2011 – Premium 3D Plasma TV Technical Guide and Troubleshooting Flowchart

2011- Plasma FHD TV – (14th Generation)

Applies to models:

TC-PXXGT30 TC-PXXVT30



Panasonic National Training Panasonic Service and Technology Company



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TTG110901CP

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2011 Series Line Up And Available Sizes





2011 Premium 3D PDP Line up And Feature Comparison

		VT30 Series	GT30 Series
	Size	65/55	65/60/55/50
	Full HD 3D	Y	Y
	3D Active Shutter Eyewear	1 included	Not Included
	Louver Filter	Y	Y
	600 Hz Sub-field Drive	Y	Y
Picture	Moving Picture Resolution	1,080 lines	1,080 lines
	24p Cinematic Playback	Y	_
	THX Mode	Y (3D/2D)	Y (3D/2D)
	ISFccc	Y	—
	Pro Setting	Y	Y
	Sub Pixel Control	Y	Y
Speakers		Dual Speaker, Woofer	Full-range x 2 (L, R)
Sound	CONEQ	Y	—
	HDMI Input	4 (4 side)	4 (4 side)
	Support Feature	Audio Return Channel (Input 1)/3D Input (All)	Audio Return Channel (Input 1) / 3D Input (All)
N	USB	3	3
Networking	PC Input	Y *	Y *
	RS232C	Dsub 9pin x 1(lower) *	—
	VIERA Connect (IPTV)	Y	Y
	Wireless LAN Adaptor	Y	Y
	DLNA	Y	Y
Othors	Swivel Angle	—	Only 50
Others	One-Sheet-of-Glass Design	Y	_



New Technical Features

2 new technical features have been added to the 2011 models to assist the service technicians speed up the repair process.

- □ The ability of the power LED to match the number of blinks of the first and last SOS blinking codes detected by the TV as listed on the "SELF Check" menu.
- □ The delaying of the power LED blinking reaction by 10 seconds when the SC/SN board is isolated.

The power LED can be forced to duplicate the number of blinks of the first and last SOS conditions detected by the TV. This can be done while the power LED is blinking after a shutdown condition has occurred.

Procedure:

To duplicate the number of blinks of the last SOS detected.

While the power LED is blinking, press the "VOL+" on the remote control once to make the power LED blink the same number of times as the last blinking code detected by the TV.

To duplicated the number of blinks of the first SOS detected.

Press the "VOL-" once to make the power LED match the number of blinks of the first SOS blinking code detected.





This can help in determining if the symptom shown by the TV when it first failed (Most likely during operation), has changed to another blinking code when checked by the service technician.

Charging the 3D Glasses

- 1. Turn off the TV.
- 2. Set the 3D Eyewear power switch to "OFF".
- 3. Connect the 3D glasses to the TV as shown in the diagram below.
- 4. Turn on the TV.
- 5. The indicator LED on the glasses lights red, and charging starts.
- 6. When the LED turns off, charging is complete. (Approximately 2 hours required)
- 7. Turn off the TV and remove the charging cable.



Note: Turn on the TV when charging the 3D glasses. The battery will not be charged when the television power is off.

Connection (Mini Adapters)

TC-P55VT30

Boards Layout



Connections (Mini Adapters Part Number)



Note: Mini adapter manufactured for other companies may not be comparable with Panasonic TVs

Service port (M3 mini Jack) Specifications

The Service port (M3 mini Jack) on the following TVs can use as the RS232C terminal which is a standard computer SERIAL interface.

Note: This operation system should be used by the certified professional dealer.

PC Control of the TV

The TV can be controlled by a personal computer when connected through an RS232C/ M3 mini jack conversion cable (not supplied).

The computer will require software which allows sending and receiving of control data through its SERIAL port.



2011 PDP Extension Cable list (GT30 series)

Model : TC-P50 / 55 / 60 / 65 GT30

		Cable	Necessary quantity for one model (pcs)					
Parts No.	Connected Couplers	ected Length		GT30	60/65GT30		notes	
	Coupleto	(mm)	A-board	P-board	A -board	P -board		
TZSC09287	A6 – P6	1200	1	1	1	1	New (Common use to 60S30)	
TSXM287 (or TSXL869)	A20-SC20	960 (925)	1		1		Replacement parts for P55ST30 (Replacement parts (35p FFC))	
TSXM288 (or TZSC09227)	A31-C21 A32-C31	773 (900)	2		2		Replacement parts for P55ST30 (Common use to 10 PDP)	
TZSC09107	P2 –SC2	1200		1		1	Common use to 08/09/10 PDP	
TZSC09177	P11 – SS11	1200		1		1	Common use to 09/10 PDP	
TZSC09285	P35 –C35	1000		1		1	New (common use to 60S30)	
TZSC09289	A11 – SPEAKER	1000	2		2		New	
TZSC09282	K1 – A1/S2	1000	1		1		New (Common use to ST30)	
TZSC09288	A8 – FAN	1000	2		65 (2)		New	
TZSC09283	A14 – V14	1000	1		1		New (common use to ST30)	
TZSC09290	A40 – SS33	1300	1		1		New	
TZSC09107	P51 – P52	1200		1		1	Common use to 08/09/10 PDP	
TZSC09177	P55 – P56	1200		1		1	Common use to 09/10 PDP	
TZSC09284	P57 – P58	1000		1			New	
TZSC09060	P57 – P58	1000				1	Common use to 07 PDP	
TZSC09177	P59 – P60	1200				1	Common use to 09/10 PDP	
TZSC07061	P61 – P62	1000				1	New (common use to 60S30)	

