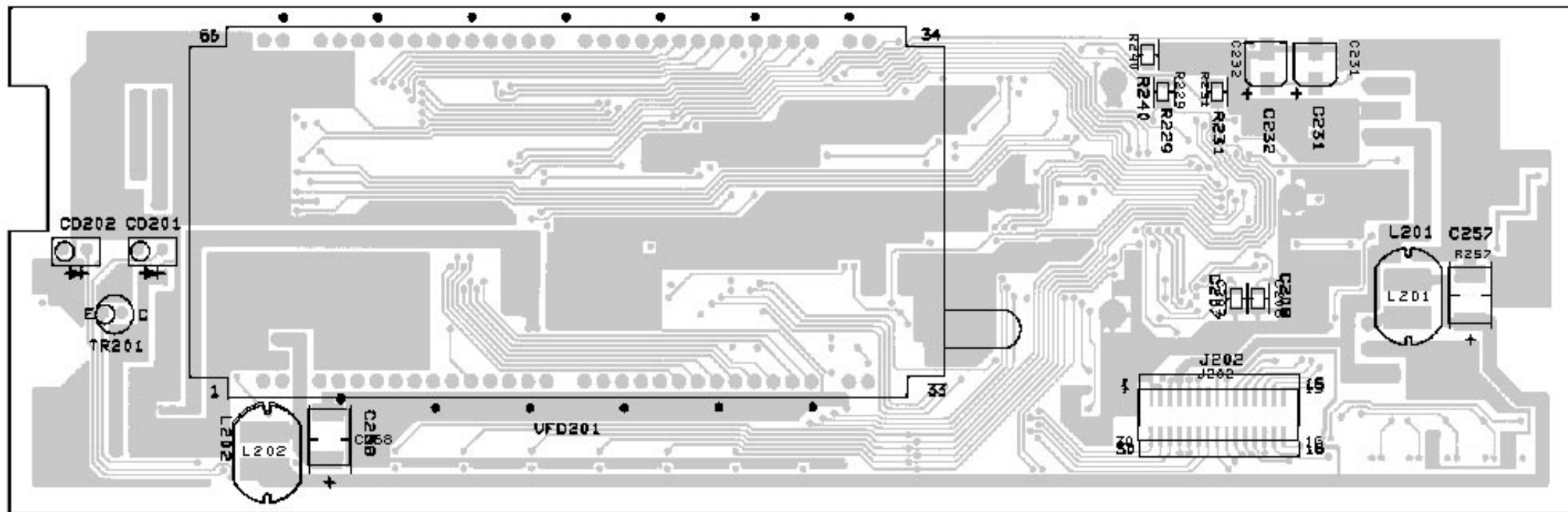
SWITCH CIRCUIT
CDF-368M
(Used in P3, P4)

SYMBOL	EGE PART NO.	DESCRIPTION
C101 Thru C104	B19/5CAAD01586	Ceramic: 0.1 F ±5% 50 VDCW, temp coef 030 PPM.
C105 Thru C111	B19/5CAAD02263	Ceramic: 1000pF +80%,-20% 50 VDCW, temp coef +22%,-82%.
----- DIODES -----		
CD101 Thru CD103	B19/5TXAD00637	Silicon: fast recovery (2 diodes in cathode common); sim to TOSHIBA 1SS300.
CD104 Thru CD105	B19/5TZET00009	Optoelectronic: orange, sim to CITIZEN CL-150D-CD.
CD106	B19/5TZET00022	Optoelectronic: red, sim to CITIZEN CL-150UR-CD.
CD107 And CD108	B19/5TZET00009	Optoelectronic: orange, sim to CITIZEN CL-150D-CD.
CD109	B19/5TZET00022	Optoelectronic: red, sim to CITIZEN CL-150UR-CD.
CD110 And CD111	B19/5TZET00009	Optoelectronic: orange, sim to CITIZEN CL-150D-CD.
CD112	B19/5TZET00022	Optoelectronic: red, sim to CITIZEN CL-150UR-CD.
CD113 And CD114	B19/5TZET00009	Optoelectronic: orange, sim to CITIZEN CL-150D-CD.
CD115	B19/5TZET00022	Optoelectronic: red, sim to CITIZEN CL-150UR-CD.
CD116 And CD117	B19/5TZET00009	Optoelectronic: orange, sim to CITIZEN CL-150D-CD.
----- INTEGRATED CIRCUITS -----		
IC101	B19/5DAAD00664	Linear: Positive Voltage Regulator; sim to TOSHIBA TA78L05F.
IC102	B19/5DAAJ01028	Digital, 8 BIT Shift Register; sim to MOTOROLA MC74HC595AF.
----- CONNECTORS -----		
J101	B19/5JBAX00007	Connector: 30 pins.
J102	B19/5JWHZ00048	Connector: 9 pins.
----- RESISTORS -----		
R101	B19/5RDAC02163	Metal film: 270 ohms ±5%, 100 VDCW 1/8W.
R102	B19/5RDAC02147	Metal film: 3.3K ohms ±5%, 100 VDCW 1/8W.
R103	B19/5RDAC02163	Metal film: 270 ohms ±5%, 100 VDCW 1/8W.
R104	B19/5RDAC02147	Metal film: 3.3K ohms ±5%, 100 VDCW 1/8W.
R105	B19/5RDAC02163	Metal film: 270 ohms ±5%, 100 VDCW 1/8W.
R106	B19/5RDAC02147	Metal film: 3.3K ohms ±5%, 100 VDCW 1/8W.
R107	B19/5RDAC02163	Metal film: 270 ohms ±5%, 100 VDCW 1/8W.
R108 Thru R116	B19/5RDAC02147	Metal film: 3.3K ohms ±5%, 100 VDCW 1/8W.
R117	B19/5RDAC02443	Metal film: 390 ohms ±5%, 100 VDCW 1/8W.
R118	B19/5RDAC02147	Metal film: 3.3K ohms ±5%, 100 VDCW 1/8W.
R119	B19/5RDAC02163	Metal film: 270 ohms ±5%, 100 VDCW 1/8W.
R120 Thru R123	B19/5RDAC02147	Metal film: 3.3K ohms ±5%, 100 VDCW 1/8W.
----- TRANSISTOR -----		
TR101 Thru TR116	B19/5TCAZ00011	Silicon NPN: sim to SANYO 2SC3398-TB.

