

LCD TELEVISION

SERVICE MANUAL

LC-27R25
LC-32R26

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Attention: This service manual is only for service personnel to take reference with. Before servicing please read the following points carefully.

Safety precautions

1. Instructions

Be sure to switch off the power supply before replacing or welding any components or inserting/plugging in connection wire. Anti static measures to be taken (throughout the entire production process!):

- a) Do not touch here and there by hand at will;
- b) Be sure to use anti static electric iron;
- c) It's a must for the welder to wear anti static gloves.

Please refer to the detailed list before replacing components that have special safety requirements. Do not change the specs and type at will.

2. Points for attention in servicing of LCD

2.1 Screens are different from one model to another and therefore not interchangeable. Be sure to use the screen of the original model for replacement.

2.2 The operation voltage of LCD screen is 700-825V. Be sure to take proper measures in protecting yourself and the machine when testing the system in the course of normal operation or right after the power is switched off. Please do not touch the circuit or the metal part of the module that is in operation mode. Relevant operation is possible only one minute after the power is switched off.

2.3 Do not use any adapter that is not identical with the TV set. Otherwise it will cause fire or damage to the set.

2.4 Never operate the set or do any installation work in bad environment such as wet bathroom, laundry, kitchen, or nearby fire source, heating equipment and devices or exposure to sunlight etc. Otherwise bad effect will result.

2.5 If any foreign substance such as water, liquid, metal slices or other matters happens to fall into the module, be sure to cut the power off immediately and do not move anything on the module lest it should cause fire or electric shock due to contact with the high voltage or short circuit.

2.6 Should there be smoke, abnormal smell or sound from the module, please shut the power off at once. Likewise, if the screen is not working after the power is on or in the course of operation, the power must be cut off immediately and no more operation is allowed under the same condition.

2.7 Do not pull out or plug in the connection wire when the module is in operation or just after the power is off because in this case relatively high voltage still remains in the capacitor of the driving circuit. Please wait at least one minute before the pulling out or plugging in the connection wire.

2.8 When operating or installing LCD please don't subject the LCD components to bending, twisting or extrusion, collision lest mishap should result.

2.9 As most of the circuitry in LCD TV set is composed of CMOS integrated circuits, it's necessary to pay attention to anti statics. Before servicing LCD TV make sure to take anti static measure and ensure full grounding for all the parts that have to be grounded.

2.10 There are lots of connection wires between parts behind the LCD screen. When servicing or moving the set please take care not to touch or scratch them. Once they are damaged the screen

would be unable to work and no way to get it repaired.

2.11 Special care must be taken in transporting or handling it. Exquisite shock vibration may lead to breakage of screen glass or damage to driving circuit. Therefore it must be packed in a strong case before the transportation or handling.

2.12 For the storage make sure to put it in a place where the environment can be controlled so as to prevent the temperature and humidity from exceeding the limits as specified in the manual. For prolonged storage, it is necessary to house it in an anti-moisture bag and put them altogether in one place. The ambient conditions are tabulated as follows:

Temperature	Scope for operation	0 ~ +50 °C
	Scope for storage	-20 ~ +60 °C
Humidity	Scope for operation	20% ~ 85%
	Scope for storage	10% ~ 90%

2.13 Display of a fixed picture for a long time may result in appearance of picture residue on the screen, as commonly called “ghost shadow”. The extent of the residual picture varies with the maker of LCD screen. This phenomenon doesn’t represent failure. This “ghost shadow” may remain in the picture for a period of time (several minutes). But when operating it please avoid displaying still picture in high brightness for a long time.

3. Points for attention during installation

3.1 The front panel of LCD screen is of glass. When installing it please make sure to put it in place.

3.2 For service or installation it’s necessary to use specified screw lest it should damage the screen.

3.3 Be sure to take anti dust measures. Any foreign substance that happens to fall down between the screen and the glass will affect the receiving and viewing effect

3.4 When dismantling or mounting the protective partition plate that is used for anti vibration and insulation please take care to keep it in intactness so as to avoid hidden trouble.