2011 PDP Extension Cable for A board (GT30 series)



2011 PDP Extension Cable for P board (GT30 series)



2011 PDP Extension Cable list (VT30 series / FHD)

		Cable	Necess	ary quantity				
Parts No.	Connected	Length	55V	Т30	65VT30		notes	
	oouplers	(mm)	A-board	P -board	A-board	P- board		
TZSC09287	A6 – P6	1200	1	1	1	1	New (Common use to GT30)	
TSXM287 (or TSXL869)	A20-SC20	960 (925)	1		1		Replacement parts for P55ST30 (Replacement parts (35p FFC))	
TSXM288 (or TZSC09227)	A31-C21 A32-C31	773 (900)	2		2		Replacement parts for P55ST30 (Common use to 10 PDP)	
TZSC09107	P2 –SC2	1200		1		1	Common use to 08/09/10 PDP	
TZSC09177	P11 – SS11	1200		1		1	Common use to 09/10 PDP	
TZSC09204	P34 – S10	1000		1		1	Common use to 09/10 PDP	
TZSC09285	P35 –C35	1000		1		1	New (Common use to GT30)	
TZSC09289	A11 – SPEAKER	1000	2		2		New (Common use to GT30)	
TZSC09282	K1 – A1/S2	1000	1		1		New (Common use to ST30)	
TZSC09288	A8 – FAN	1000	2		2		New (Common use to GT30)	
TZSC09283	A14 – V14	1000	1		1		New (Common use to GT30)	
TZSC09290	A40 – SS33	1300	1		1		New (Common use to GT30)	
TZSC09107	P51 – P52	1200		1		1	Common use to 08/09/10 PDP	
TZSC09177	P55 – P56	1200		1		1	Common use to 09/10 PDP	
TZSC09284	P57 – P58	1000		1			New (Common use to GT30)	
TZSC09060	P57 – P58	1000				1	Common use to 07 PDP	
TZSC09177	P59 – P60	1200				1	Common use to 09/10 PDP	
TZSC07061	P61 – P62	1000				1	New (common use to 60S30)	
TZSC09060	P63 – P64	1000				1	Common use to 07 PDP	
TZSC09124	A12 – WOOFER	1000	1		1		Common use to 10 PDP	

SOS Detect Circuit

SOS Detect Circuit Schematic (TC-P50G30)



SOS Detect Circuit Schematic (TC-P55VT30)



Voltage Distribution

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Signal Processing

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GT30 Models Video Signal Flow



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VT30 Models Video Signal Flow



Signal Processing Circuit (GT Series)



Signal Processing Circuit (VT Series)



TC-P55VT30

Boards Layout



PCB Part List

\nearrow	VT30 series		VT30 series / GT30 series / GT31				
Board	TC-P65VT30	TC-P55VT30	TC-P65GT30	TC-P60GT30	TC-P55GT30 TC-P55GT31	TC-P50GT30	
	N0AE6KM00003 (MAIN)	N0AE6KL00005 (MAIN)	N0AE6KM00003 (MAIN)	N0AE6KM00003 (MAIN)	N0AE6KL00005 (MAIN)	TXNP11QJUE (P)	
Р	N0AE6KM00004 (SUS)		N0AE6KM00004 (SUS)	N0AE6KM00004 (SUS)		TXNP21QJUE (P2)	
	N0AE6KM00005 (SUB)	N0AE6KL00009 (SUB)	N0AE6KM00005 (SUB)	N0AE6KM00005 (SUB)	N0AE6KL00009 (SUB)		
А	TXN/A1NRUUS	TXN/A1NSUUS	TXN/A1NTUUS	TXN/A1NUUUS	TXN/A1NVUUS	TXN/A1NWUUS	
к	TXN/K1PEUU	TXN/K1PEUU	TXN/K1PEUU	TXN/K1PEUU	TXN/K1PEUU	TXN/K1PEUU	
s	TXN/S1PEUU	TXN/S1PEUU	TXN/S1PEUU	TXN/S1PEUU	TXN/S1PEUU	TXN/S1PEUU	
V	TXN/V1PEUU	TXN/V1PEUU	TXN/V1PEUU	TXN/V1PEUU	TXN/V1PEUU	TXN/V1PEUU	
C1	TXNC11NYUU	TXNC11PAUU	TXNC11NYUU	TXNC11PGUU	TXNC11PAUU	TXNC11PHUU	
C2	TXNC21NYUU	TXNC21NVUU	TXNC21NYUU	TXNC21NUUU	TXNC21NVUU	TXNC21NWUU	
C3	TXNC31NTUU	TXNC31NVUU	TXNC31NTUU	TXNC31NUUU	TXNC31NVUU	TXNC31NWUU	
SC	TXNSC1NTUU	TXNSC1NVUU	TXNSC1NTUU	TXNSC1NUUU	TXNSC1NVUU TXNSC1NVUUB	TXNSC1NWUU	
SS	TXNSS1NTUU	TXNSS1NVUU	TXNSS1NTUU	TXNSS1NUUU	TXNSS1NVUU	TXNSS1NWUU	
SS2	TXNSS21NYUU	TXNSS21NVUU	TXNSS21NYUU	TXNSS21PGUU	TXNSS21NVUU	TXNSS21NWUU	
SU	TXNSU1NYUU	TXNSU1PAUU	TXNSU1NYUU	TXNSU1PGUU	TXNSU1PAUU	TXNSU1NWUU	
SD	TXNSD1NYUU	TXNSD1PAUU	TXNSD1NYUU	TXNSD1PGUU	TXNSD1PAUU	TXNSD1NWUU	
SN							

