

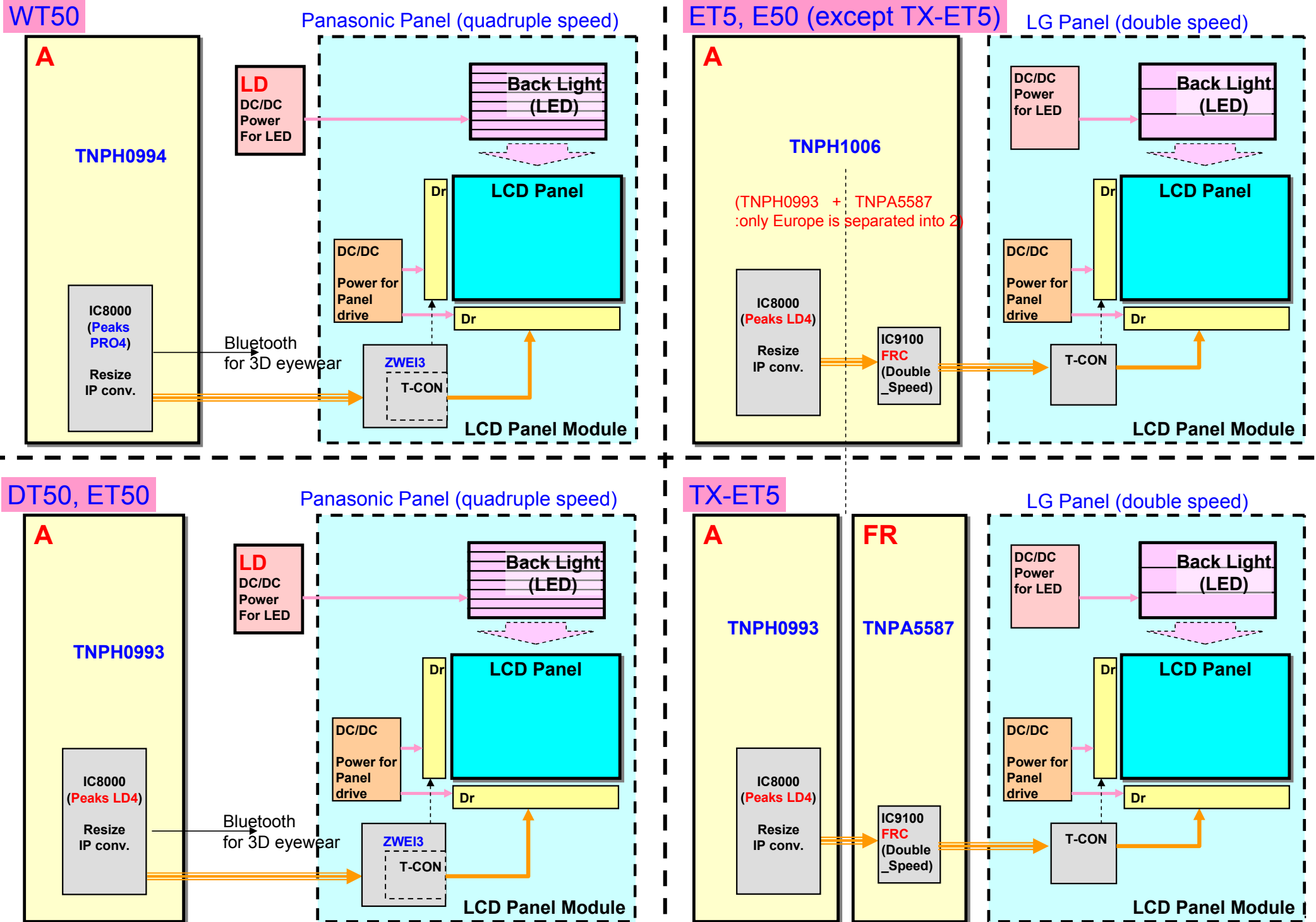
## Hints for the LCD Board Repair

( 2012 model )

Panasonic Corporation

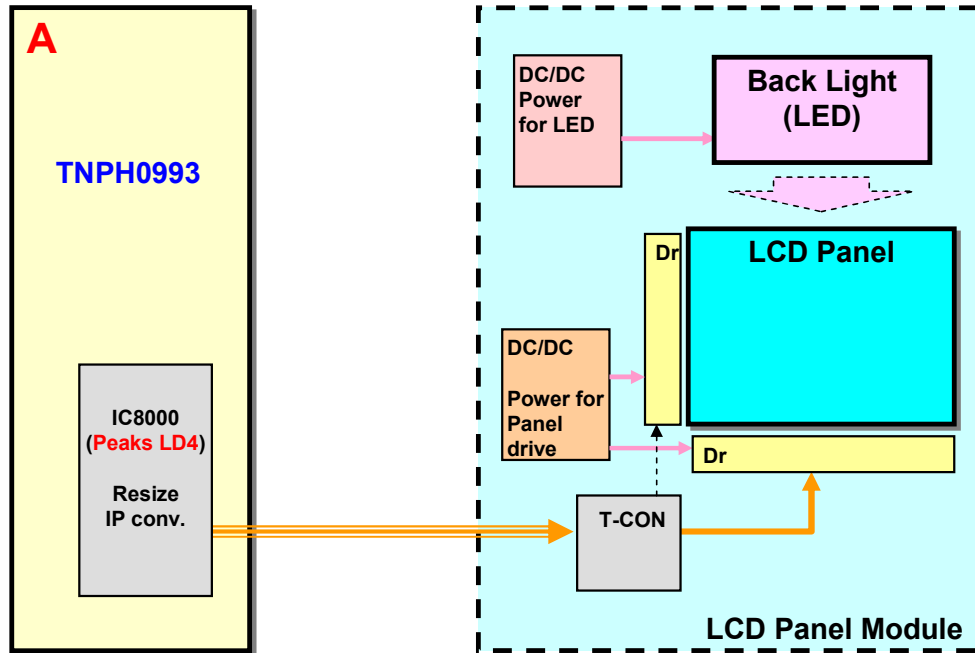
Panasonic Corporation

# Structure of LCD Panel and Signal Process Board 1

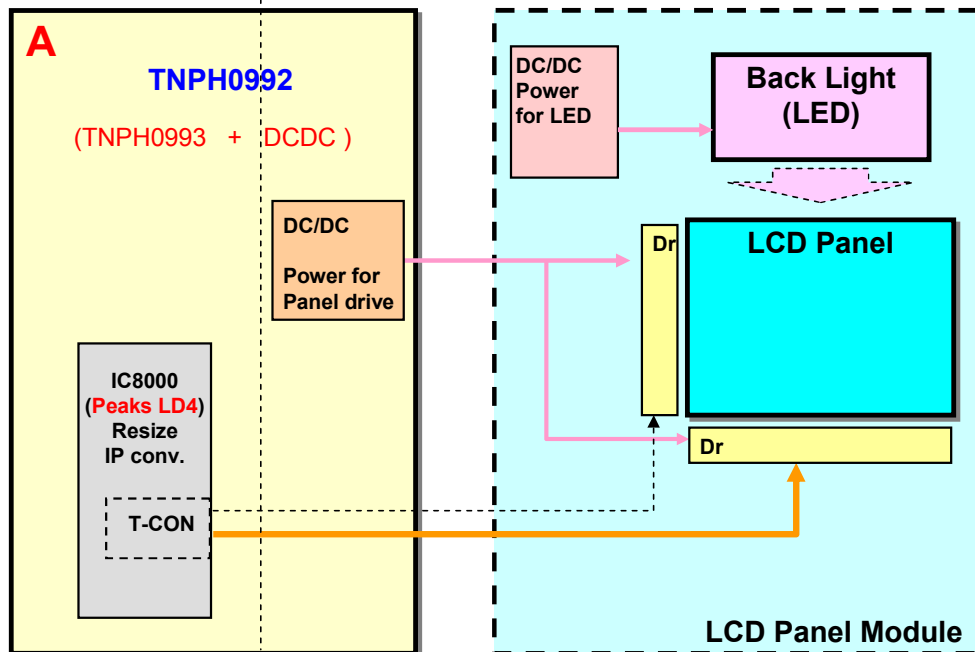


# Structure of LCD Panel and Signal Process Board 2

E5 (except 32inch)

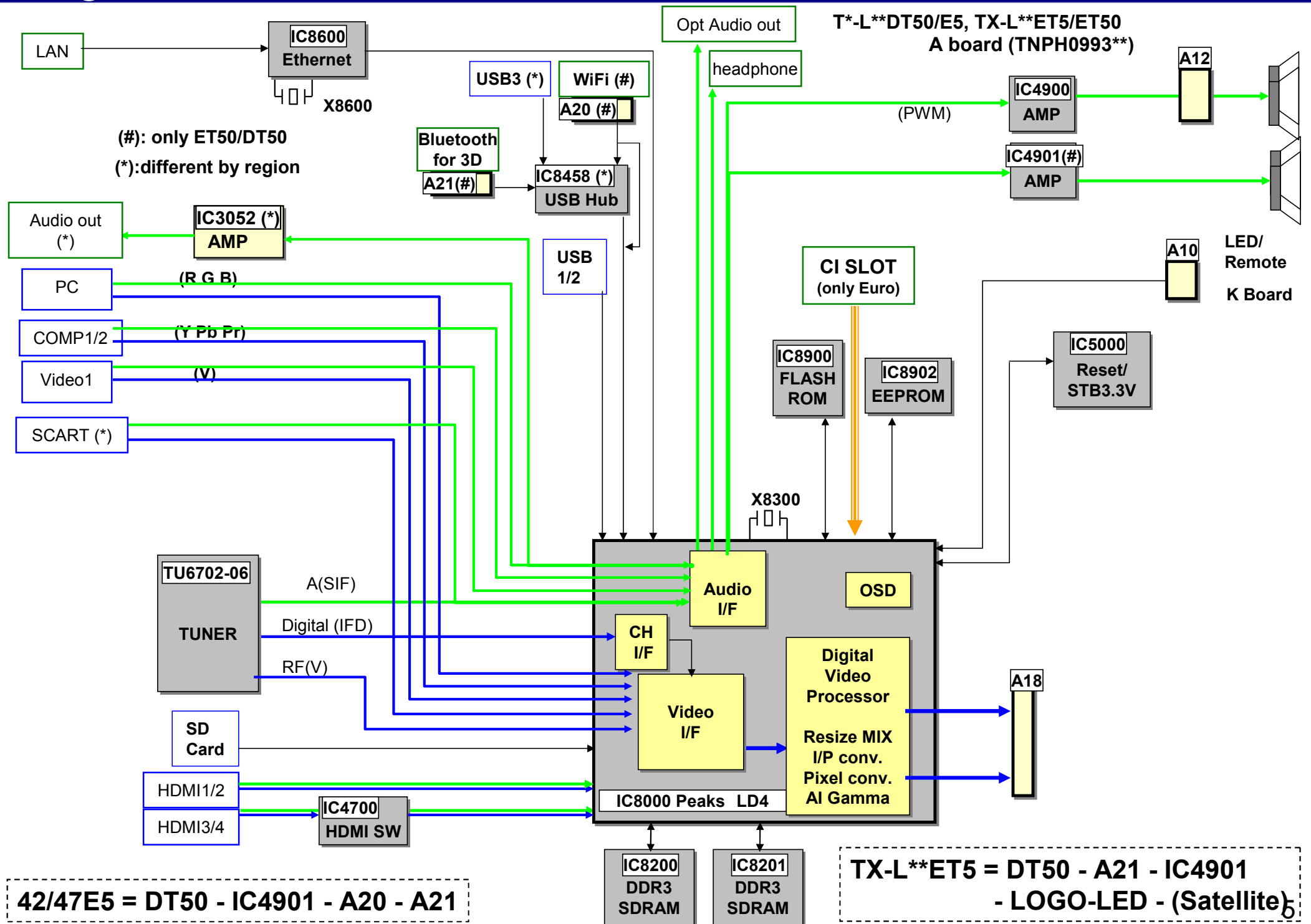


E5 (32inch only)

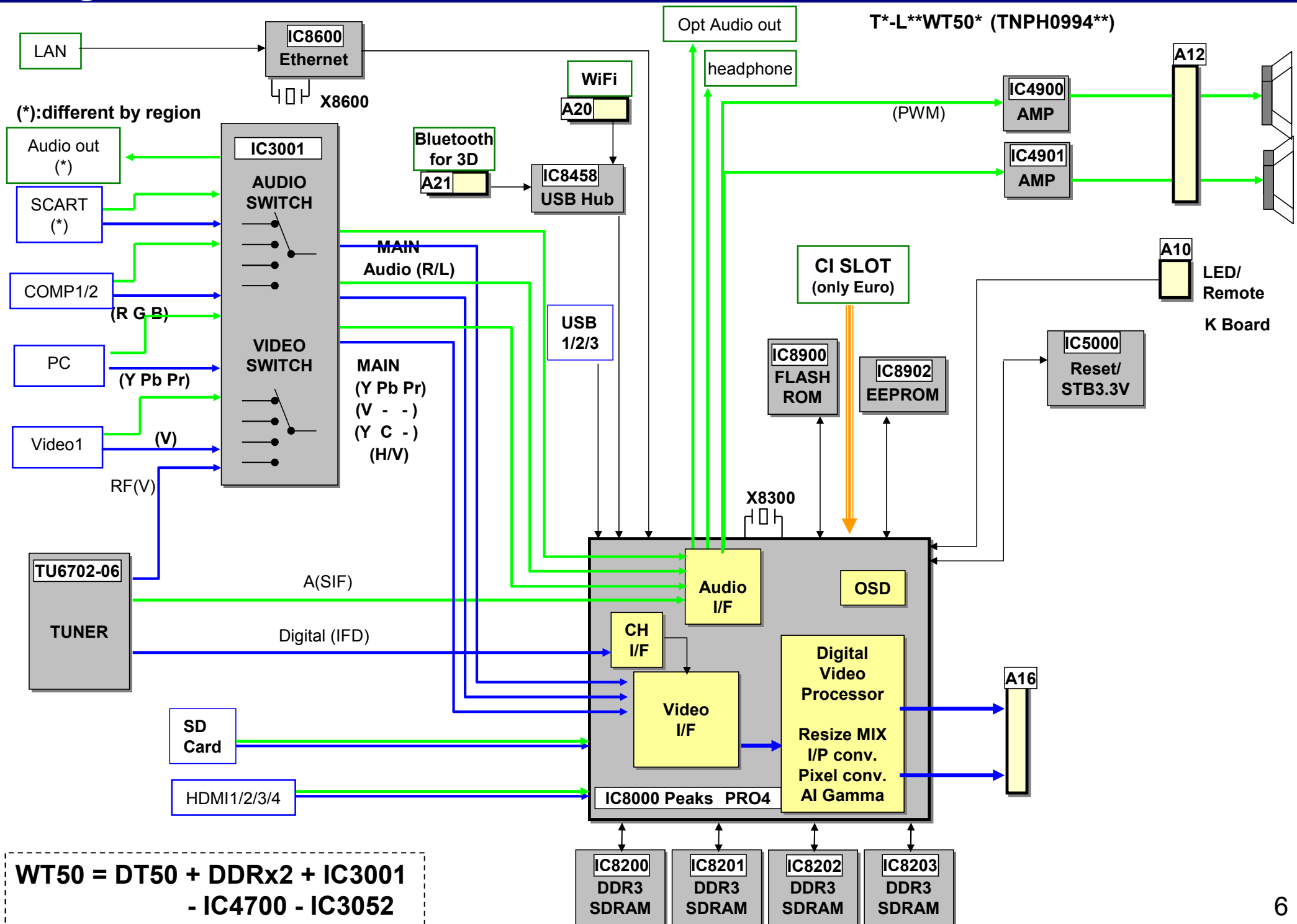


**A board**

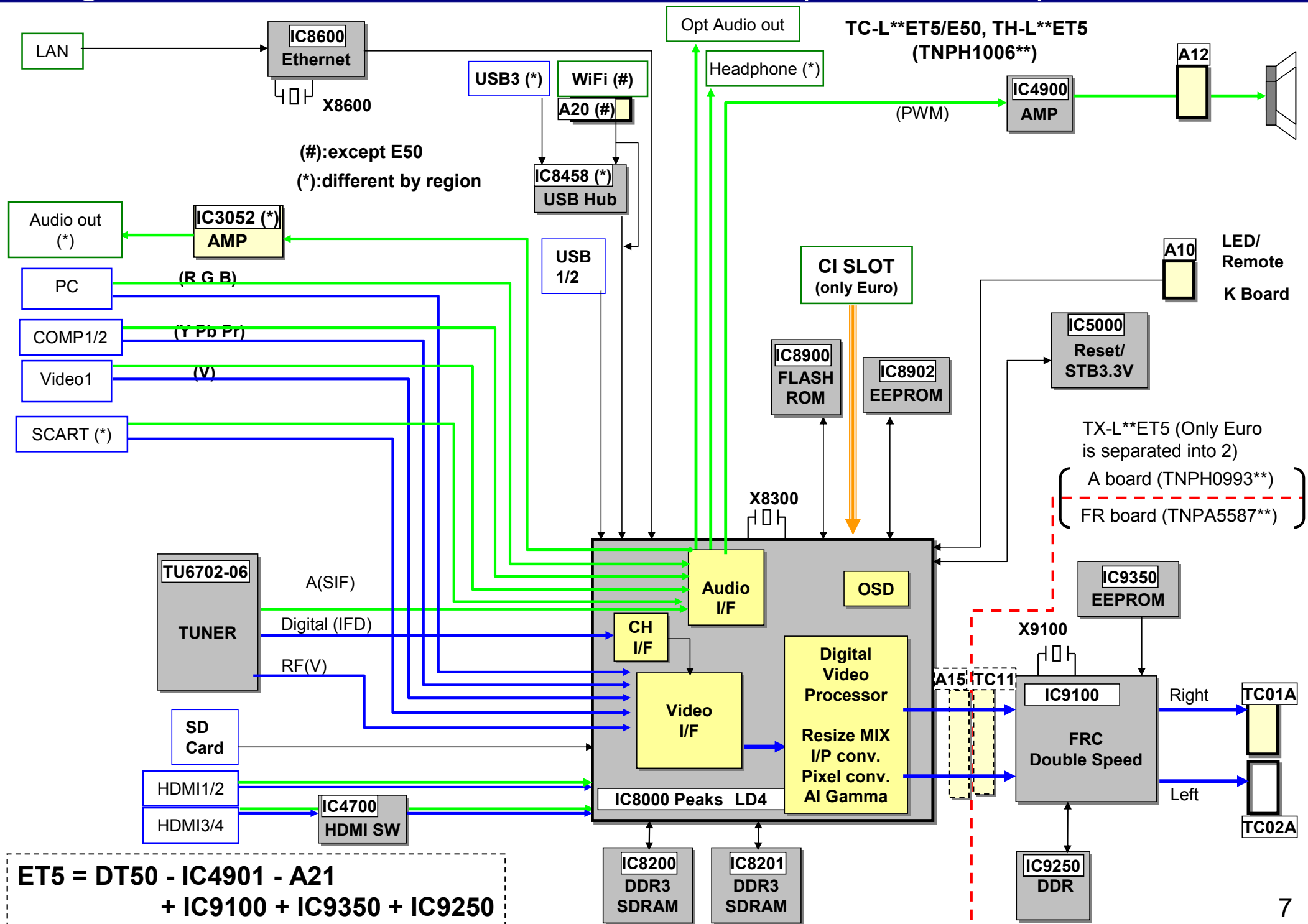
# Signal Flow of T\*-L\*\*DT50/E5, TX-L\*\*ET5/E50



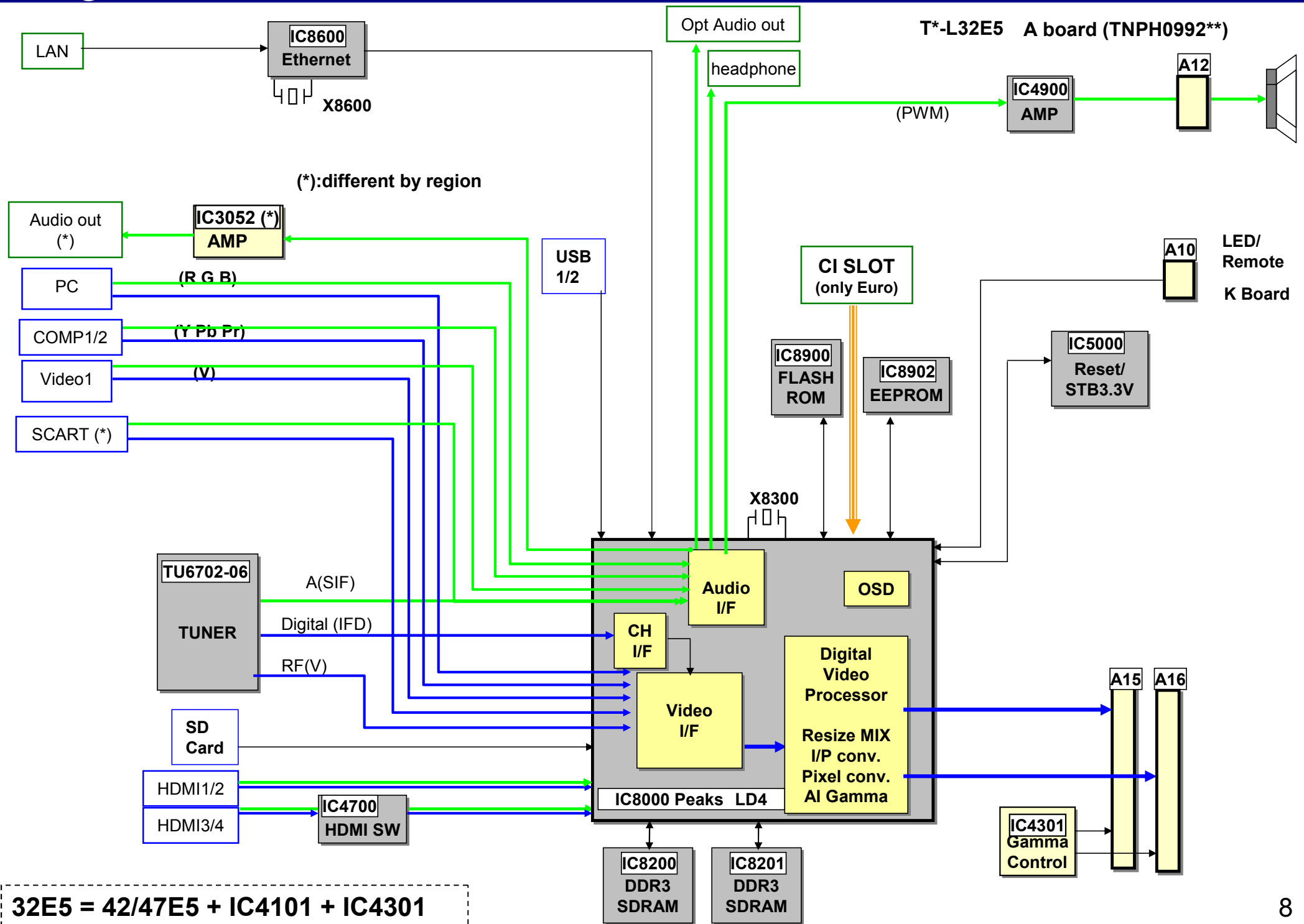
# Signal Flow of T\*-L\*\*WT50



# Signal Flow of TC/TH - L\*\*ET5/E50 (TX-L\*\*ET5)



# Signal Flow of T\*-L32E5



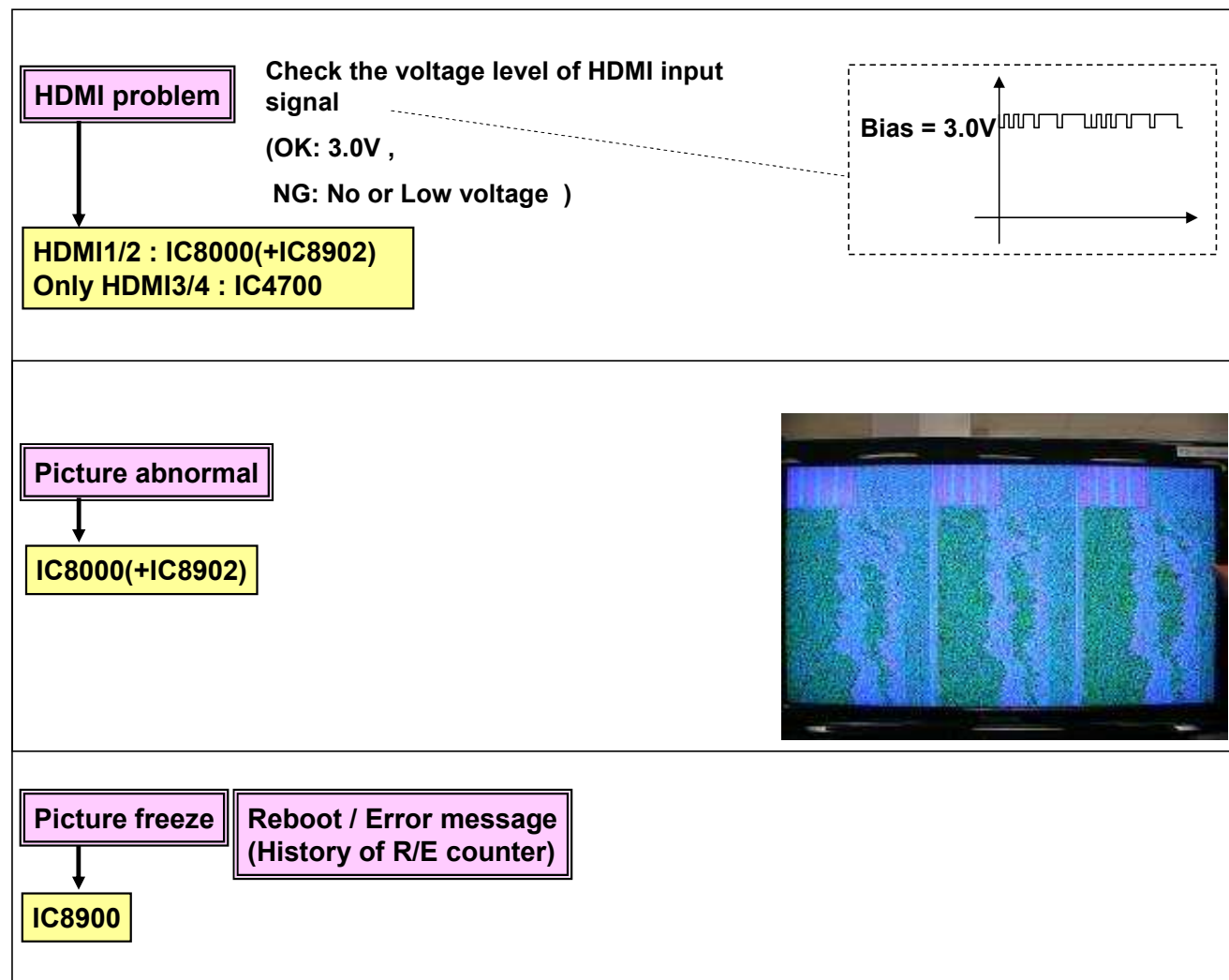
# Troubleshoot of Picture Problem

## Check by signal flow

Check by picture/audio signal flow,

1. Is all input abnormal ? / How about audio ?
2. Check the Test Pattern

< symptom >



There are KEY data for DTCP-IP of DLNA and the registration information for video service in IC8902. And the final KEY data is generated by IC8000 when SELF-CHECK is done. After that final data is stored in both IC8000 and IC8902. So when IC8000 is replaced, also IC8902 must be replaced. (When IC8902 is replaced, IC8000 is not necessary to be replaced.)