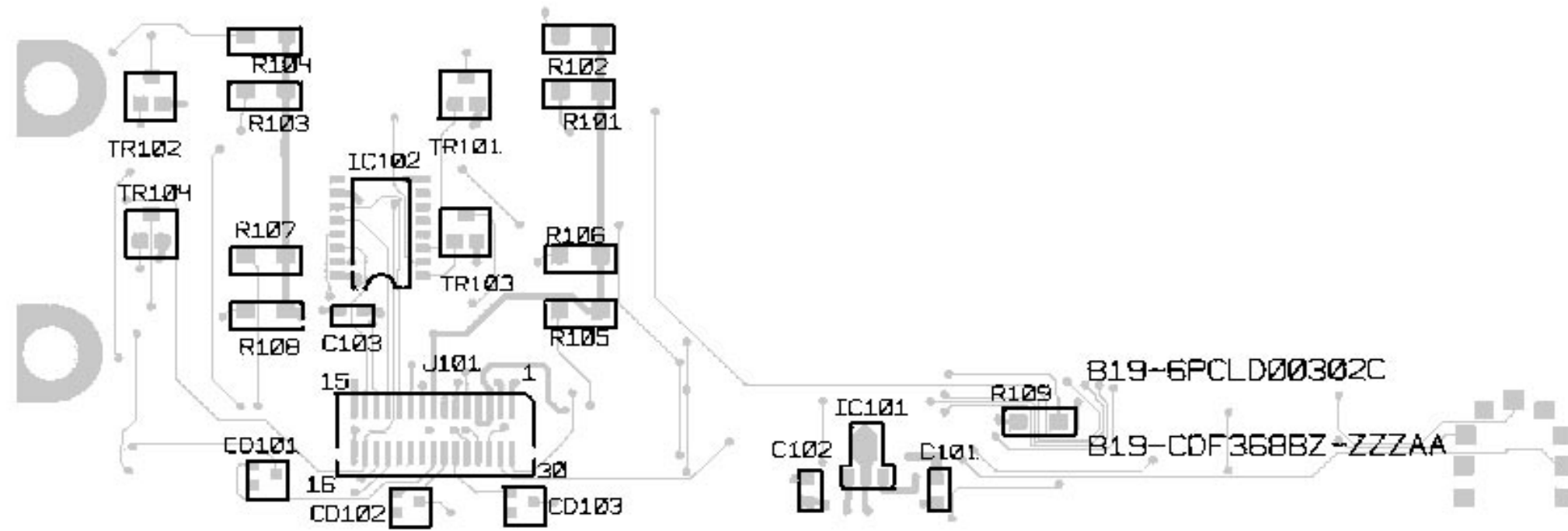
COMPONENT SIDE



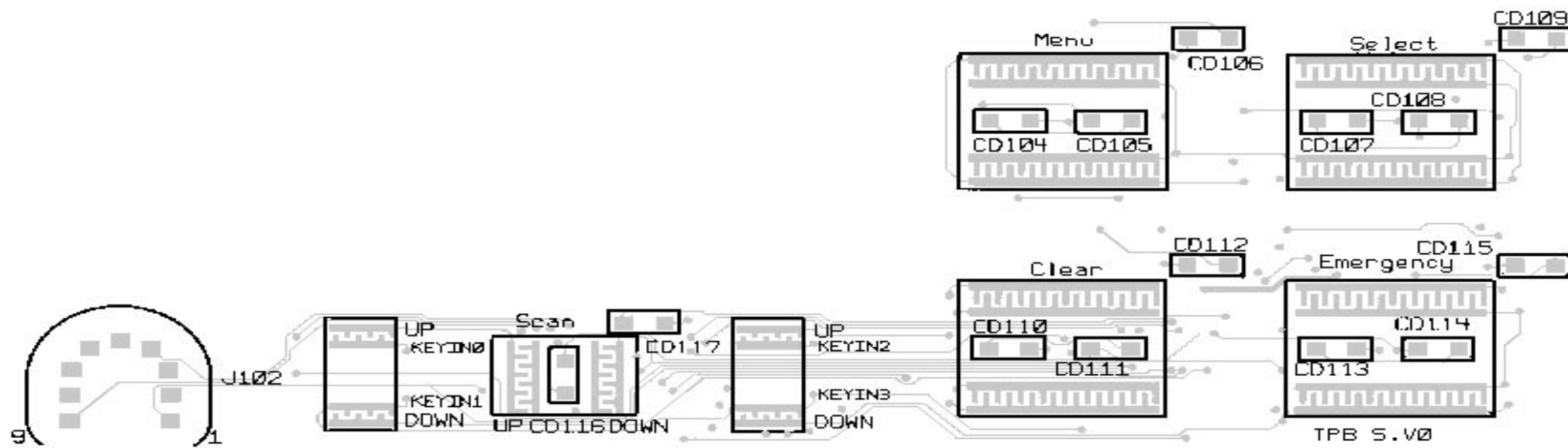