SOS Detect Circuit (Shutdown)

When an abnormality occurs in the unit, the "SOS Detect" circuit is triggered and the TV shuts down. The power LED on the front panel will flash a pattern indicating the circuit that has failed.

Cautions

If the power LED continues to blink even after the TV is unplugged, press and hold the power switch on the TV for a few seconds until the LED turns off.

Some steps require removal of connectors and sometimes PC boards removal. Do not allow the TV to run for more than 30 seconds while connectors or boards are disconnected.

NOTE: When taking voltage reading, place your meter's probe on the test point or pin indicated before connecting the TV to the AC line. The voltage you intent to measure may only appear for a brief moment.

Warning: The Vsus line has large capacitors that hold the charge for some time even after the TV has been turned off and unplugged. When disconnecting P2/SC2 or P11/SS1, bleed the remaining charge of the Vsus before reconnecting the cable.

Use a 500 ohms/ 5W (At least) resistor to discharge the Vsus line before reconnecting P2/SC2 or P11/SS11.

Power LED Error Code Definition (1 of 2)

POWER LED		CONDITIONS TRIGGERING	LIST OF BOA	BIBLY CASUSING TH	ASUSING THE FAILURE		
ERROR CODE	CIRCUIT MONITORED	THE SHUTDOWN	MOST COMMON	2 ND	OCCASIONALLY	RARELY	
NO BLINLK SOLID RED	LSI Error	Shorted Vsus Shorted Vda Shorted P15V	SC - SS	Ρ	Α	Panel	
1 BLINLK	Panel Information SOS PD5 Start-up SOS	Communication problem between the System CPU (IC8001) and the Panel CPU (IC9003)	А	n	¤	¤	
4 BLINKS	Power Supply output voltages	Regulation issues with any of the voltages output from the power supply. Wrong diagnostic by the A board	Ρ	А	¤	¤	
6 BLINKS	SC Energy Recovery Circuit	An increase or reduction of the Energy Recovery Circuit output (MID). Open connection of the P15V line between the P and A board. Open connection between any of the ribbon cables on the C boards and the A board. Open connection between the ribbon cable/cables interconnecting the C boards. Wrong diagnostic by the A board.	SC	A	¤	С	
7 BLINKS	Scan Drive Circuit and Connection between the SC board and the SM(SU/SD) board.	Missing Vsus. Abnormality of the scan circuit output, the 15V_F, the scn_pro, and Vscn circuit. Loose or open Connection between the SC board and the SM(SU/SD) board (SC41, SC42, SC46). Open or loose connection between connectors SC2/P2 Wrong diagnostic by the A board Defective Panel	SC	SU- SD/SS	Panel	A	
8 BLINKS	Sustain Drive Circuit and Connection between the SS board and the Panel.	Abnormality of the Sustain drive circuit. Open or loose connection between the SS board and FPCs from the panel (SS61, SS64, SS21, SS24, and SS58). Open or loose connection between connectors C10/C20 Open or loose connection between A20 and SC20. Wrong diagnostic by the A board	SS	Panel	A	C2	

Note: When connector SC20/A20 is disconnected on the 2011 models, the TV shuts down with 8 blinks. When this is done on the 2009 and 2010 models, the TV shuts down with 6 blinks.

Power LED Error Code Definition (2 of 2)

POWER LED	CIRCUIT MONITORED CONDITIONS TRIGGERING		LIST OF BOARDS POSSIBLY CASUSING THE FAILURE				
CODE		THE SHUTDOWN	MOST COMMON	2 ND	OCASSIONALLY	RAREALLY	
9 BLINKS	DCC Discharge Control Circuit	Failure of PD4 IC9300 (Discharge control)	А				
10 BLINKS	SUB5V – SUB3.3 – F15V Tuner Power Down	 <u>Abnormalities of the F+15V and derivate Sub-voltages.</u> Reasons: The P board is not generating the F+15V SUB Voltages are affected by the K board or by metal object present in the SD card slot <u>Wrong diagnostic by the A board.</u> 	Ρ	A			
12 BLINKS	AUDIO AMP	Abnormalities of the Audio AMP Pinched speaker wire. Wrong diagnostic by the A board.	А	¤	¤	¤	
13 BLINKS	Communication error between Stby section and Main processor within the Peaks SLD/LDA IC	Abnormal operation of the Peaks SLD/LDA IC Wrong diagnostic by the A board.	A				
14 BLINKS	This code is triggered if there are abnormalities during data exchange with the standby CPU ROM.	No F15V connected to the A board at plug-in (Open connection of both pins 10 & 11 between P6 and A6) Shorted F15V developed after the TV is up and running. Holding the power switch for over 5 seconds after the unit has gone into shut down and it's in lock mode with the power LED solid red (Note: the LED stays on if the power button is momentarily pressed).	A- P				