# Troubleshoot of Power On Problem with A board(1/2)

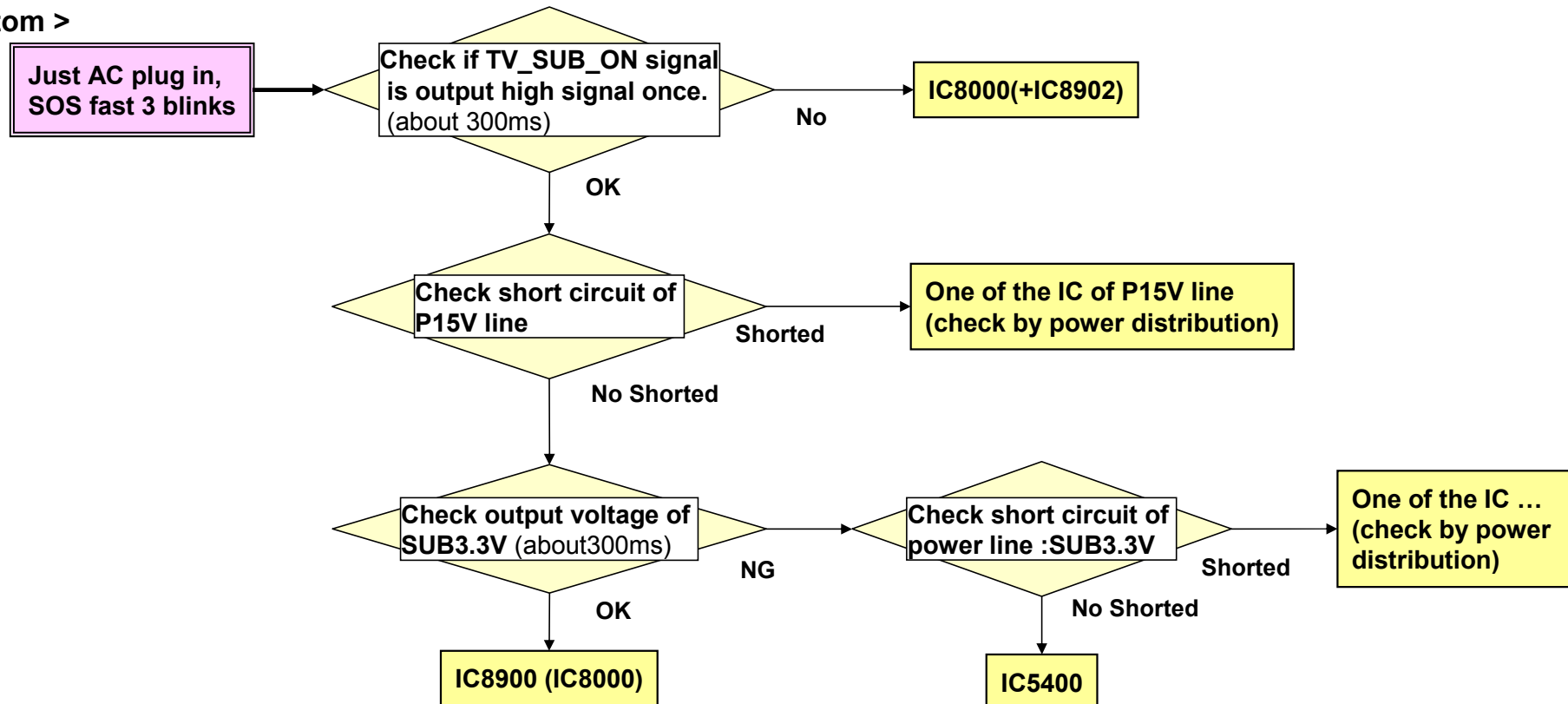
## Check by power on sequence

< Difference from last year model >

- # The new models with the Peaks LD4/Pro4 happen the fast 3 blinks instead of 14 blinks of the previous model.
- # The EEPROM(IC8502) is integrated to Flash(IC8900). The memory block is separated.  
After just AC plug in, the Peaks IC accesses to the EEPROM part of IC8900 once (about 300ms\*).  
(The standby power always output to A board, when plug in.)  
If the Peaks IC can't read the IC8900 at that time, fast 3 blinks happened.

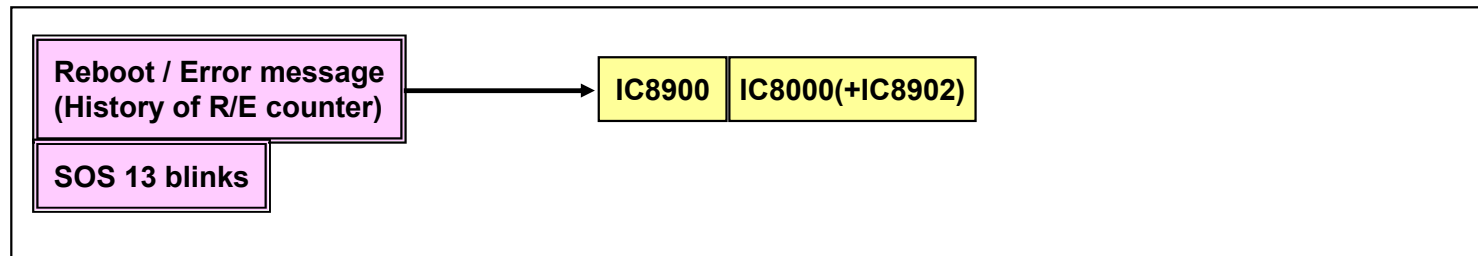
\*The time is different by the model and state.

< symptom >

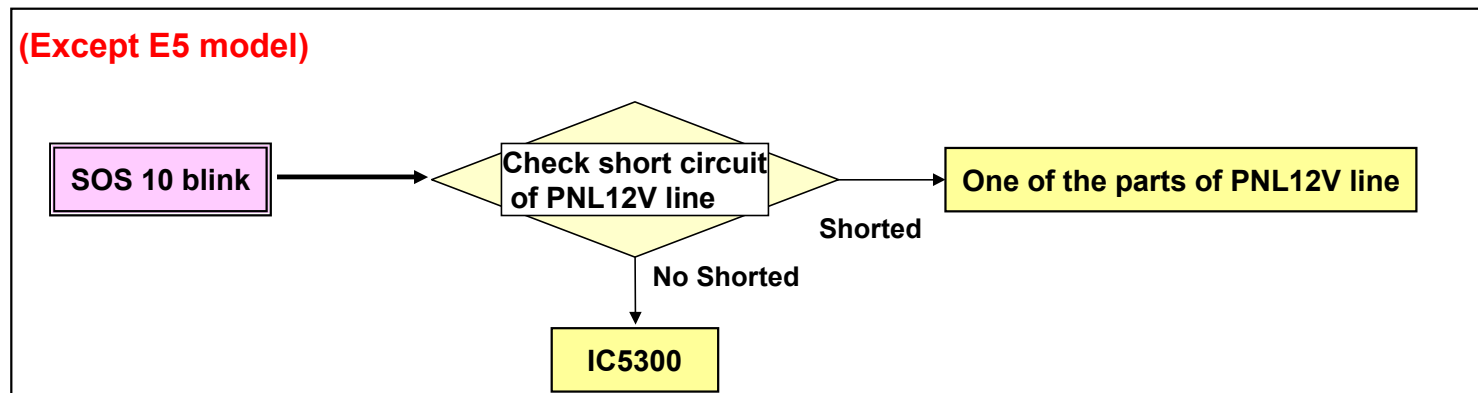


# Troubleshoot of Power On Problem with A board(2/2)

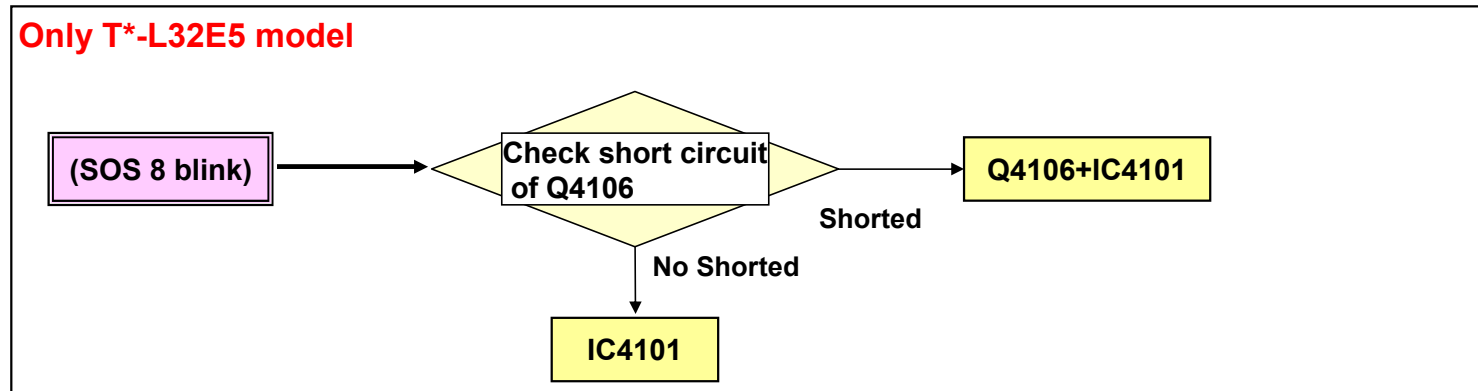
< symptom >



(Except E5 model)

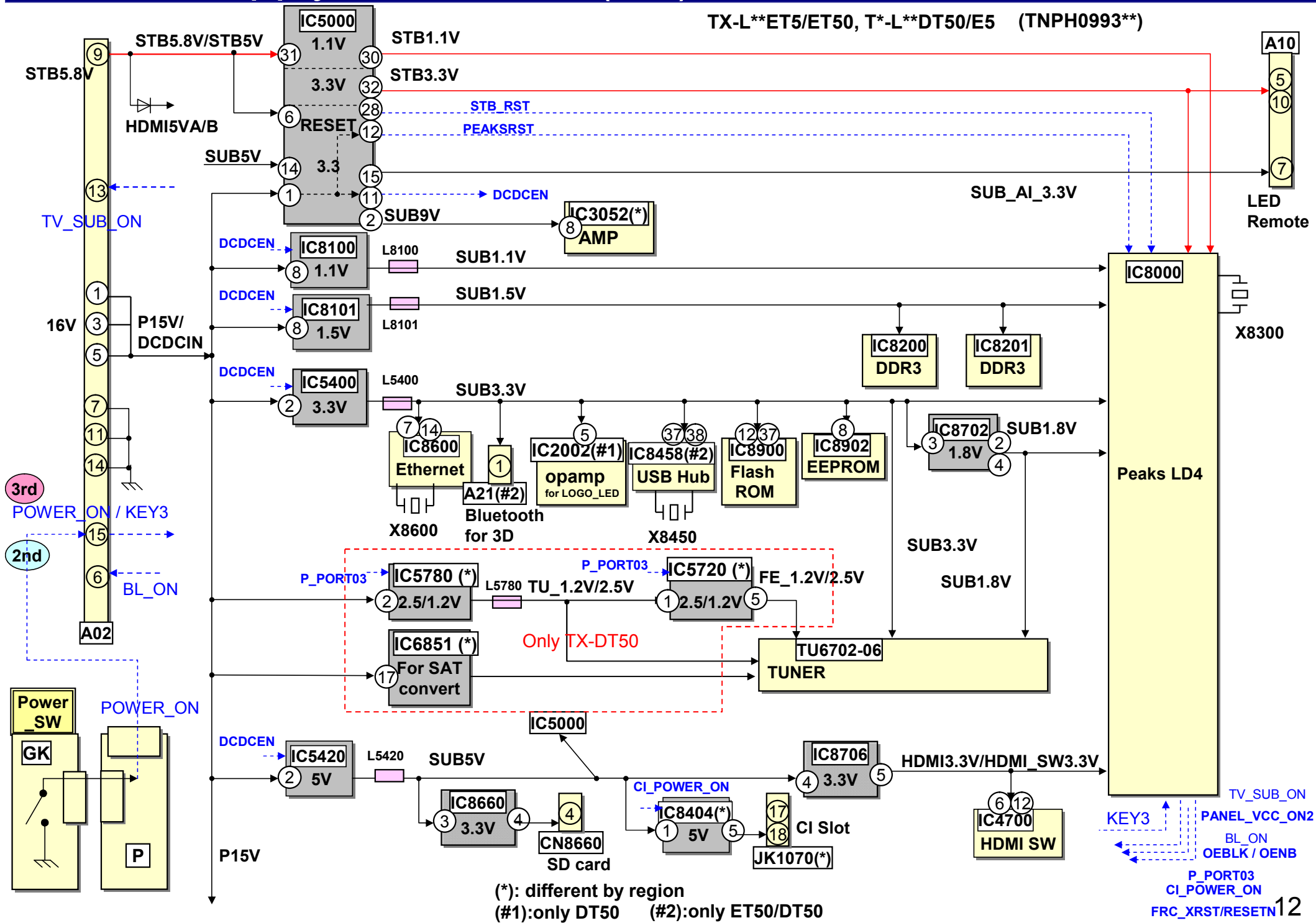


Only T\*-L32E5 model



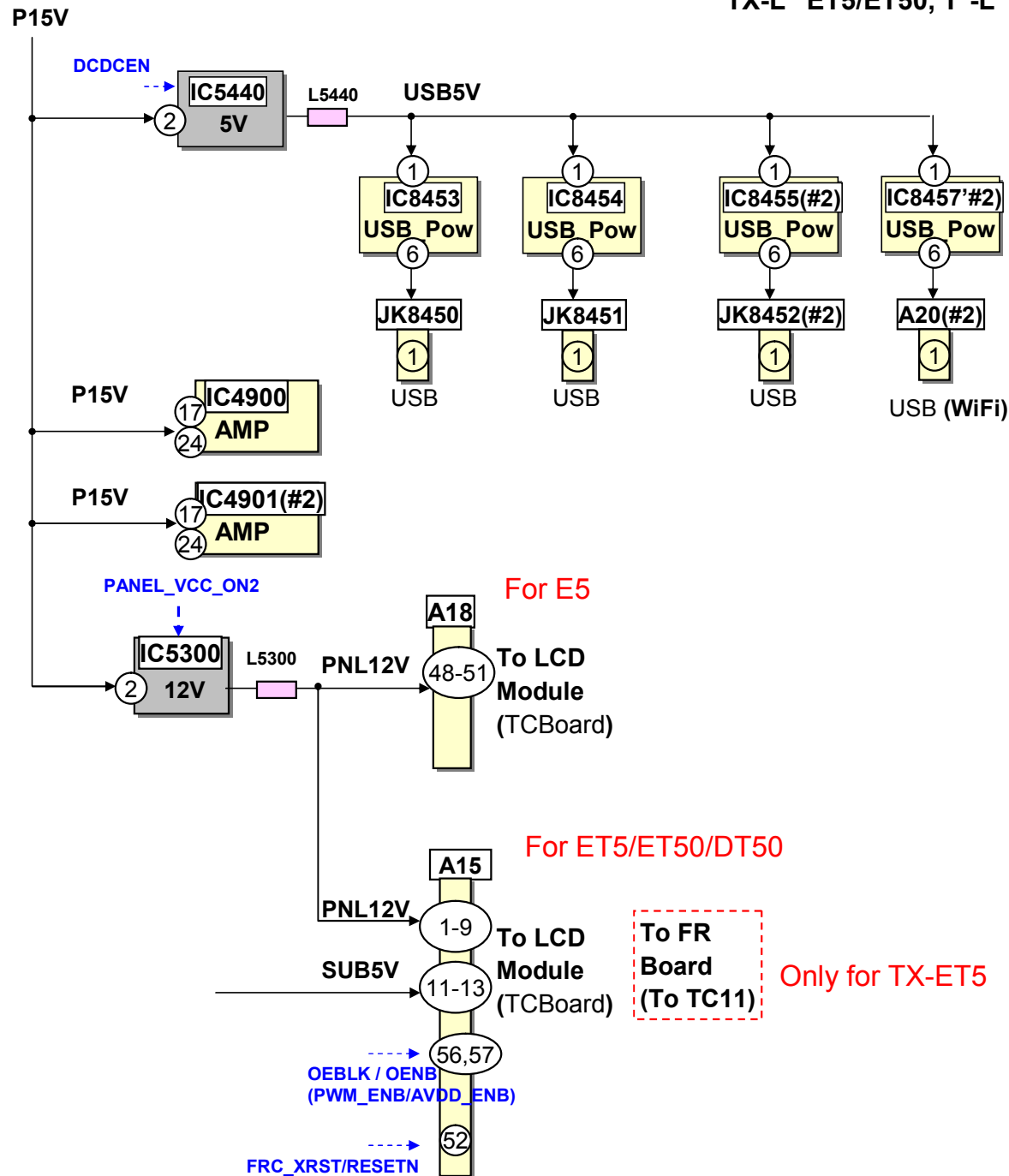
# Power Supply Distribution (1/2) : T\*-L\*\*E5

TX-L\*\*ET5/ET50, T\*-L\*\*DT50/E5 (TNPH0993\*\*)



# Power Supply Distribution (2/2) : T\*-L\*\*E5

**TX-L\*\*ET5/ET50, T\*-L\*\*DT50/E5 (TNPH0993\*\*)**



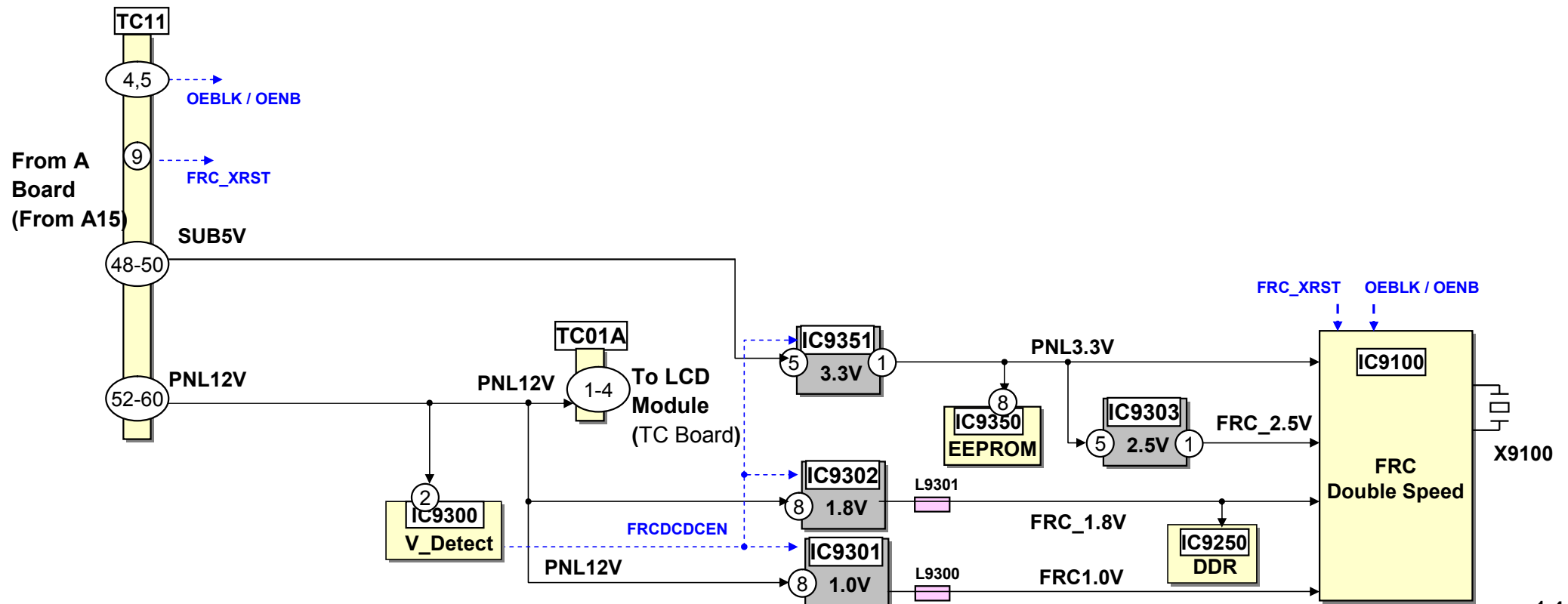
**(#2):only ET50/DT50**

Only for TX-ET5

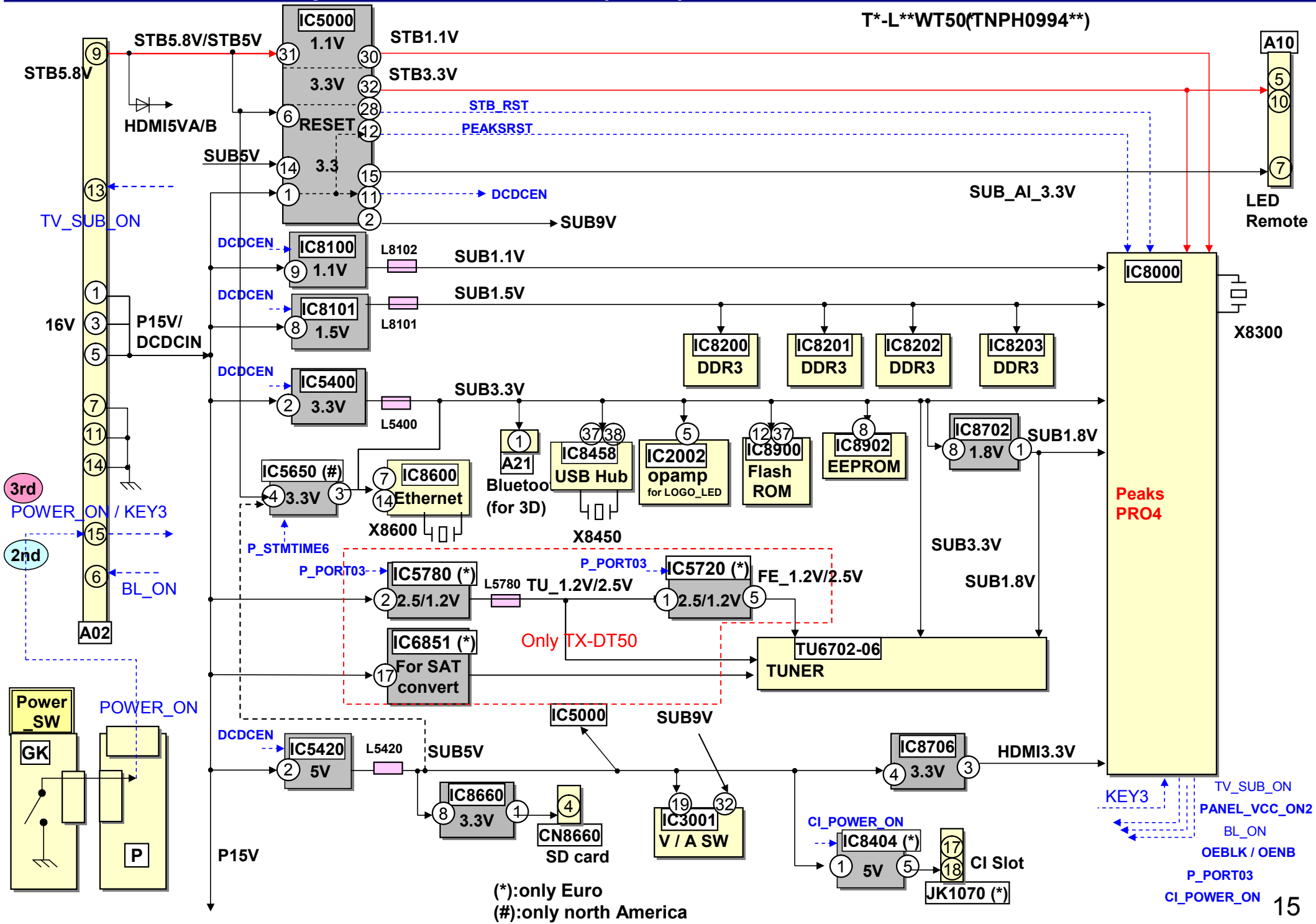
# Power Supply Distribution : TX-L\*\*ET5