3.5 Be sure to protect the cabinet from damage or scratch during service, dismantling or mounting.

Alignment instructions

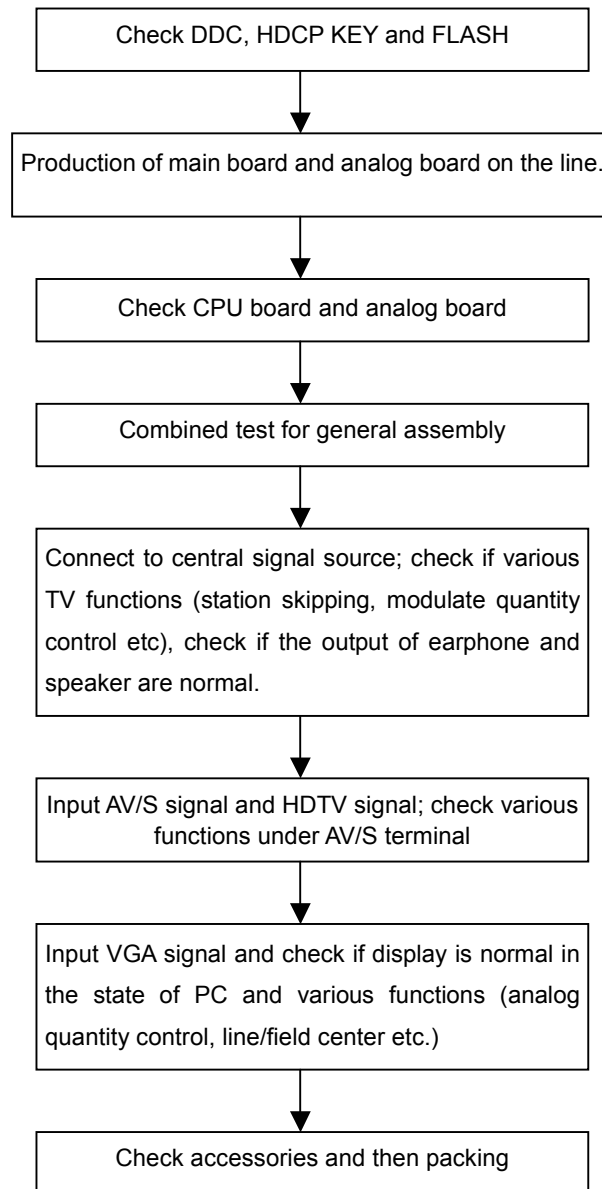
1. Test equipment

PM5518 (Video signal generator)

K-7253 (VGA signal generator)

CA210 (White balancer)

2. The alignment flow chart (see below figure)



3. The unit adjustment

Enter factory menu method: press the SOURCE→ 2→ 5→8→0 buttons one by one on the remote control to factory menu. Press the MENU button to select item. Press the DSP button to exit the factory menu.

3.1 EEPROM initialization and back light adjustment

Enter the first page of factory menu, adjust item (OPTION-1 to 9, OPTION-2 to 5 and back light to 255(LG PANEL) or 0(SHARP and CMO panel), select the EEPROM initial after, press the VOL+

button, then display the DOING, still the DOING disappear and turn off the unit.

Note: option-1 and option-2 function as follows:

	Option-1	Option-2
Bit3	0: No memory function after power off for 10s 1: memory function after power off for 10s	0:no signal noise wave of TV 1:no signal blue screen of TV
Bit2,1	00: STANDBY 01: turn on 10: memory function of turn on	00:complexion correction (OFF) 01: complexion correction (WEAK) 10: complexion correction (MIDDLE) 11: complexion correction (STRONG)
Bit0	0: without LOGO 1: With LOGO	0: Video and Graphic channel white balance no share 1: Video and Graphic channel white balance no share

3.2 HDMI channel adjustment

Input the VG-848 TIME854(800X600/60Hz) and PATTERN92 8-LEVEL gray signal, enter the factory menu2(white balance adjustment menu), adjust the third step and the seventh step.

Adjust R-OFFSET, G-OFFSET and B-OFFSET item, still the third step and the seventh step color coordinate to (285, 293). Adjust R-GAIN, G- GAIN and B- GAIN item, still the seventh step color coordinate to (285, 293). Repeat adjustment R-OFFSET, G-OFFSET and B-OFFSET item and R-GAIN, G- GAIN and B- GAIN item, still two step gray to (285, 293).

Enter the factory menu3 (cool and warm color temperature difference menu):

		R-offset-D elta	G-offset-D elta	B-offset-D elta	R-Gain- Delta	G-Gain- Delta	B-Gain- Delta
Warm	27CMO	0	-1	1	0	-7	-22
	32LG	0	0	0	0	-9	-26
	26SHARP	-1	-1	1	0	-11	-27
	32SHARP	2	3	3	0	-13	-25
Cool	27CMO	0	-1	0	-25	-9	0
	32LG	-1	1	0	-24	-5	0
	26SHARP	0	0	0	-23	-7	0
	32SHARP	5	3	2	-30	-11	0
TV MODE	27CMO						
	32LG	0	-7	0	0	0	0
	26SHARP	0	-5	0	0	-3	0
	32SHARP						

Note: R-OFFSET, G-OFFSET and B-OFFSET values must be an item value to 128 at least; R-GAIN, G- GAIN and B- GAIN values must be an item value to 255 at least.

3.3 VGA channel adjustment

3.3.1 mode pre-set

Input the VGA signal of VG-848 (PATTERN 980:1 dot ON/OFF), select the TIME877 (720x400/70Hz) signal, press auto-adjust button to all screen or adjust PC setting menu to auto correction. Separate auto adjust for TIME854 (800x600/60Hz) and TIME854 (800x600/60Hz).

3.3.2 VGA channel auto color adjustment

Input the VG-848 TIME854(800x600/60Hz) and PATTERN920(GRAY 8 STEP(H)), enter the factory menu1, select the AUTO COLOR after, press the VOL+ button to select AUTO COLOR.

3.4 YPBPR channel adjustment

Input the VG-848 TIME972(1080i/60Hz) and PATTERN976(64 GRAY & Color), enter the factory menu1, select the AUTO COLOR after, press the VOL+ button to select AUTO COLOR.