TC-P55VT30

Boards Layout



SOS Blinking Codes/Troubleshooting Flowchart

Troubleshooting Solid Red LED Shutdown Failure
Behavior Comparison Between 2009/2010 and 2011 Models When Shorted Vsus, Vda, or P15V

NOTE: Unlike the 2011 lower-end models, the result of a shorted Vsus, Vda, or P15 is not a Solid-Red-LED for GT and VT modes. <u>This condition will only occur when the F15V is missing while the TV is on.</u>

Behavior Comparison Between 2009/2010 and 2011 Models When Shorted Vsus, Vda, or P15V								
Ye	ear	2009/2010	2011					
Series		All Models	X – S – ST	GT - VT				
Shorted	Vsus		Locked Solid Red	7 Plinks				
	Vda	4 -7 -10 Blinks	LED					
	P15		Locked Solid Red LED (14 Blinks, If TV is Turned On After the 2 nd Relay Click)	Dead (LED is Off)				



Solid Red LED Error Code (Locked Mode)

NOTE: Unlike the 2011 lower-end models, the result of a shorted Vsus, Vda, or P15 is not a Solid-Red-LED for GT and VT modes.

These conditions can cause the TV to shutdown while the power LED stays on (Solid red)

1. Missing F15V while the TV is on

- □ Open connection between pins 10 and 11 of connectors P6 and A6.
- 2. Wrong diagnostic by the A board

Cautions: Disconnect the AC Power prior to making any disconnection or connection.

If the power LED continues to blink even after the TV is unplugged, press and hold the power switch on the TV for a few seconds until the LED turns off.

When taking voltage reading, place the voltmeter probe at the test point, component, or connector's pin indicated before connecting the TV to the AC line. This will ensure voltage reading accuracy before the TV shuts down. (Since the TV is shutting down, expect the voltage to only come up a couple of seconds.)

NOTE: When taking voltage reading, place your meter's probe on the test point or pin indicated before connecting the TV to the AC line. The voltage you intent to measure may only appear for a brief moment.

Troubleshooting Solid Red LED Failure (Locked Mode)

confirm that the TV is on Locked Mode, 1st, press the power switch to turn on the TV, then when the LED turns on, press the power switch to turn the TV off. If the LED stays on, the TV is on Locked Mode but if the LED goes off, then the symptom is different (Like no video or black screen).



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Troubleshooting 1 Blink Failure

(PD4 Startup SOS/Panel Information SOS)

Start Here

If the TV shuts down and the power LED blinks 1 time, replace the A

Troubleshooting 4 Blinks Failure

4 Blinks Error Code (Abnormality of Power Supply Output)

These conditions can cause the TV to shutdown and the power LED to blink 4 times

- 1. <u>Regulation issues with any of the voltages from the power supply.</u>
 - □ If P15V goes over a preset level.
 - □ If F15V goes over a preset level.
 - □ If Vsus goes over a preset level..
 - □ If Vda goes above a preset level.
- 2. Wrong diagnostic by the A board

The power supply outputs STB5V, F+15V, Vsus, Vda, and P15V. These voltages are necessary to drive the different circuits in the TV.

In order to provide protection for the TV, these voltages are monitored. An increase on any of these voltages is detected and I651 outputs a shutdown voltage (SOS4_PS) to the System CPU to disable the Unit.

A 4 blinks condition is normally caused by the P board or the A board.



Troubleshooting 4 Blinks Failure

Blink		List of boards likely to cause this symptom.									
Code	Main Suspect	2 nd	3 rd	4 th	5 th	6 th	7 th				
4 Blinks	Р	Α									

Cautions: Disconnect the AC Power prior to making any disconnection or connection.

If the power LED continues to blink even after the TV is unplugged, press and hold the power switch on the TV for a few seconds until the LED turns off.

When taking voltage reading, place the voltmeter probe at the test point, component, or connector's pin indicated before connecting the TV to the AC line. This will ensure voltage reading accuracy before the TV shuts down. (Since the TV is shutting down, expect the voltage to only come up a couple of seconds.)



Troubleshooting 6 Blinks Failure

6 Blinks Error Code Circuit Explanation

6 Blinks SOS

Energy Recovery/Vscan

The energy recovery circuit and Vscan are monitored in the SC board. Failure of any these 2 circuits triggers the SOS6 line causing the unit to shut down and the power LED to blink 6 times.