TX-L\*\*ET5\*\* (TNPA5587\*\*)

(FR board  
TNPA5587\*\*)

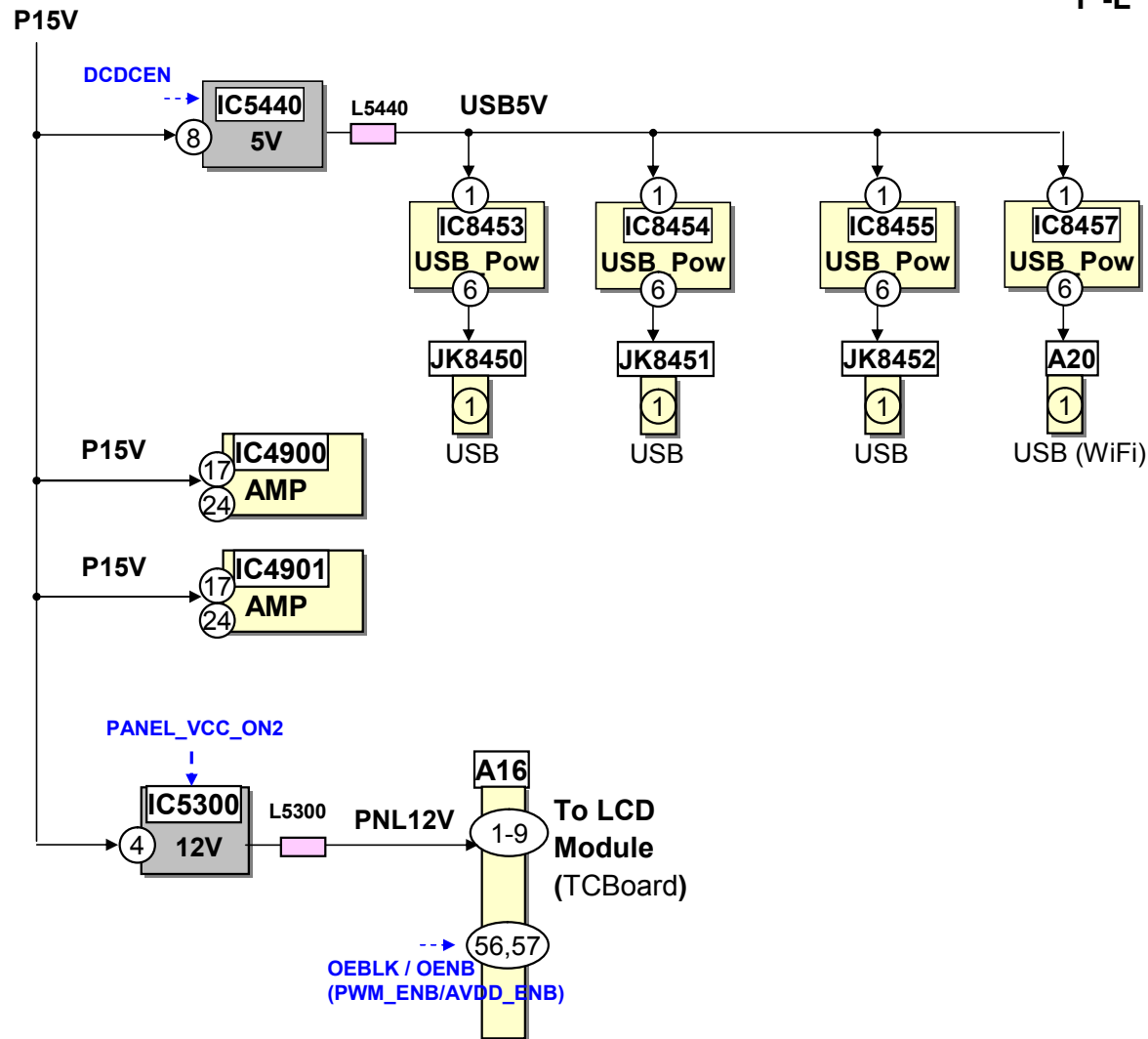


# Power Supply Distribution (1/2) : T\*-L\*\*WT50\*

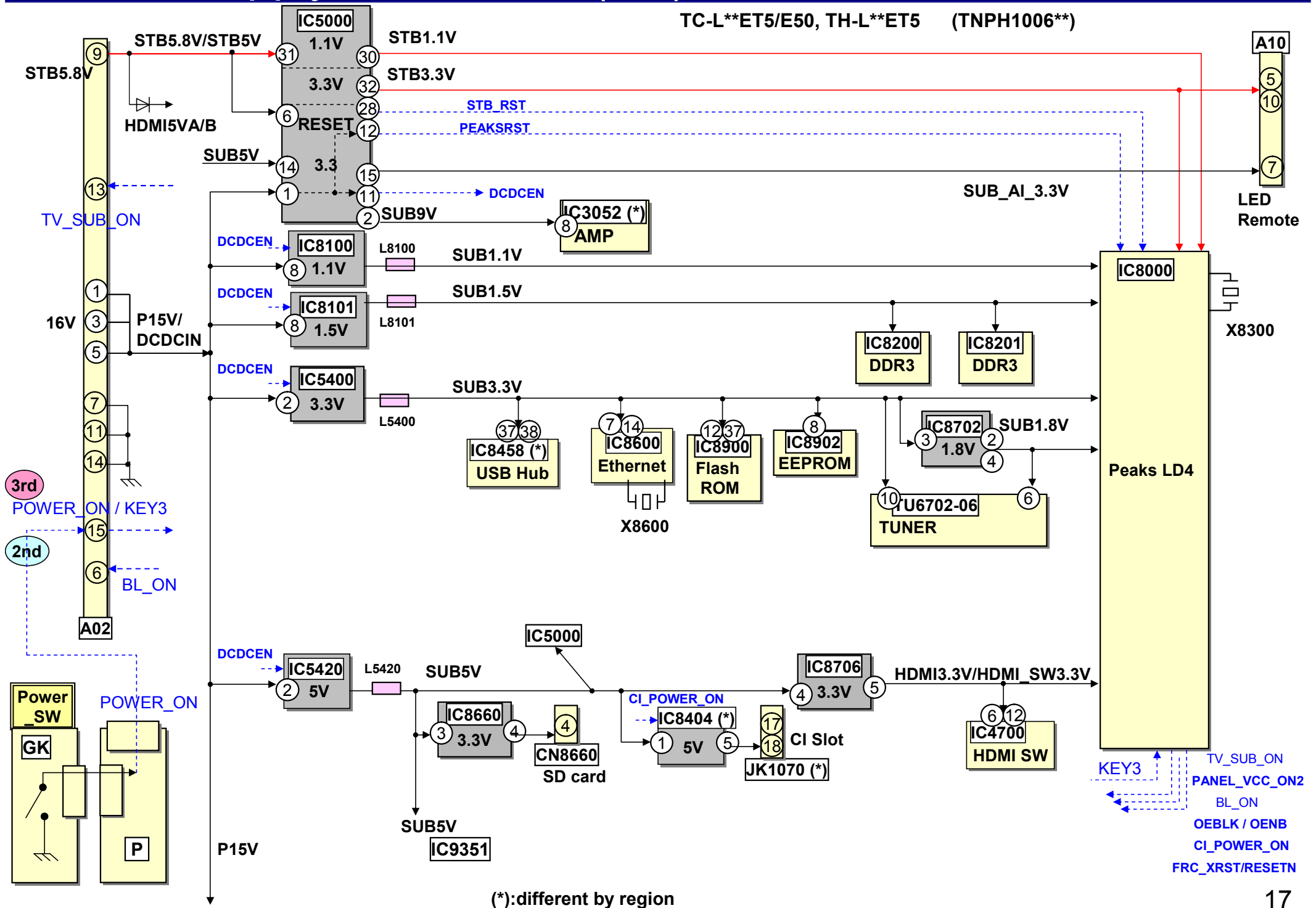


# Power Supply Distribution (2/2) : T\*-L\*\*WT50\*

T\*-L\*\*WT50\* (TNPH0994\*\*)

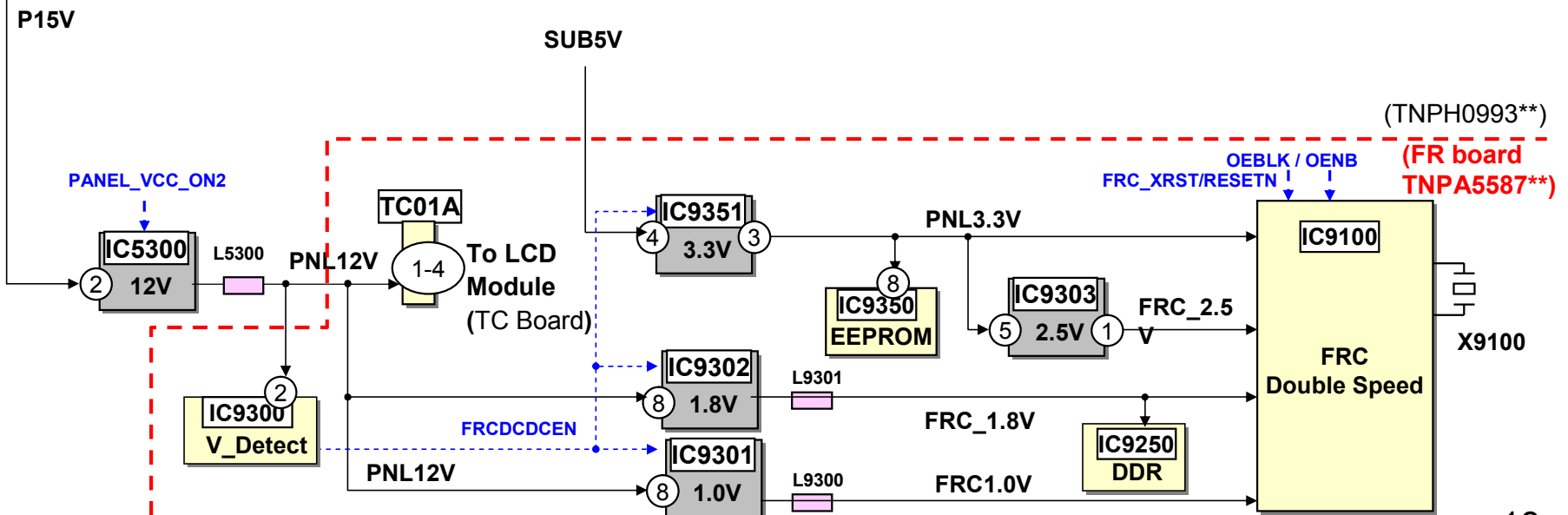
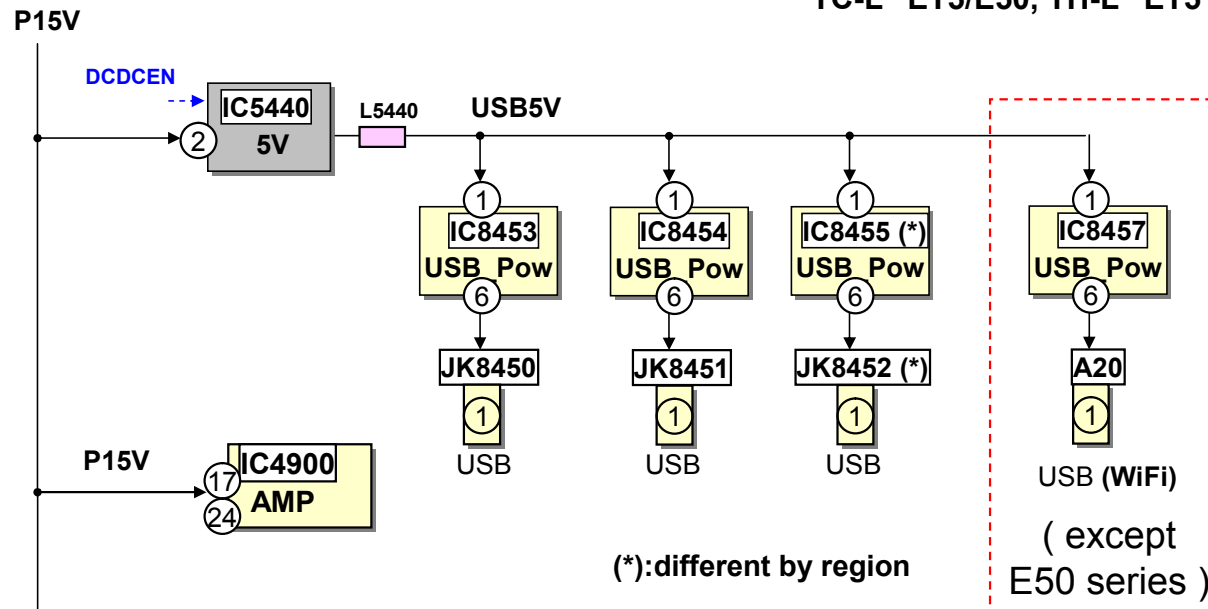


# Power Supply Distribution (1/2) : T\*-L\*\*ET5/E50



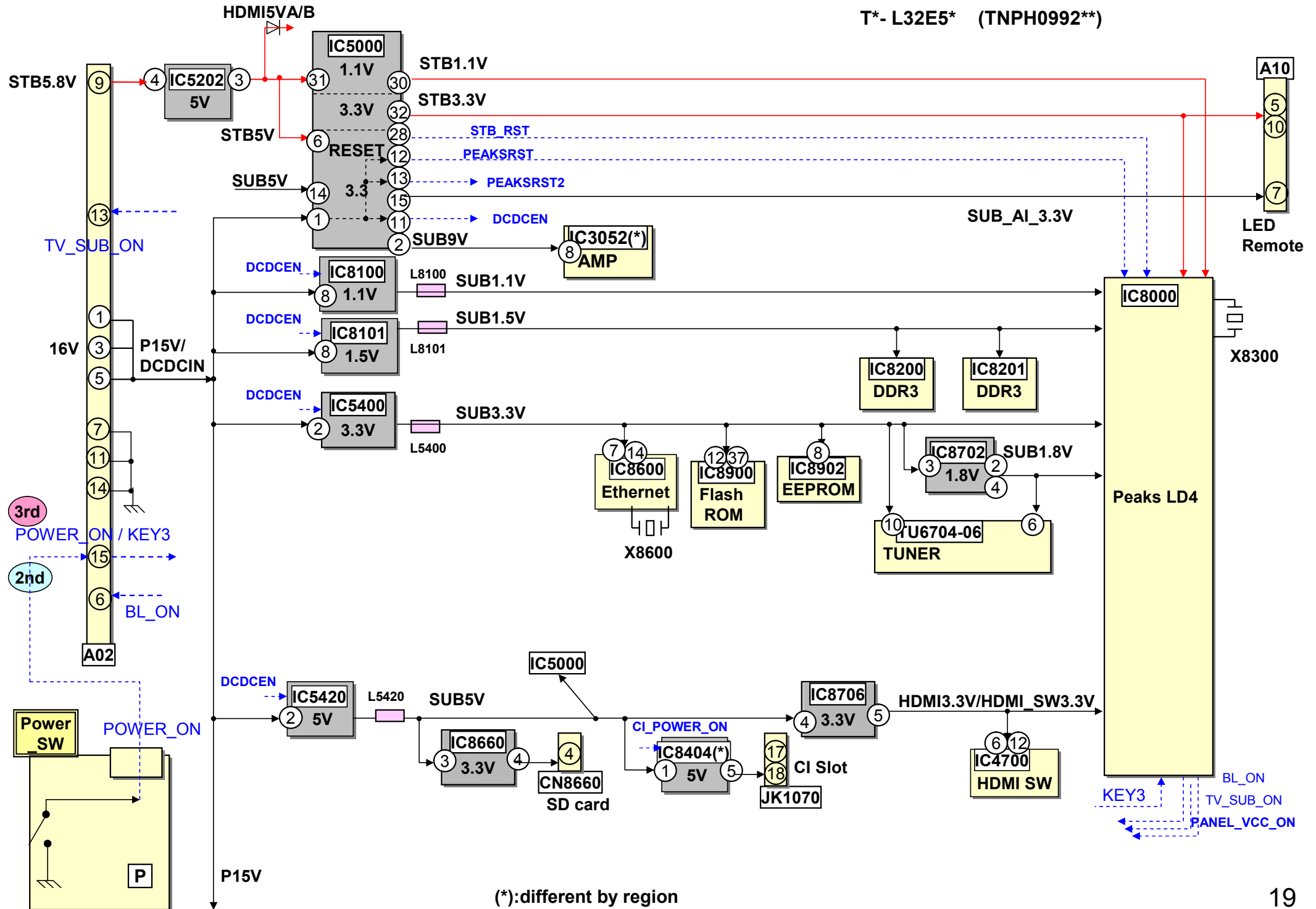
# Power Supply Distribution (2/2) : T\*-L\*\*ET5/E50

TC-L\*\*ET5/E50, TH-L\*\*ET5 (TNPH1006\*\*)



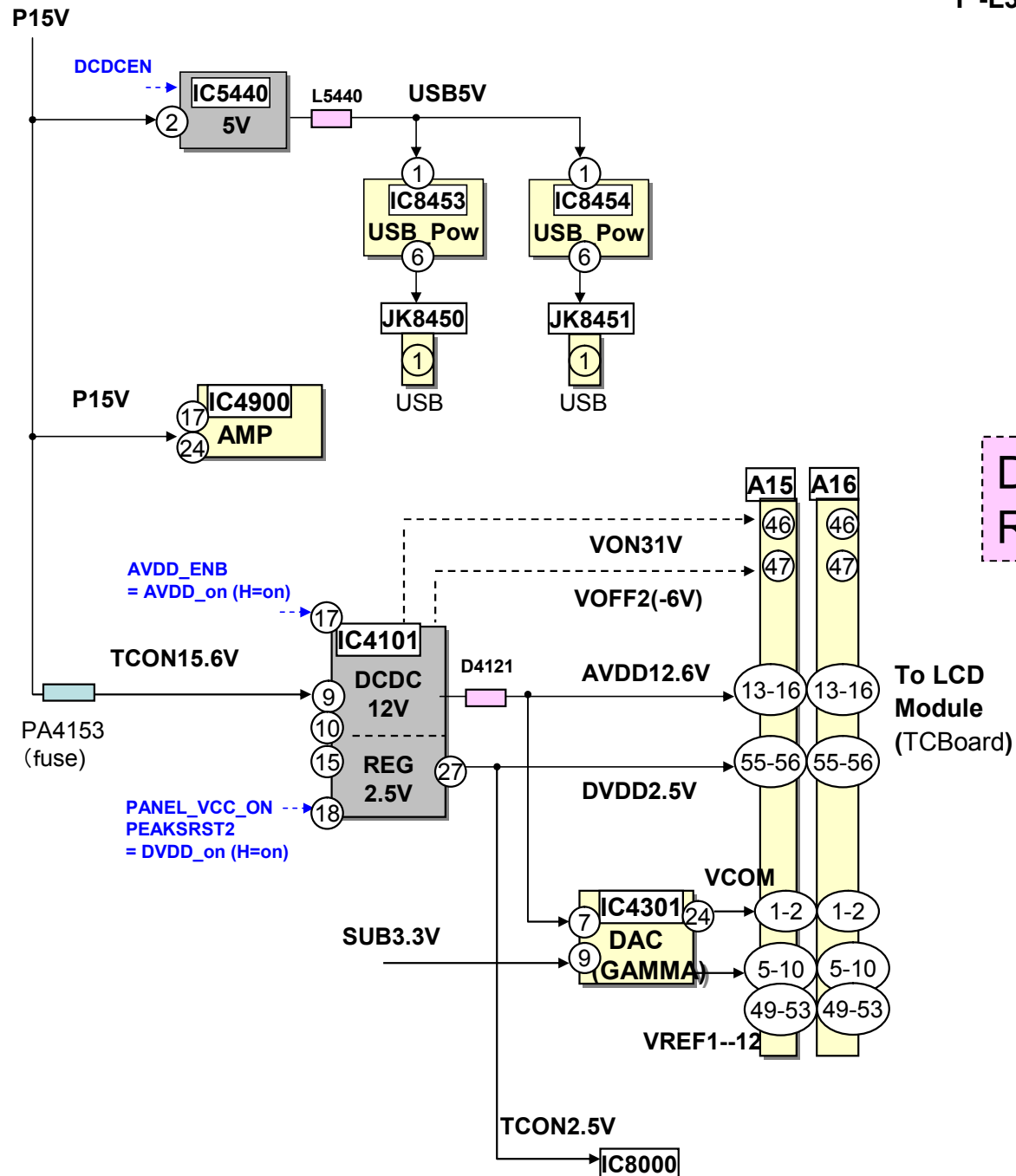
# Power Supply Distribution (1/2) : T\*-L32E5

T\*-L32E5\* (TNPH0992\*\*)



# Power Supply Distribution (2/2) : T\*-L32E5

T\*-L32E5\* (TNPH0992\*\*)



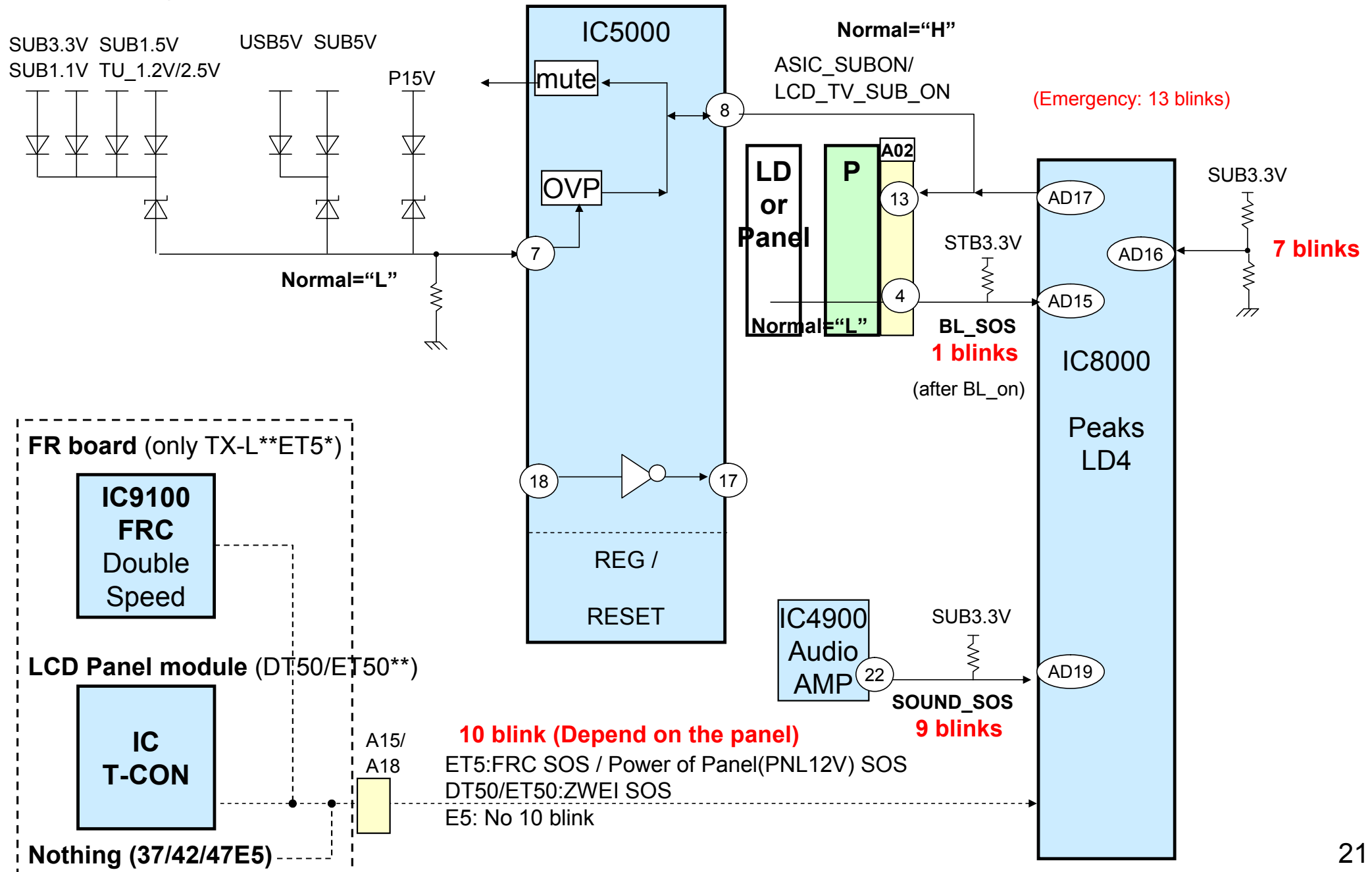
DCDC charge-pump:  
Refer to the Appendix page