SOLDER SIDE



COMPONENT SIDE

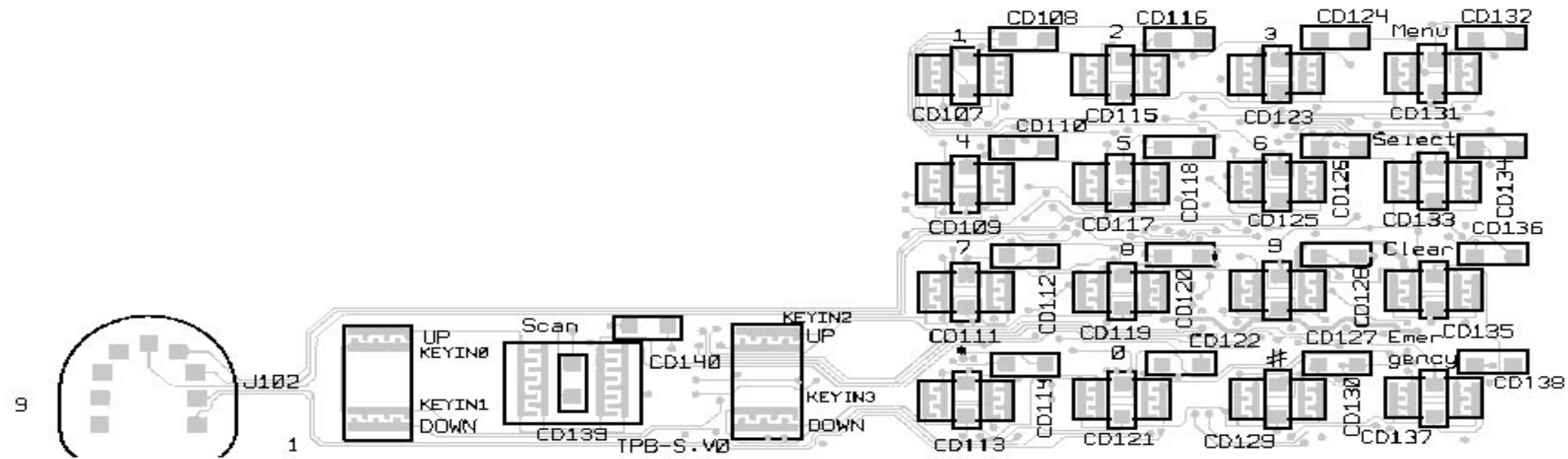


SOLDER SIDE