3.5 Other setting

Separate Factory Menu 4, Factory Menu 5, Factory Menu 6, Factory Menu 7 adjustment as follows:

Factory Menu 4				Factory Menu 6			
Bright Max	148			Picture_Mode	Soft	Normal	Bright
Bright Center	128			Brightness	50	50	55
Bright Min	78			Contrast	35	50	75
Contrast Max	154			Color	40	50	60
Contrast center	118			Sound_Mode	Music	Movie	News
Contrast Min	28			Bass	80	50	30
Color Center	128			treble	60	50	40
Factory Menu 5					Factory Menu 7		
	27CMO	32LG	26SHARP	32SHARP			
Volume_1	48			52	S2310_Color	142	
Volume_25	100			102	S2310_Contrast	120	
Volume_50	114			116	S2310_Bright	133	
Volume_100	123			121			
Bright_Cen_Delt	0						
Bright_Max_Delt	2						
Cont_Cen_Delt	10						
Cont_Max_Delt	12						

4. Performance check

4.1 TV function

Input center source signal to RF-TV terminal, check if the channel is leak for auto searching.

4.2 AV/S and YPBPR terminal

Input AV/S and HDTV signal, check if the signal is normal.

4.3 VGA terminal

Input 640 x 480 @60Hz VGA format signal, check if the signal is normal.

4.4 HDMI terminal

Separate input HDMI and DVI signal; check the picture and sound is normal, check if the HDCP function is normal.

4.5 check the sound channel

4.6 ex-factory setting

Enter the first page of factory menu, select the factory out after, press the VOL+ button to display “doing”, then “doing” disappear while it can auto ex-factory setting.

Working principle analysis of the unit

The RF via integrative tuner TUNER1 after, the FBAS is generated. The FBAS, AV1/SVHS(SVHS priority) and AV2 and so on, its sent N7 (TVP5160) to switch selection and decode. The video is decoded and generates an AV output. The signal via N7 decode after, it sent 8-bit ITU-R656 format signal to N10 (FLI2310) non-interlaced processing. It sent 16bit YC signal to main processing control chip N15(GM1501/1601).

Two ways YPBPR signal via HDTV switch N36(CBT3257C) selection after, it sent RGB switch N4(CT3257C) and 24bit RGB from pc signal to GM1501/1601.

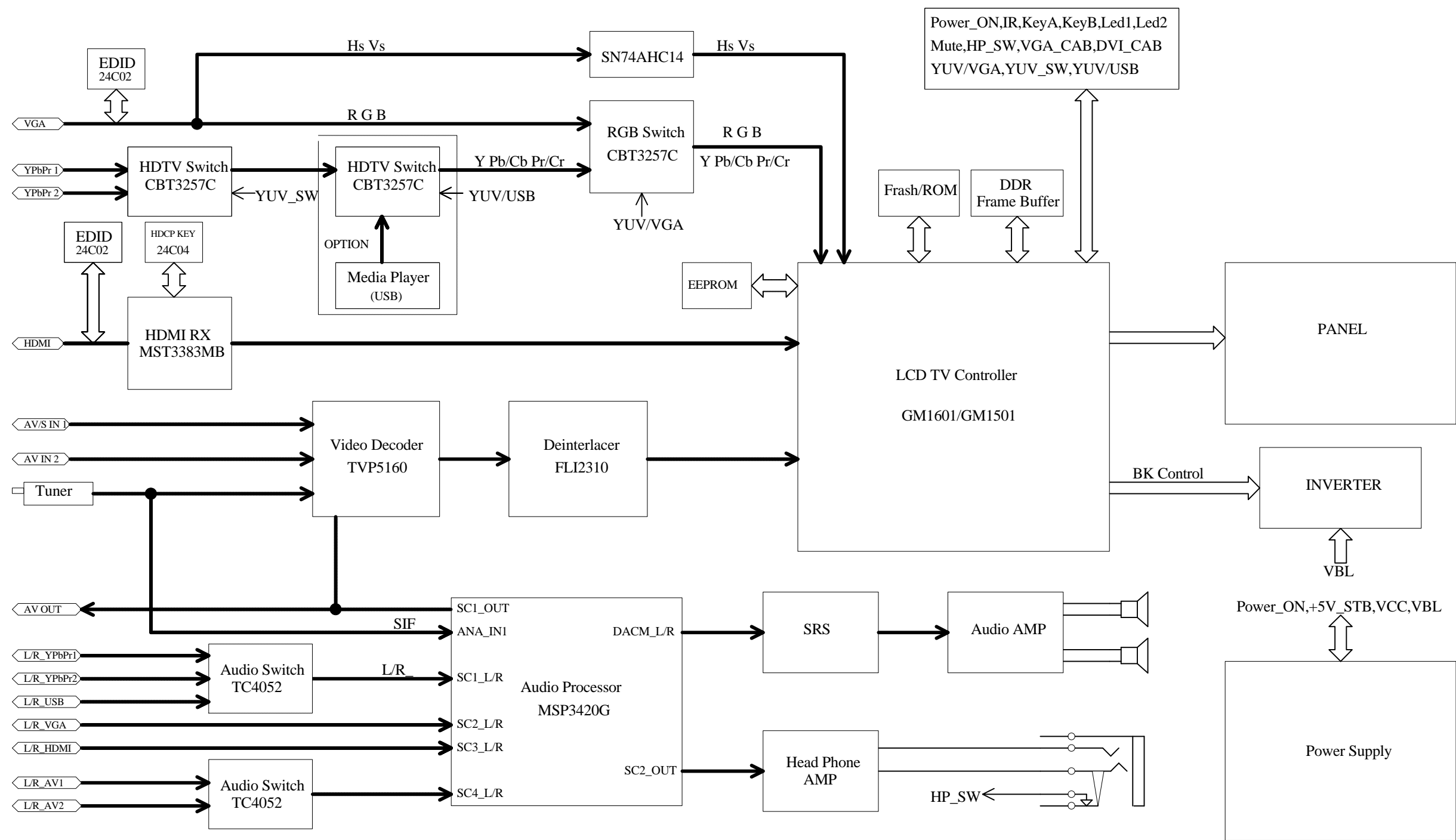
The HDMI via receiver N34(MST3383MB) processing after, it output VGA signal of 24bit to GM1501/1601.