# Protection circuit (L\*\*DT50/ET50/E5(except 32inch)\*\* / TX-L\*\*ET5\*\* )

**TX-L\*\*DT50B**

**< SOS signal >**

**< A board :TNP0993\*\*>**

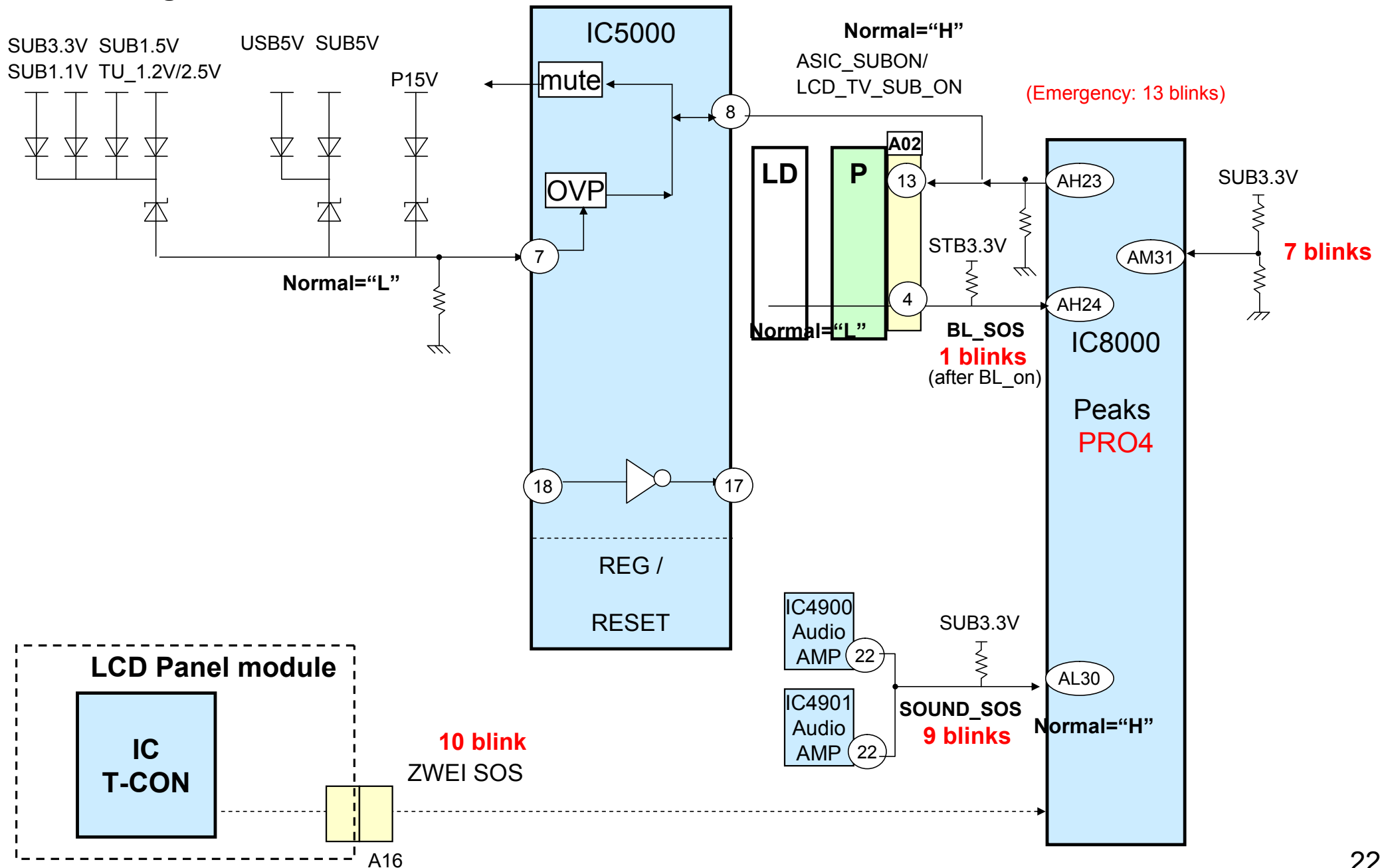


# Protection circuit (L\*\*WT50\*\*)

T\*-L\*\*WT50

< SOS signal >

< A board :TNP0994\*\*>

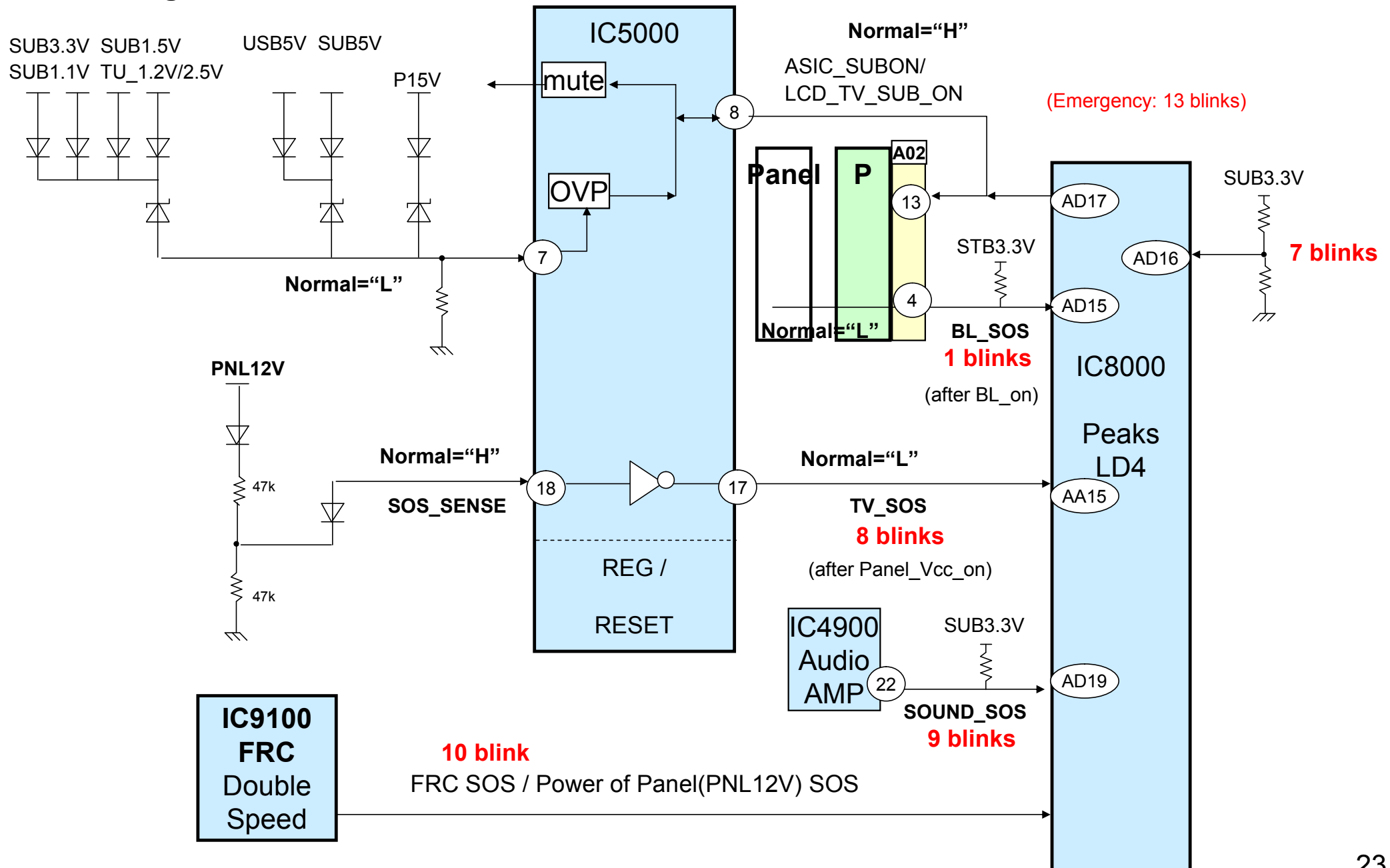


# Protection circuit (TC/TH-L\*\*ET5/E50\*\*)

TC/TH-L\*\*ET5/E50

< SOS signal >

< A board :TNPH1006\*\*>

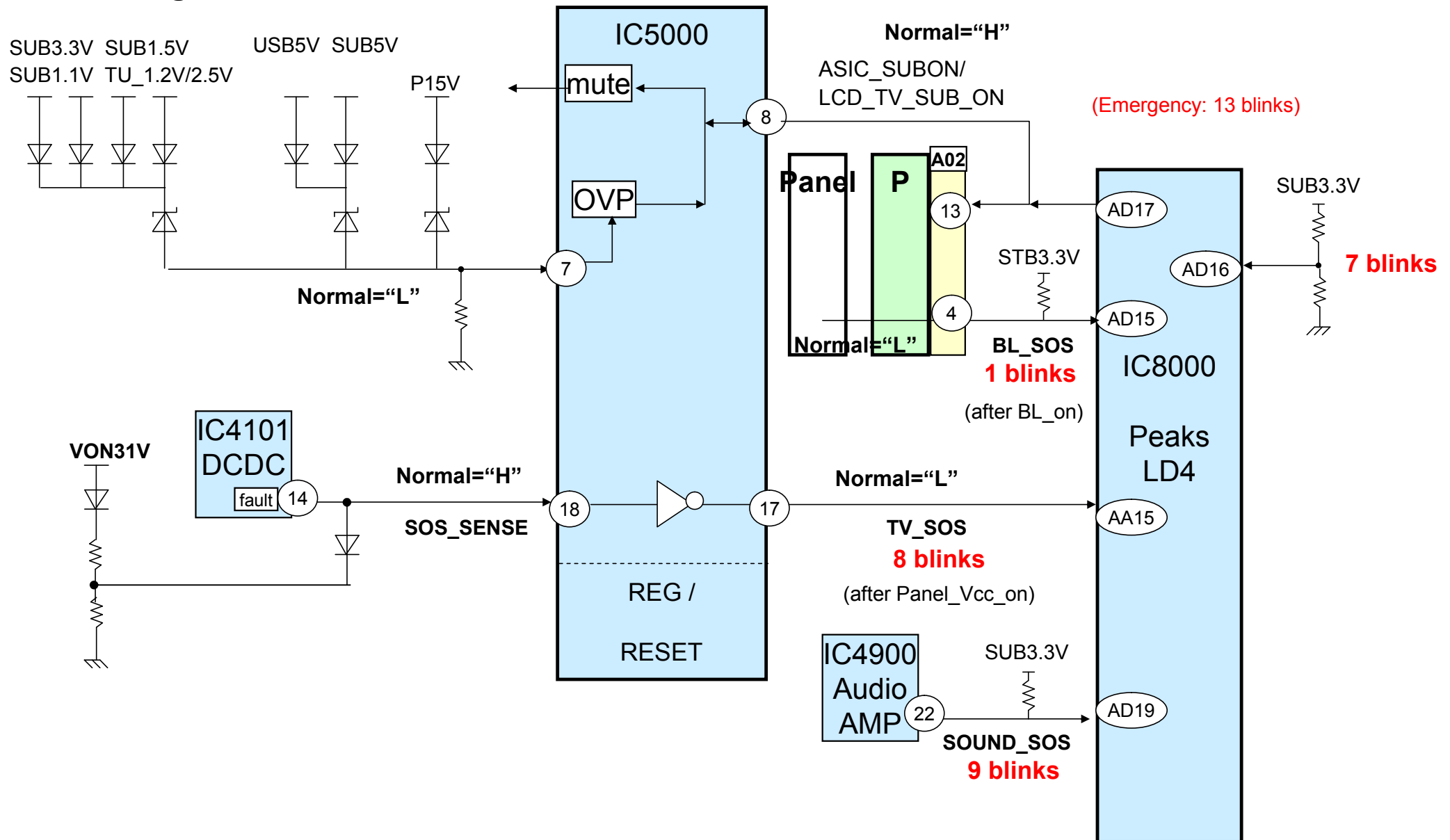


# Protection circuit (L32E5\*\*)

T\*-L32E5

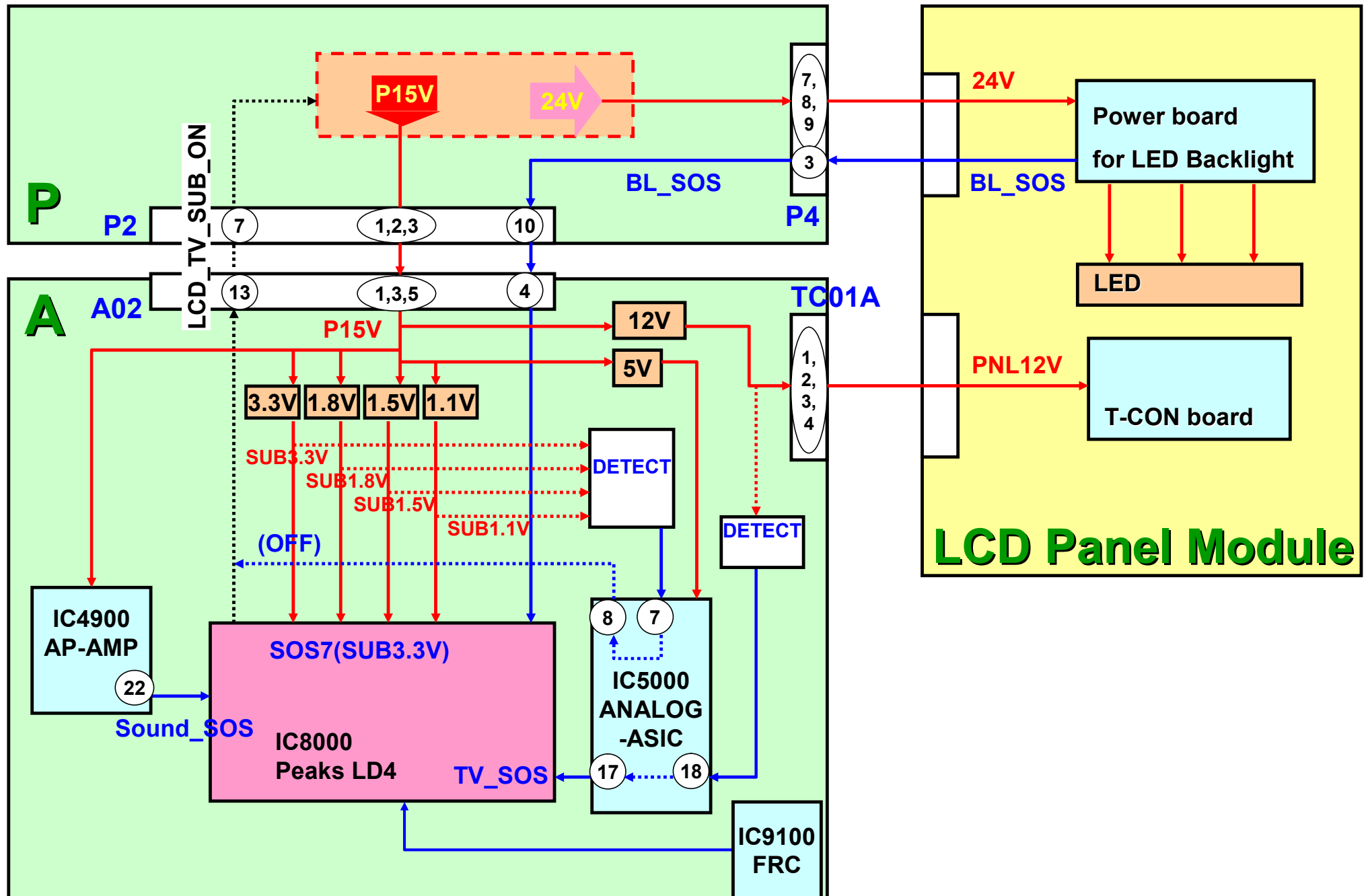
< SOS signal >

< A board :TNP0992\*\*>



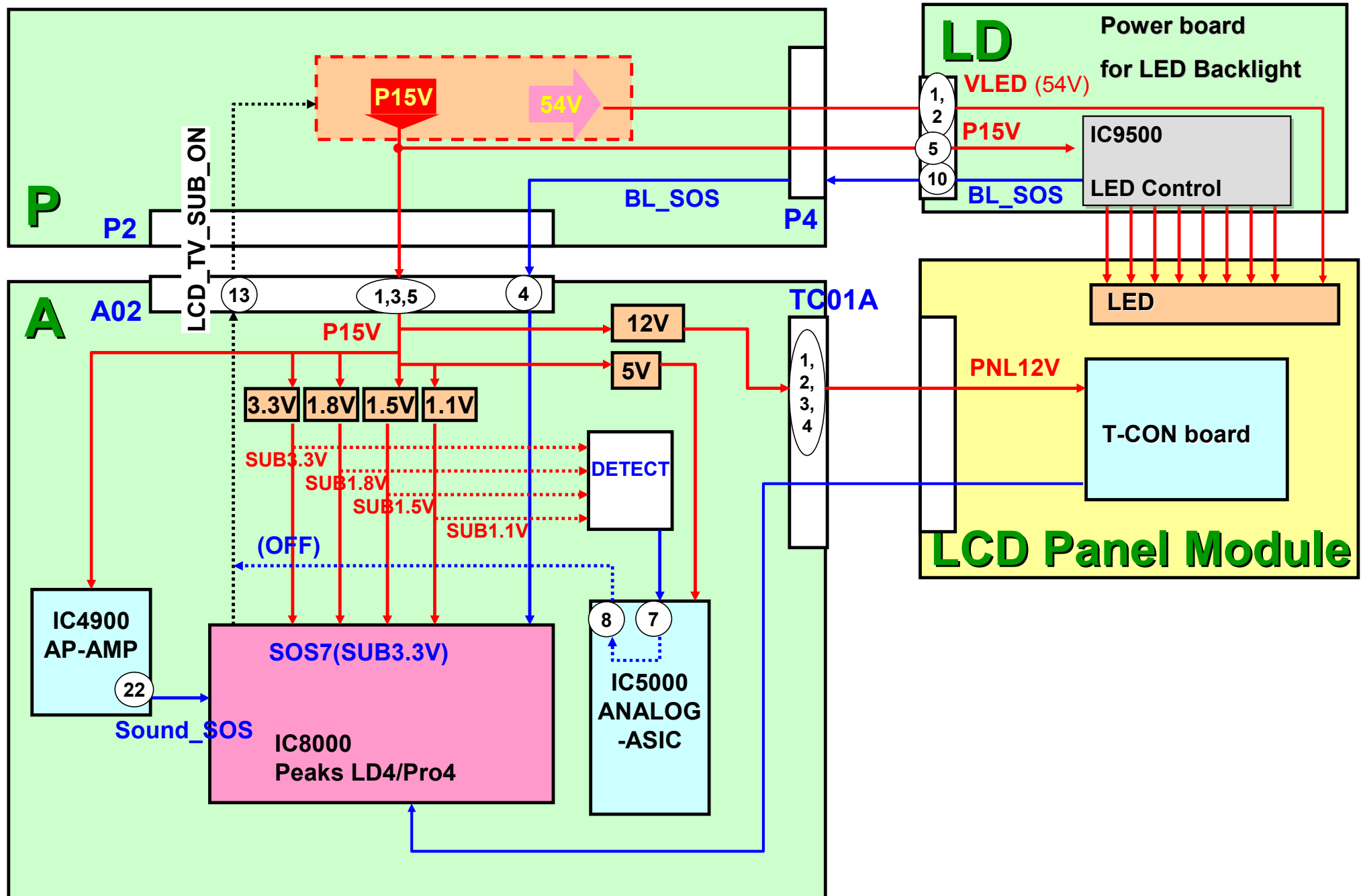
# Protection circuit block diagram of Panel Drive

TC/TH-L\*\*ET5/E50

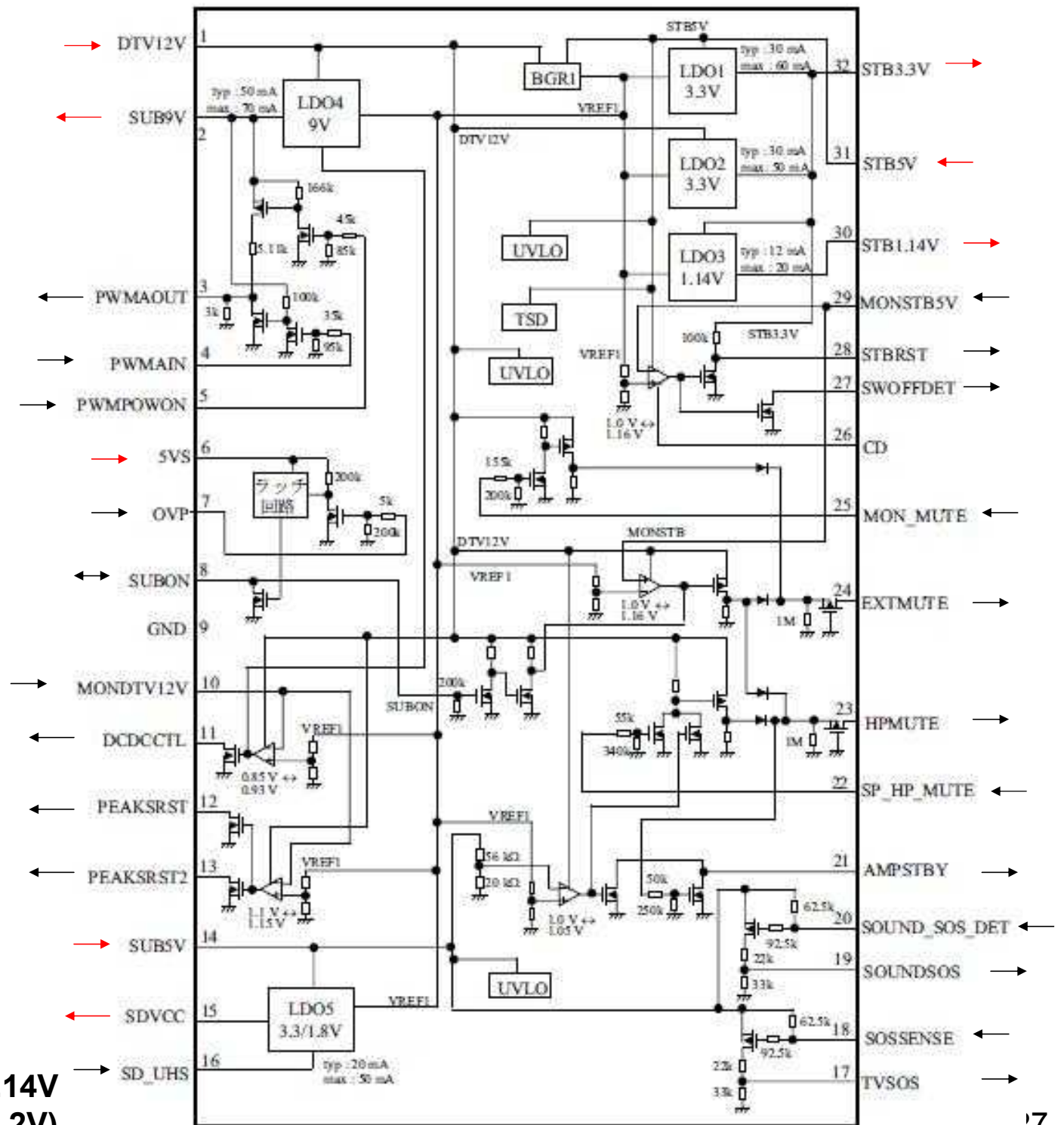


# Protection circuit block diagram of Panel Drive

TX-L\*\*DT50/WT50



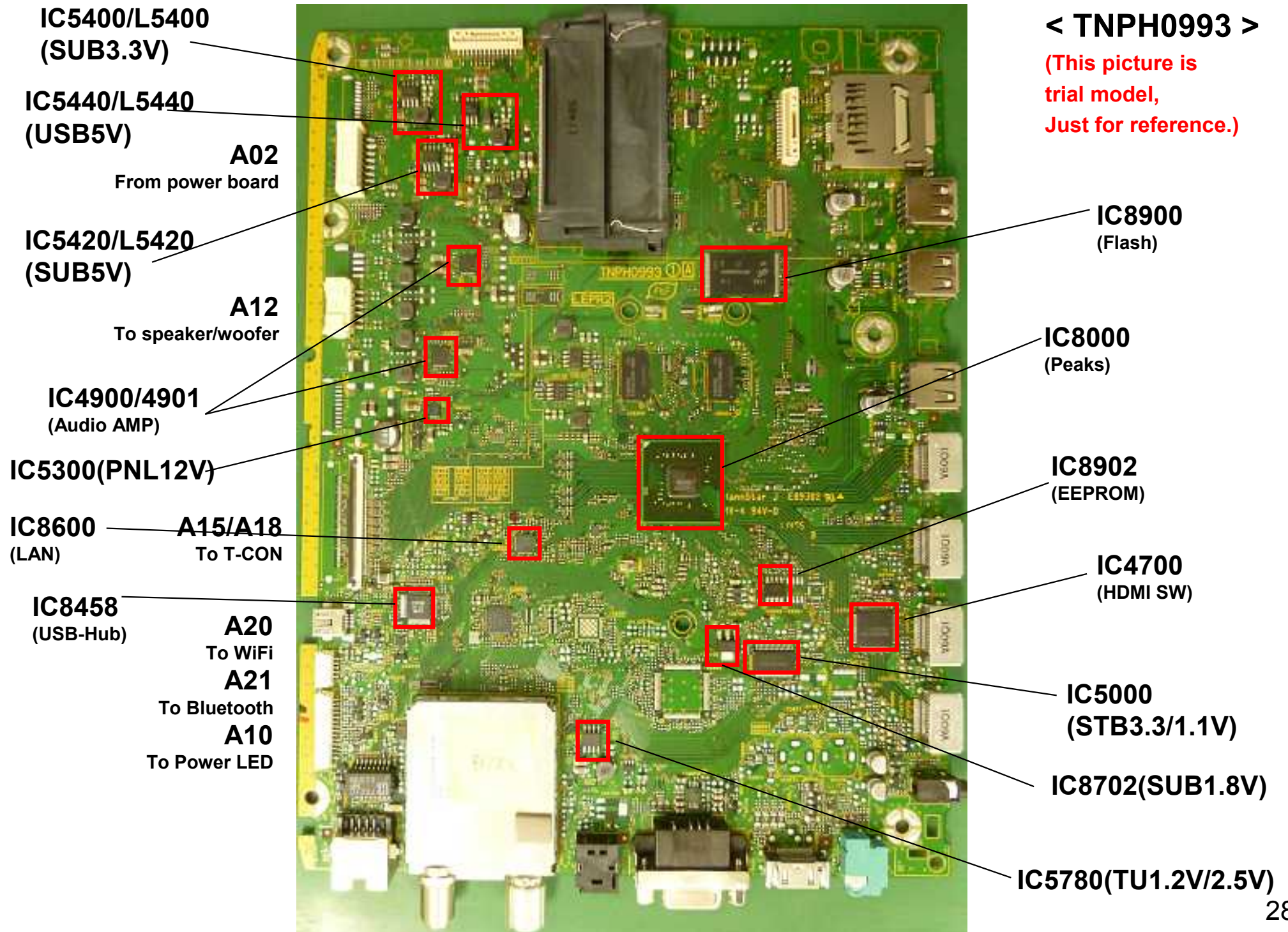
# IC5000 (Block Diagram)



## Difference

AN34043AAVF : 30pin output = 1.14V  
(AN34043A-VF : 30pin output = 1.2V)

# Component Location



# Power On Sequence ( AC Plug in ) : DT50

Just AC plug in ( to Power off or Standby )

Reference : waveform of TX-L42DT50

( The time is just reference. Checked by trial model.)