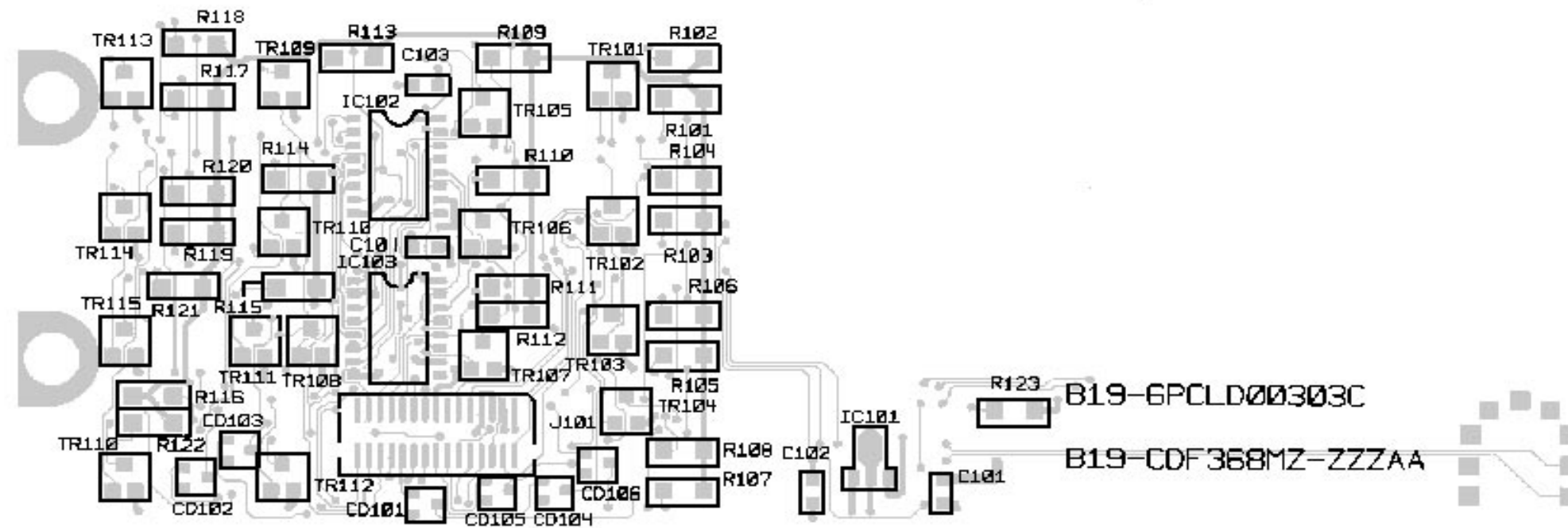


SWITCH CIRCUIT
CDF-368B

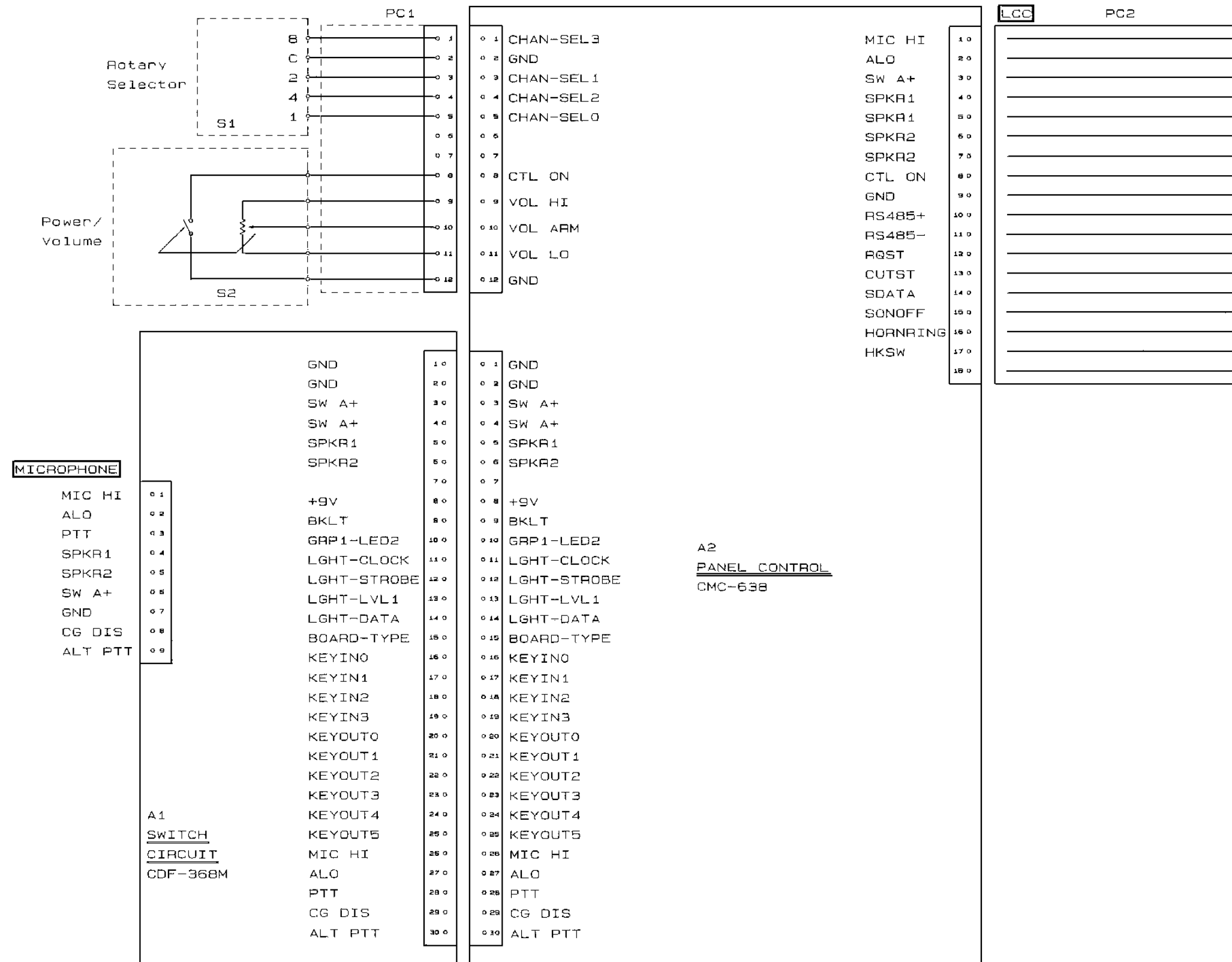