Under normal operation, the output voltage (MID) of the "Energy Recovery" circuit ranges between 68V and 138V. If the voltage drops below 67V or increases above 139V, the error detect circuit (IC16581) is triggered. This causes a high to be output to pin 15 of connector SC20.

Pin 15 of SC20 (SOS6-SC1) also goes high, if the Vscan generating circuit fails.

The voltage from SC20 is connected to the Peaks – LDA3 (IC8000) on the A board via the DC level shifter section of the ASIC (Application Specific) IC (IC5000) If this voltage goes high, the TV shuts down and the power LED blinks 6 times.

This condition is normally caused by a defective SC, A, or P board. (SC>A>P). 6 blinks can also be caused by open connection between the C boards and open connection between any of the C board and the A board.

6 Blinks Error Code (SC Energy Recovery Circuit Abnormality)

These 2 conditions can cause the TV to shutdown and the power LED to blink 6 times

- 1. An increase or reduction of the Energy Recovery Circuit output (MID).
- 2. Wrong diagnostic by the A board

Note: Disconnecting SC20/A20 on the 2011 models causes the TV to shut down with 8 blinks instead
of 6 blinks like it was the case of the 2009 and 2010 models.

Troubleshooting 6 Blinks Failure

Blink	List of boards likely to cause this symptom.									
Code	Main Suspect	2 nd	3 rd	4 th	5 th	6 th	7 th			
6 Blinks	SC	Α	Р							

Cautions: Disconnect the AC Power prior to making any disconnection or connection.

If the power LED continues to blink even after the TV is unplugged, press and hold the power switch on the TV for a few seconds until the LED turns off.

When taking voltage reading, place the voltmeter probe at the test point, component, or connector's pin indicated before connecting the TV to the AC line. This will ensure voltage reading accuracy before the TV shuts down. (Since the TV is shutting down, expect the voltage to only come up a couple of seconds.)



Troubleshooting 7 Blinks Failure

Cautions: Disconnect the AC Power prior to making any disconnection or connection.

If the power LED continues to blink even after the TV is unplugged, press and hold the power switch on the TV for a few seconds until the LED turns off.

When taking voltage reading, place the voltmeter probe at the test point, component, or connector's pin indicated before connecting the TV to the AC line. This will ensure voltage reading accuracy before the TV shuts down. (Since the TV is shutting down, expect the voltage to only come up a couple of seconds.)

Preparation:

Disconnect AC Power prior to making any disconnection or connection. Wait at least 2 minutes before the removal of any connector. Remove the front cabinet and expose the panel to a bright light for a thorough visual inspection. Check for cracks and blown pixels or any other abnormalities. Check for burnt panel driver ICs on the SU and SD boards. If the panel is defective, the SU, SD, and/or the SC board may also be defective.

Warning: The Vsus line has large capacitors that hold the charge for some time even after the TV has been turned off and unplugged. When disconnecting P2/SC2 or P11/SS1, bleed the remaining charge of the Vsus before reconnecting the cable.

Use a 500 ohms/ 5W (At least) resistor to discharge the Vsus line before reconnecting P2/SC2 or P11/SS11.

7 Blinks Error Detect Circuit

These 6 conditions can cause the TV to shut down and the power LED to blink 7 times

- 1. <u>Missing or shorted Vsus.</u>
- 2. Shorted Vda
- 3. Abnormality of the scan circuit output, the 15V_F, the scn_pro, and Vscn circuit.
- 4. Defective Panel.
- 5. Loose or open Connection between the SC board and the SU/SD boards.
- 6. Wrong diagnostic by the A board

Blink Code	List of boards likely to cause this symptom.								
	Main Suspect	2 nd	3 rd	4 th	5 th	6 th	7 th		
7 Blinks	SC	SU - SD	SS	Р	Α	Panel			

The SOS7 circuit monitors the panel, the scan circuit output, the 15V_F, the scan_pro, Vscan, and the physical connection between the SC board and the SU and SD boards (CHA).

If any abnormality occurs on any of these lines or Vsus is missing, the TV shuts down and the power LED blinks 7 times. If any of the connectors between the SC and the SU or SD board is open, the TV also shuts down and the power LED blinks 7 times.

Quick Procedure To Check For Short or Low Resistance Condition of the Vsus, Vda, and P15V Lines

Note: <u>Vsus</u> is generated by the Power supply and is only used by the SS and SC boards

Vda is generated by the Power supply and is only used by the Panel (Panel Drive ICs)

P15V is generated by the Power supply and is used by the A, SS, and SC boards

Test points for the Vsus, Vda, and P15V can be easily found on the P board. To check for short circuit or low resistance on these lines, follow this procedure:

Preparation

- 1. Make sure the TV is disconnected.
- 2. Remove any residual charge from the Vsus and Vda lines by momentarily grounding them through a 500 ohms resistor (At least 5Watts).
- 3. Measure the resistance between chassis ground and the pins indicated on the table below. <u>A dead</u> short or a reading lower than 1K indicates a shorted or partially shorted line.

