Viera Plasma

Display PC Board Recycling Component Level Repair

Course 3

Understanding how System Shut Down operates

Possible causes of shutdown

- A short circuit on the voltage lines.
- Over-voltage condition.
- Abnormality in the Control Drive Pulse circuit i.e. SC, SS, SU or SD boards.
- Missing source voltage to the PA board (STB14V) from P board.
- Missing output voltage from the PA board to the DG board.
- Missing 15V or Vsus on either SS or SC board while the control drive pulses from the D board are being provided.

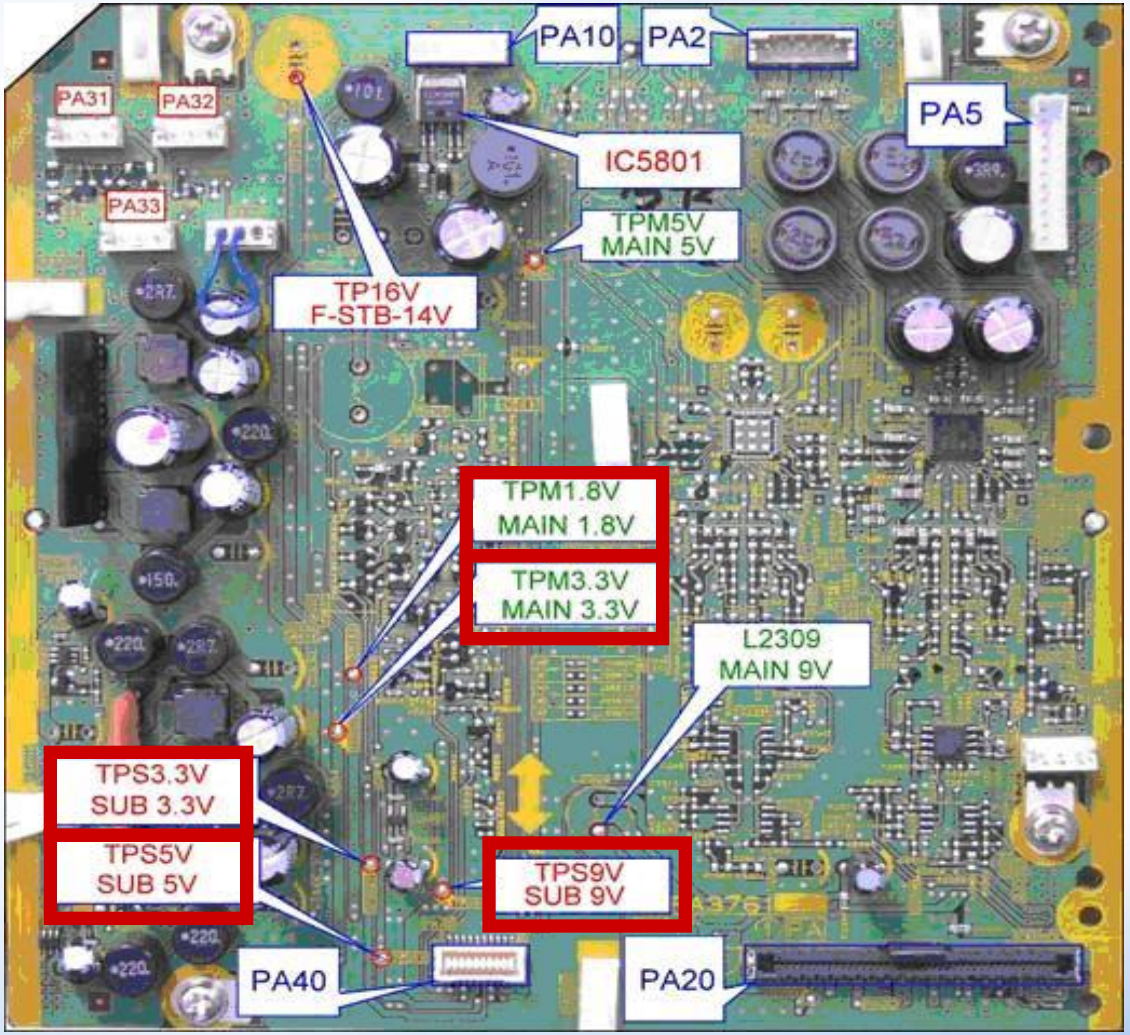
D BOARD SOS DETECT

D Board SOS detect		
SOS line	**Line Monitored**	**# of times LED blinks**
SOS 2	**15V**	**2 blinks**
SOS 3	**P3.3V(15V & STB5V)**	**3 blinks**
SOS 4	**PS**	**4 blinks**
SOS 5	**5V**	**5 blinks**
SOS 6	**SC1**	**6 blinks**
DRV RST	**5V DET**	**6 blinks**
SOS 7	**SC2**	**7 blinks**
SOS 8	**SS**	**8 blinks**

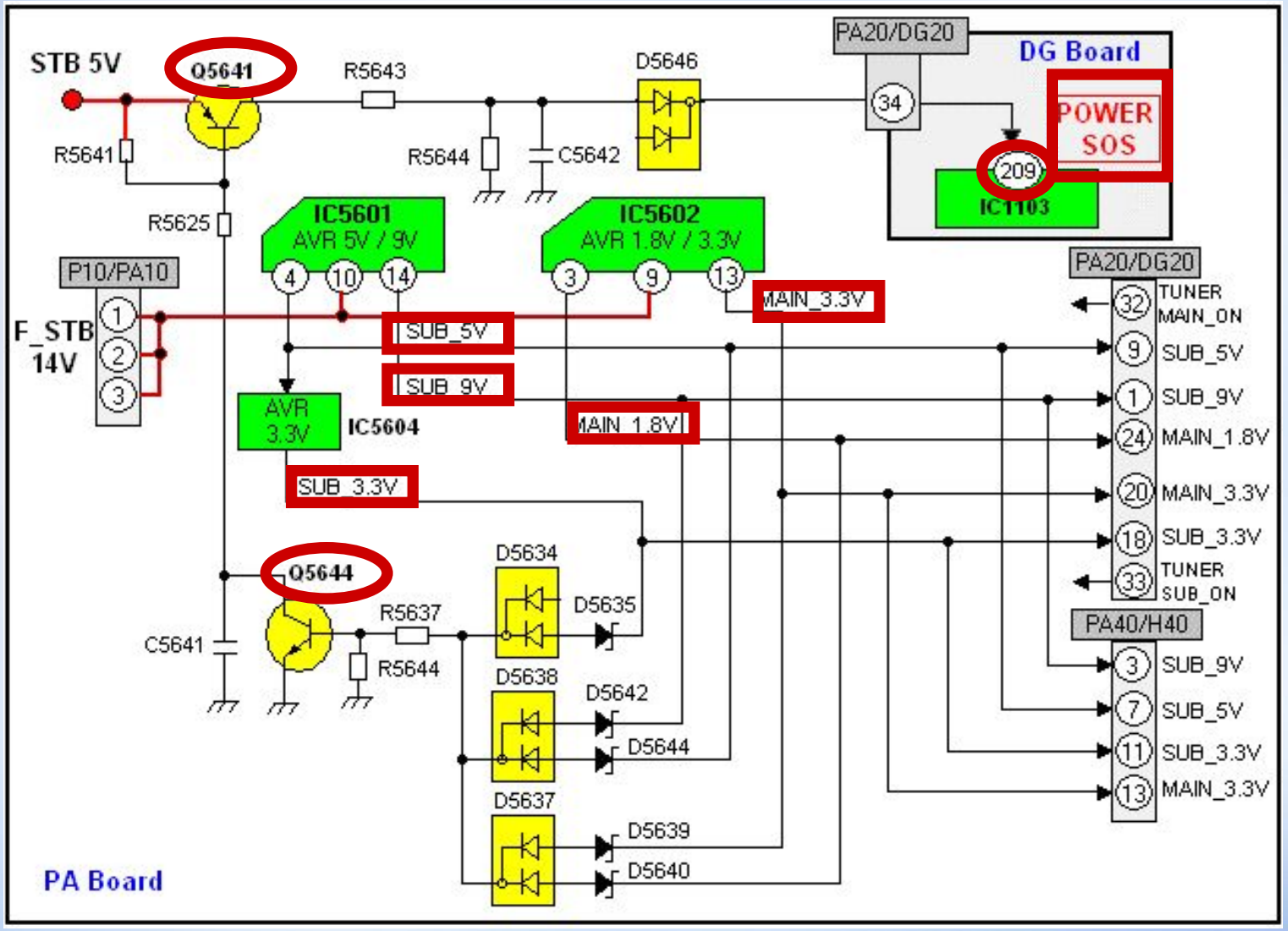
DG BOARD SOS DETECT

DG Board SOS detect		
SOS line	**Line Monitored**	**# of times LED blinks**
STB 3.3V DET	**STB 3.3V**	**10**
MAIN 3.3V DET	**MAIN 3.3V**	**10**
SUB 5V DET	**SUB 5V**	**10**
SUB 9V DET	**SUB 9V**	**10**
PA-TUNER-SOS	**PA & Tuner +30V**	**10**
FAN SOS	**FAN CIRCUIT**	**11**
SOUND	**SOUND OUTPUT CIRCUIT**	**12**