AC plug in

This page is No need for north America model

STB5.8V/5V(TP2017)  
STB3.3V(from IC5000-32pin:TP5002)  
STB1.1V(from IC5000-30pin:TP5003)

STB\_RST  
(from IC5000-28pin to IC8000) TP8910

2.3s (to OFF)

94s : to Standby ( OPT = light on )

X8300 (IC8000)

TV\_SUB\_ON  
(from IC8000 to P-PCB via A02-13pin(P2-7pin) )

20ms

266ms : to OFF (94s to standby) : refer to the Power board page

\*There is no OFF state in North America models.

P15V input

38ms

DCDCEN  
( from IC5000-11pin to each DC power IC )

52ms

SUB5V/3.3V/1.5V/1.1/USB5V output

SUB3.3V SENSE (IC8001) SUB9V output

( If low voltage, fast 3 blinks )

P\_XRST/PEAKSRST  
( from IC5000-12pin to IC8000 )

180ms

Flash CE  
(IC8000 to IC8900-9pin :R8914)

186ms

186-265ms

# Power On Sequence ( Power on:1/3 ) : DT50

## Power-ON

Reference : waveform of TX-L42DT50

( The number of the time is reference. )

STB5.8V/5V(TP2017)  
STB3.3V(from IC5000-32pin:TP5002)  
STB1.1V(from IC5000-30pin:TP5003)

STB\_RST  
(from IC5000-28pin to IC8000) TP8910

Power\_SW\_ON

PUSH

No need for north America model

X8300 (IC8000)

13ms

TV\_SUB\_ON  
(from IC8000 to P-PCB via A02-13pin(P2-7pin) )

P15V input

36ms

DCDCEN  
( from IC5000-11pin to each DC power IC )

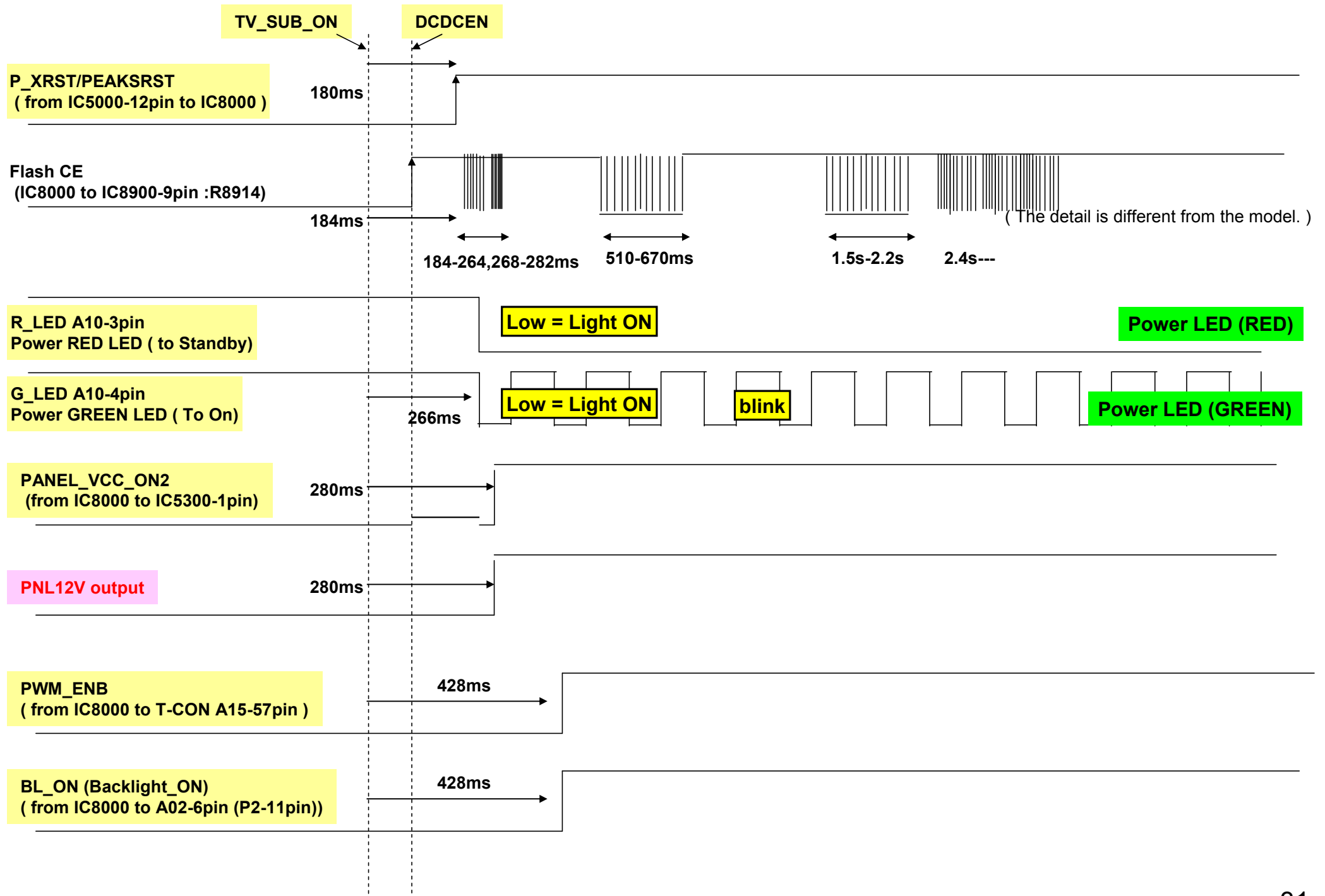
SUB5V/3.3V/1.5V/1.1/USB5V output

SUB3.3V SENSE (IC8001)

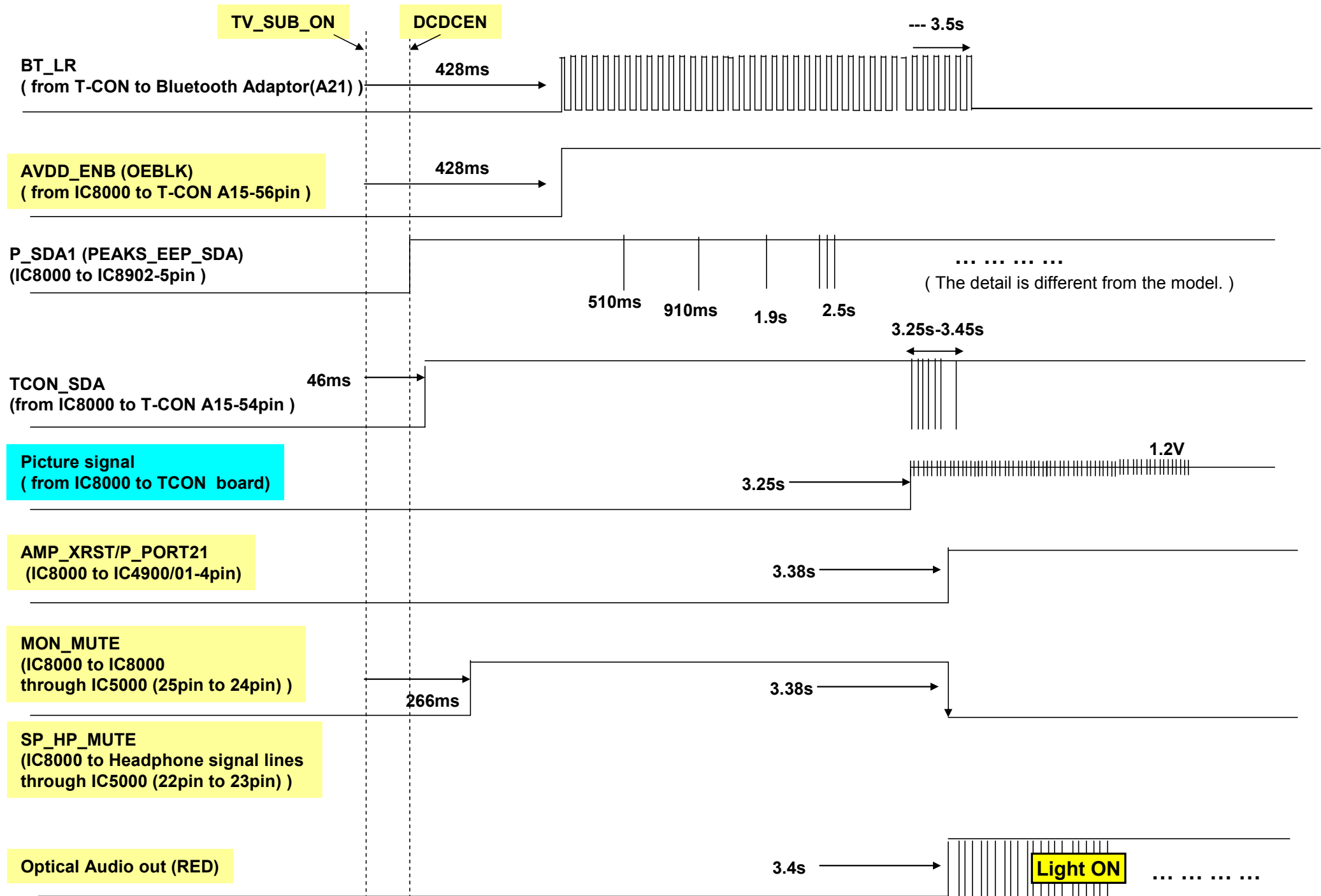
SUB9V output

46ms

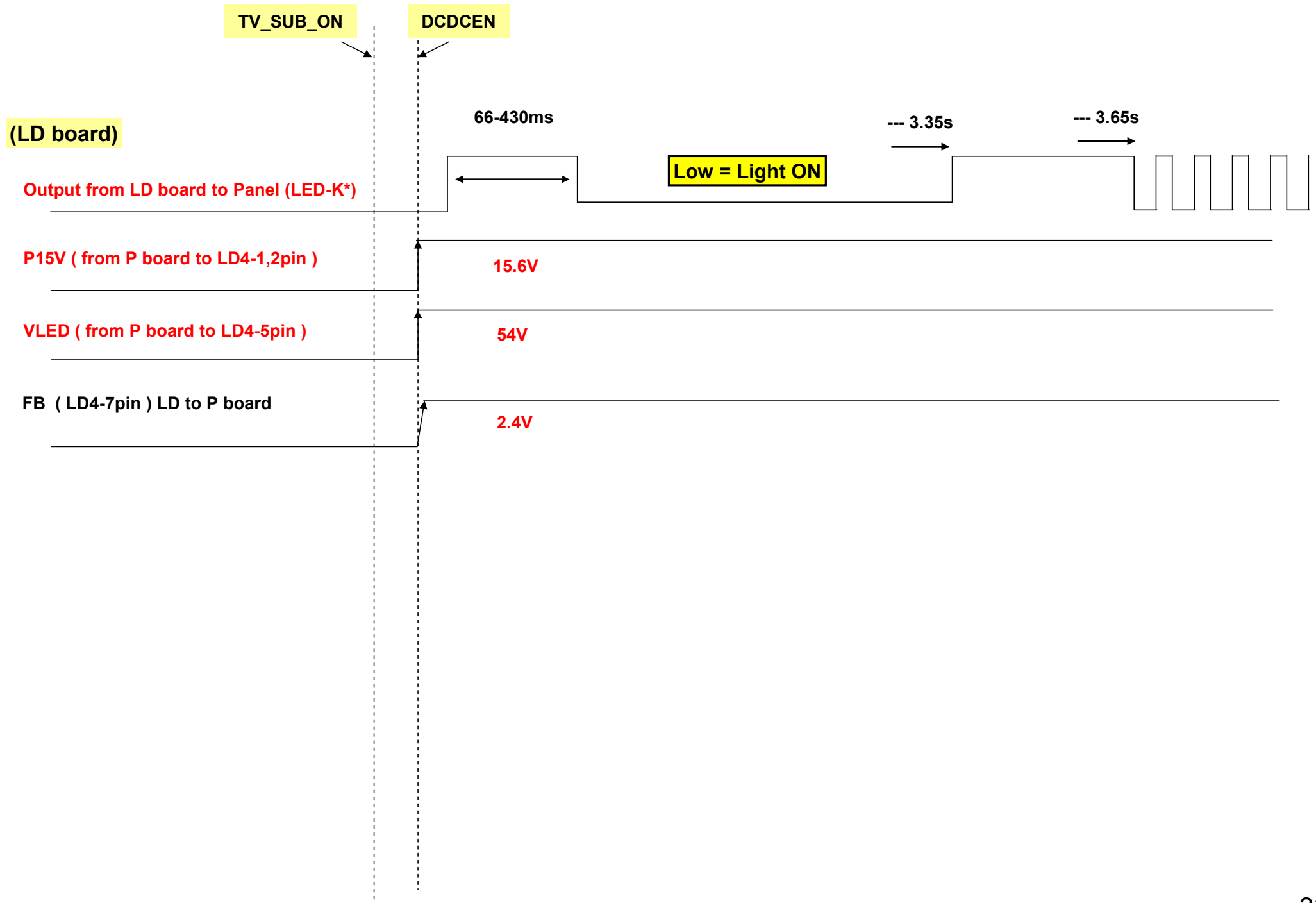
# Power On Sequence ( Power on:2/3 ) : DT50



# Power On Sequence ( Power on:3/3 ) : DT50



# Power On Sequence ( LD board ) : DT50





# Power On Sequence ( AC Plug in ) : ET5

Just AC plug in ( to Power off or Standby )

Reference : waveform of TX-L37ETW5

( The time is just reference. Checked by trial model.)

AC plug in

20ms

STB5.8V/5V(TP2017)  
STB3.3V(from IC5000-32pin:TP5002)  
STB1.1V(from IC5000-30pin:TP5003)

STB\_RST  
(from IC5000-28pin to IC8000) TP8910

2.3s (to OFF)

33s : to Standby ( OPT = light on )

X8300 (IC8000)

TV\_SUB\_ON

(from IC8000 to P-PCB via A02-13pin(P2-7pin) )

20ms

236ms : to OFF (32s to standby) : refer to the Power board page

\*There is no OFF state in North America models.

P15V input

13ms

26ms

DCDCEN

( from IC5000-11pin to each DC power IC )

SUB5V/3.3V/1.5V/1.1/USB5V output

SUB3.3V SENSE (IC8001) SUB9V output

( If low voltage, fast 3 blinks )

P\_XRST/PEAKSRST

( from IC5000-12pin to IC8000 )

150ms

Flash CE

(IC8000 to IC8900-9pin :R8914)

154ms

154-234ms

# Power On Sequence ( Power on:1/4 ) : ET5

## Power-ON

Reference : waveform of TX-L37ETW5

( The number of the time is reference. )

STB5.8V/5V(TP2017)  
STB3.3V(from IC5000-32pin:TP5002)  
STB1.1V(from IC5000-30pin:TP5003)

STB\_RST  
(from IC5000-28pin to IC8000) TP8910

Power\_SW\_ON

PUSH

No need for north America model

X8300 (IC8000)

13ms

TV\_SUB\_ON  
(from IC8000 to P-PCB via A02-13pin(P2-7pin) )

P15V input

13ms

DCDCEN  
( from IC5000-11pin to each DC power IC )

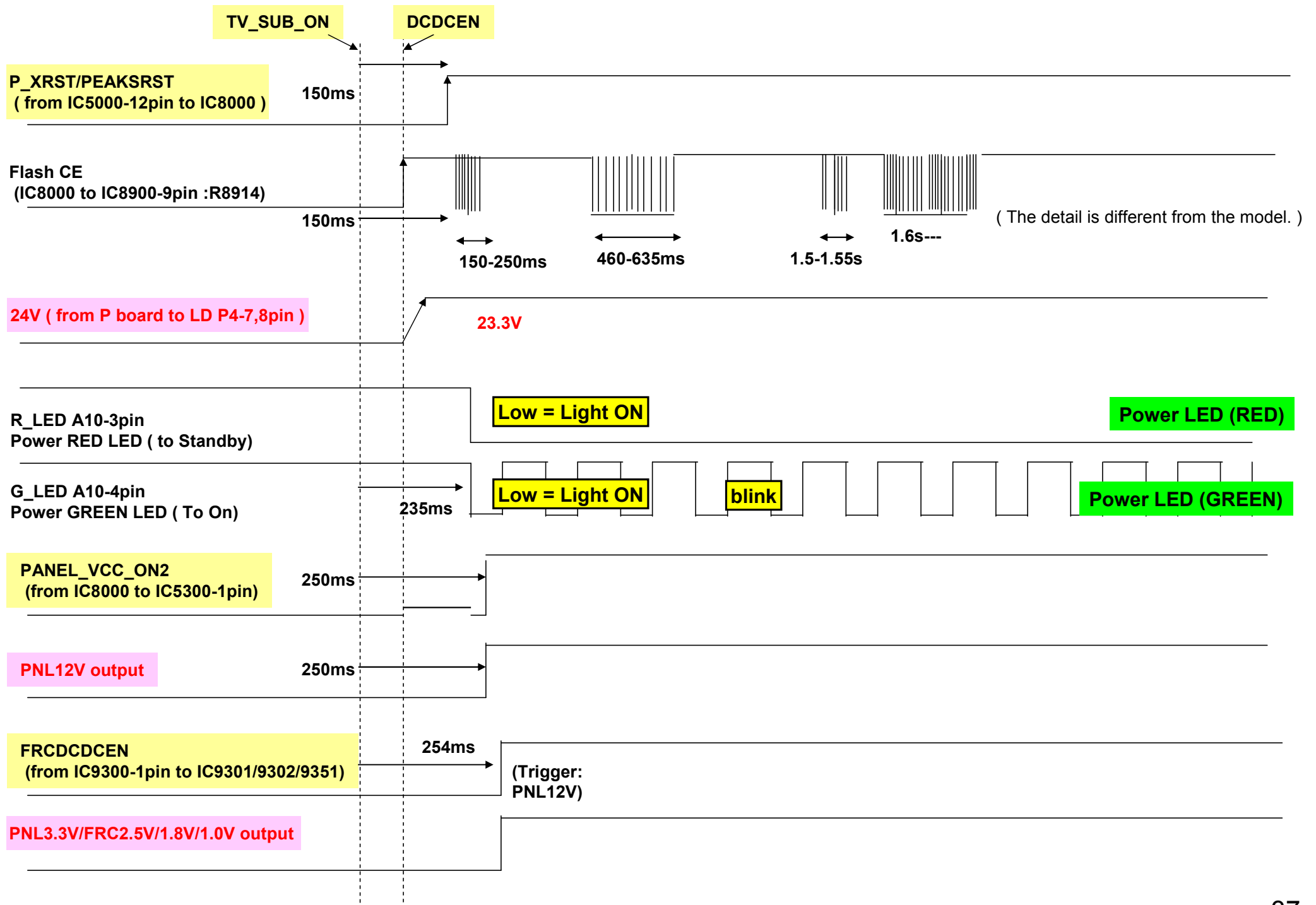
SUB5V/3.3V/1.5V/1.1/USB5V output

SUB3.3V SENSE (IC8001)

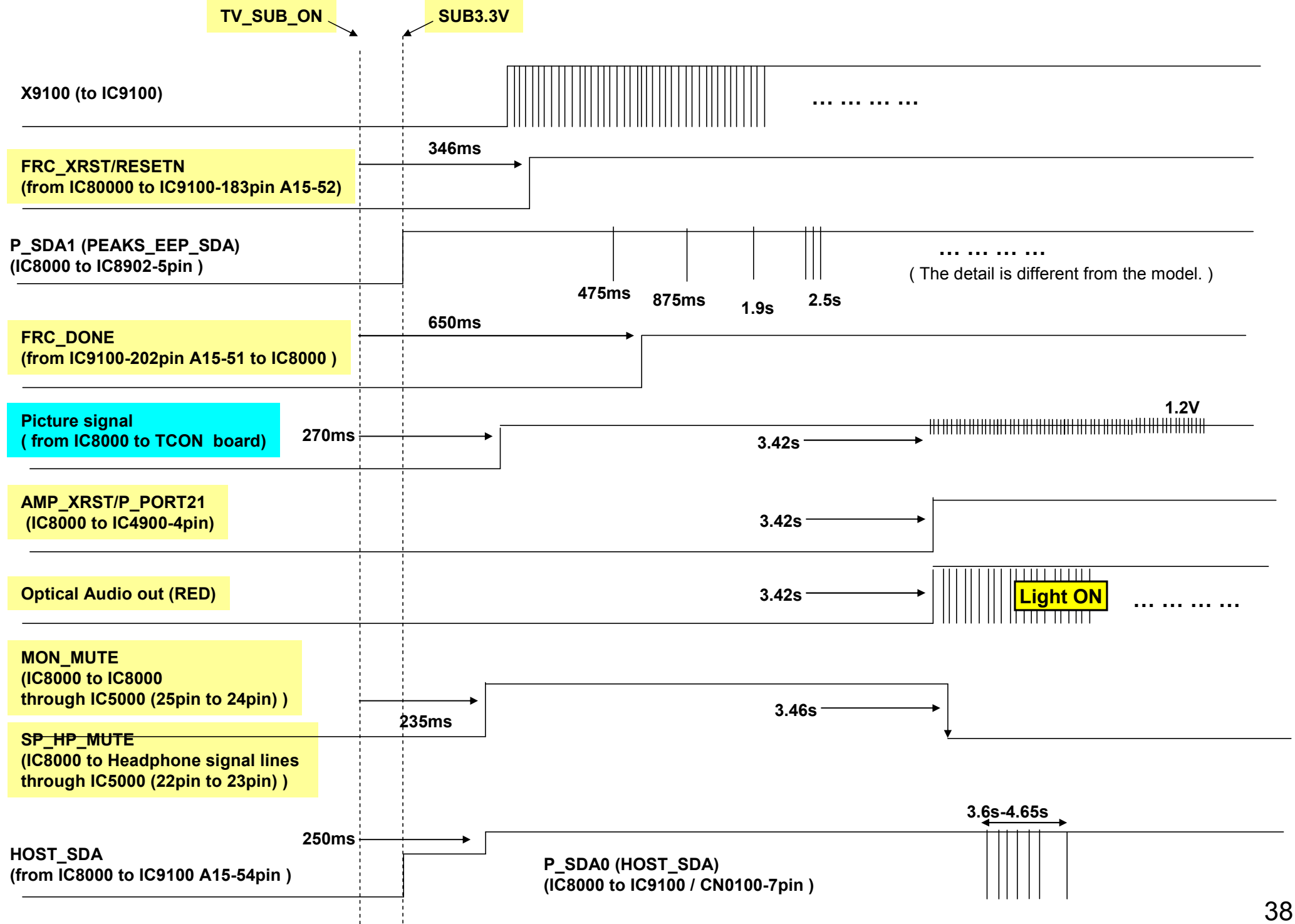
SUB9V output

13ms

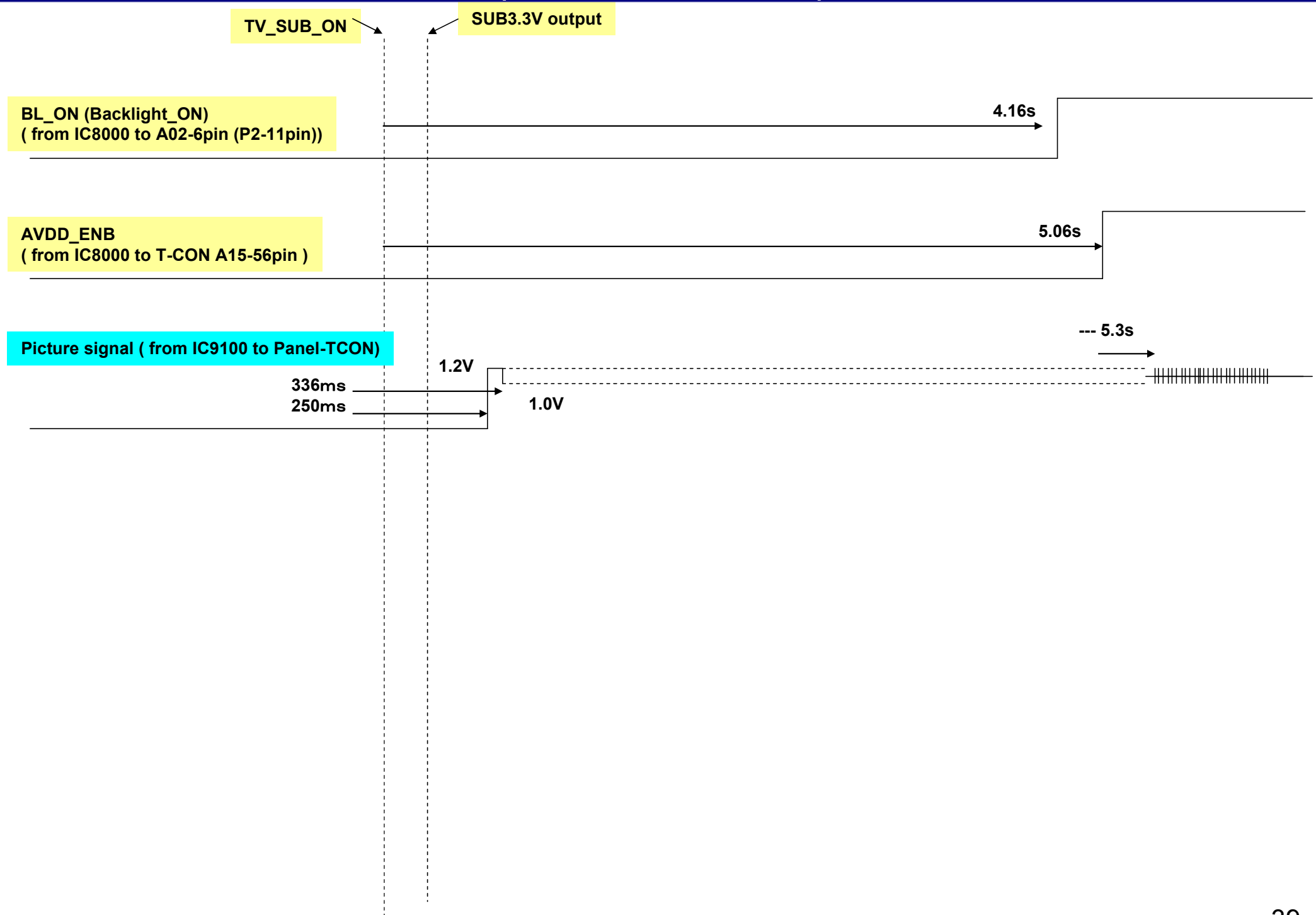
# Power On Sequence ( Power on:2/4 ) : ET5