Voltage Test Points							
Connector	Pin Number	Voltage					
P11	1	Vsus					
P11	4	P15V					
P35	1	Vda					



Troubleshooting 7 Blinks Failures (GT and VT Series)

Note: Perform firmware upgrade after replacing the SC board or the SS board





VFO/VSCN_F and VF_5V Resistance Test (46", 50", and 55" FHD (S30 and ST30))

This test can be used to quickly determine if either the SU, SD, or/and the SC board are bad. **Note:** even though a short circuit is a clear indication of a defective board, a no-short-circuit condition does not necessarily means that the boards are good. Follow the isolation procedure to determine if these boards are good or bad.

Preparation:

Unplug the TV prior to making any disconnection or connection.

Wait at least 2 minutes before removal of any connector.

Note: If the power LED continues to blink even after the TV has been unplugged, press and hold the power switch on the TV for a few seconds until the LED turns off.

Resistance Test

Procedure to determine if there is a short

circuit or low resistance reading of the Vfo

(TPSC1) or the VF_5V (R515).

Using VFG (Floating ground screws) as ground, measure the resistance of:

- 1. Resistor R515 (TPSC1/VFO)
- 2. Pin 3 of IC724 (VF-5V)

Continue on the page after the next



VFO/VSCN_F and VF_5V Resistance Test (50"~65" Slim Models (GT30 and VT30))

This test can be used to quickly determine if either the SU, SD, or/and the SC board are bad. **Note:** even though a short circuit is a clear indication of a defective board, a no-short-circuit condition does not necessarily means that the boards are good. Follow the isolation procedure to determine if these boards are good or bad.

Preparation:

Unplug the TV prior to making any disconnection or connection.

Wait at least 2 minutes before removal of any connector.

Note: If the power LED continues to blink even after the TV has been unplugged, press and hold the power switch on the TV for a few seconds until the LED turns off.

Resistance Test

Procedure to determine if there is a short

circuit or low resistance reading of the Vfo

(TPSC1) or the VF_5V (Junction of R696~R699).

Using VFG (Floating ground screws) as ground,

measure the resistance of:

- 1. Junction of R696~R699) (TPSC1/VSCN-1)²
- 2. Pin 3 of IC724 (VF-5V)

Continue on the page





SU-SD boards Isolation Procedure

Preparation:

Disconnect AC Power prior to making any disconnection or connection. Wait at least 2 minutes before the removal of any connector.



Warning:

When performing this procedure, isolate the SU and SD boards together at the same time. Do not attempt to isolate the SU or the SD boards individually. This could cause further damages to the TV

Procedure:

- 1. Remove the 4 VFG screws from the SU and SD boards. (See picture on the left side.)
- 2. Remove SC41, SC42, and SC46 from the SC board. Also remove the ribbon cable between the SU and SD boards (SU11/SD11).
- 3. Install the SC50 Jig or just jump pins 1 and 2 of connector SC50 on the SC board.



Note: Remove the jig or the jumper after completing the isolation procedure.

4. Plug-in the TV and turn it on.

Troubleshooting 8 Blinks Failure

8 Blinks Error Code

These 5 conditions can cause the TV to shut down and the power LED to blink 8 times

- 1. Abnormality of the Sustain drive circuit.
- 2. Open or loose connection between the SS board and FPCs from the panel.
- 3. When SS53, SS54 or SS56 are disconnected.
- 4. When SC20 is disconnected.
- 5. Wrong diagnostic by the A board

The SOS Detect circuit in the Sustain board monitors:

- □ Physical connection between the panel and the SS board.
- □ The output of the sustain drive circuit.

Under normal condition, Q16280 is on. When Q16280 is on, a low is provided to the anode of D16255.

If any abnormality occurs on the sustain drive circuit or one of the FPC cables (SS53, SS54 or SS56)

opens, Q16255 turns off and a high is provided to the anode of D16255 (D255).

This high is provided to pin 10 of IC5000 on the A board. When this happens, the TV shuts down and the power LED blinks 8 times.

To determine if the 8 blinks is caused by the A board, SS board, or the Panel:

- Isolate the SS board and check if the TV stays on when it's turned on.
- If the TV does not stay on after disconnecting the SS board, the A board is defective.
- If the TV stays on, then the SS or the Panel is defective.
- Check continuity between pins 1 and 2 of connectors SS53, SS54 and SS56. If open, the panel might be defective. (Check for loose connection between the flex-cables and the SS board).
- If continuity is OK, the SS board is defective.

8 Blinks Error Detect Circuit

Blink		List of boards likely to cause this symptom.								
Code	Main Suspect	2 nd	3 rd	4 th	5 th	6 th	7 th			
8 Blinks	SS	Α	Panel							

Cautions: Disconnect the AC Power prior to making any disconnection or connection.

Wait at least 2 minutes before the removal of any connector.

If the power LED continues to blink even after the TV is unplugged, press and hold the power switch on the TV for a few seconds until the LED turns off.

When taking voltage reading, place the voltmeter probe at the test point, component, or connector's pin indicated before connecting the TV to the AC line. This will ensure voltage reading accuracy before the TV shuts down. (Since the TV is shutting down, expect the voltage to only come up a couple of seconds.)