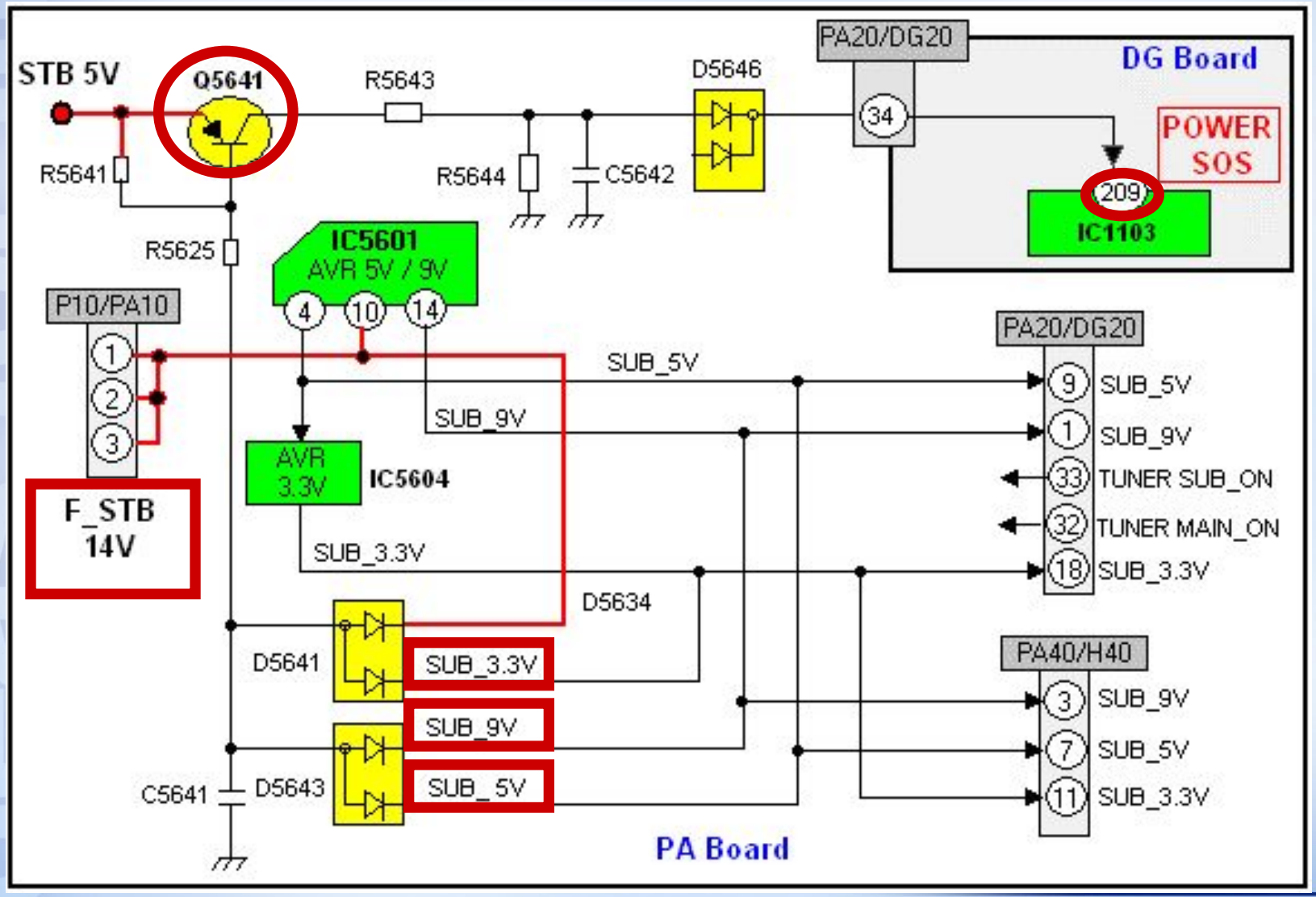
PA Board Test Points



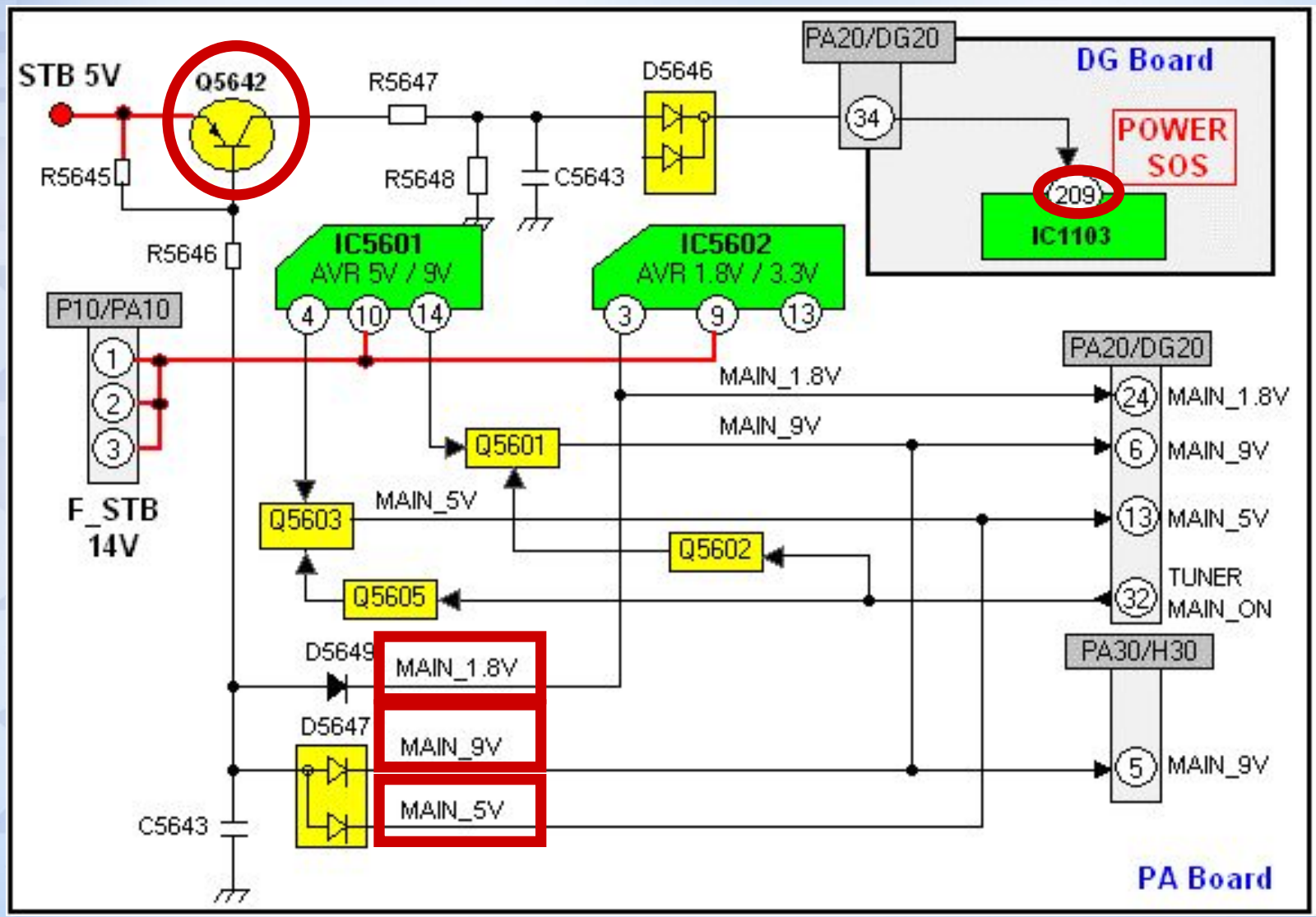
PA Board Over Voltage Protection



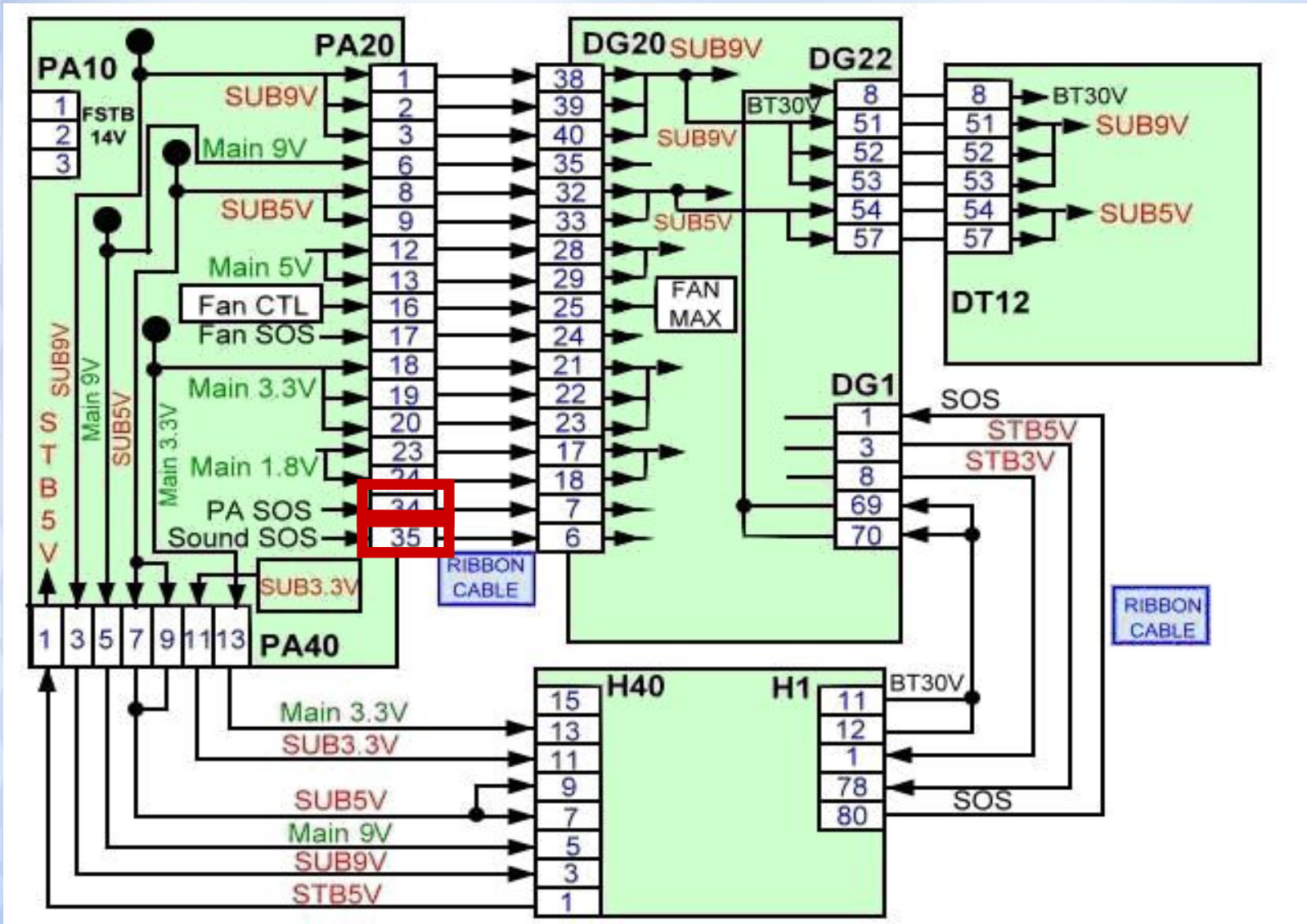
PA Board Loss of Sub-Voltage Protection



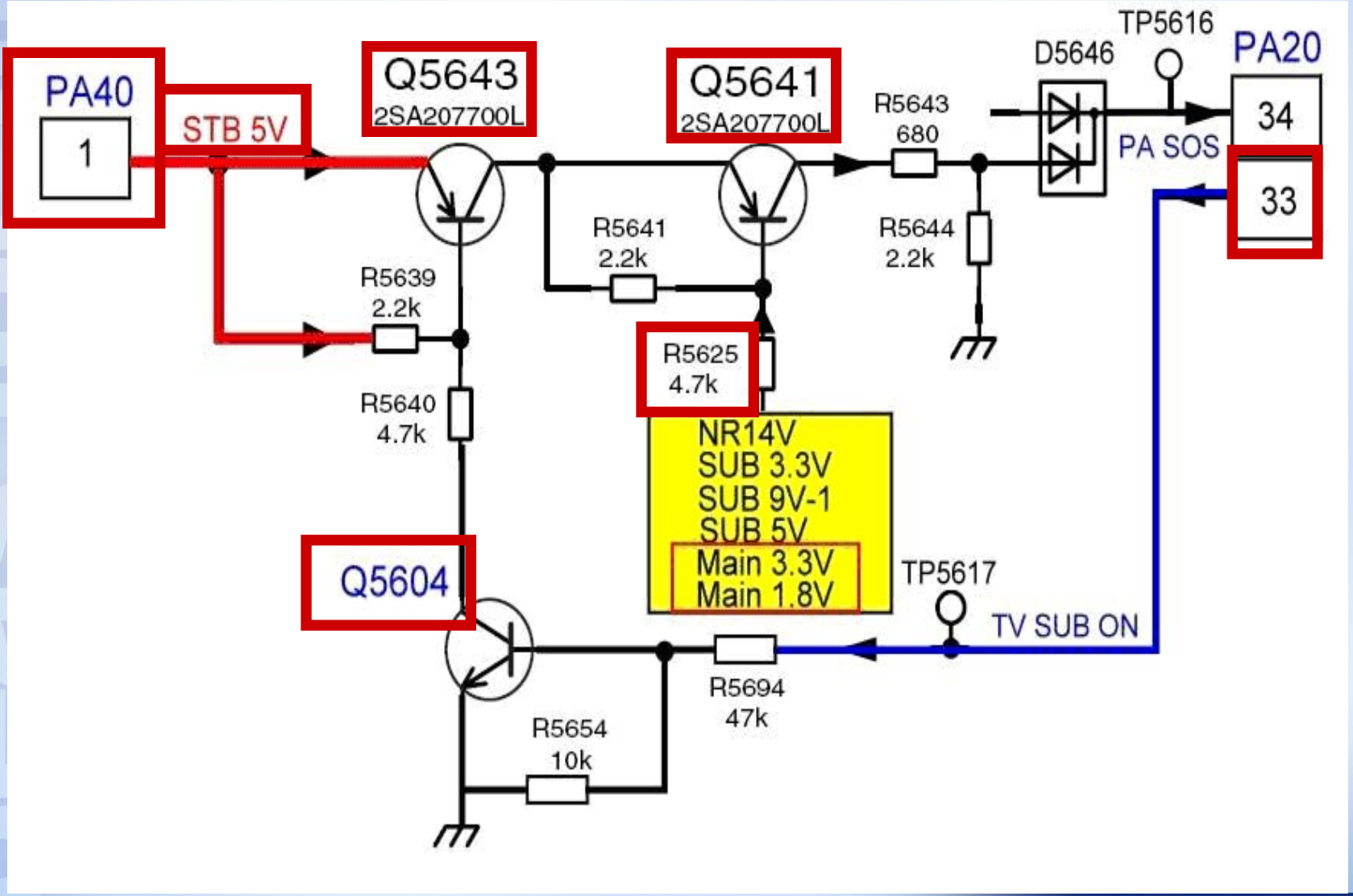
PA Board Loss of Main-Voltage Protection



PA Voltage Output



PA SOS Detect Circuit



LED BLINKING 10 TIMES

When the power LED blinks 10 times right after the Plasma TV has been plugged in to the AC source, the possible defective boards are:

- P Board
- PA Board
- DG Board
- H Board
- DT Board

How to Rule out the P Board

1. Use a Peak Hold Meter for voltage reading

NOTE: Follow this procedure when the click sound of the relay can be heard after the unit is plugged in. If the relay does not click, check the STB 5V from the P board. If the STB 5V is missing, the P board may be defective. (If STB 5V is OK, the DG board may be defective.

2. Disconnect Connector P10 on the P board. (Make sure that the TV is unplugged)
3. Because you only have 2 – 3 seconds to measure the STB14V, place your meter's probe at pin 1 of connector 10 of the P board before plugging the TV in to the AC line.
4. Plug the TV in to the AC line while still holding the probe at Pin 1.
5. Check to see if the 14V comes up. If it does not come up the P board is defective. If it does, (since it may take some involvement to determine which of the PA or DG board is defective) it is OK to order both the PA and DG board together.

To rule out H Board

1. Disconnect connector H40 then plug Plasma TV to AC line.
2. If the power LED stops blinking, the H board may be defective, otherwise another board is causing the problem.

NOTE: It is recommended that the PA board be replaced at the same time if the H board is suspected to be defective and will be replaced.

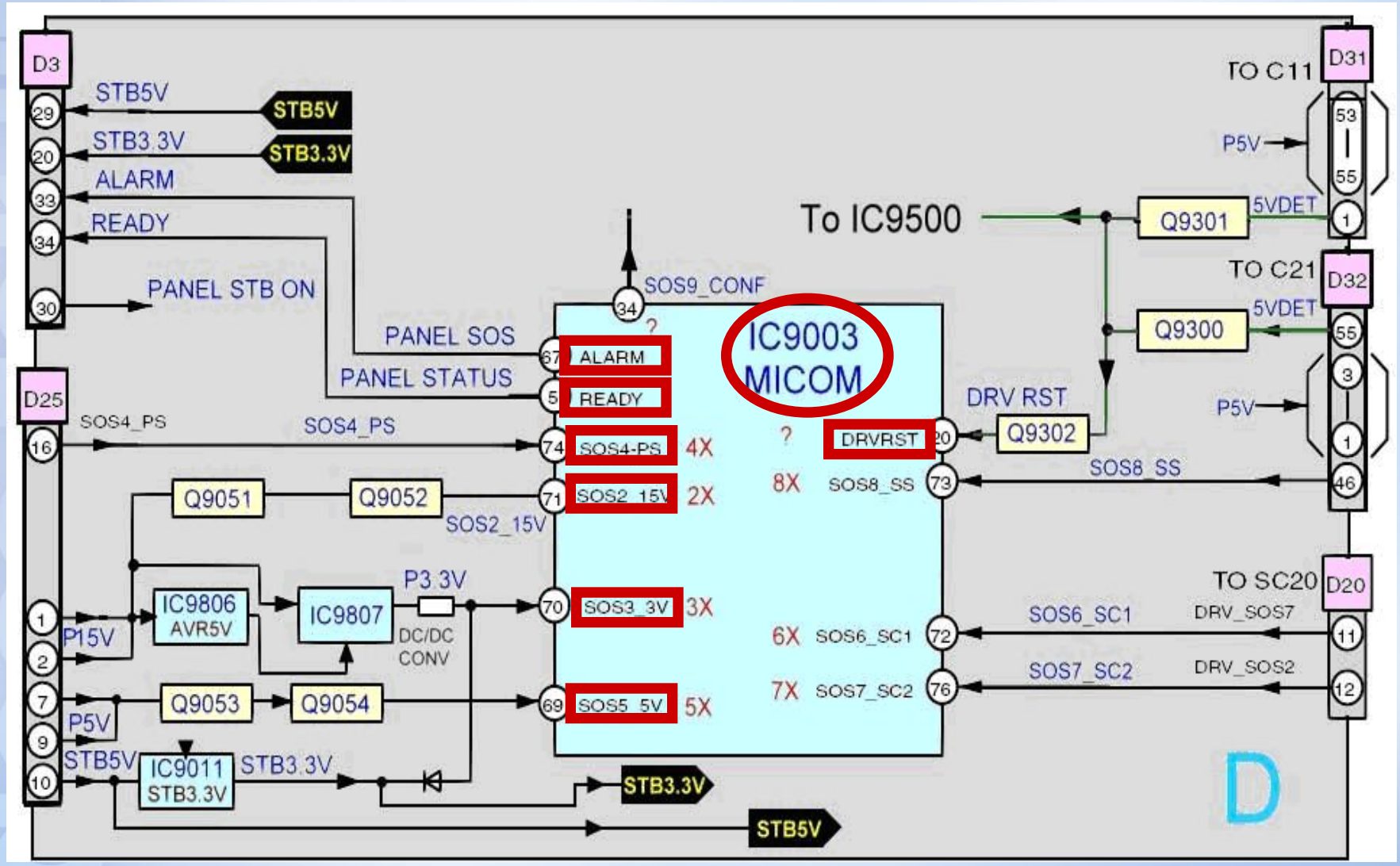
To rule out the DT (Digital Tuner) Board