# Power On Sequence ( Power on:3/4 ) : ET5

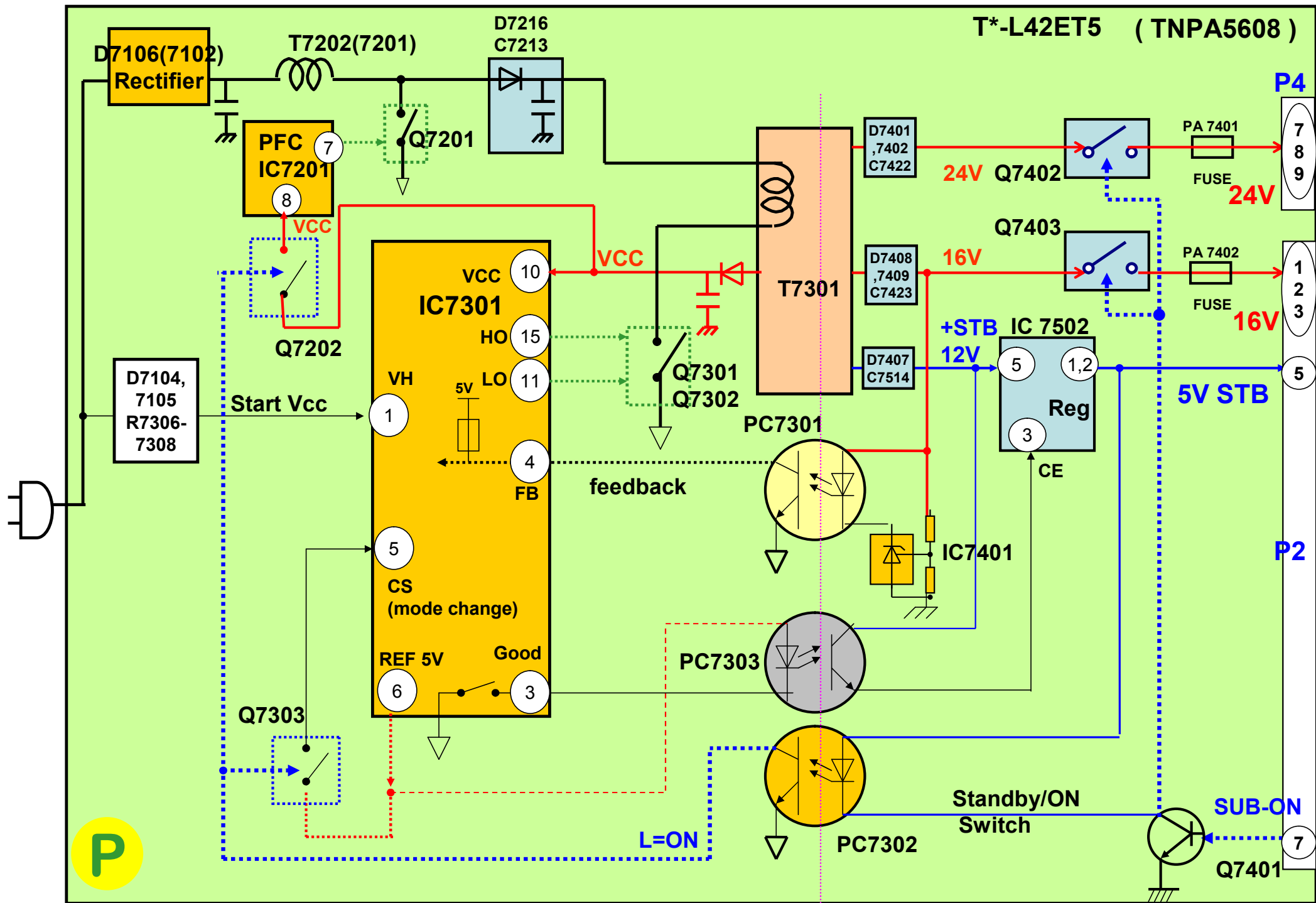


# Power On Sequence ( Power on:4/4 ) : ET5



**P board**

# Power Supply Block Diagram : T\*-L\*\*ET5/E5

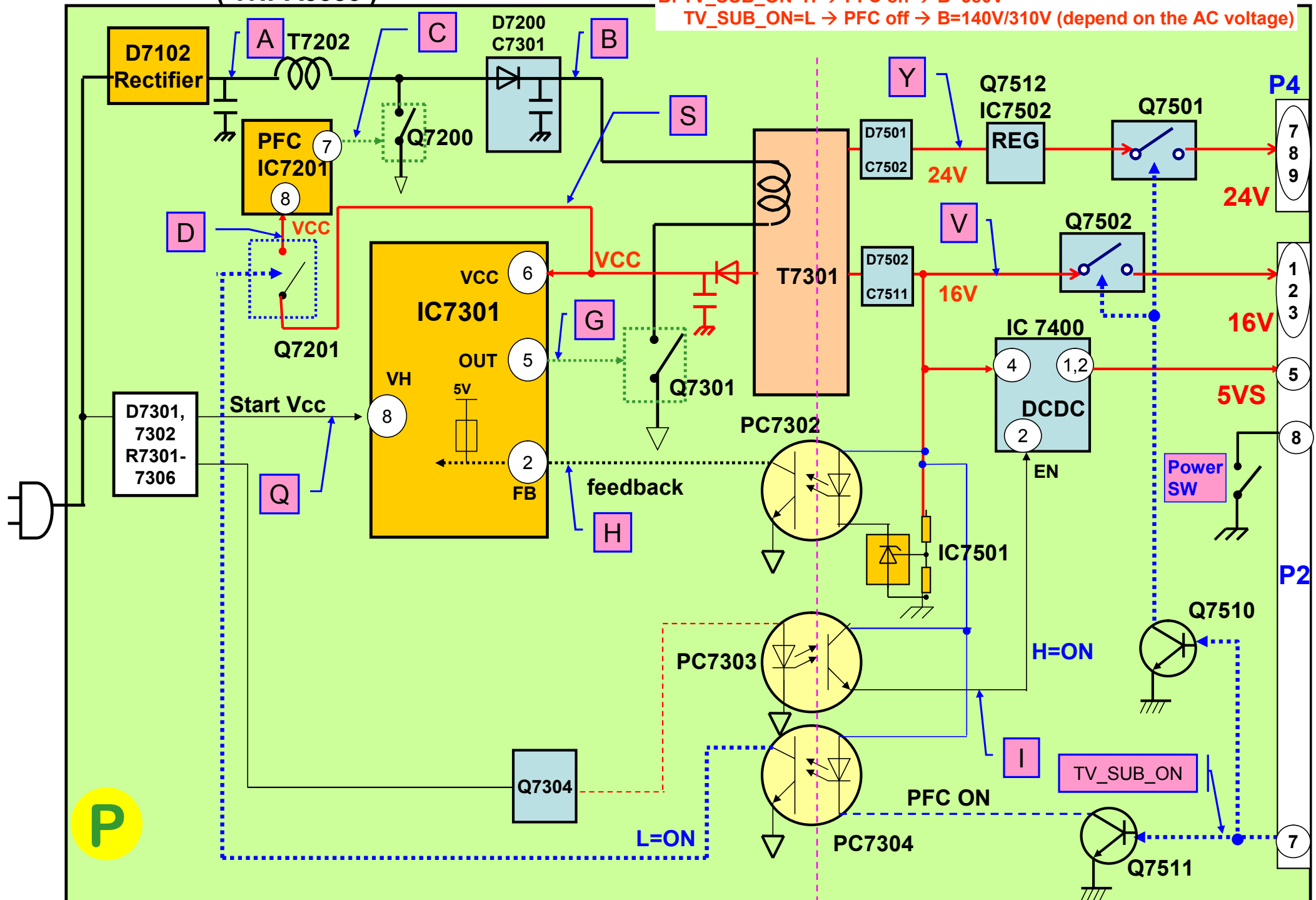


# Power Supply Block Diagram : TX-L37ET5

T\*-L37ET5 (TNPA5583)

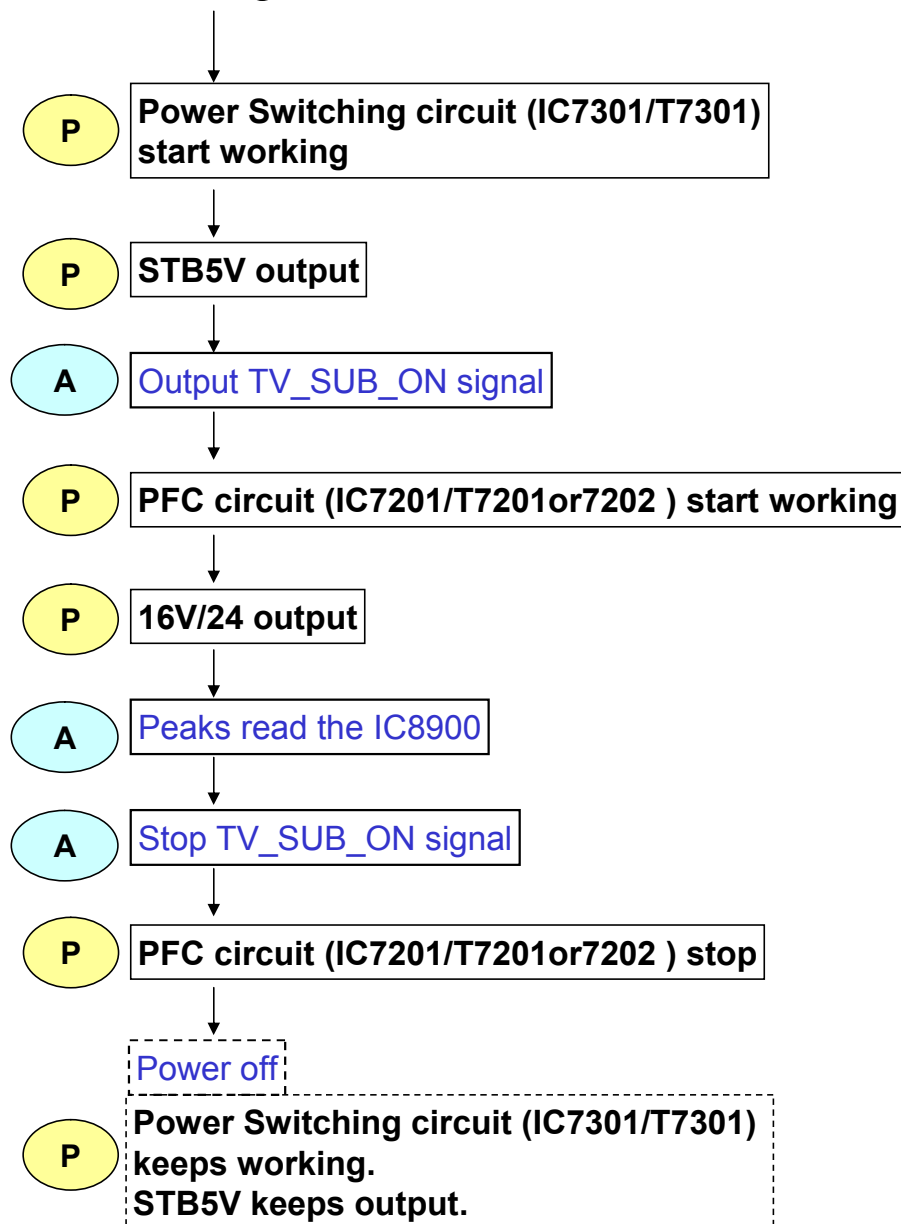
B: TV\_SUB\_ON=H → PFC on → B=380V

TV\_SUB\_ON=L → PFC off → B=140V/310V (depend on the AC voltage)

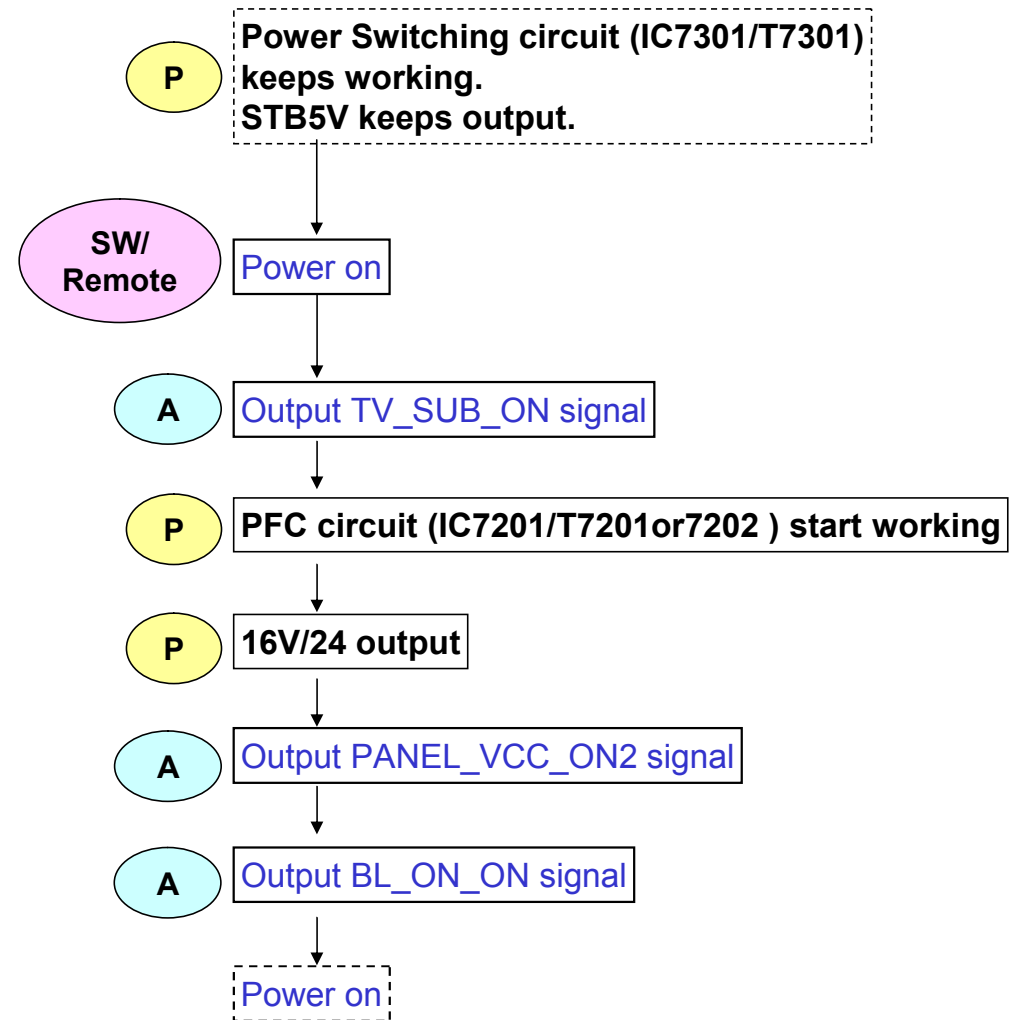


# Simple Power On Sequence

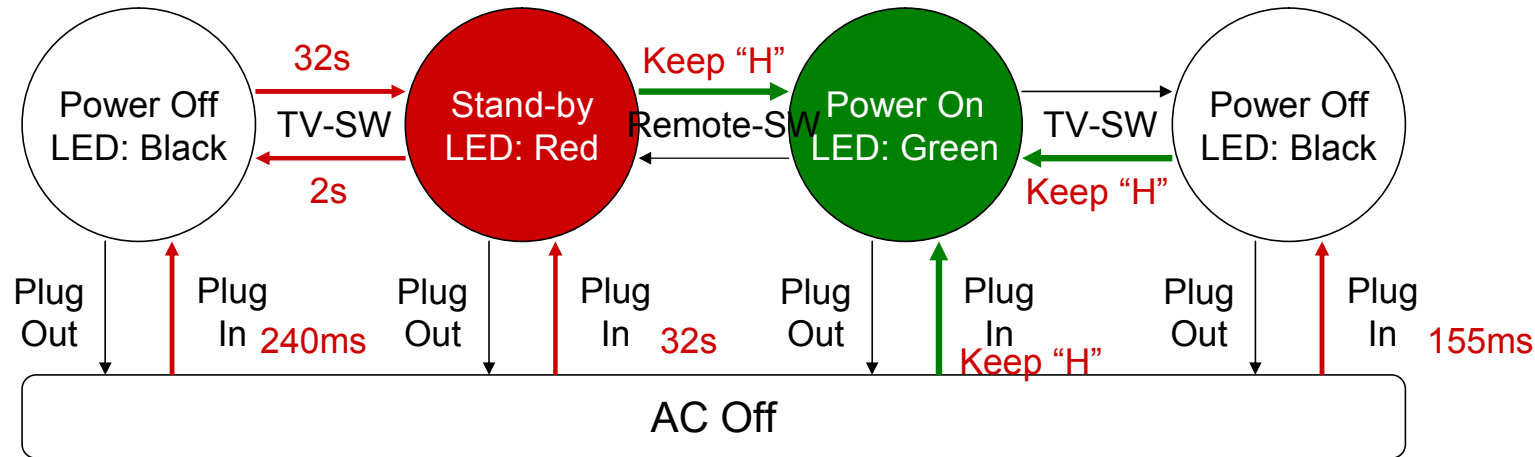
## < Plug In >



## < Power On >



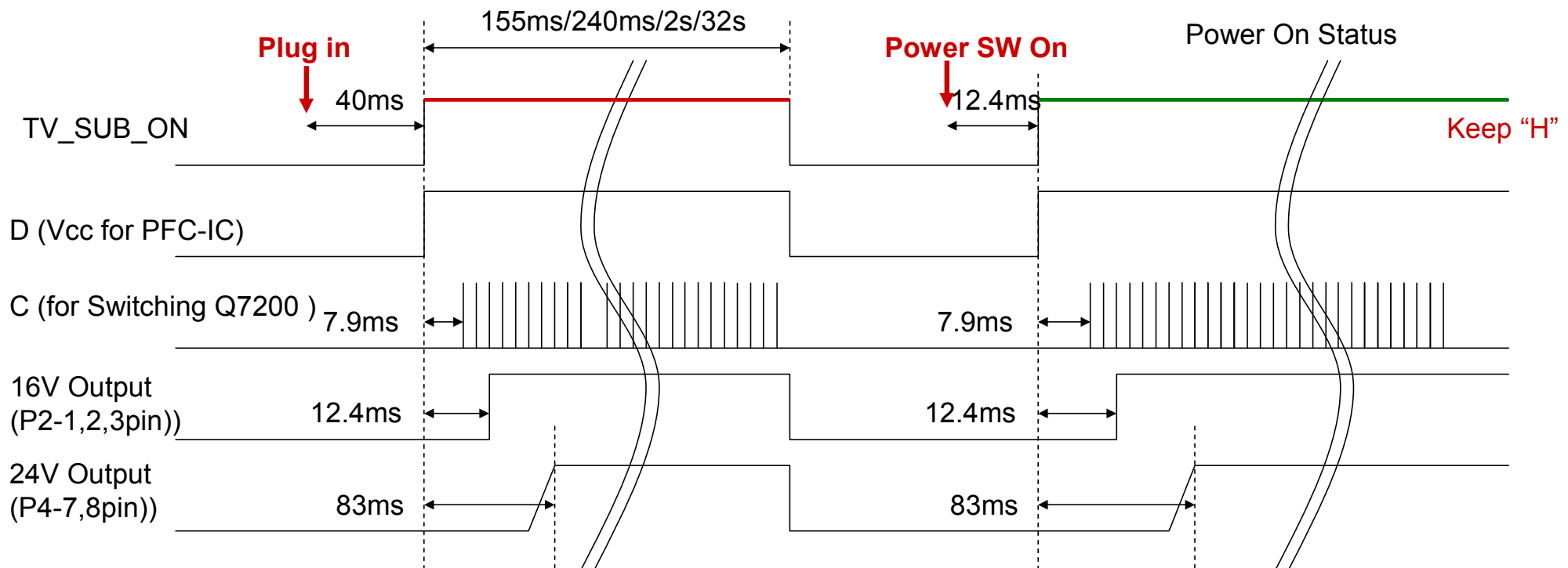
# TV\_SUB\_ON Timing Chart




(The time is for the TX-L37ETW5. It's different from the model.)

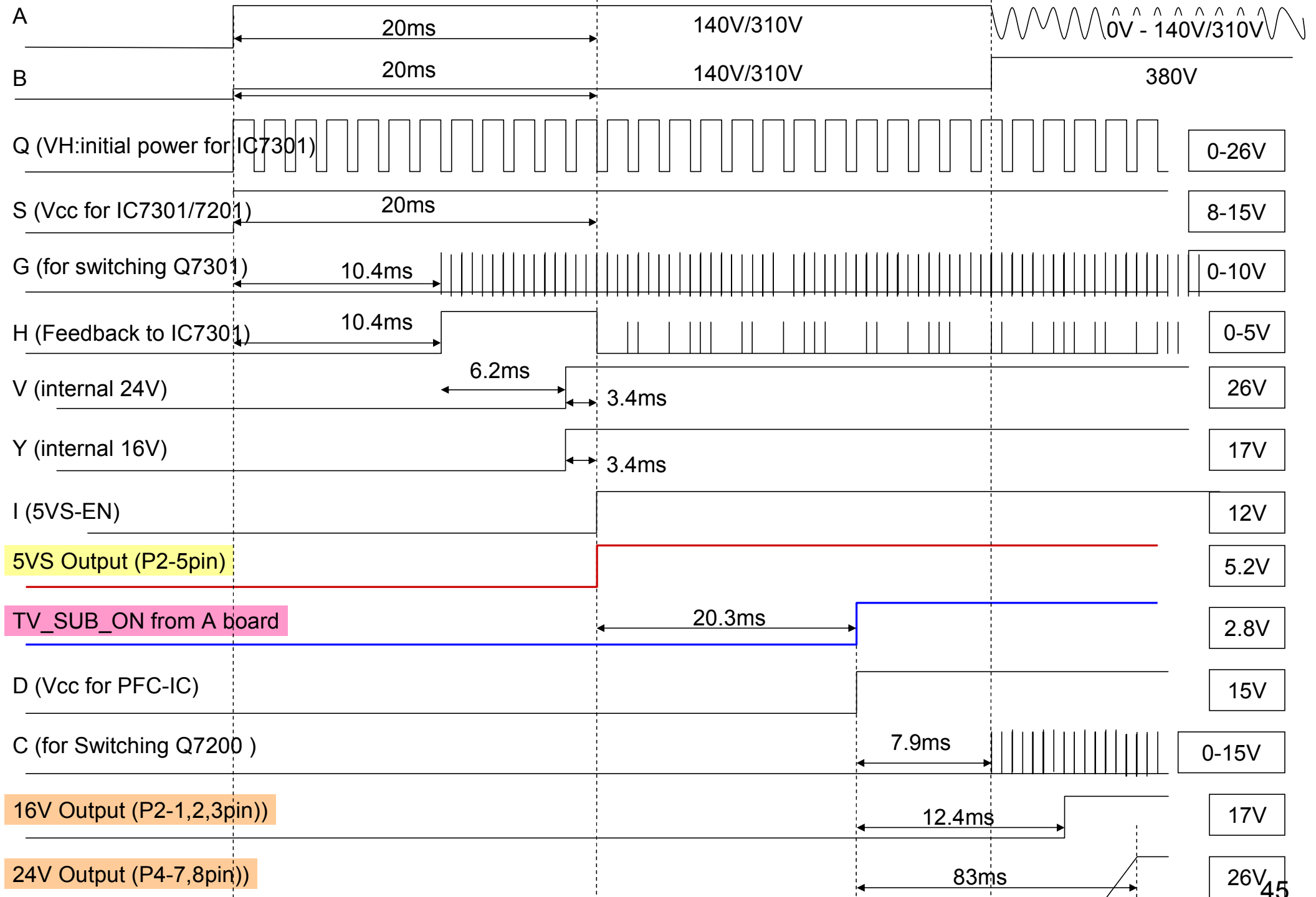
\*There is no Power OFF state in North America models.