Warning: The Vsus line has large capacitors that hold the charge for some time even after the TV has been turned off and unplugged. When disconnecting P2/SC2 or P11/SS1, bleed the remaining charge of the Vsus before reconnecting the cable.

Use a 500 ohms/ 5W (At least) resistor to discharge the Vsus line before reconnecting P2/SC2 or P11/SS11.

8 Blinks Error Detect Circuit



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Troubleshooting 8 Blinks Failure



Troubleshooting 9 Blinks Failure

9 Blinks Error Code

This condition can cause the TV to shutdown and the power LED to blink 9 time

1. Failure of PD4 IC9300 (Discharge control)

9 blinks can be caused by failure of IC9300, IC5000, or IC8000. Since all these ICs are located on the A board, only the A board should be replaced when a blinks condition is detected.



Troubleshooting 9 Blinks Failure

Blink	List of boards likely to cause this symptom.								
Code	Main Suspect	2 nd	3 rd	4 th	5 th	6 th	7 th		
9	Α								

Cautions: Disconnect the AC Power prior to making any disconnection or connection.

If the power LED continues to blink even after the TV is unplugged, press and hold the power switch on the TV for a few seconds until the LED turns off.



Troubleshooting 10 Blinks Failure

Troubleshooting 10 Blinks Failure



Troubleshooting 10 Blinks Failure

Blink	List of boards likely to cause this symptom.								
Code	Main Suspect	2 nd	3 rd	4 th	5 th	6 th	7 th		
10	Р	Α							



Troubleshooting 11 Blinks Failure

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11 Blinks Error Detect Circuit (Fan SOS)

These 3 conditions can cause the TV to shut down and the power LED to blink 11 times

- 1. If one of the fans opens or increases resistance.
- 2. If connector A8 is not seated properly.
- 3. If the A board becomes defective triggering the shutdown circuit.



11 Blinks Error Code Explanation

The ventilation fans are monitored to be sure they are operating properly. If one of the fans opens or increases resistance, the resulting current change is applied to pin 61 of the main CPU (IC8000).

The fan drive circuit is located on the A board. To control the speed of the fan, a control voltage from the microprocessor(IC8000) is applied to IC5607.

If any of the fans is removed or becomes defective, a high is output at the corresponding pin (pin 3, 9, or 12) of the fan connector (A8) to forward bias the inline diode. The DC output of the diode is provided to pin 61 of IC8000 to trigger the SOS condition.

Troubleshooting 11 Blinks Failure

Cautions: Disconnect the AC Power prior to making any disconnection or connection.

If the power LED continues to blink even after the TV is unplugged, press and hold the power switch on the TV for a few seconds until the LED turns off.

When taking voltage reading, place the voltmeter probe at the test point, component, or connector's pin indicated before connecting the TV to the AC line. This will ensure voltage reading accuracy before the TV shuts down. (Since the TV is shutting down, expect the voltage to only come up a couple of seconds.)





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Normally, If no jumper wire is used on the fan's connector when a fan is disconnected, the TV shuts down in approximately 3 minutes.

12 Blinks Error Code

These 3 conditions can cause the TV to shut down and the power LED to blink 12 times

- 1. A Board.
- 2. Pinched speaker wire.
- 3. Speakers

The transistor Q4930 monitors the speaker amplifier ICs (IC4900 – IC4901). Pin 3 is normally high. If any of the amplifier ICs or one of the speakers develops a short circuit, pin 3 goes low causing Q4930 to go into conduction and output a high to pin AG22 of the System CPU (IC8000) on the A board. When this happens, the TV shuts down and the power LED blinks 12 times.


Troubleshooting 12 Blinks Failure

Blink	List of boards likely to cause this symptom.						
Code	Main Suspect	2 nd	3 rd	4 th	5 th	6 th	7 th
12	А	Speaker					

Cautions: Disconnect the AC Power prior to making any disconnection or connection.

If the power LED continues to blink even after the TV is unplugged, press and hold the power switch on the TV for a few seconds until the LED turns off.

When taking voltage reading, place the voltmeter probe at the test point, component, or connector's pin indicated before connecting the TV to the AC line. This will ensure voltage reading accuracy before the TV shuts down. (Since the TV is shutting down, expect the voltage to only come up a couple of seconds.)



13 Blinks Error Code

This condition can happen when the internal communication of the Main processor and the Standby microprocessor within the PEAKS-LDA3 IC is interrupted for more than 3 minutes.

	Start Here			
Repla	Replace the A board			

14 Blinks Error Code

These conditions can cause the TV to shutdown and the power LED to blink 14 times

- No F15V connected to the A board at plug-in (Open connection of both pins 10 & 11 between P6 and A6)
- 2. Holding the power switch for over 5 seconds after the unit has gone into shut down and it's in lock mode with the power LED solid red (Note: the LED stays on if the power button is momentarily pressed).



Troubleshooting No Power/Dead Unit

These 5 conditions can cause the TV to be dead with no power.