1. Remove the DT board and then plug the Plasma TV into an AC source.

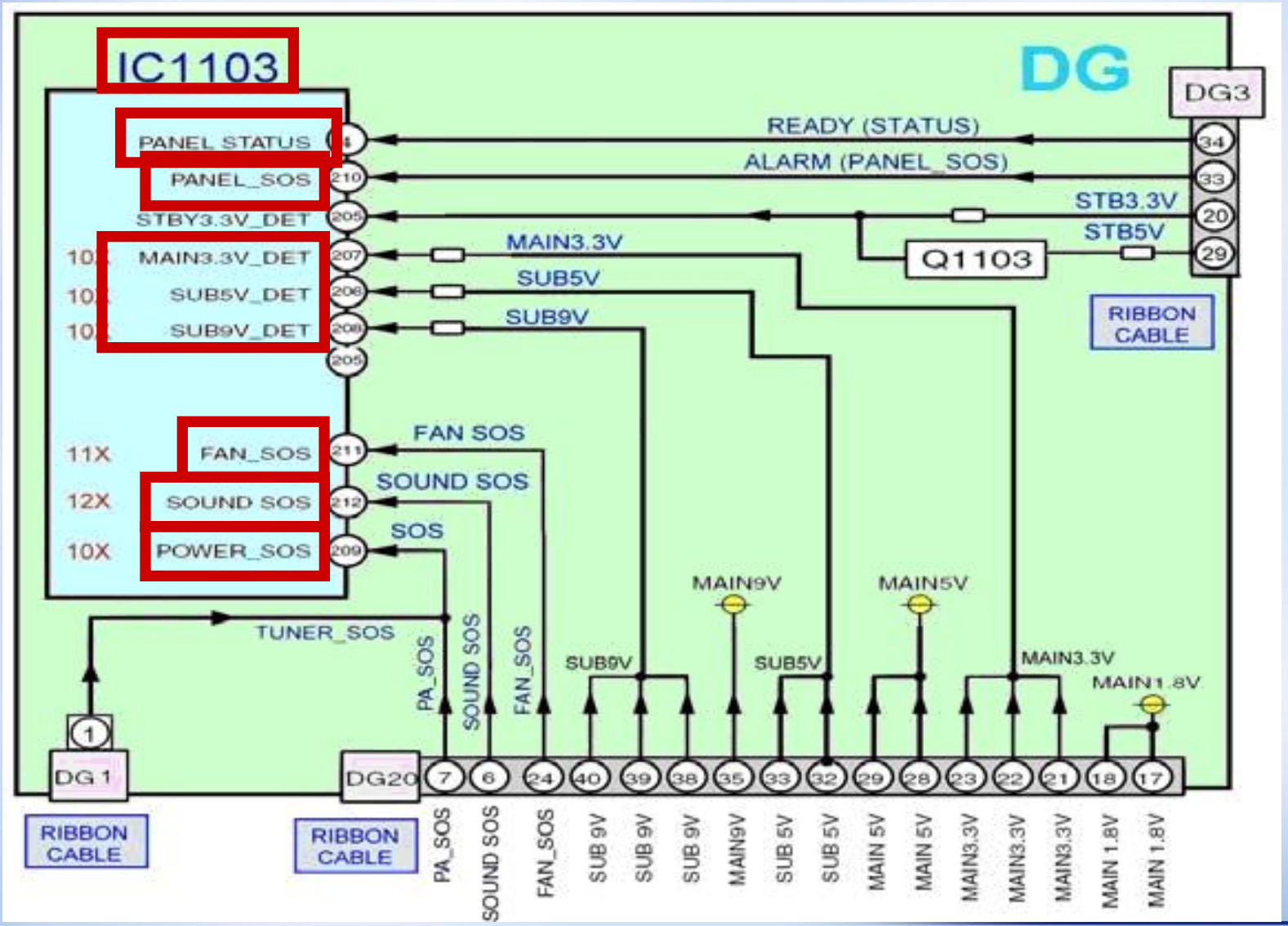
Note: When the DT board is removed, the unit will still power up but all functions are disabled due to the lack of data communication

2. If the power LED stops blinking the DT may be defective otherwise, another board is causing the problem.
3. Other possible causes of blinking are the PA or DG board.