After plug in, the Peaks IC output the TV\_SUB\_ON signal once. The period of keeping "high" of TV\_SUB\_ON is depend on the previous situation.



< Plug In >  Plug in

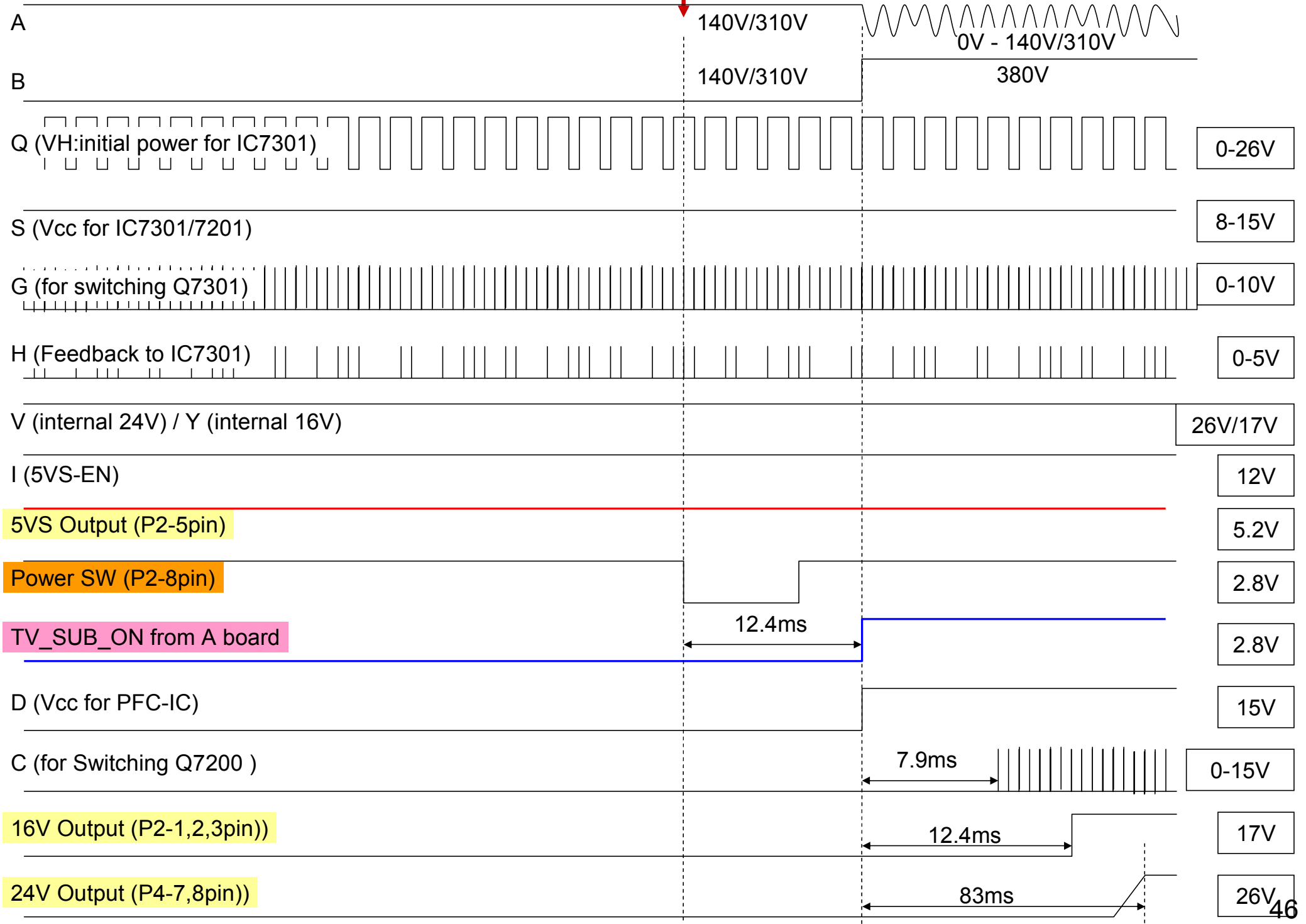
Reference : waveform of T\*-L37ET5 (TNPA5583)



# < Power On >

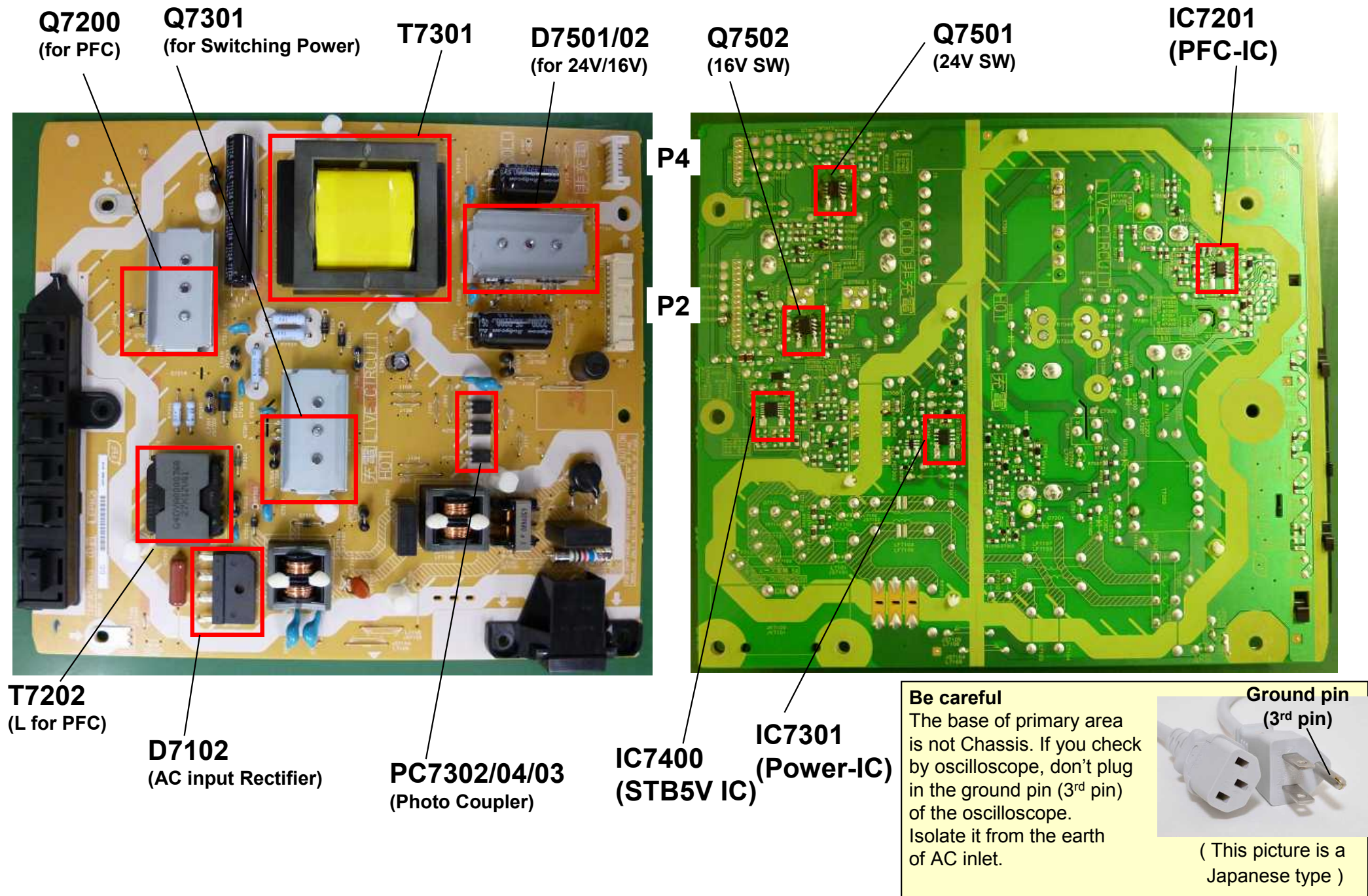
SW On

Reference : waveform of TX-L37ETW5



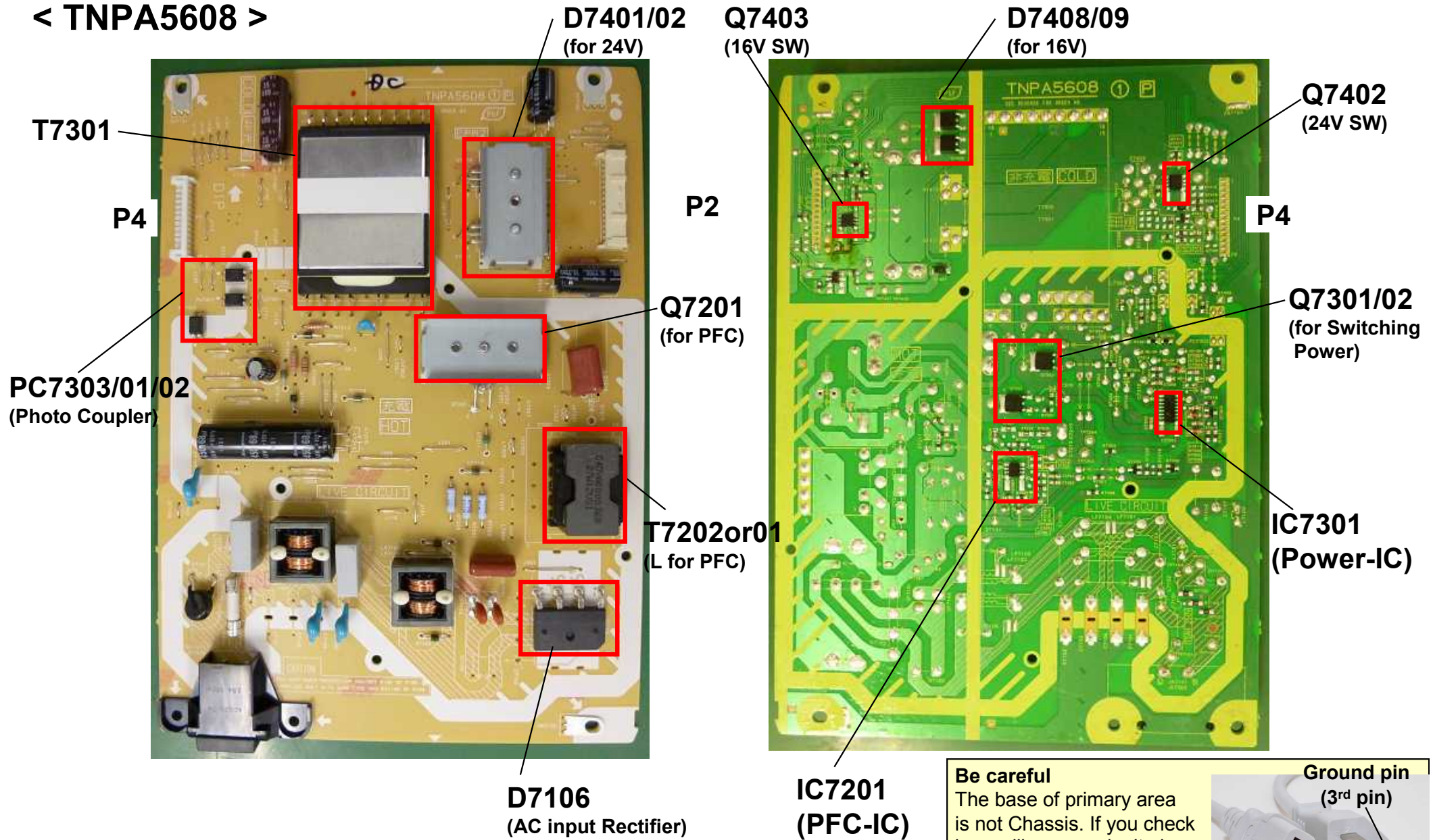
# Component Location

## < TNPA5583 >



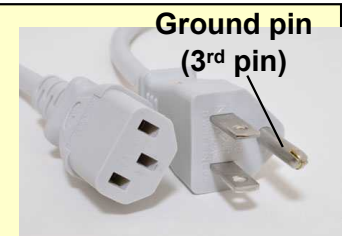
# Component Location

## < TNPA5608 >



### Be careful

The base of primary area is not Chassis. If you check by oscilloscope, don't plug in the ground pin (3<sup>rd</sup> pin) of the oscilloscope. Isolate it from the earth of AC inlet.



( This picture is a Japanese type )

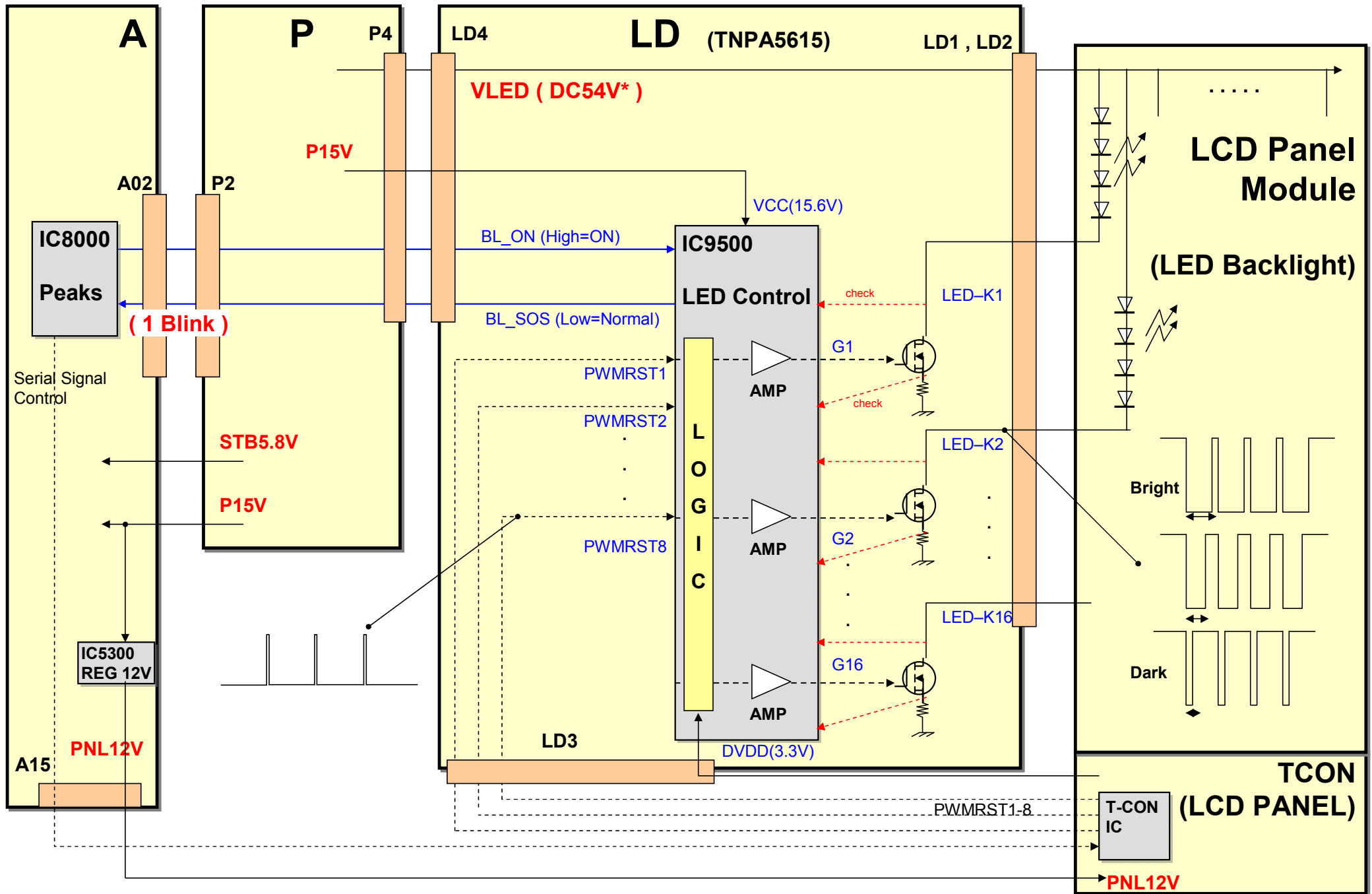
# **LD board**

# Block Diagram of LD board (DT50/WT50\*\*)

< Power for LED Backlight >

IC9500 checks the voltage and current of each output LED-K#.

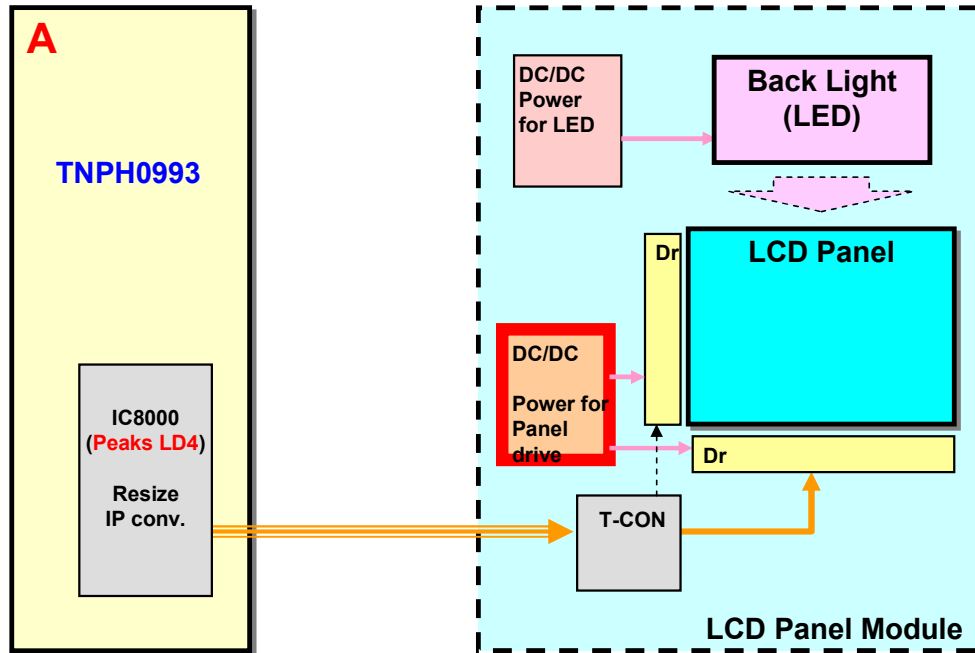
If disconnecting one of LD1,LD2,LD3,LD4,A15 connector, 1 blink is happened.



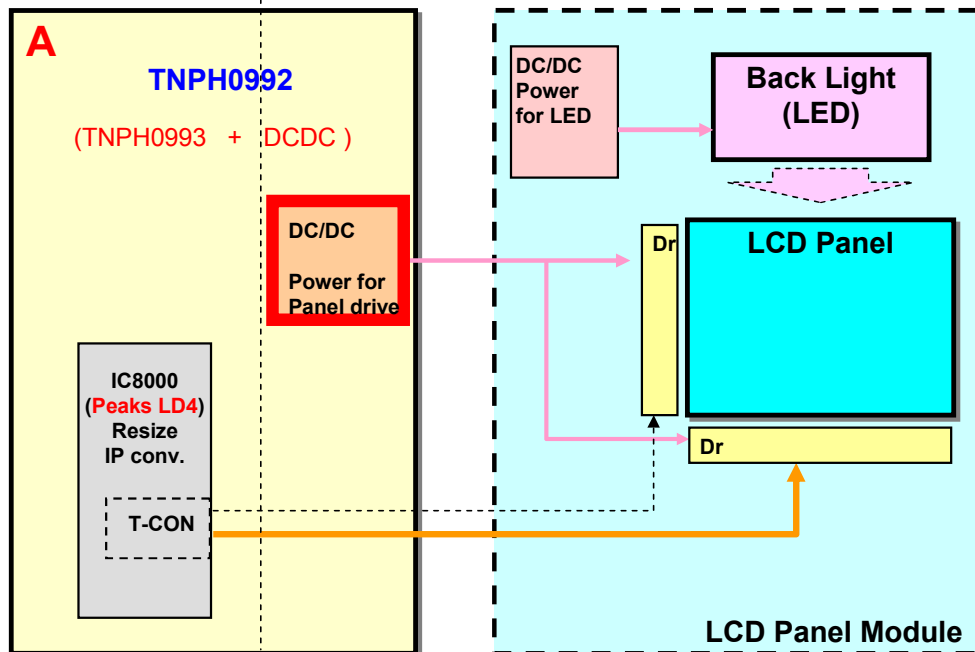
# Appendix

# Power for LCD Panel Drive

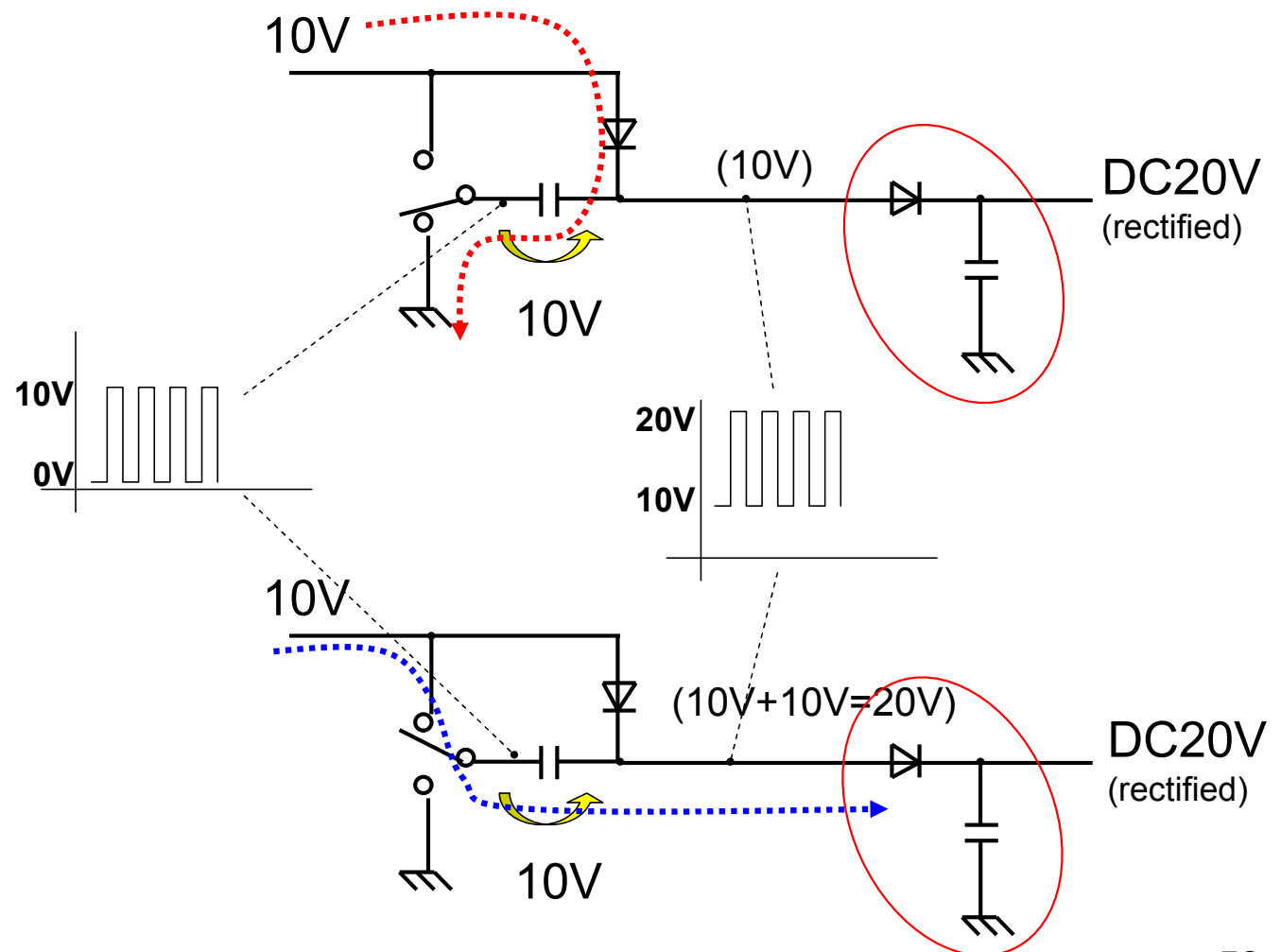
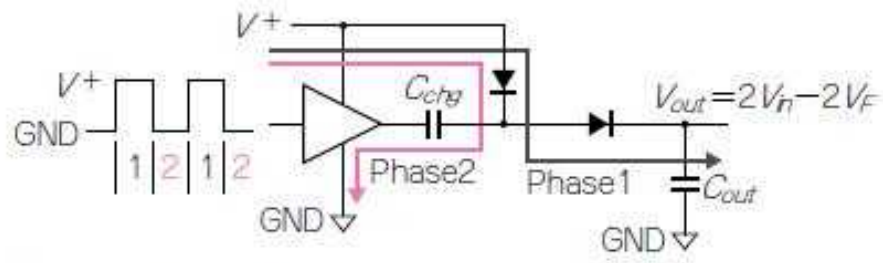
E5 (except 32inch)