They sent to GM1501/1601 picture processing, therein YPBYP or RGB to A/D conversion after, it and other two signal are switched selection and digital display processing, it include OSD, GAMMA correction, brightness and contrast processing, then LVDS conversion to LCD panel display.

The SIF of tuner output signal to audio processing NA6(MSP3420),The audio of AV1/SVHS/AV2 via switch conversion NA3(HEF4052) to MSP3420, the audio of two YPBPR via switch conversion NA5(HEF4052), the HDMI via MST3383MB decode to audio, it audio via N26(CS4334) D/A conversion to MSP3420, the audio of VGA sent to MSP3420.

The stereo of the SIF with other four ways audio switch conversion selection to volume control and audio processing. it output right/left channel audio, one way signal sent SRS processing NA7 (M62494) to SRS sound stereo processing. It via sound amplifier NA9(TPA3008D2) to speaker; other way signal to earphone and AV OUT R/L output.

Block diagram



IC block diagram

1.MSP3420

The MSP 34x0G family of single-chip Multistandard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards. The full TV sound processing, starting with analog sound IF signal-in, down to processed analog AF-out, is performed on a single chip. Figure 1–1 shows a simplified functional block diagram of the MSP 34x0G.

This new generation of TV sound processing ICs now includes versions for processing the multichannel television sound (MTS) signal conforming to the standard recommended by the Broadcast Television Systems Committee (BTSC). The DBX noise reduction, or alternatively, Micronas Noise Reduction (MNR) is performed alignment free.

Other processed standards are the Japanese FM-FM multiplex standard (EIA-J) and the FM Stereo Radio standard.

Current ICs have to perform adjustment procedures in order to achieve good stereo separation for BTSC and EIA-J. The MSP 34x0G has optimum stereo performance without any adjustments.

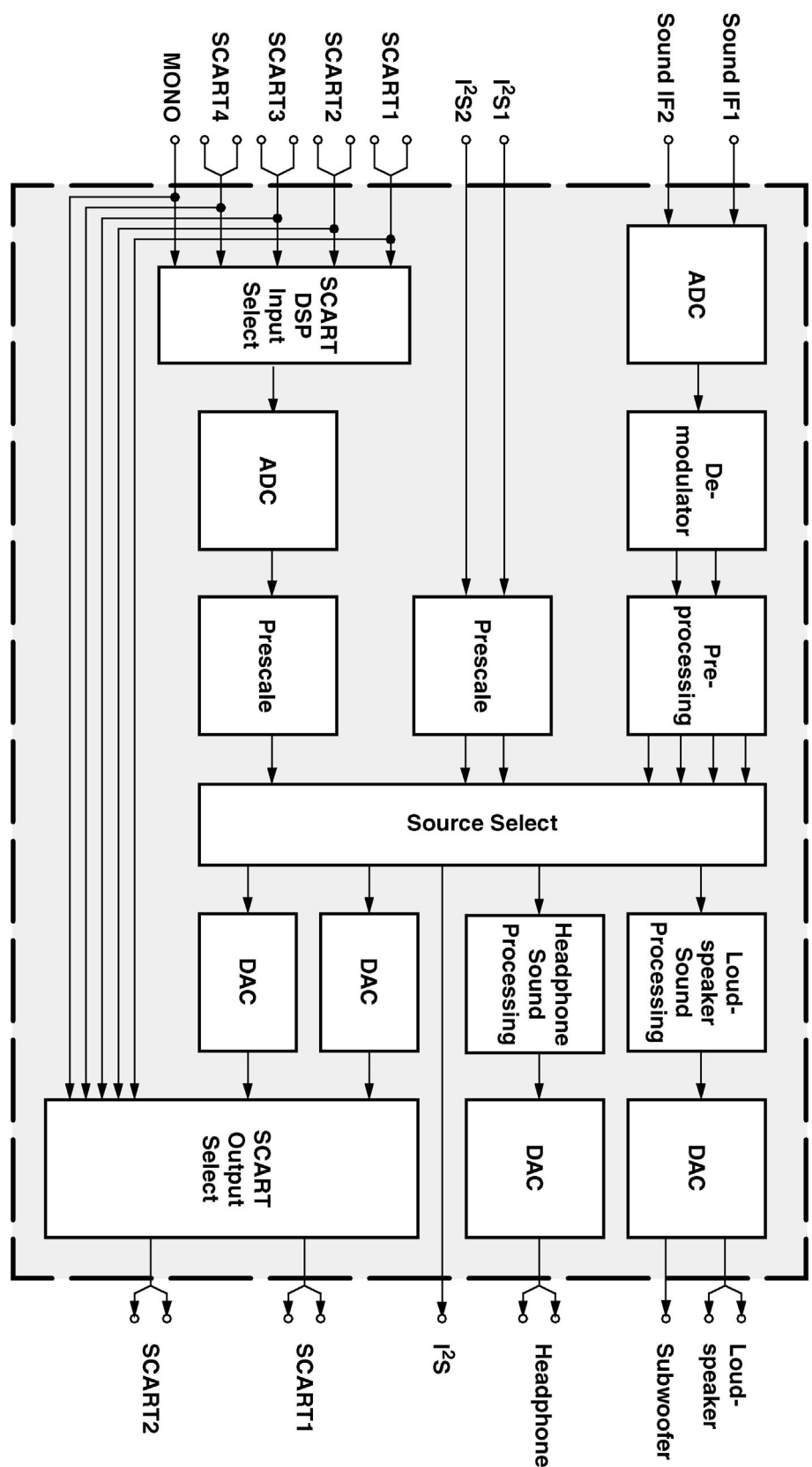
All MSP 34xxG versions are pin compatible to the MSP 34xxD. Only minor modifications are necessary to adapt a MSP34xxD controlling software to the MSP 34xxG. The MSP 34x0G further simplifies controlling software. Standard selection requires a single I2C transmission only.