COMPONENT SIDE



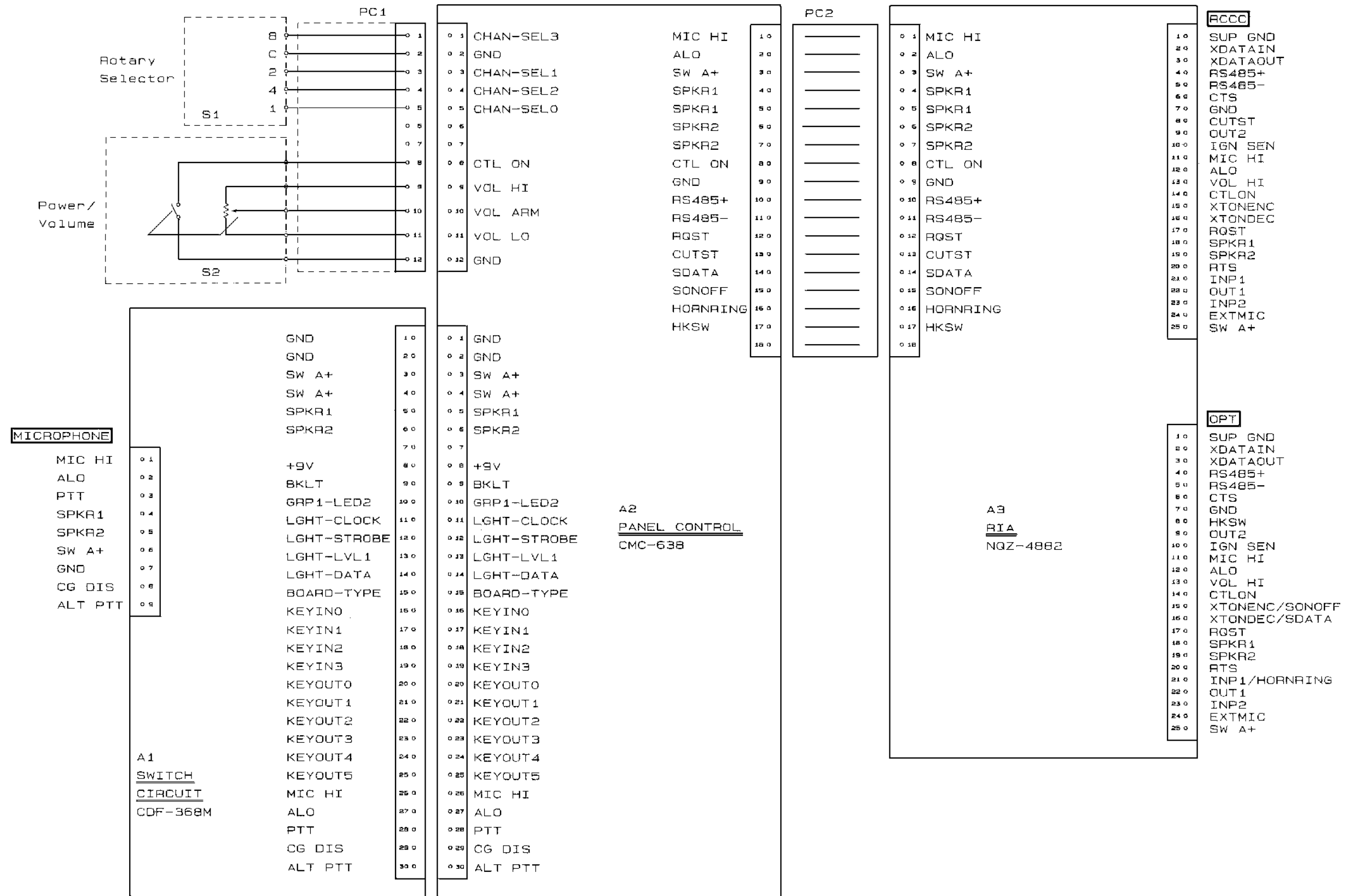
SOLDER SIDE



SWITCH CIRCUIT