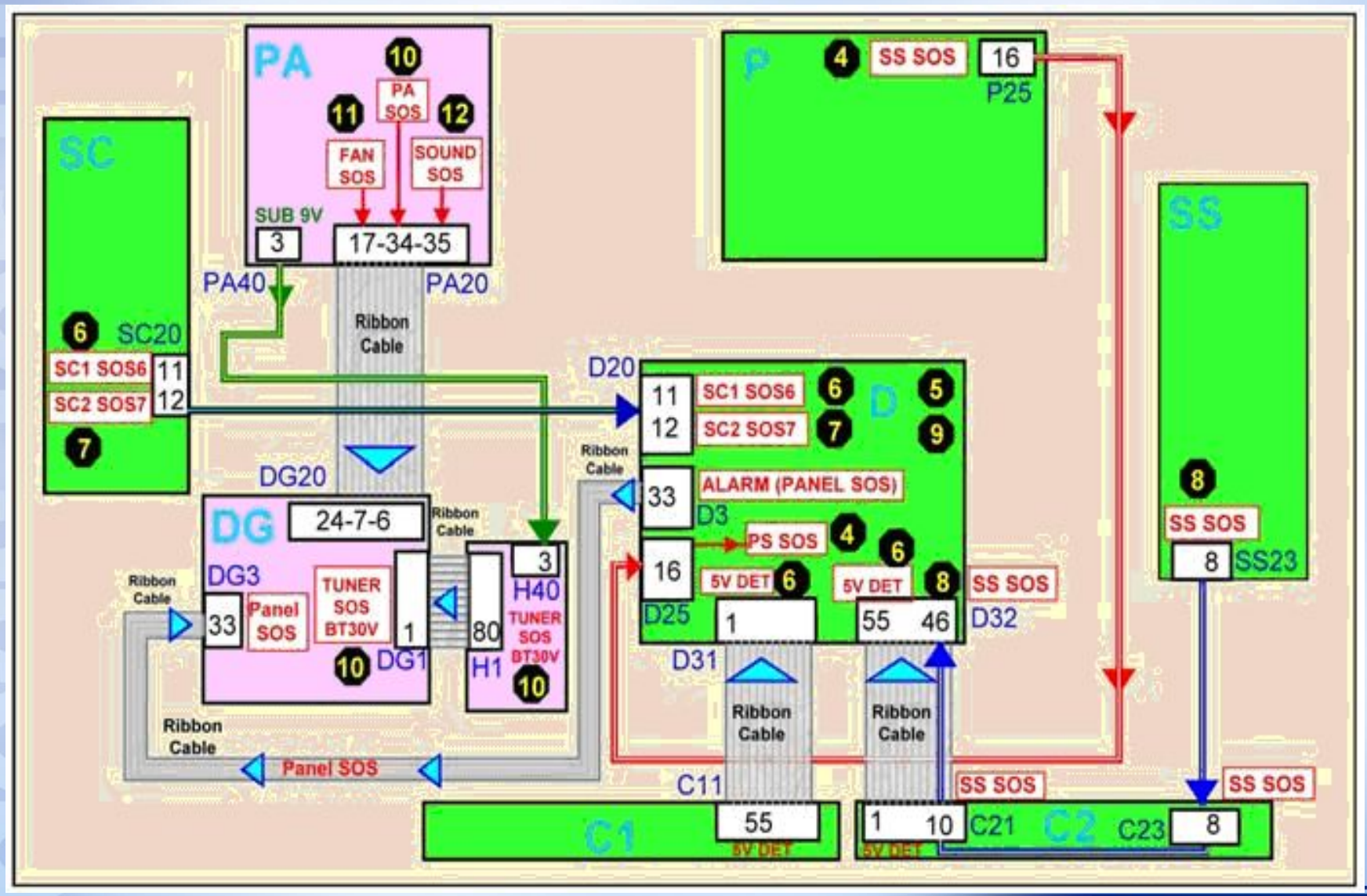
D Board SOS Detect



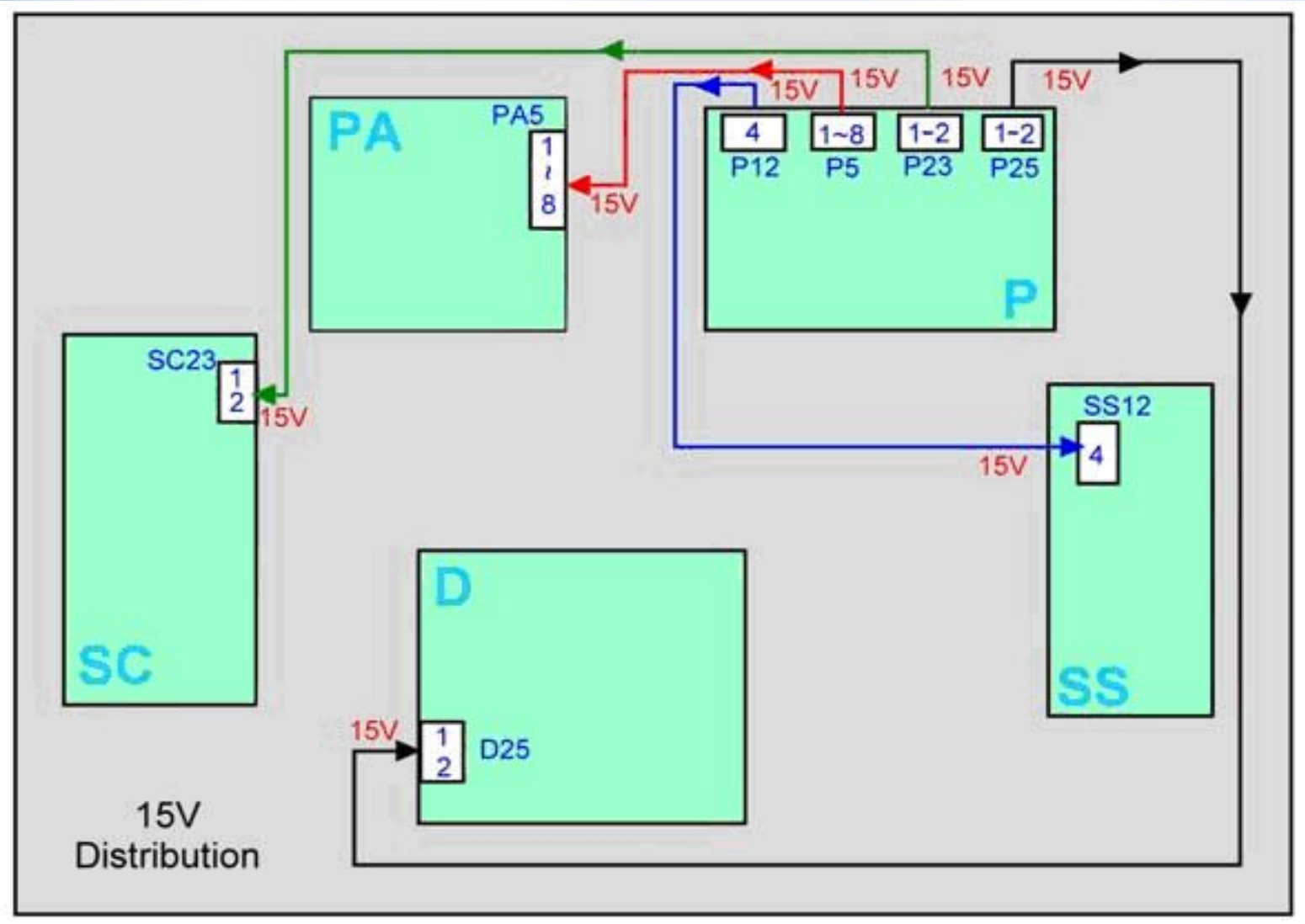
DG Board SOS Detect



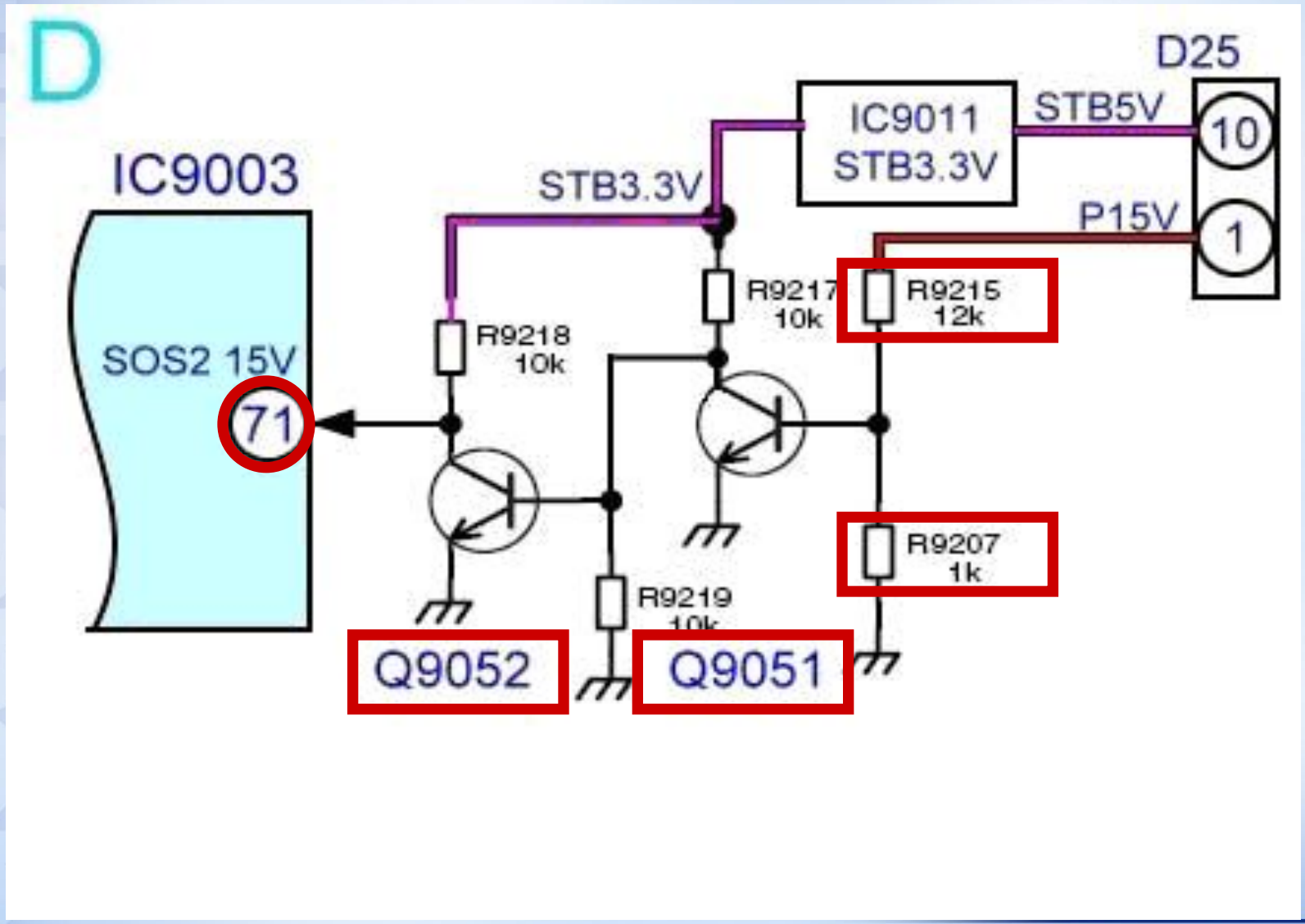
DG Board SOS Detect



15V Distribution



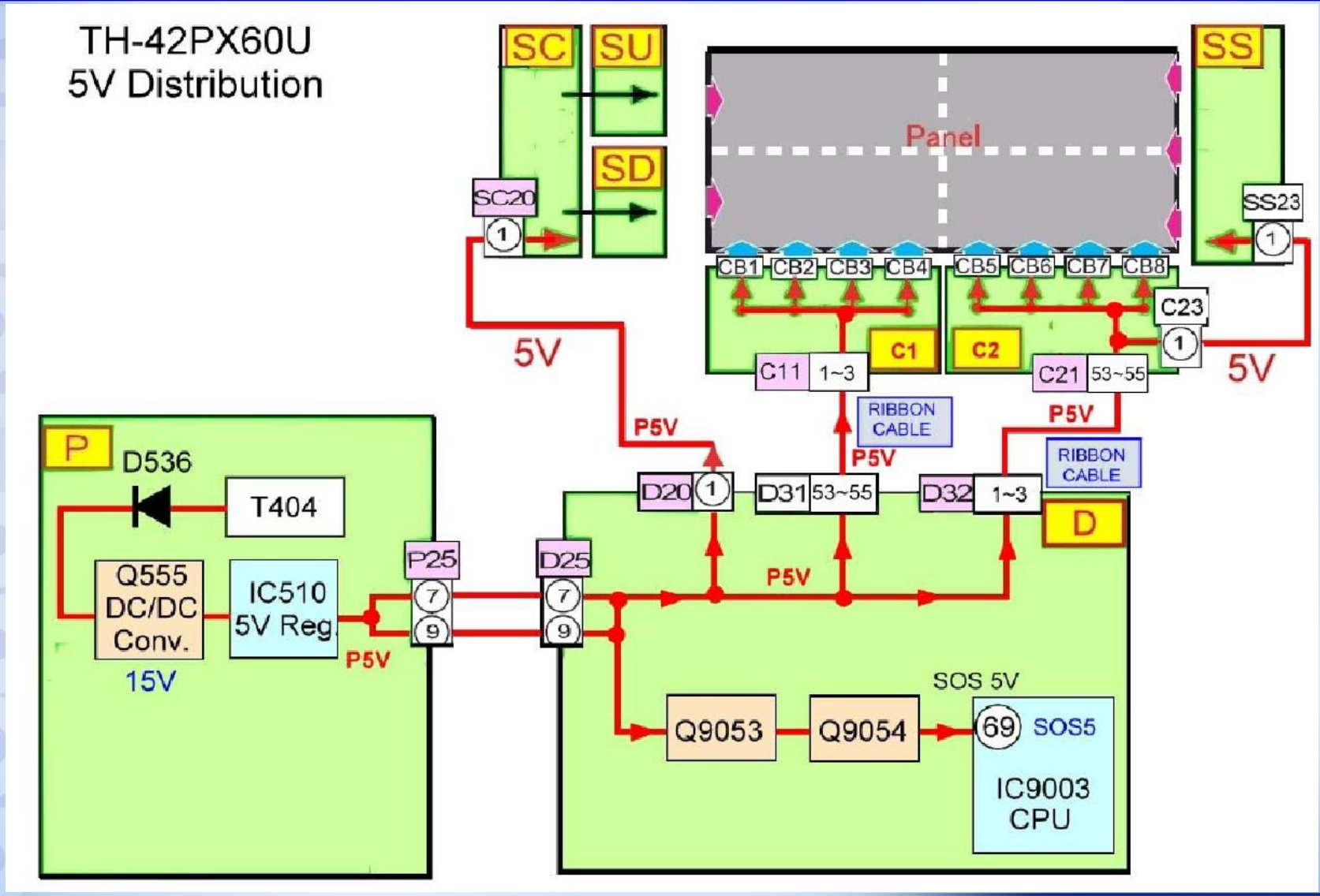
15V SOS


D
D25
IC9011
STB5V
STB3.3V
10
P15V
1
IC9003
STB3.3V
R9217
10k
R9215
12k
R9218
10k
SOS2 15V
71
R9207
1k
R9219
Q9052
Q9051

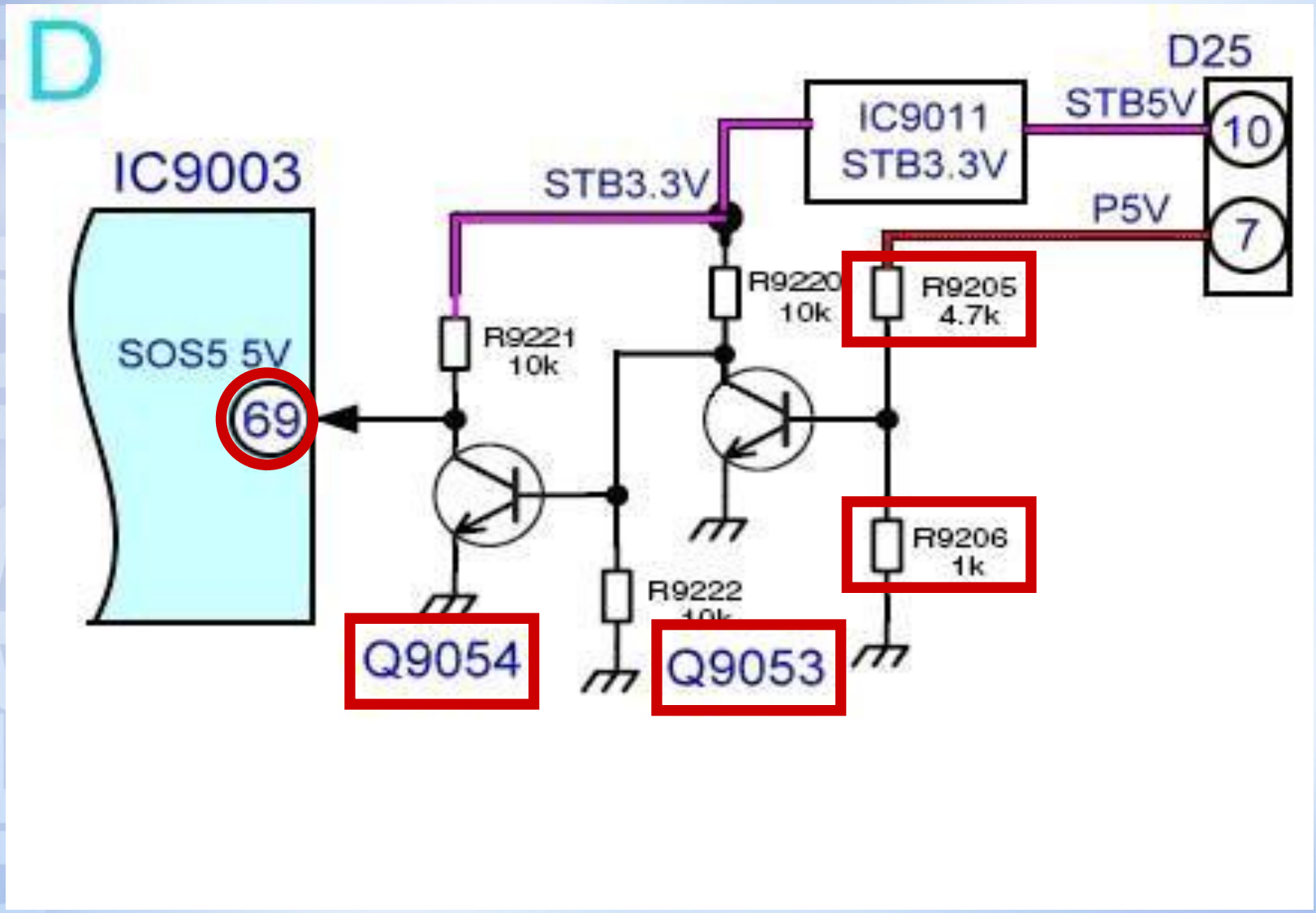
LED BLINKING 5 TIMES

- This blinking code is caused by an abnormalities in the 5V voltage supply line.
- Other possible cause is a problem in ***Vda supply voltage line.***

5V Distribution Line



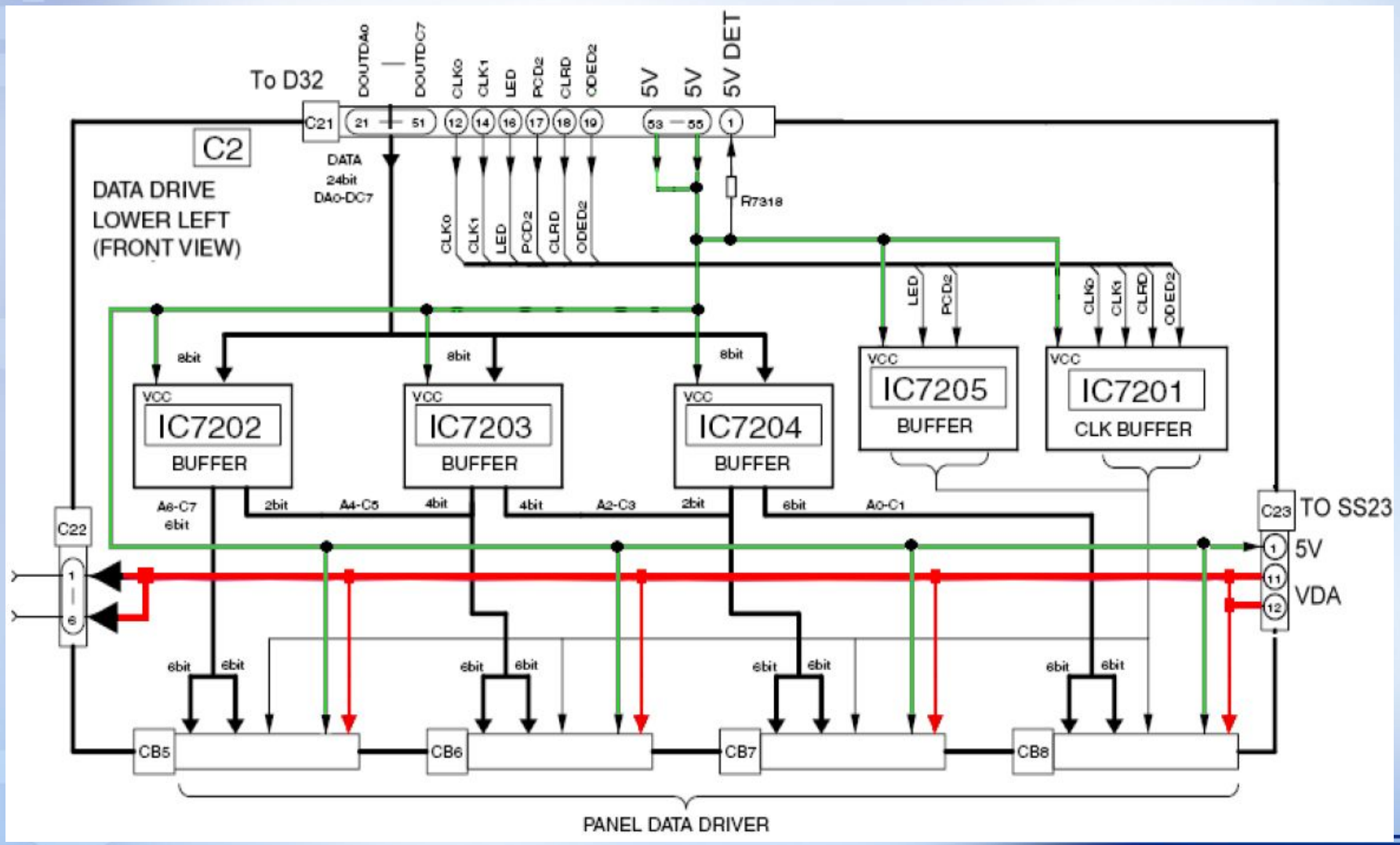
5V SOS


D
D25
IC9011
STB5V
STB3.3V
10
IC9003
STB3.3V
P5V
7
R9220
10k
R9205
4.7k
R9221
10k
SOS5 5V
69
R9206
1k
R9222
Q9054
Q9053

Other Cause of 5V SOS

- The Power LED can also blink 5 times if the Vda voltage is shorted. This is normally caused by the Panel demultiplexer ICs.

5V & Vda Distribution on the C Board



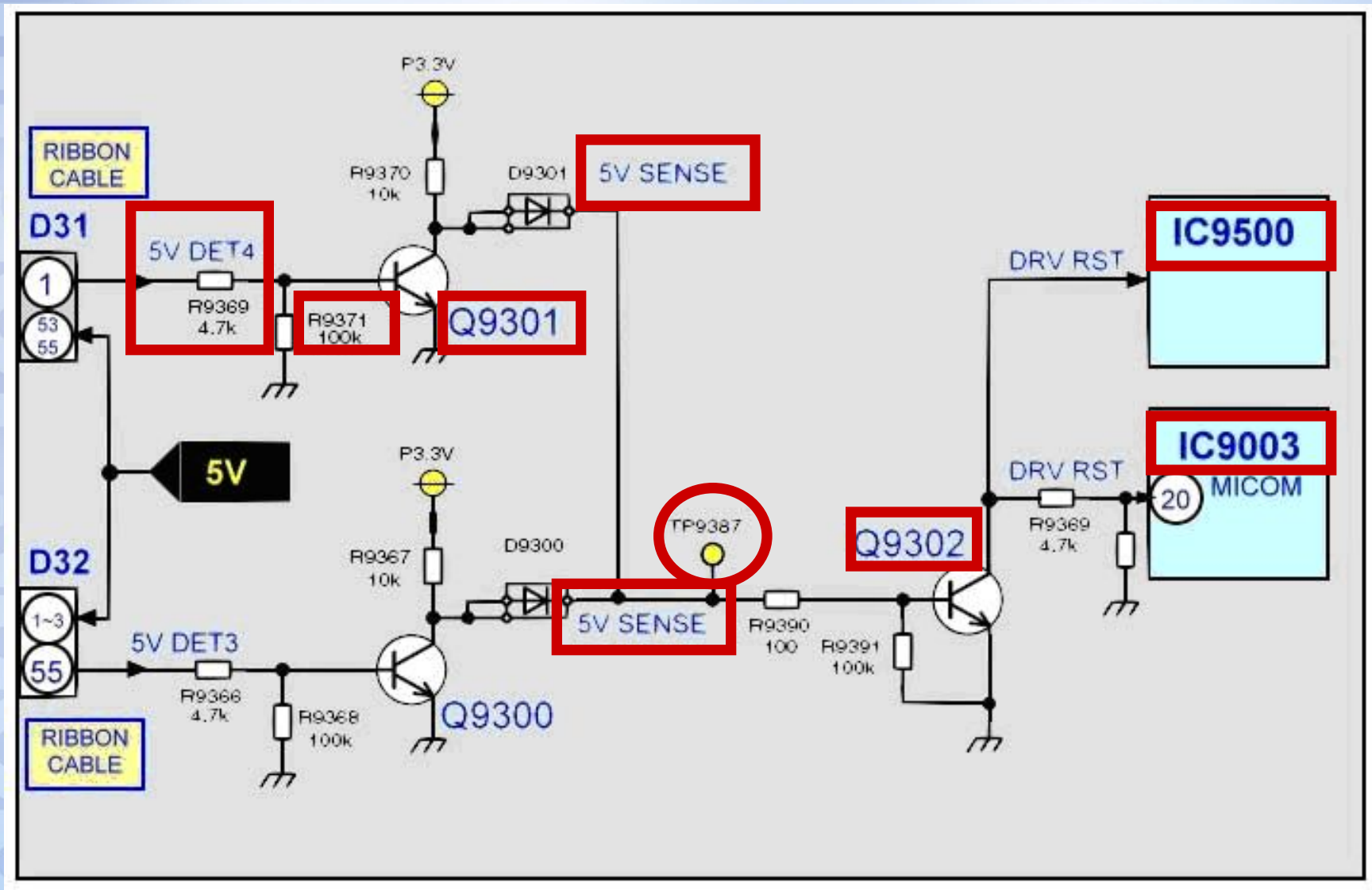
Procedure to properly isolate C Board

- When the ribbon cables from the D board to the C boards are disconnected in order to isolate the C boards, the LED will blink 6 times.
- To properly isolate the C boards to avoid 6 blinks, TP9387 (on the D board) should be grounded by a 1Kohm resistor.