The MSP 34x0G has built-in automatic functions: The IC is able to detect the actual sound standard automatically (Automatic Standard Detection). Furthermore, pilot levels and identification signals can be evaluated internally with subsequent switching between mono/ stereo/bilingual; no I2C interaction is necessary (Automatic Sound Selection).

The MSP 34x0G can handle very high FM deviations even in conjunction with NICAM processing. This is especially important for the introduction of NICAM in China.

The ICs are produced in submicron CMOS technology. The MSP 34x0G is available in the following packages: PLCC68 (not intended for new design), PSDIP64, PSDIP52, PQFP80, and PLQFP64.

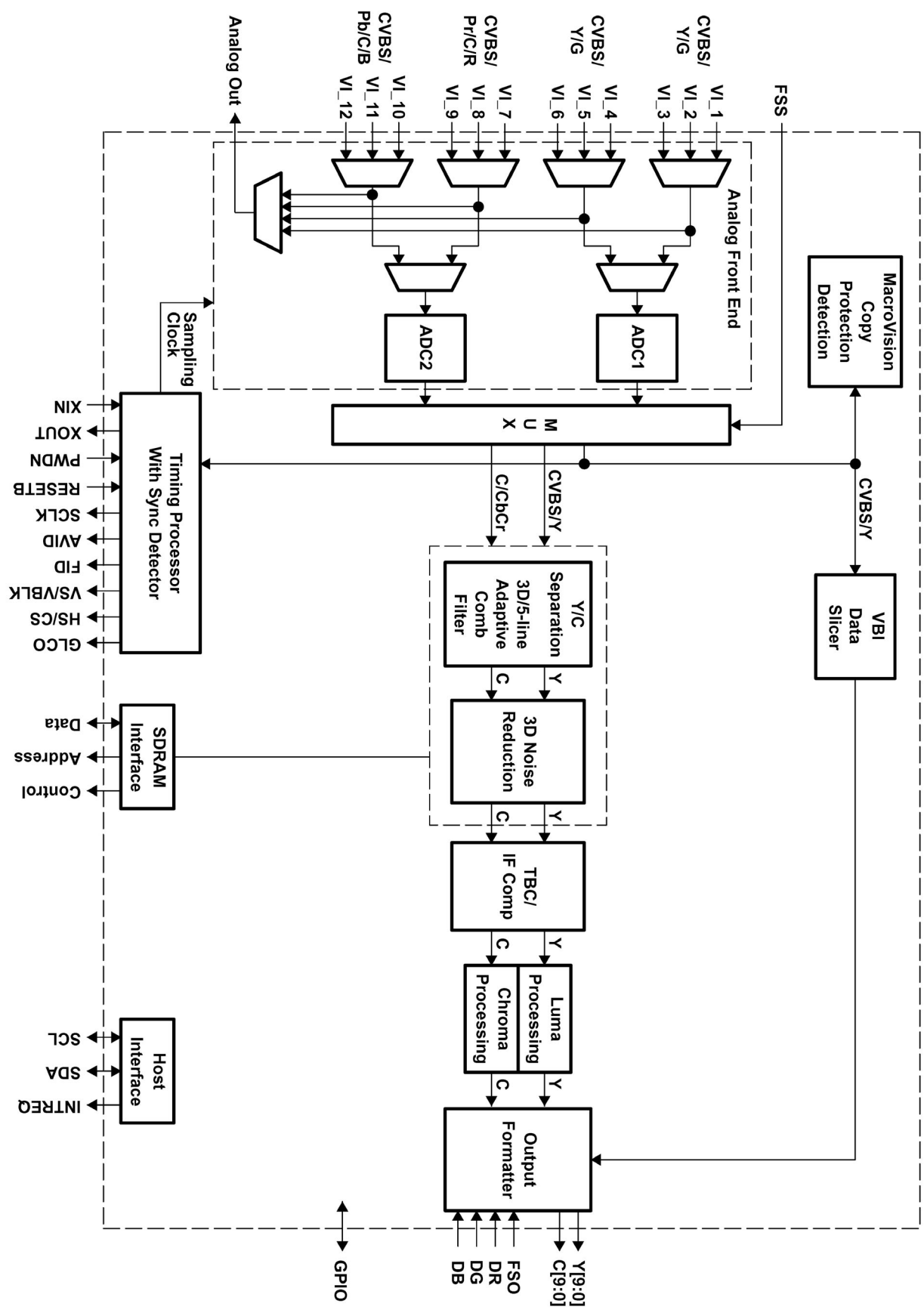
Fig. 1–1: Simplified functional block diagram of the MSP 34x0G