CDF-368M

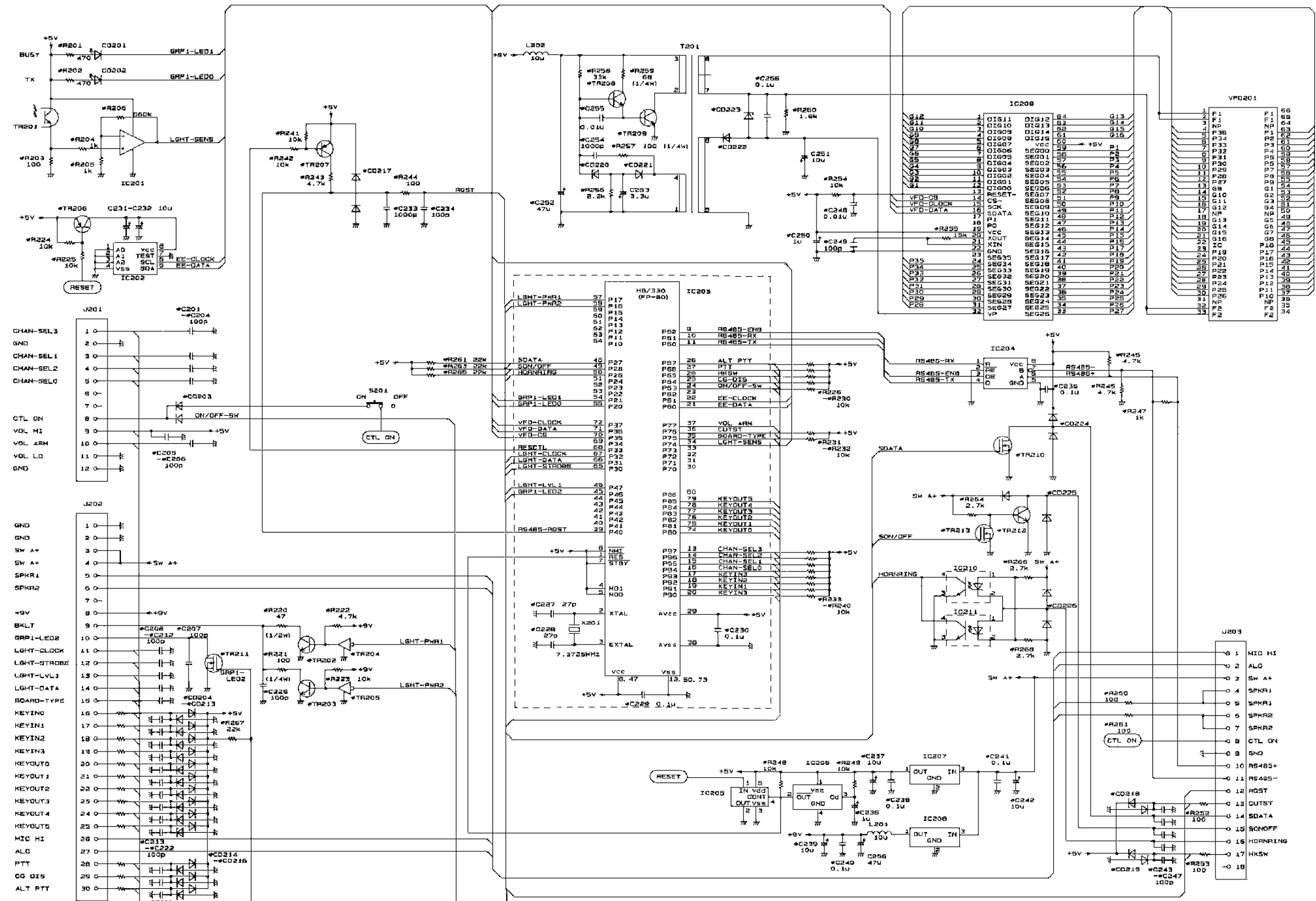


CONTROL UNIT (LOCAL TYPE)
(DD00-CDM-556ML)