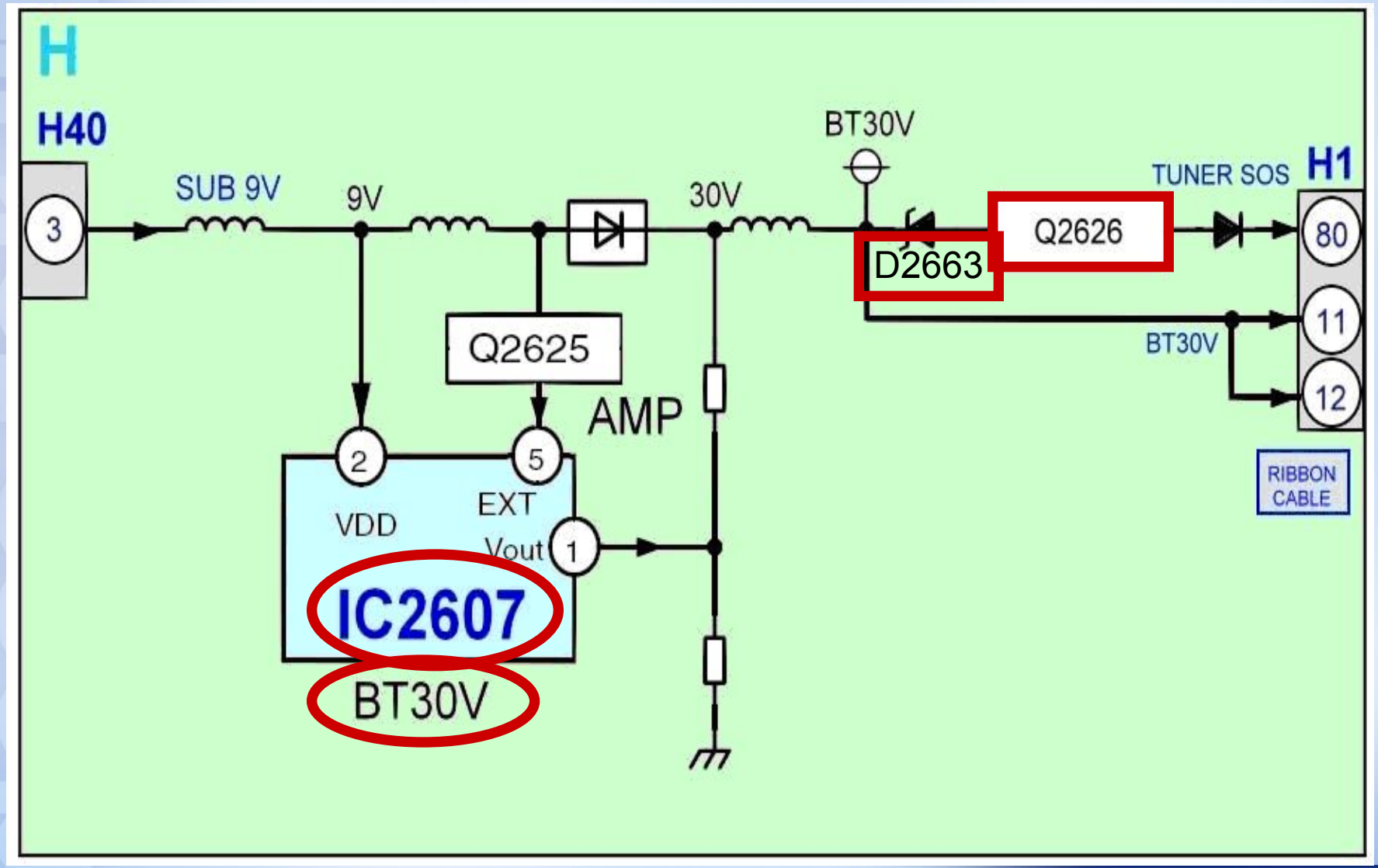
Note: The next slide will show reasons why SOS 6 blinks is generated when the ribbon cables are removed.

- The Vda connector should also be disconnected.