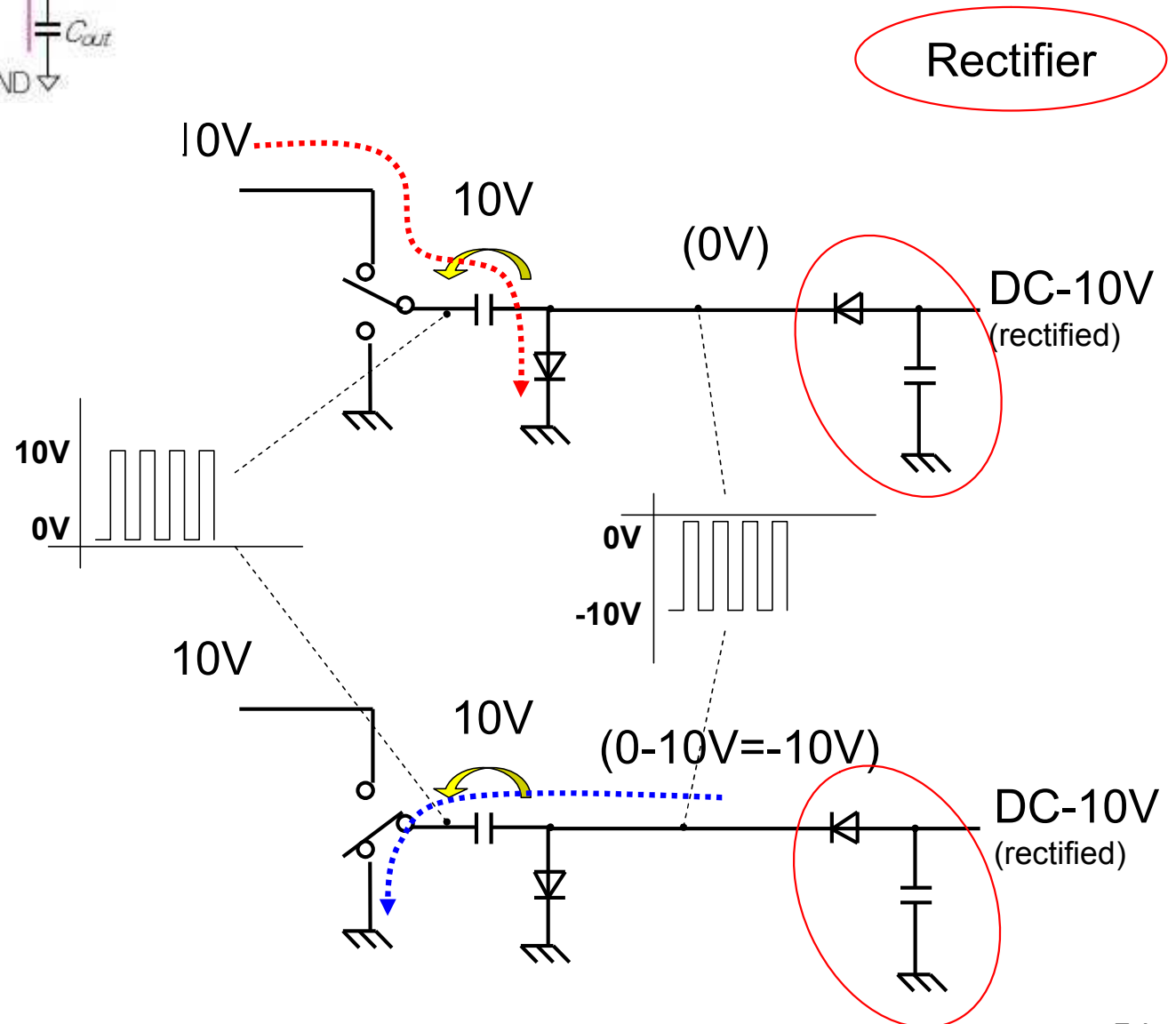
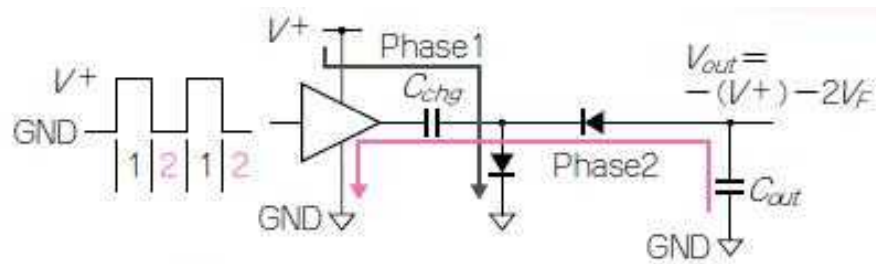
E5 (32inch only)



## DC/DC power supply : Charge Pump Circuit (plus voltage output)



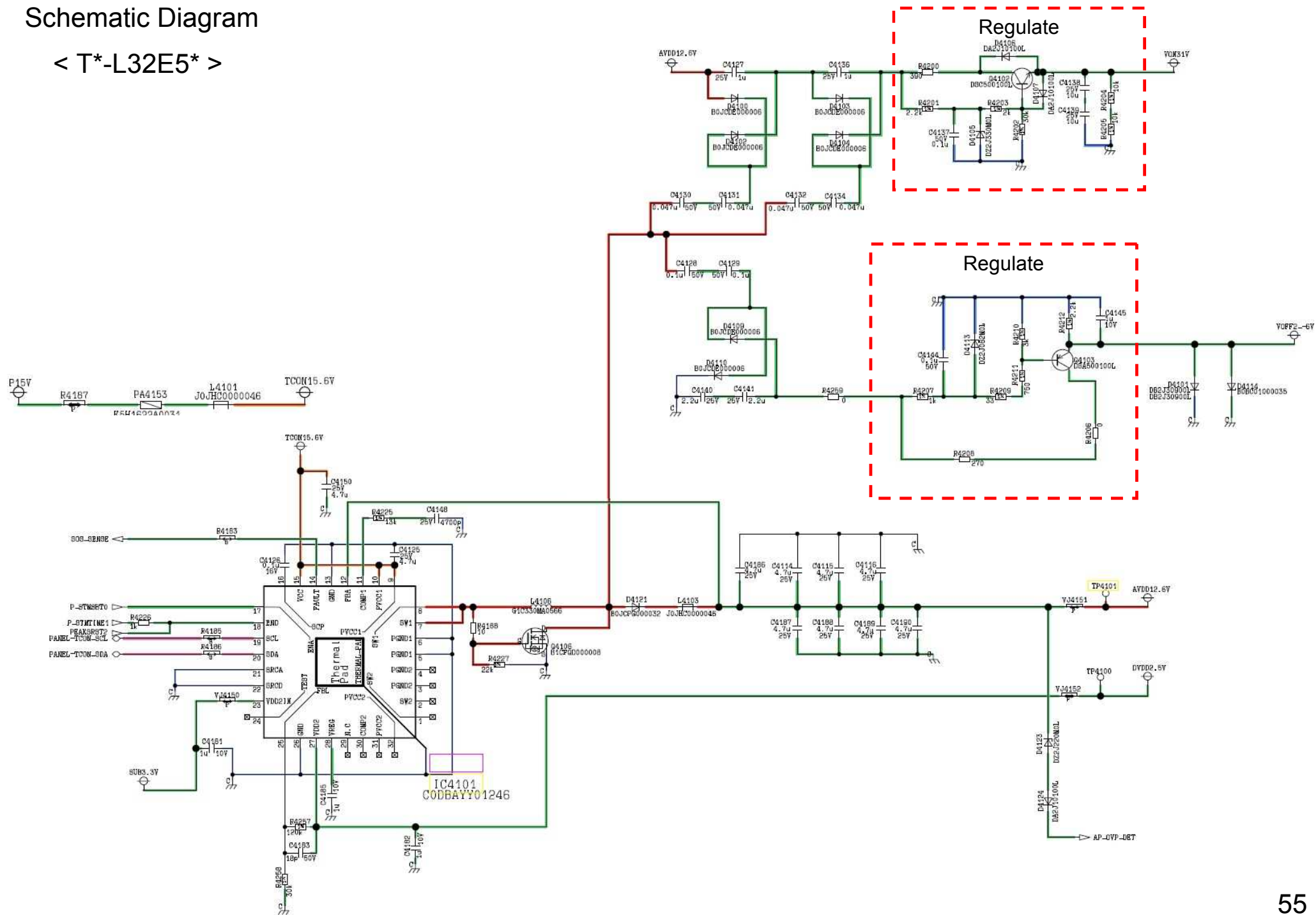
## DC/DC power supply : Charge Pump Circuit (minus voltage output)



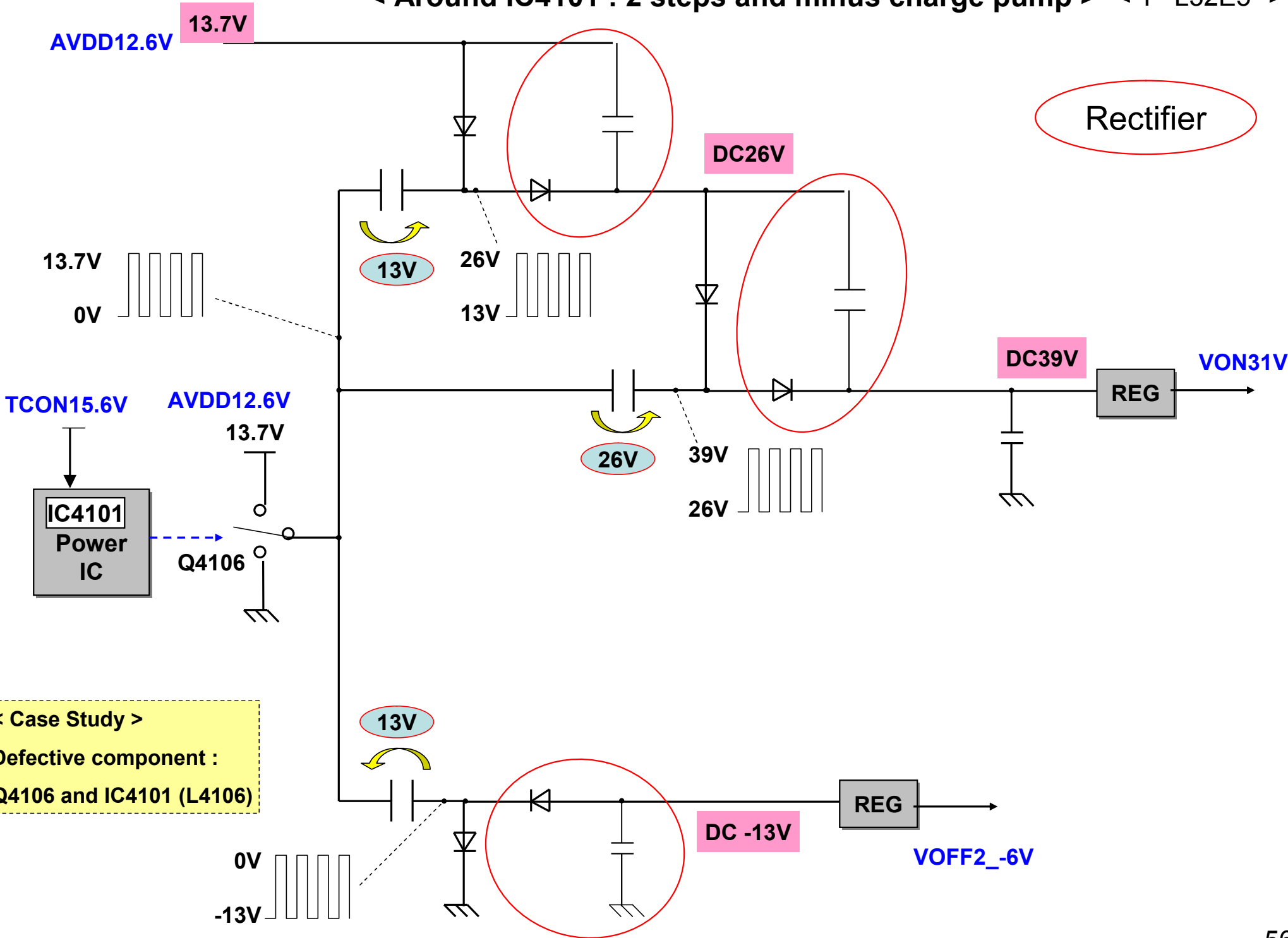
## Power Supply for LCD Panel ( T\*-L32E5\* )

## Schematic Diagram

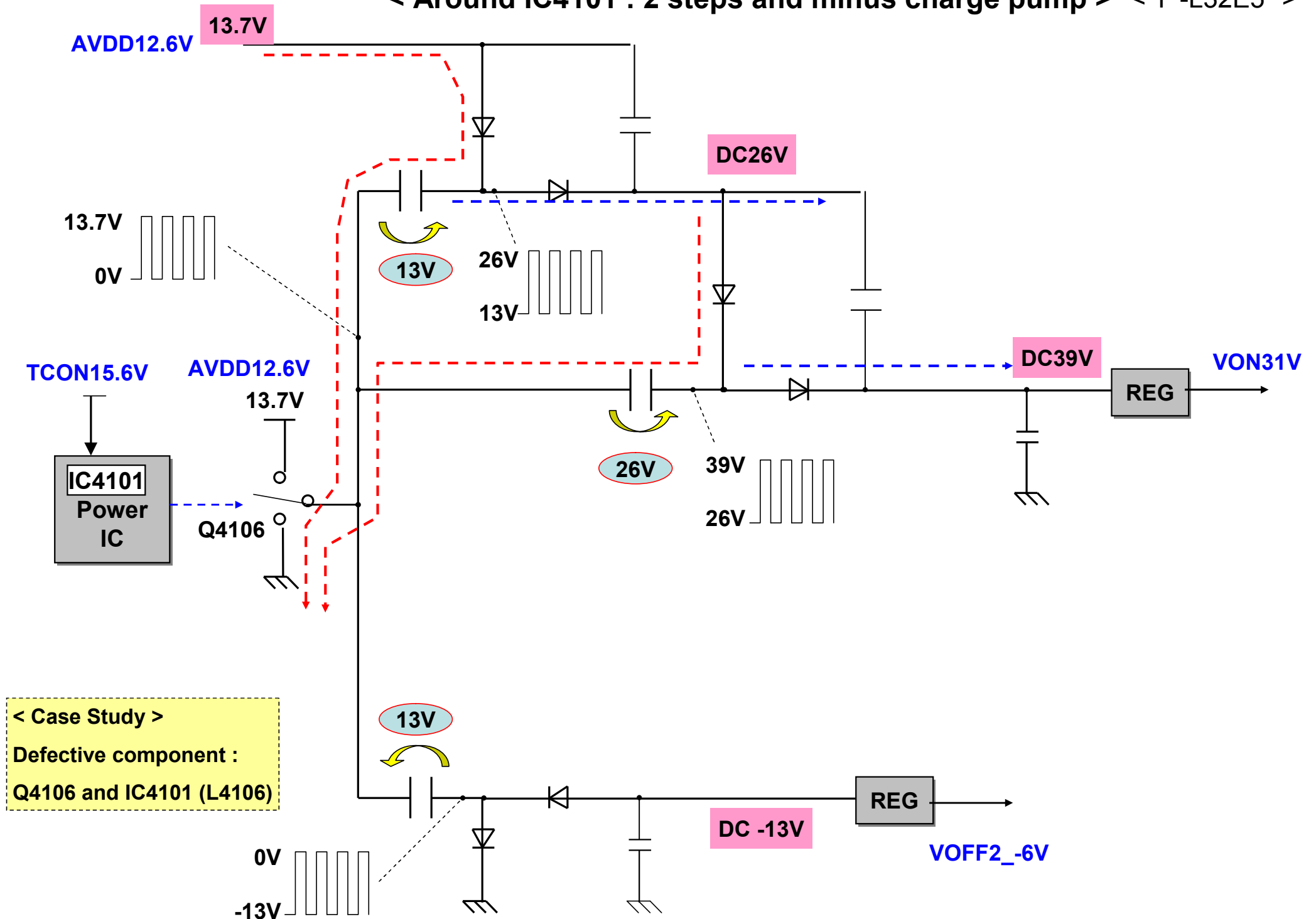
< T\*-L32E5\* >



**< Around IC4101 : 2 steps and minus charge pump > < T\*-L32E5\* >**



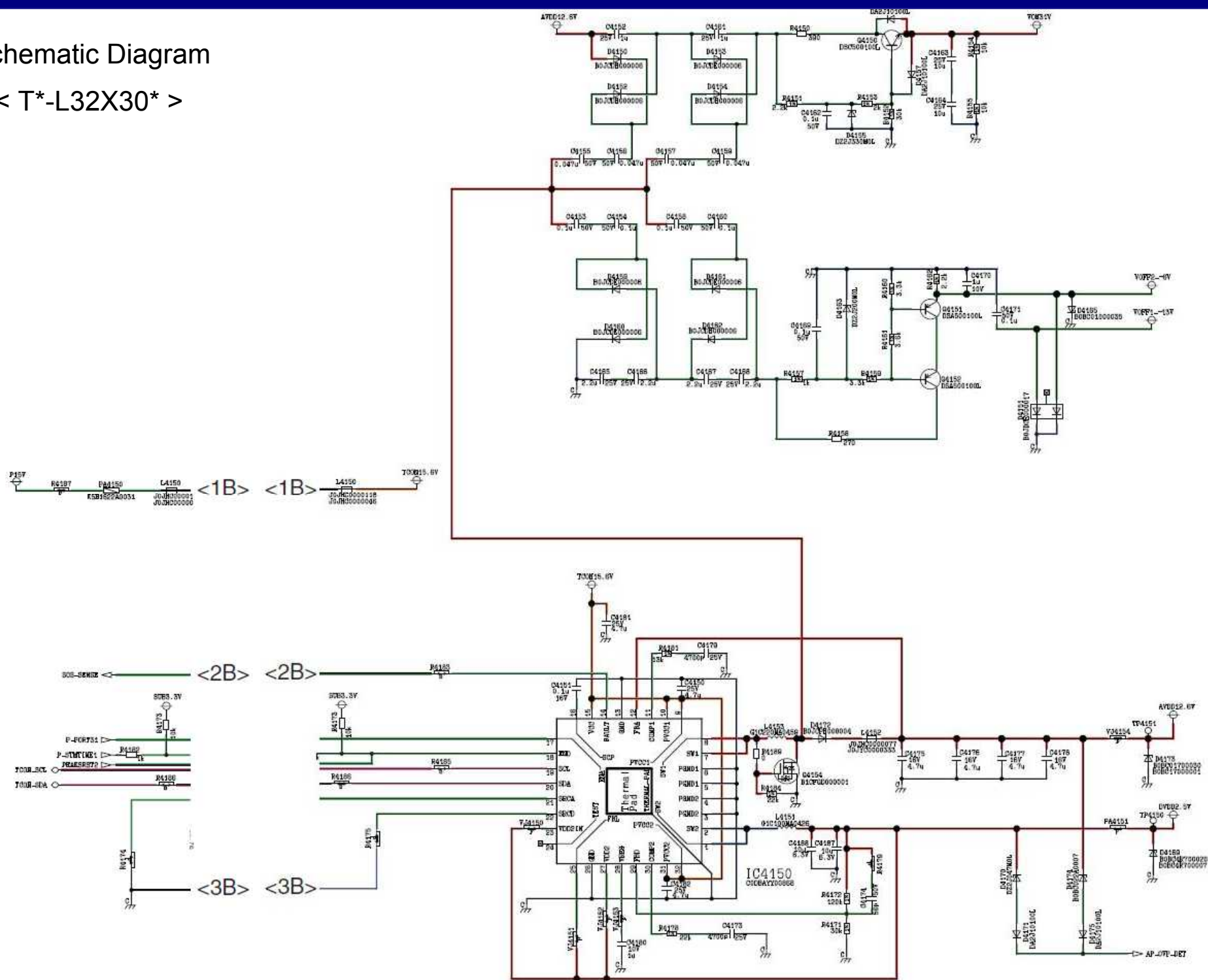
< Around IC4101 : 2 steps and minus charge pump > < T\*-L32E5\* >



## Power Supply for LCD Panel ( Reference : T\*-L32X30\* )

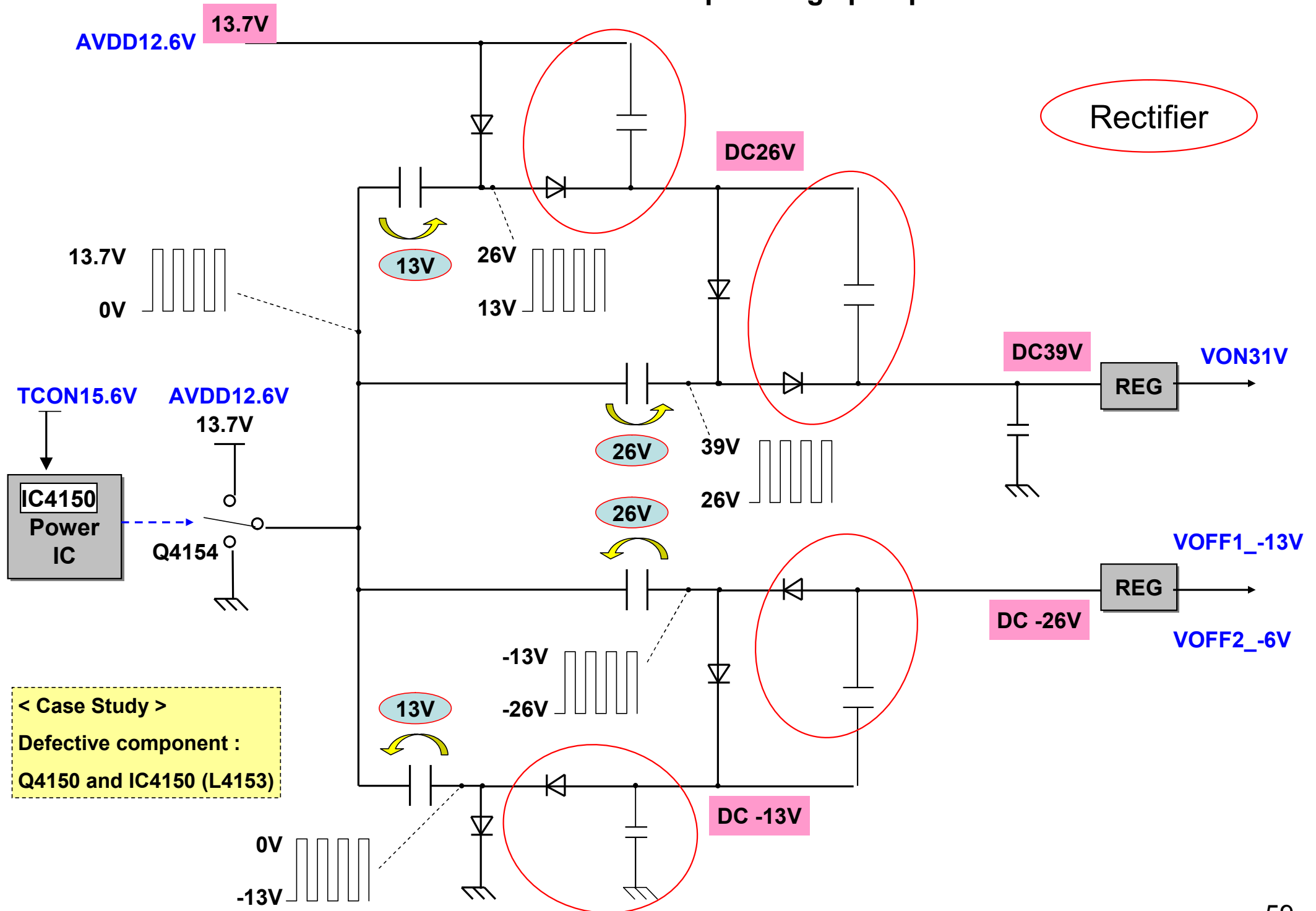
## Schematic Diagram

< T\*-L32X30\* >



# < Around IC4150 : 2 steps charge pump >

< T\*-L32X30\* >



# < Around IC4150 : 2 steps charge pump >

< T\*-L32X30\* >