2. TVP5160

The TVP5160 device is a high quality; digital video decoder that digitizes and decodes all popular baseband analog video formats into digital component video. The TVP5160 decoder supports the A/D conversion of component YPbPr and RGB (SCART) signals, as well as the A/D conversion and decoding of NTSC, PAL, and SECAM composite and S-Video into component YCbCr. Additionally, component progressive signals can be digitized. The chip includes two 11-bit, 60-MSPS, A/D converters (ADCs). Prior to each ADC, each analog channel contains an analog circuit, which clamps the input to a reference voltage and applies a programmable gain and offset. A total of 12 video input terminals can be configured to a combination of YPbPr, RGB, CVBS, and S-Video video inputs. Progressive component signals are sampled at 2x clock frequency (54 MHz) and are then decimated to the 1x rate. In SCART mode the component inputs and the CVBS inputs are sampled at 54 MHz alternately, then decimated to the 1x rate. Composite or S-Video signals are sampled at 4x the ITU-R BT.601 clock frequency (54 MHz), line-locked for correct pixel alignment, and are then decimated to the 1x rate. CVBS decoding utilizes advanced 3D Y/C filtering and 2-dimensional complementary 5-line adaptive comb filtering for both the luma and chroma data paths to reduce both cross-luma and cross-chroma artifacts. 3D Y/C color separation may be used on both PAL and NTSC video signals. A chroma trap filter is also available. On CVBS and Y/C inputs, the user can control video characteristics such as hue, contrast, brightness, and saturation via an I2C host port interface. Furthermore, luma peaking with programmable gain is included, as well as a patented color transient improvement (CTI) circuit. Attenuation at higher frequencies or asymmetrical color subcarrier sidebands are compensated using the IF compensation block. Frame adaptive noise reduction may be applied to reduce temporal noise on CVBS, S-Video, or component inputs. 3D noise reduction and 3D Y/C separation may be used at the same time or independently. The TVP5160 decoder utilizes Texas Instruments' patented technology for locking to weak, noisy, or unstable signals and can auto-detect between broadcast quality and VCR-style (nonstandard) video sources. The TVP5160 decoder generates synchronization, blanking, field, active video window, horizontal and vertical syncs, clock, genlock (for downstream video encoder synchronization), host CPU interrupt and programmable logic I/O signals, in addition to digital video outputs. The TVP5160 decoder includes methods for advanced vertical blanking interval (VBI) data retrieval. The VBI data processor (VDP) slices and performs error checking on teletext, closed caption, and other VBI data. A built-in FIFO stores up to 11 lines of teletext data, and, with proper host port synchronization, full-screen teletext retrieval is possible. The TVP5160 decoder can pass through the output formatter 2x sampled raw Luma data for host-based VBI processing. Digital RGB overlay can be synchronously switched with any video input, with all signals being oversampled at 4x the pixel rate.

INTERNAL BLOCK DIAGRAM:



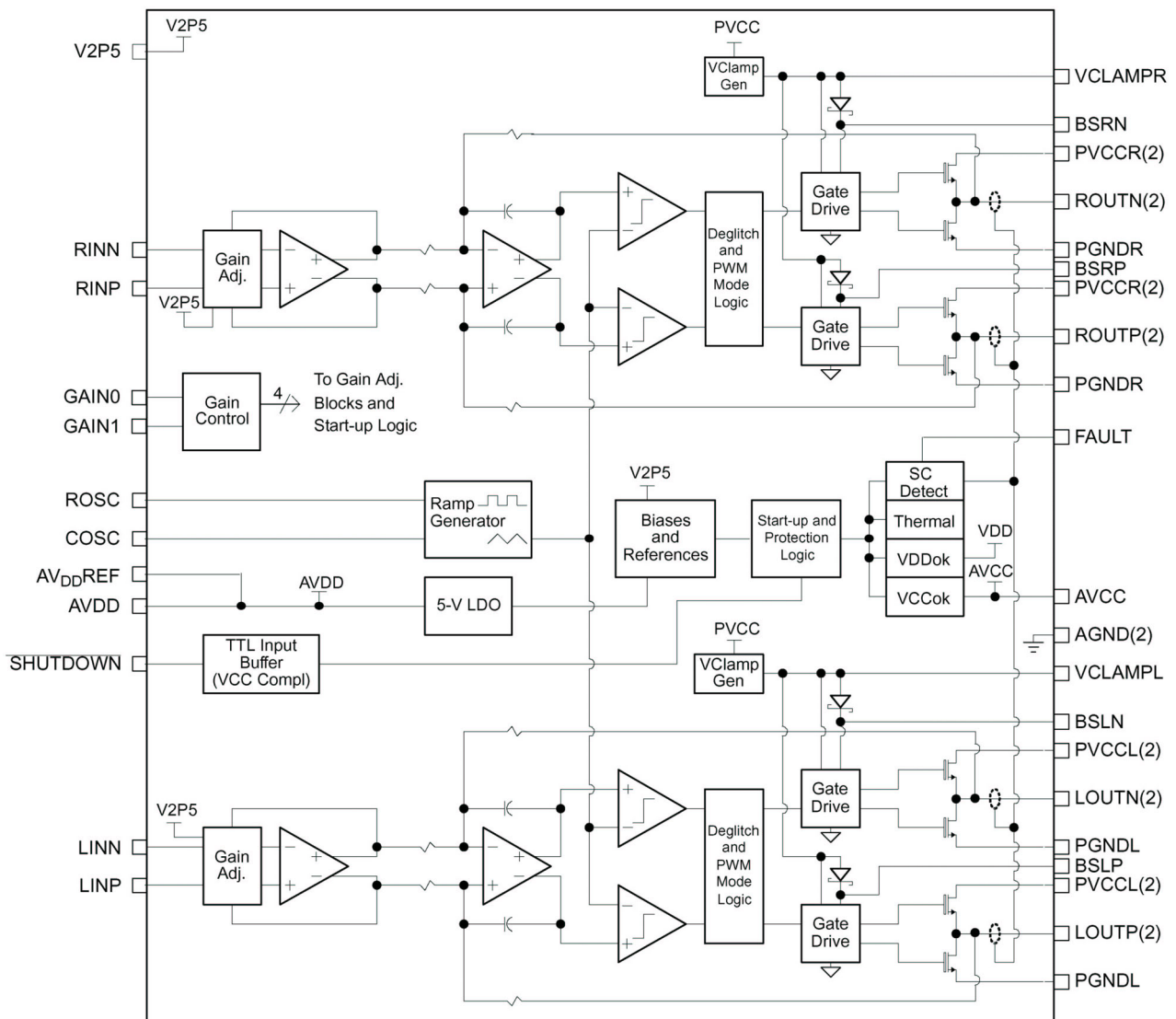
3. TPA3008D2

The TPA3008D2 is a 10-W (per channel) efficient, class-D audio amplifier for driving bridged-tied stereo speakers. The TPA3008D2 can drive stereo speakers as low as 8 Ω . The high efficiency of the TPA3008D2 eliminates the need for external heatsinks when playing music.

The gain of the amplifier is controlled by two gain select pins. The gain selections are 15.3, 21.2, 27.2, and 31.8 dB.

The outputs are fully protected against shorts to GND, VCC, and output-to-output shorts. A fault terminal allows short-circuit fault reporting and automatic recovery. Thermal protection ensures that the maximum junction temperature is not exceeded.

INTERNAL BLOCK DIAGRAM:



4. MST3383MB

The MST3383MB integrates the HDMI compliant receiver for enabling advanced digital display devices such as digital TVs, plasma displays, LCD TVs and projectors to receive and display. Compliant with the HDMI 1.0 specification, the MST3383MB enables consumer electronic devices to receive uncompressed, high quality, digital audio and video HD content over a single, low-cost HDMI cable. The MST3383MB is available in a 128-pin PQFP package.

FUNCTIONAL DESCRIPTION

DVI/HDMI Interface

The MST3383MB integrates an HDMI compliant receiver and enables a high quality and secure delivery of digital video and audio. The HDMI link input supports up to 170 MHz pixel rate. With the HDMI input and signal detection, the MST3383MB provides a high-performance solution for up to 1080p for video and 1600x1200 (UXGA) for monitor applications. The MST3383MB's HDMI receiver is fully backward compatible to DVI 1.0 and HDCP 1.0.

MCU Interface

The MST3383MB provides 2-wire serial bus for interfacing with an MCU. It detects active inputs for both on-line and off-line operations. During on-line operation, the MST3383MB also provides polarity and period count information of active input's DE signals. The MCU can easily adjust the input mode and switch to active input properly.

Color Space Conversion

The MST3383MB supports all general color space conversions such as RGB to YUV or RGB to YCbCr using parameters programmable by 2-wire serial bus.

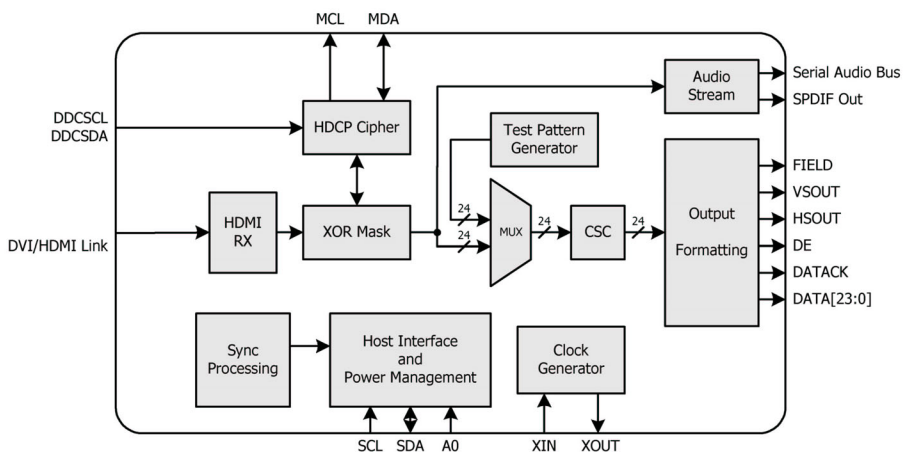
Digital Video Output Formatting

The MST3383MB can output digital data in the following configurations:

- . 24-bit 4:4:4 YCbCr/RGB output formats
- . 16-bit 4:2:2 YCbCr output formats (ITU.601)
- . 8-bit 4:2:2 YCbCr output formats (ITU.656)
- . Channel swap
- . MSB/LSB swap

Audio Stream S/PDIF port output is supported to enable PCM, Dolby Digital, DTS with sample rates of 32~48 kHz and a sample size of 16~24 bits.