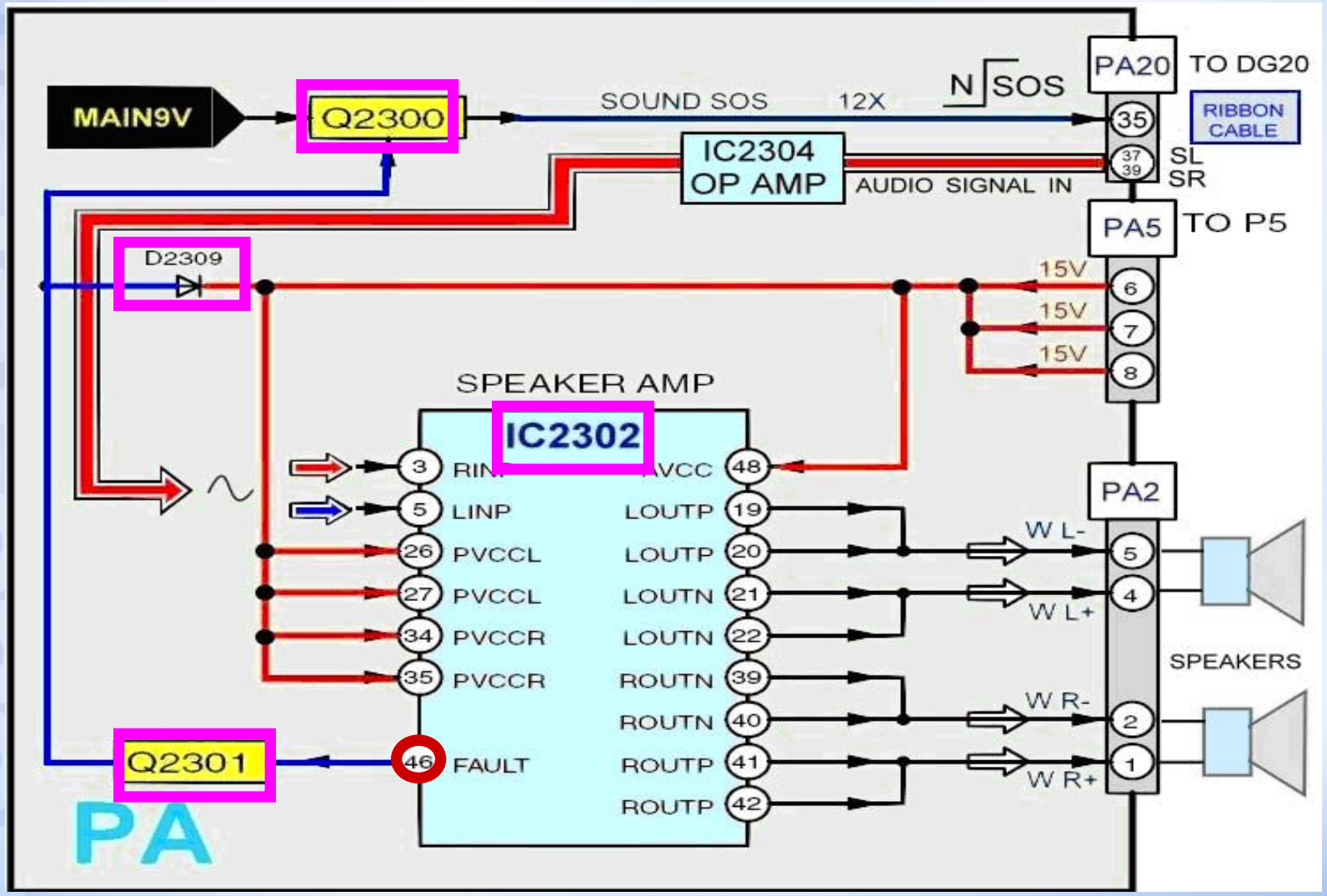
Drive Reset Circuit



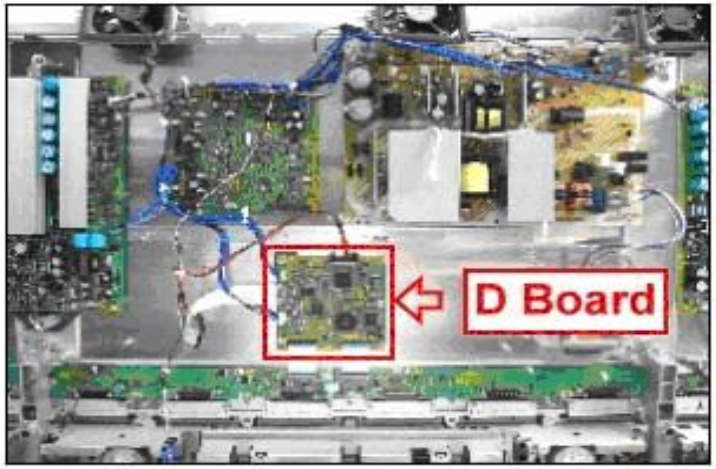
BT30V (Tuner SOS) Detect Circuit

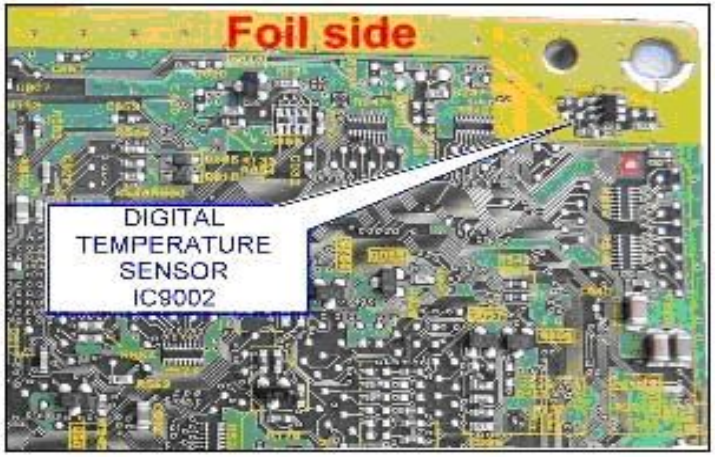


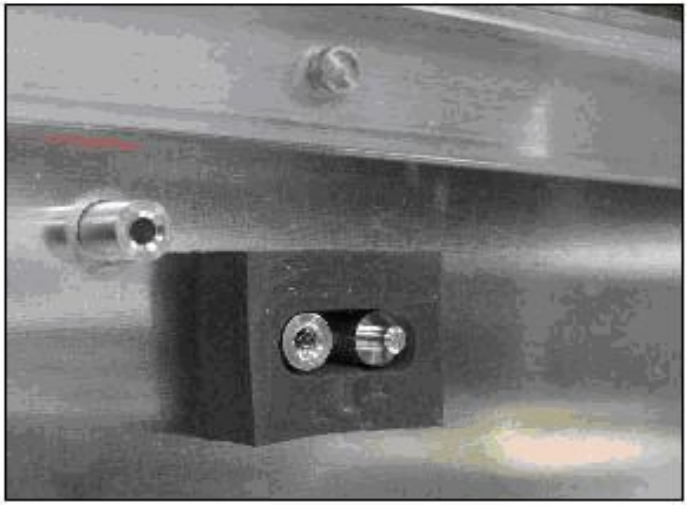
Sound SOS Detect Circuit



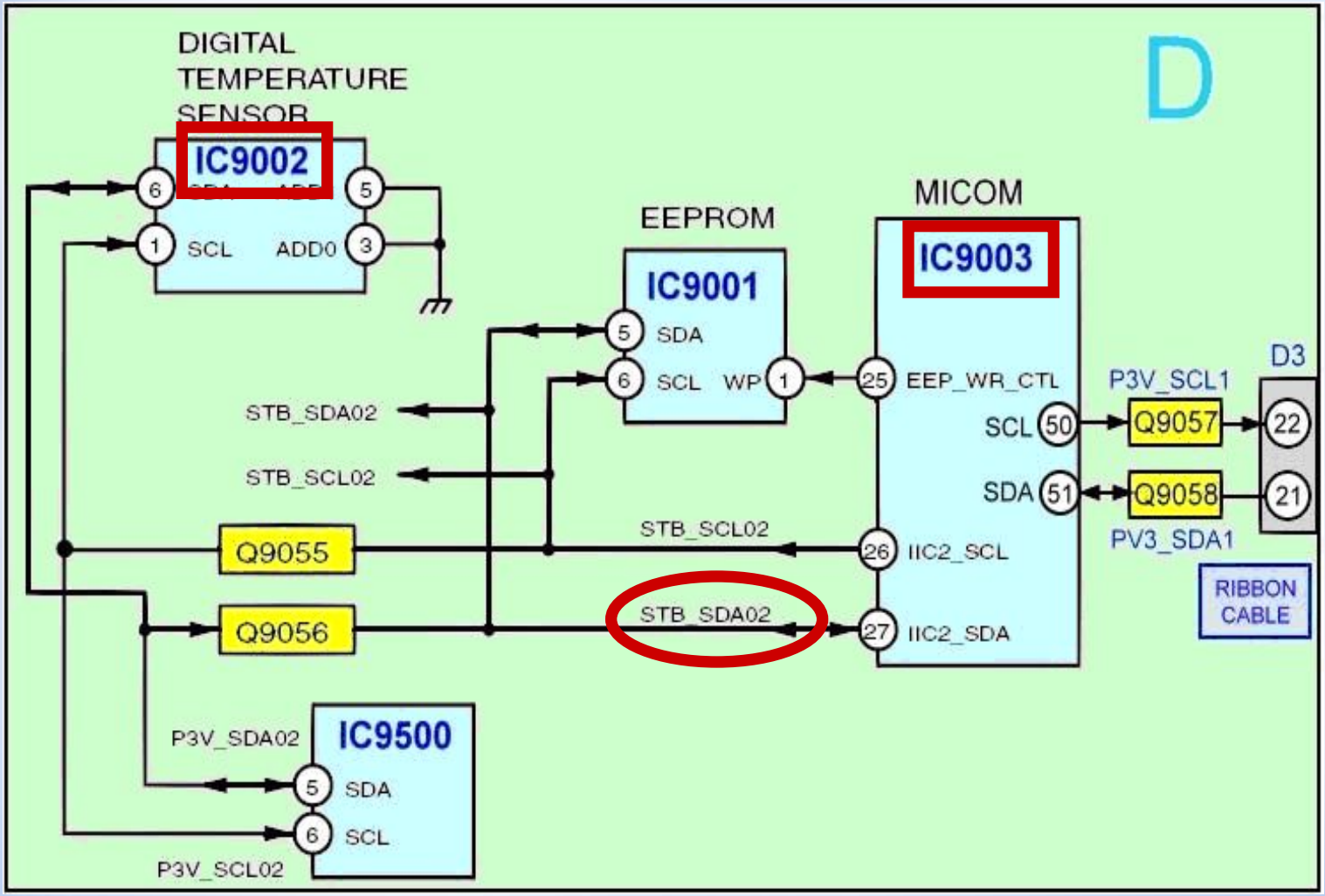
Digital Temperature Sensor



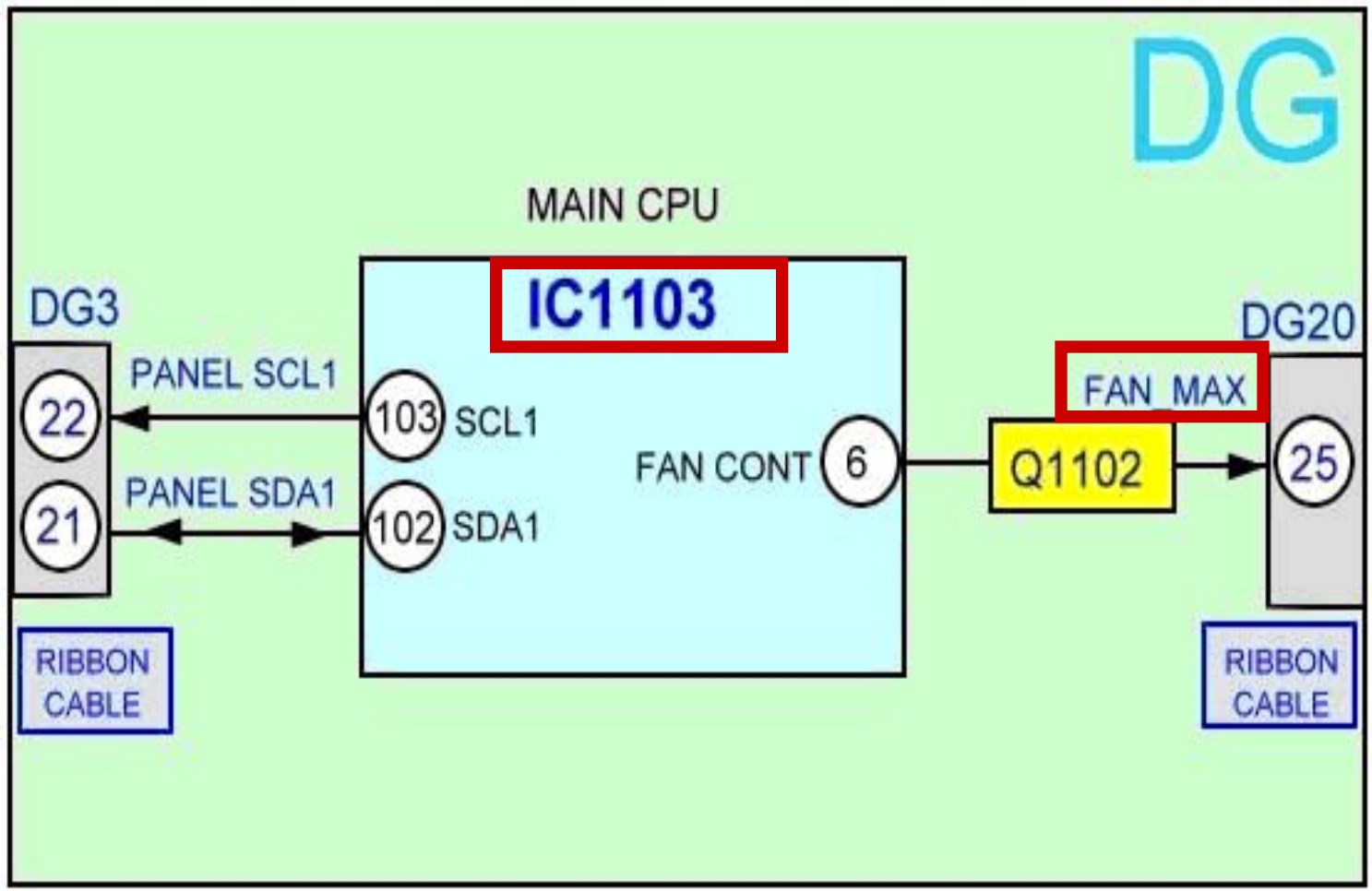




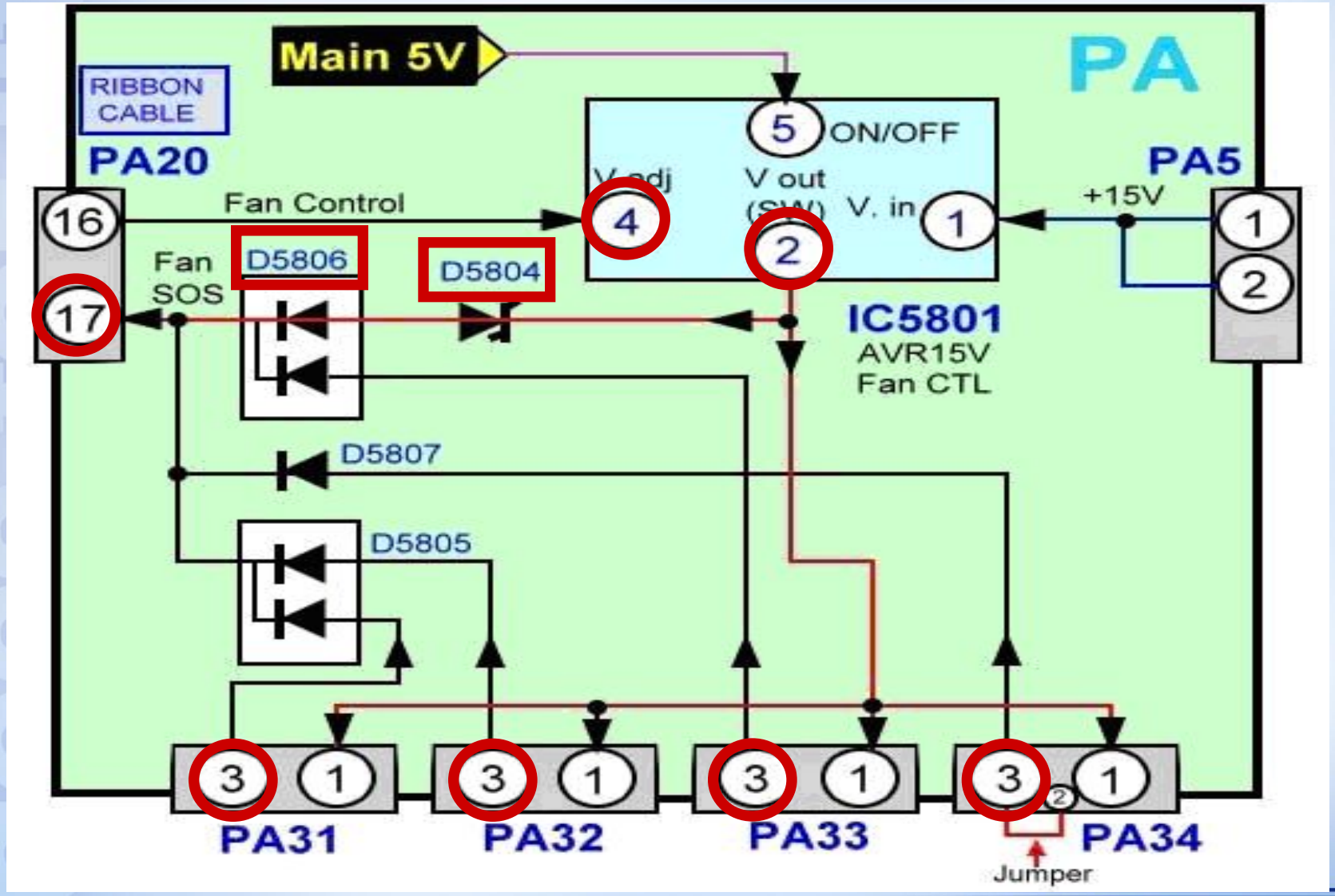
Digital Temperature Sensor



Digital Temperature Sensor (continued)



Fan SOS


Main 5V
PA
RIBBON CABLE
PA20
5
ON/OFF
PA5
V. adj
V out
(S/W)
V. in
+15V
16
Fan Control
4
2
1
1
2
Fan SOS
D5806
D5804
17
IC5801
AVR15V
Fan CTL
D5807
D5805
3
1
3
1
3
1
3
1
PA31
PA32
PA33
PA34
Jumper

Fan SOS

- To determine if the fan is the cause of the 11 blinks, simply use a peak hold meter to determine if pin 3 of the fan connector goes high before shutdown.
- If it does, the fan is defective.
- If not, check the other fans and the fan drive circuitry.

No Video and No OSD

Determining whether a no video or no OSD symptom is caused by the video process or the panel drive circuit

Isolation of SC & SS Board

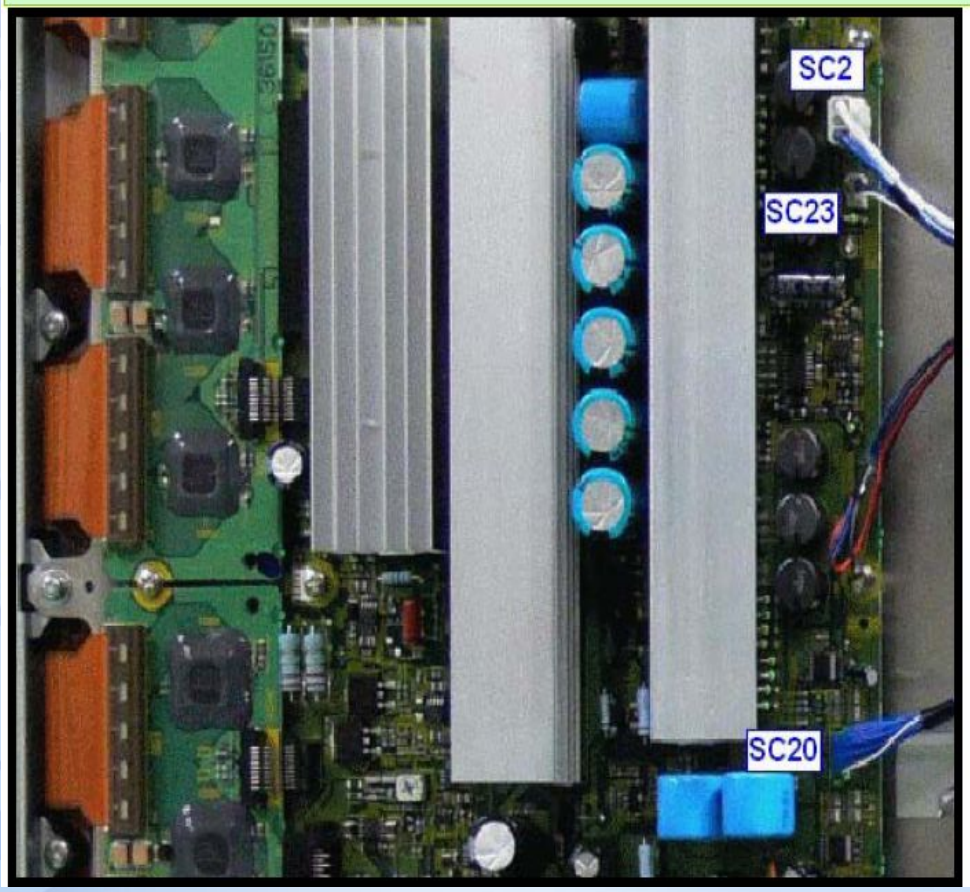
- If any of the connectors providing the 15V or Vsus voltage to the SC or SS board is disconnected, while the connectors providing the scan and sustain drive pulses are present coming from the D board, the Plasma TV will shutdown.

Isolation of the SC & SS Board

Isolation of SC Board

Connector Location

The SC board could be isolated from the sources (Supplied Voltage & Scan Control Pulses)



Supplied Voltage = ***VSUS*** (Connector SC2) ***15V*** (Connector SC23)

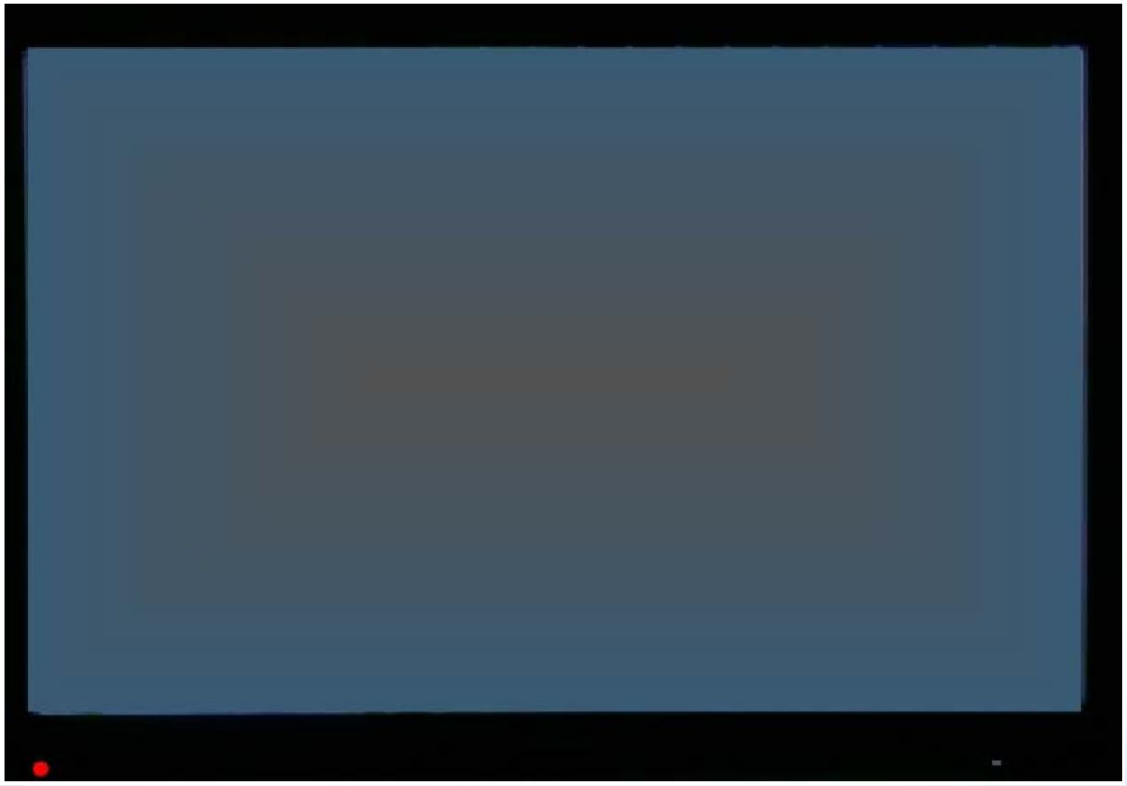
From Power Supply (P board)