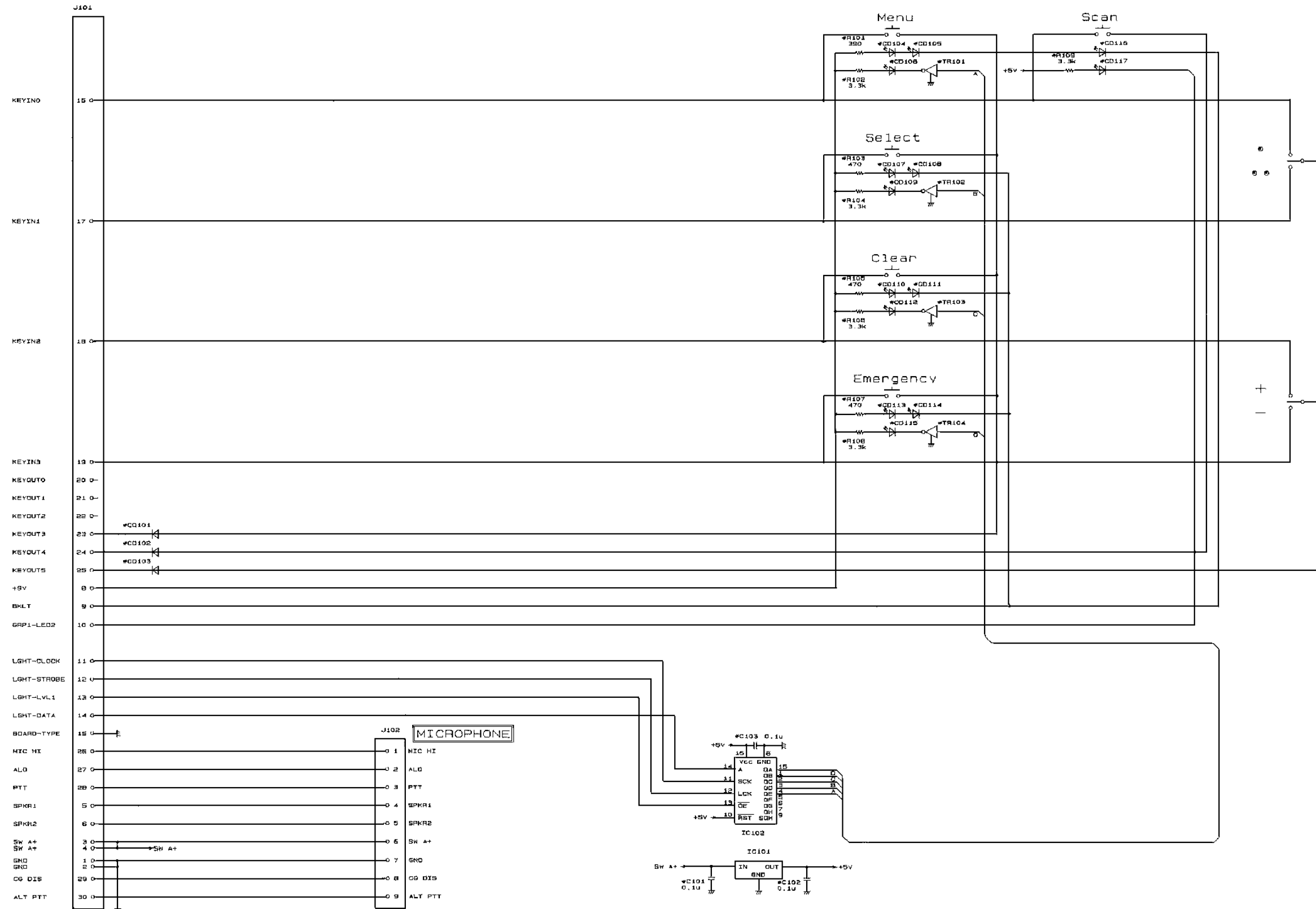
CONTROL UNIT (REMOTE TYPE)

(DD00-CMD-556MR)



NOTES: "*" IDENTIFIES "CHIP" COMPONENTS (EXAMPLE: #R201)
 ALL RESISTORS ARE 1/8 WATT UNLESS OTHERWISE SPECIFIED.
 RESISTOR VALUES IN Ω UNLESS FOLLOWED BY MULTIPLIER k, M, OR P
 CAPACITOR VALUES IN F UNLESS FOLLOWED BY MULTIPLIER μ, OR P

PANEL CONTROL
 (DD05-CMC-638)