- 1. A Board.
- 2. P Board.
- 3. SC Board
- 4. SS Board
- 5. K Board
- 6. A shorted P15V

Condition	List of boards likely to cause this symptom.						
	Main Suspect	2 nd	3 rd	4 th	5 th	6 th	7 th
Dead	Р	Α	SC - SS	К			

Cautions: Disconnect the AC Power prior to making any disconnection or connection. When taking voltage reading, place the voltmeter probe at the test point, component, or connector's pin indicated before connecting the TV to the AC line. This will ensure voltage reading accuracy before the TV shuts down. (Since the TV is shutting down, expect the voltage to only come up a couple of seconds.)

Troubleshooting No Power/Dead Unit (Power LED is Off)

Start Here If the Power Supply squeals, replace the section (P1 or P2) of the P board causing the squealing.

Make sure connectors P34 and P6 are properly seated. Follow the procedure on slide 79 to check the P15V for short circuit or low resistance.



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Quick Procedure To Check For Short or Low Resistance Condition of the Vda Line

Vda is generated by the Power supply and is only used by the Panel (Panel Drive ICs)

Test points for the Vda can be easily found on the P board. To check for short circuit or low resistance on this line, follow this procedure:

Preparation

- 1. Make sure the TV is disconnected.
- 2. Remove any residual charge from the Vda line by momentarily grounding them through a 500 ohms resistor (At least 5Watts).
- 3. Measure the resistance between chassis ground and the pins indicated on the table below. <u>A dead</u> short or a reading lower than 1K indicates a shorted or partially shorted line.

Voltage Test Points				
Connector Pin Number Voltage				
P35	1	Vda		



TV's Behavior After Connectors Removal



MODE	MODEL NO. TC-P55VT30 (Connectors Removal on the SC Board)					
Connector	Inector Connector Connector on C1 Board Result		Result			
SC2			SOS 7 Blinks			
	SC20		SOS 8 Blinks			
SC2	SC20		SOS 8 Blinks			
SC2		C10	SOS 8 Blinks (6 Blinks ST30)			
	SC20	C10	SOS 8 Blinks (TV Stays On ST30)			
SC2	SC20	C10	SOS 8 Blinks (TV Stays On ST30)			

Connector	Connector	Connector	Result
SC20	C10	SS33	TV Stays On With Fans Running and Black Screen.

MODEL NO. TC-P55VT30 (Connectors Removal on the SS + combination of connectors on the SS board and SC board)					
Connector	Connector	Connector on SC Board	Connector on SC Board	Result	
SS11				TV Stays On (SC LED On)	
	SS33			TV Stays On (SC LED On)	
SS11	SS33			TV Stays On (SC LED On)	
SS11		SC2		SOS 7 Blinks	
	SS33	SC2		SOS 7 Blinks	
SS11	SS33	SC2		SOS 7 Blinks	
SS11			SC20	SOS 8 Blinks	
SS11		SC2	SC20	SOS 8 Blinks	
	SS33		SC20	Fans On for 8 sec, then SOS 6 Blinks after 20sec	
	SS33	SC2	SC20	Fans On for 8 sec, then SOS 6 Blinks after 20sec	
SS11	SS33	SC2	SC20	Fans On for 8 sec, then SOS 6 Blinks after 20sec	

MODEL NO. TC-P55VT30 (Connectors Removal on the A Board)					
Connector	Connector	Connector	Result		
A20			SOS 8 Blinks		
	A31		SOS 8 Blinks <mark>(6 Blinks ST30)</mark>		
		A32	SOS 8 Blinks (6 Blinks ST30)		
A20	A31		SOS 8 Blinks (TV Stays ON with Black Screen ST30)		
A20		A32	SOS 8 Blinks <mark>(6 Blinks ST30)</mark>		
	A31	A32	SOS 8 Blinks (6 Blinks ST30)		
A20	A31	A32	SOS 8 Blinks		

Procedure to Check The Power Supply (Without Any Load)

Caution: Do not allow the TV to run for more than 30 seconds when isolating the power supply.

The Power Supply can be tested without any load by removing several connectors from the P and A boards.

Remove the following connectors from the P board:

P2, P11, and P35.

Remove the following connectors from the A board :

A11, A12, A20, A31, A32, A14, and A40.

Procedure:

- 1. Plug in the TV. The relays from the P board should click. (**Note:** if a second click is heard approximately 10~15 seconds after the 1st click, the F15V is confirmed to be present.)
- 2. Turn the power on. (**Note:** The power LED should turn on and the fans should be running. If this is the case, measure the Vsus and Vda.)

Vsus can be measured on pin 1 of connector P2 or P11.

Vda can be measured on pin 1 of connector P35.

3. If these voltages are OK, then the power supply is OK. (**Note:** The TV won't turn on if there is a short circuit on the P15V.)

Note: If there is a short circuit on the Vsus or Vda lines while this test is conducted;

- The SOS4_PS is not triggered. Pin 4 of connector P6 stays low. (Note: The PS SOS only monitors over-voltage conditions.
- The TV will still turn on without Vsus or Vda.
- The fans will continue to run.

Procedure to Check The Power Supply (Without Any Load)



End

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