Scan Control

Pulses = Connector SC20 from the SC board

SC2, SC23 & SC20 Disconnected

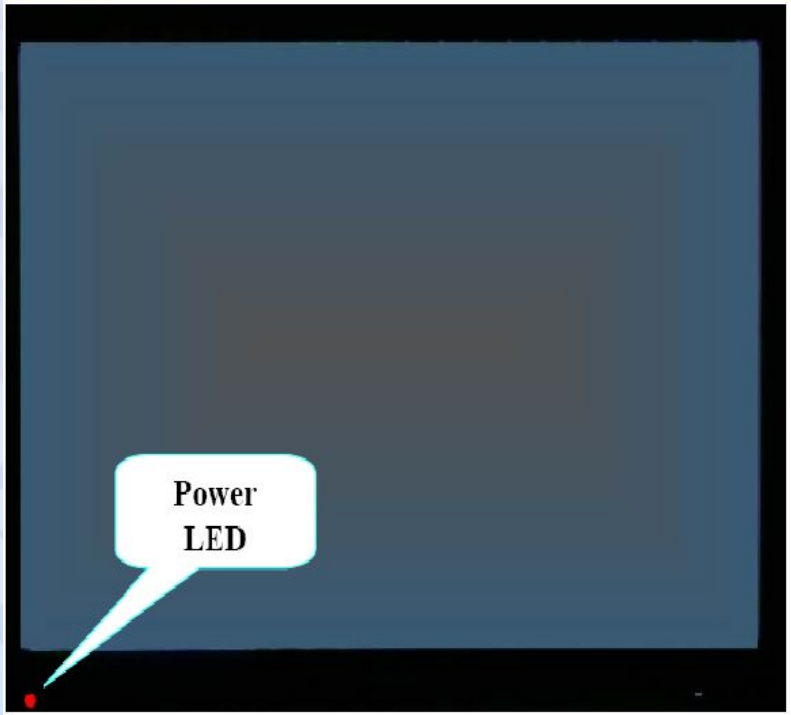
In this condition, when the SC2 SC20 & SC23 are disconnected the SC board is completely isolated from sources (P and D board).



The power LED stays on and the panel is primed as seen on this picture.

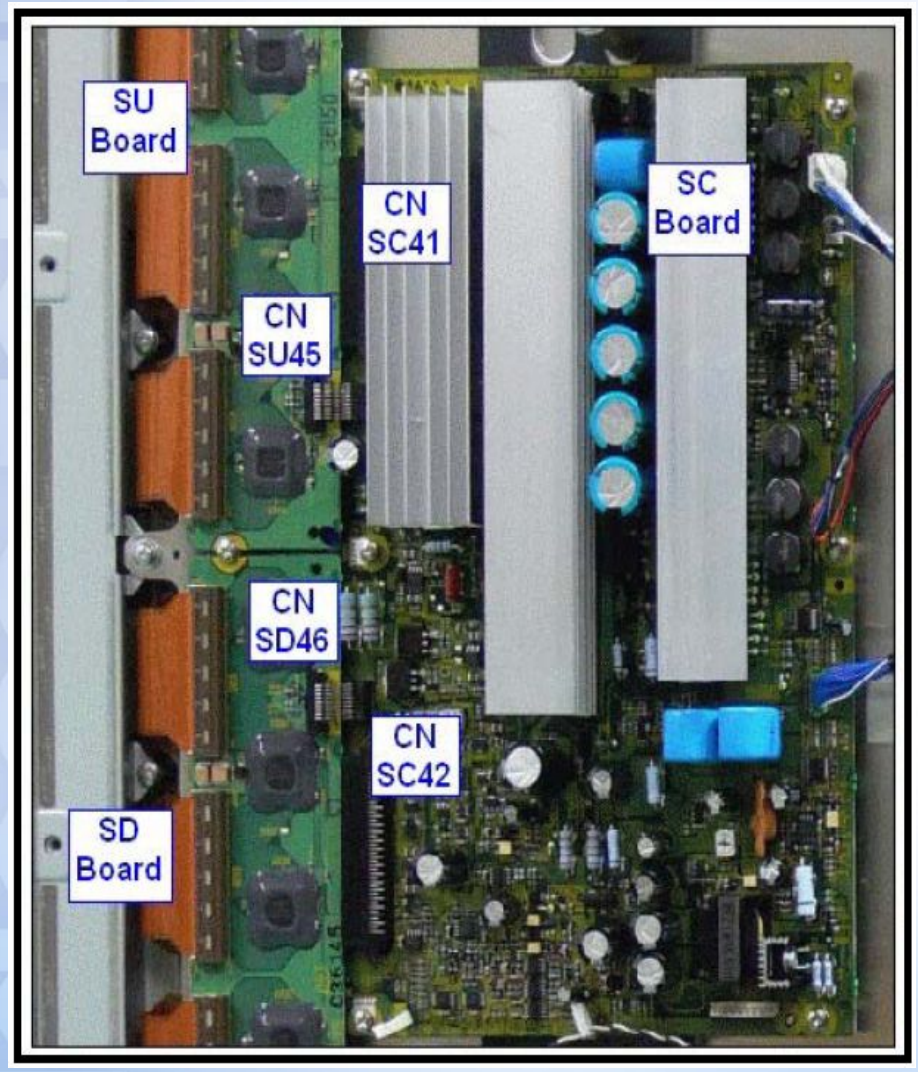
Expectations when isolating SC Board

The Supplied voltage VSUS and 15V (SC2 & SC23) cannot be disconnected while the Scan Control pulses (SC20) are being supplied to the SC board. This will cause a shutdown condition.



Isolation of SC Board

The SC board could be isolated from the Driver Boards (SU &SD)



Sometimes the TV will go into Shutdown indicating that the problem is located on the SC Board. This does not necessarily mean that the SC board is the cause of the Problem.

When this occurs, Disconnect both the SU and the SD boards from the SC board.

Note: To disconnect, remove 2 screws holding each of these boards in place and disconnect SC41, SU45, SD46 and SC42.

Isolation of SC Board

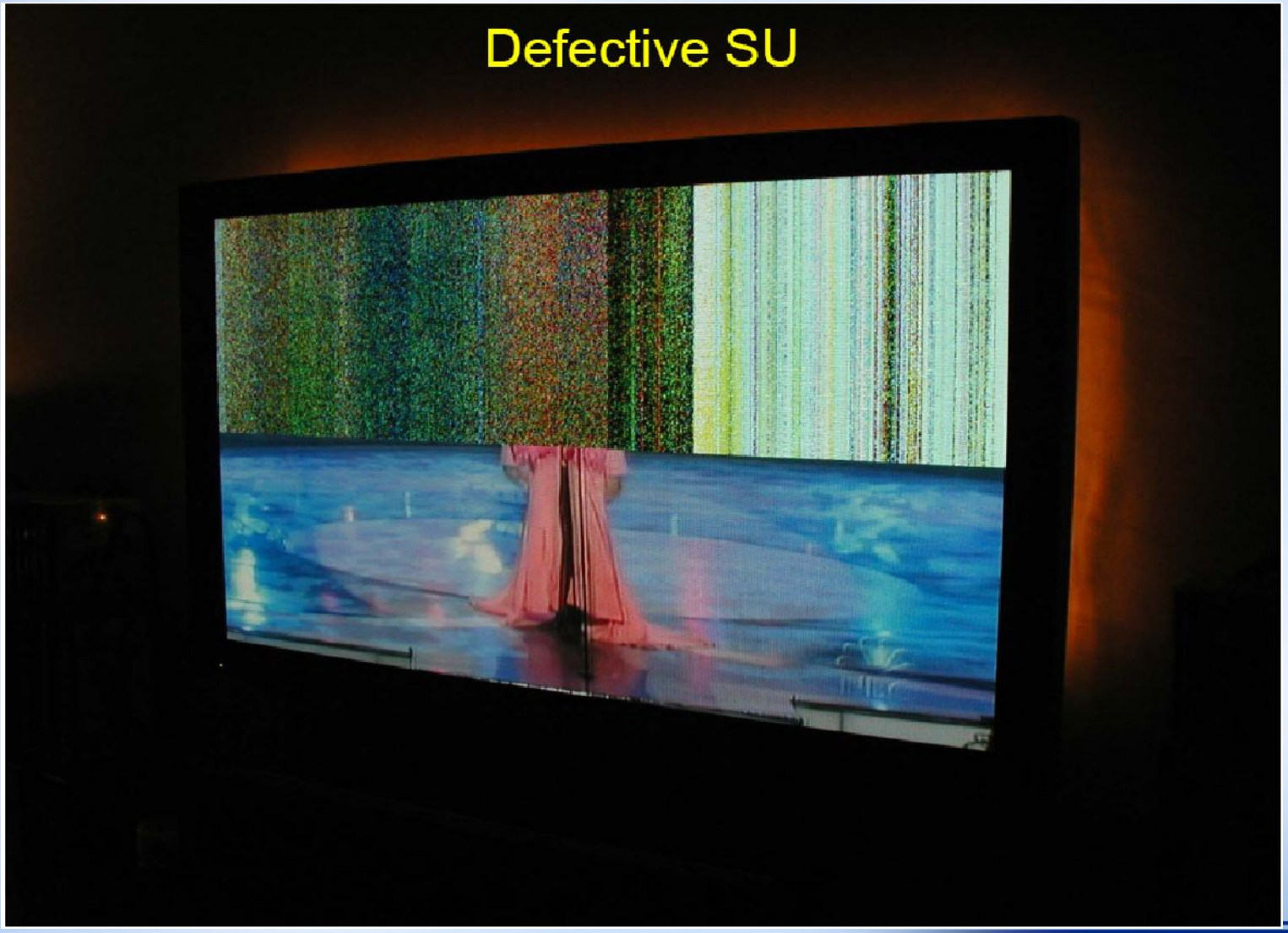
The SC board could be isolated from the Driver Boards (SU &SD)

Sometimes the TV may not go into “Shutdown” when there is a scan problem. This symptom seems to be caused by a defective D or SC board. When in reality, it is caused by the SU board.

When this occurs, disconnect the SU board from the SC board.
Note: To disconnect, remove 2 screws holding the boards in place and disconnect SC41, SU45.

Disconnecting the SU board yields a good picture at the bottom half of the screen and a completely black area in the upper half of the screen.

Isolation of SU Board

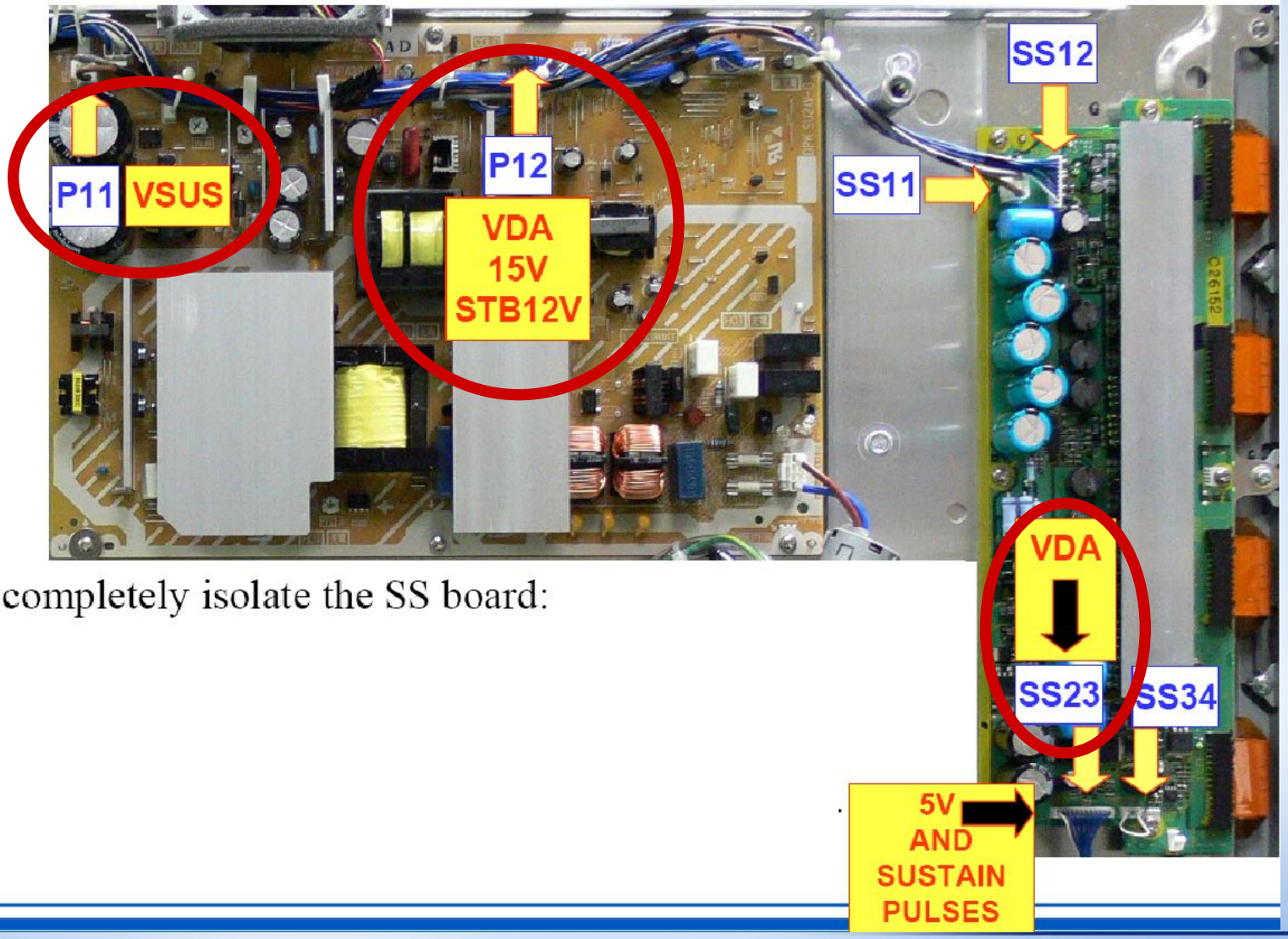


Isolation of SD Board

Horizontal line across (lower side).