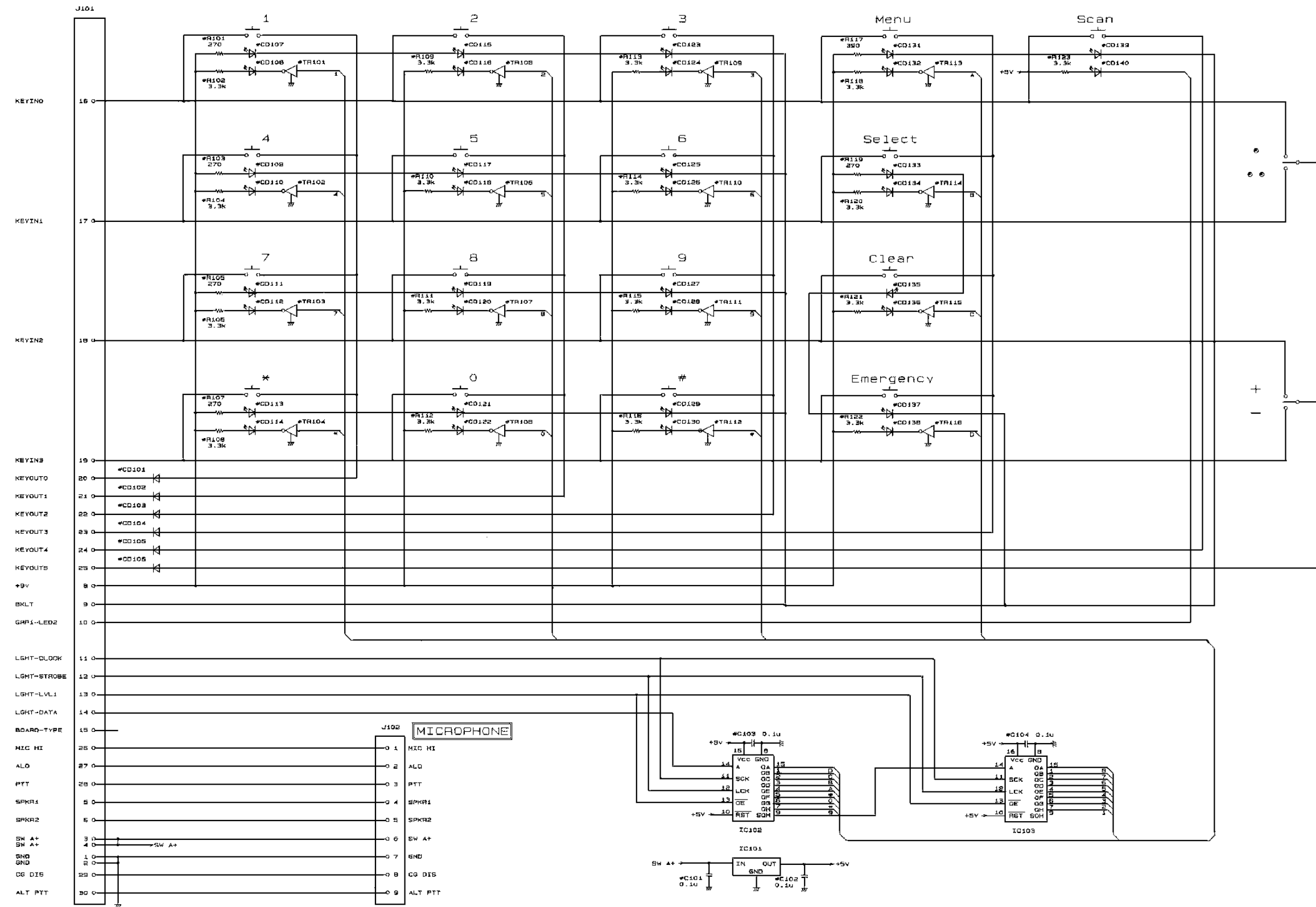


NOTES: ** IDENTIFIES "CHIP" COMPONENTS (EXAMPLE: #R101).
 ALL RESISTORS ARE 1/16 WATT UNLESS OTHERWISE SPECIFIED.
 RESISTOR VALUES IN Ω UNLESS FOLLOWED BY MULTIPLIER K.
 CAPACITOR VALUES IN P UNLESS FOLLOWED BY MULTIPLIER μ OR P.

ASM NO. 819-CDF38992-ZZZAA
 PCB NO. 819-SPCL000702

SWITCH CIRCUIT (BASIC MODEL)

(DD00-CDF-368B)



NOTES: "*" IDENTIFIES "CHIP" COMPONENTS (EXAMPLE: #R101).
 ALL RESISTORS ARE 1/16 WATT UNLESS OTHERWISE SPECIFIED.
 RESISTOR VALUES IN Ω UNLESS FOLLOWED BY MULTIPLIER K.
 CAPACITOR VALUES IN P UNLESS FOLLOWED BY MULTIPLIER μ OR P.

ASB NO. 819-CDF350MZ-222AA
 PCB NO. 819-6PCLD00203

SWITCH CIRCUIT (MID MODEL)

(DD00-CDF-368M)