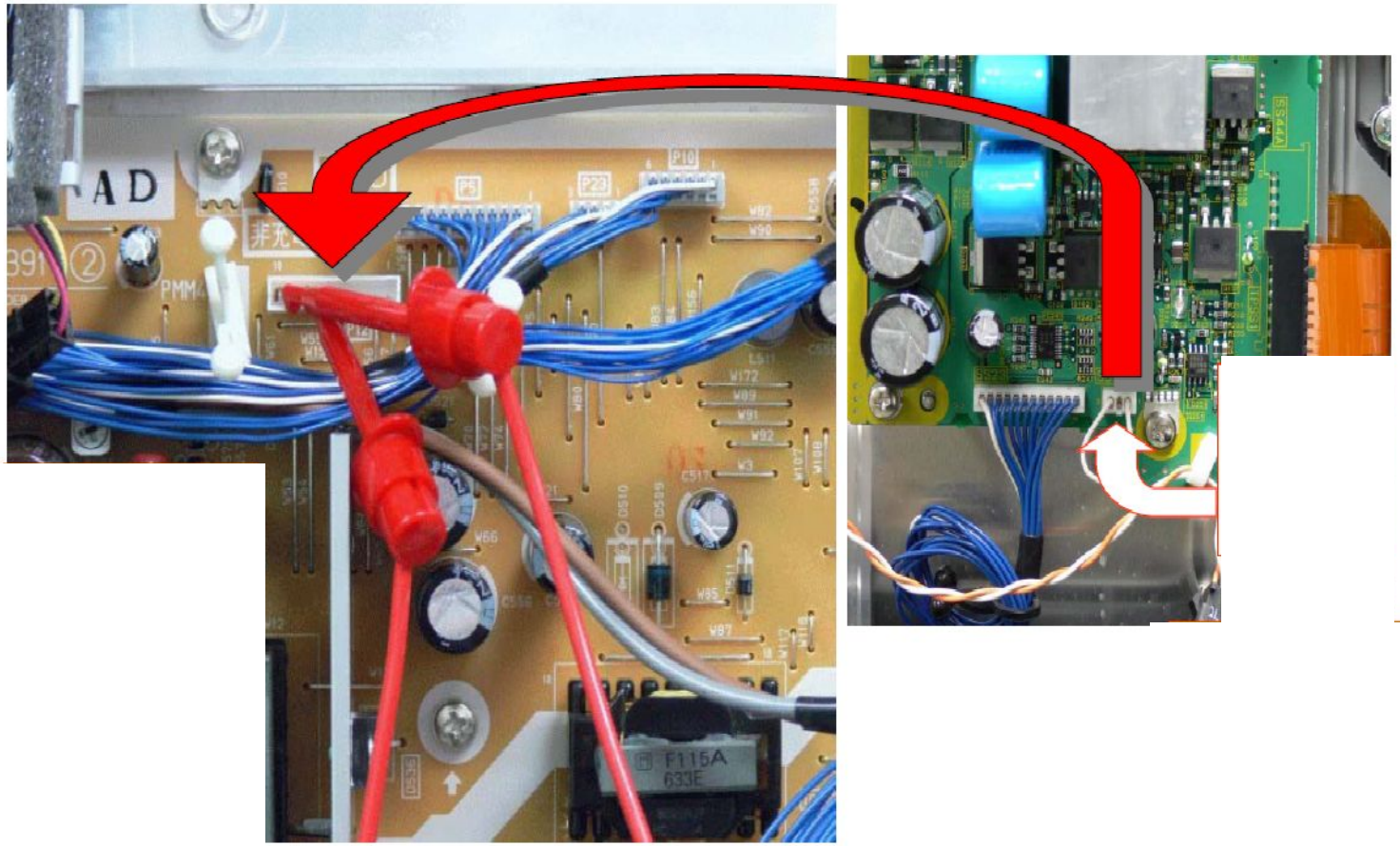
SD board defect.

Isolation of SS Board



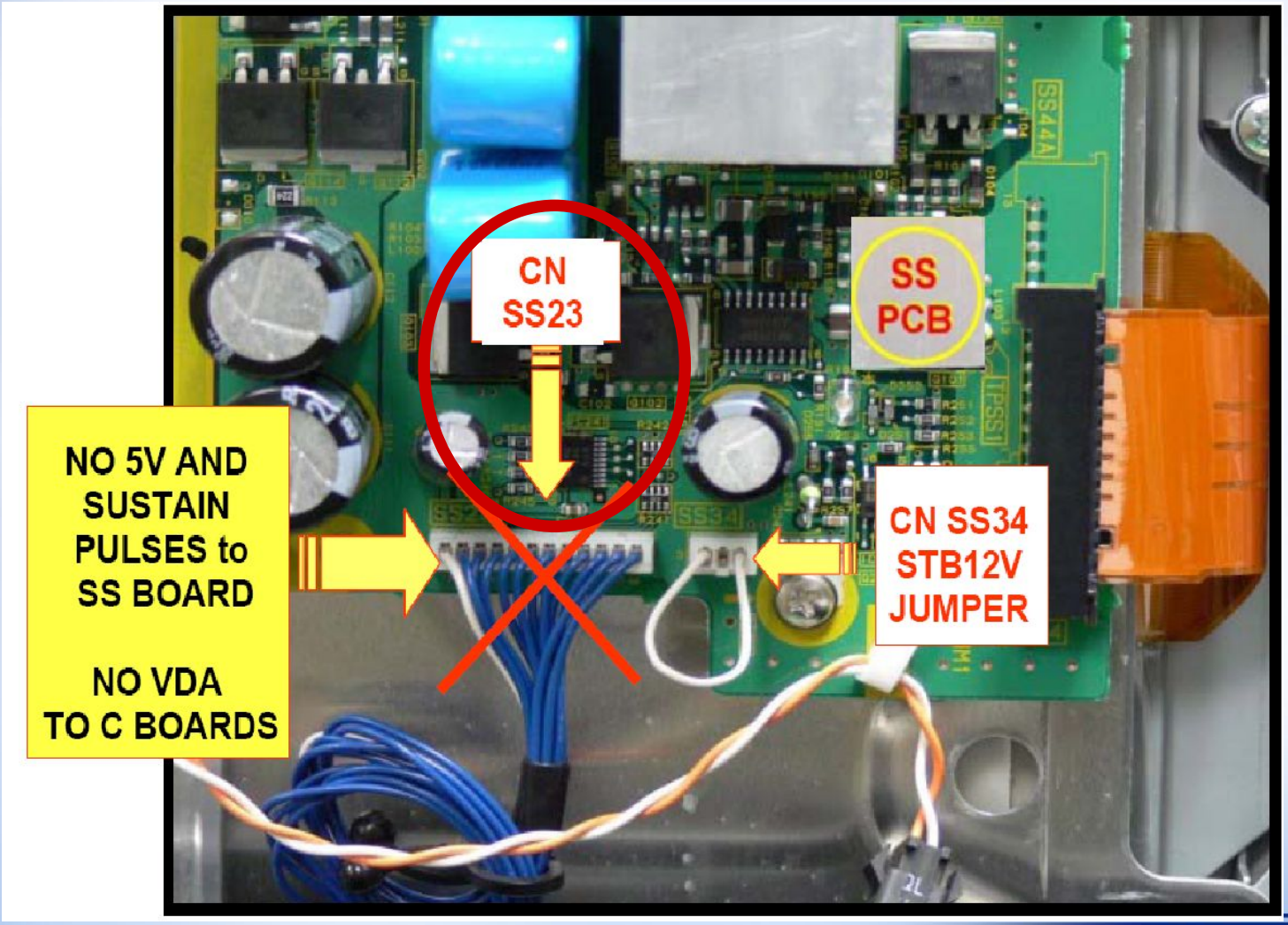
To completely isolate the SS board:

Isolation of SS Board



If P12 or SS12 is disconnected, pin 8 should be connected to pin 10.

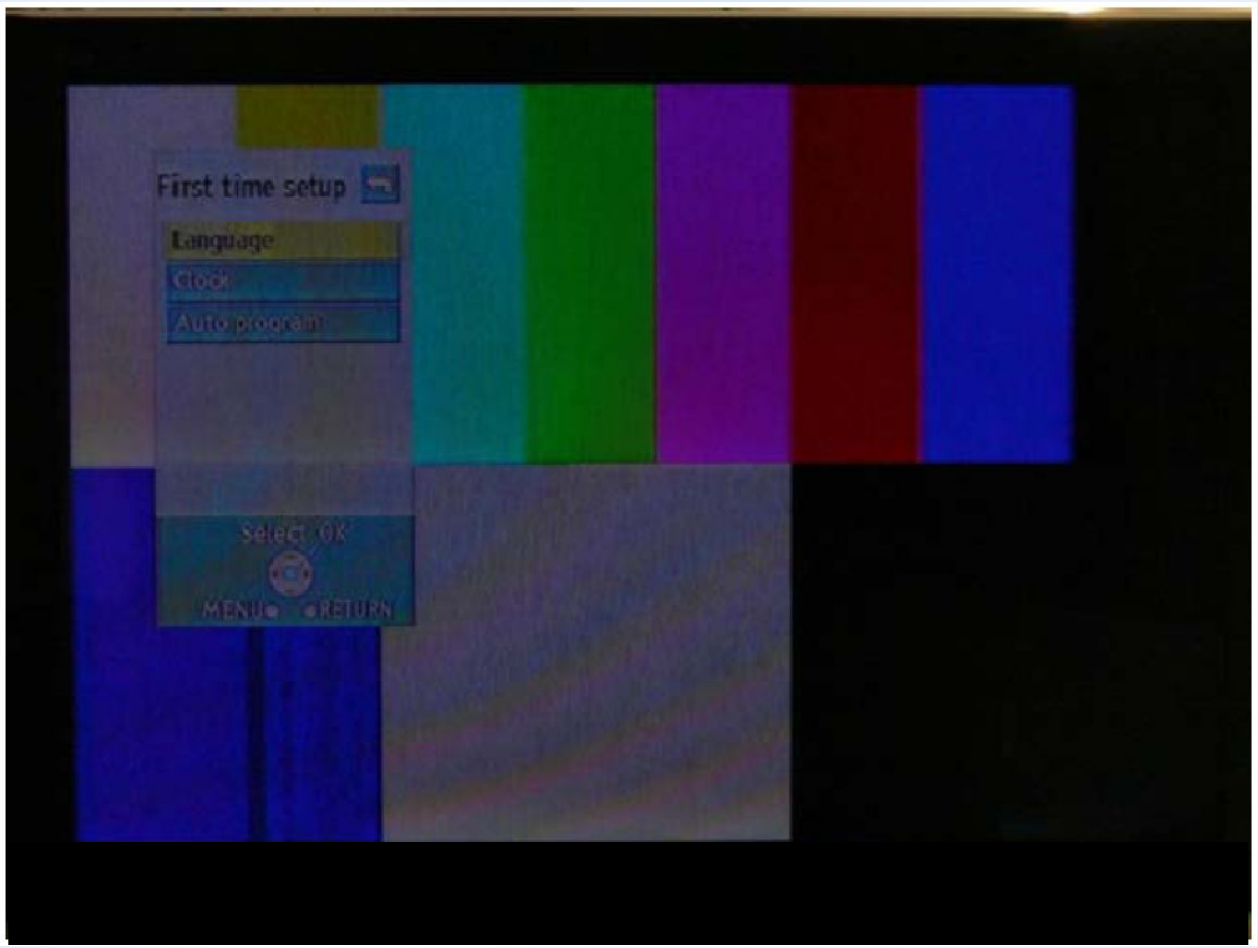
Isolation of SS Board



Isolation of SS Board

SS23 Disconnected on the SS board
(No Drive pulses from the D board)
No VDA voltage to the C boards
(Reason why the screen is black)

Isolation of SS Board



Missing Drive Pulses from the D board
SS11 and SS23 Disconnected, but VDA voltage provided to pin 12 of SS23 cable

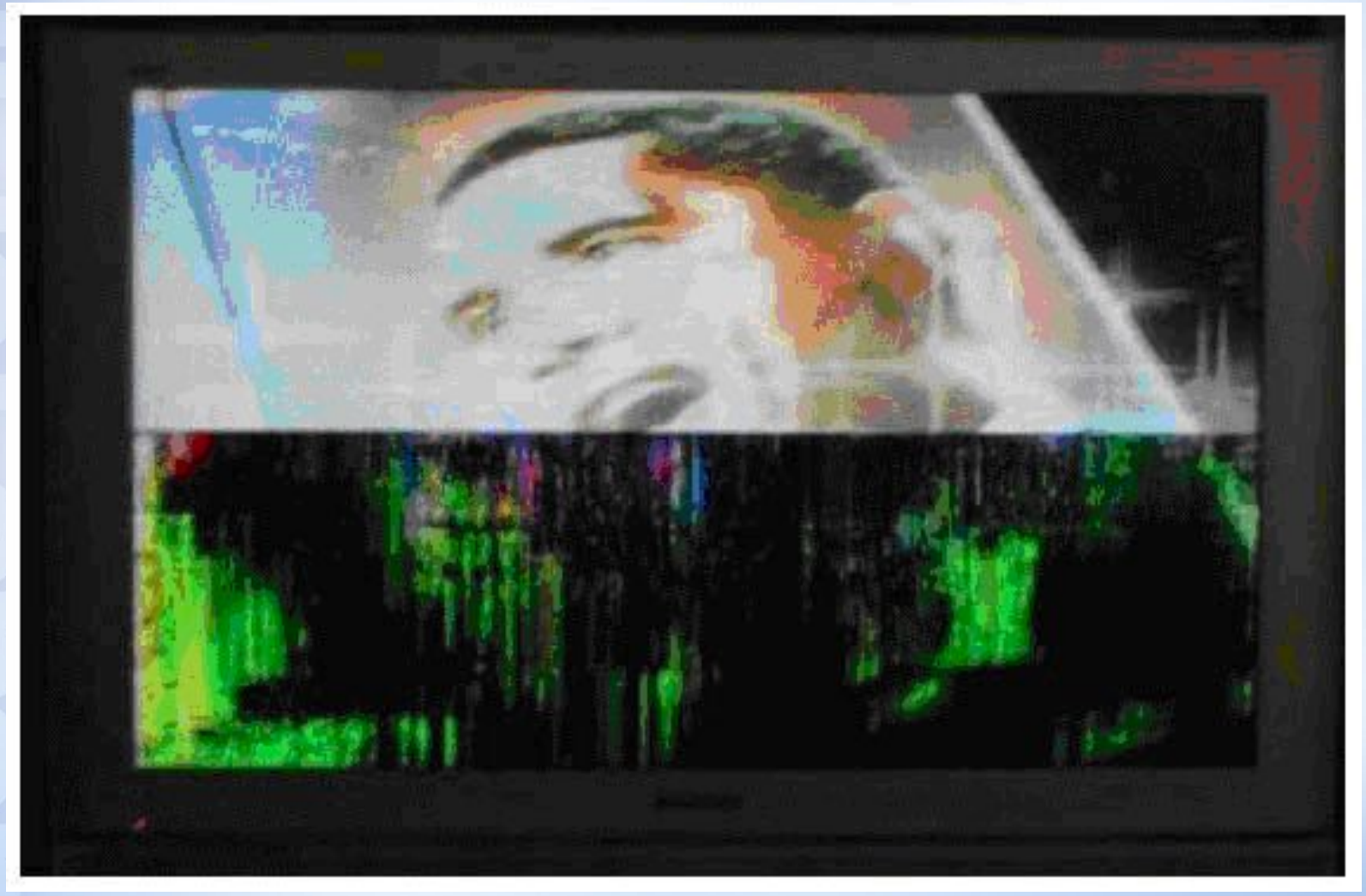
Defective D Board

Defective D Board

White balance defect.

Fault on D board

Defective SC Board



Defective SC Board

Thank You

For Completing Course Three

<u>Course Four</u>

Troubleshooting Hints / Common Symptoms