Audio Serial bus is supported to enable 2-channel PCM audio with sample rates of 32~192 kHz and a sample size of 16~24 bits.



5. GM1601/GM1501

The gm1601H is a dual channel graphics and video processing IC for Liquid Crystal Display (LCD) monitors and televisions incorporating Picture in Picture, up to WUXGA output resolutions. The gm1601H provides all key IC functions required for image capture, processing and display timing control. On-chip functions include a high-speed triple-ADC and PLL, Ultra-Reliable DVI® receiver, high quality zoom and shrink scaling engines, Motion Adaptive De-Interlacing (MADI), Low Angle Diagonal Interpolation (LADI), an on-screen display (OSD) controller, a 100MHz on-chip X186 micro-controller (OCM), and a selectable double wide TTL or dual channel LVDS transmitter for interface to displays. With all these functions integrated onto a single device, the gm1601H eliminates the need for several system components, simplifying the design and reducing the cost of high-end multimedia LCD monitors and televisions while maintaining a high degree of flexibility and quality. The gm1601H is available in two silicon revisions – “BD” and “CF”. GM1601H-CF is a backwards-compatible addition that incorporates some functional and quality improvements.

Applliicattiions

- Multi-media LCD monitors up to WUXGA resolutions
- LCD, PDP and Rear Projection TV at WXGA, UXGA, WUXGA and HD(720P & 1080P) resolutions

GM1601H System Design Example

Figure 2 below shows a typical high-resolution multi-media LCD monitor/TV system based on the gm1601H. Designs based on the gm1601H have reduced system cost, simplified hardware and firmware design and increased reliability because only a minimal number of components are required in the system.

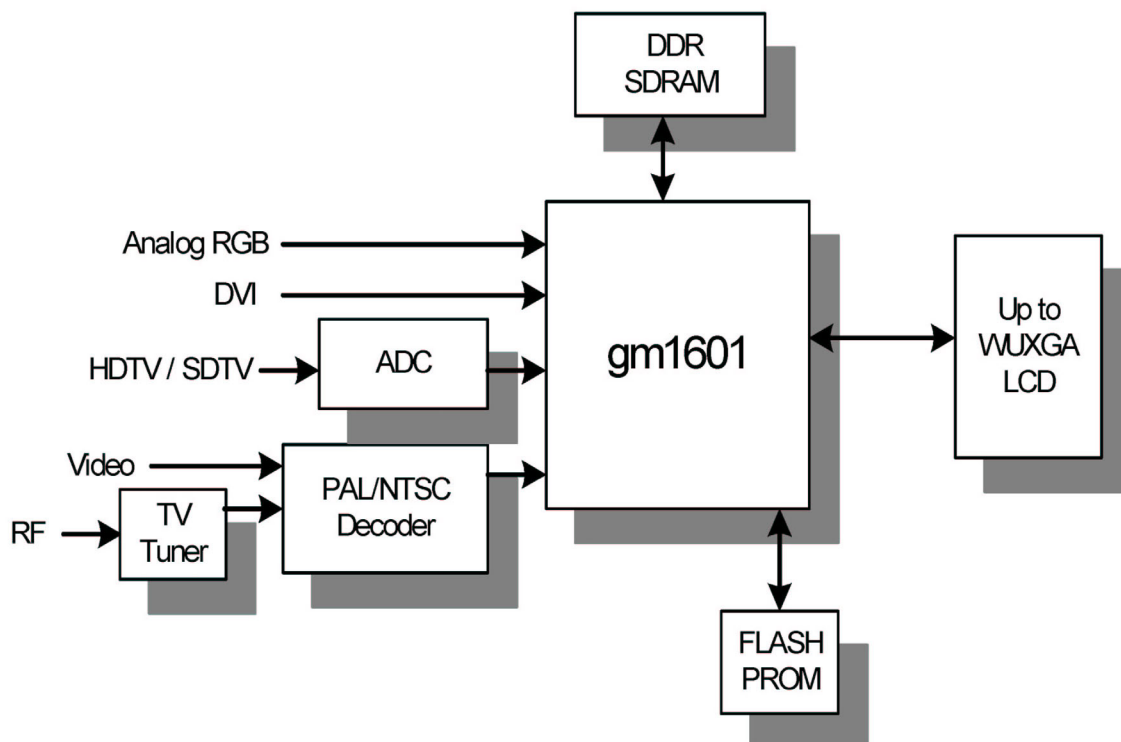


Figure 2. gm1601H System Design Example

6. FLI2310

The FLI230x and FLI2310 are highly integrated digital video format converters for DTV and DVD applications using patented deinterlacing and post processing algorithms from Faroudja Laboratories, coupled with highly flexible scaling, a wide variety of aspect ratio conversions, and other special video enhancing features to produce the highest quality image.

6.1 Inputs

- Input all industry standard and non-standard video resolutions, including 480i (NTSC), 576i (PAL/SECAM), 480p, 720p, 1080i, and VGA to XGA
- Digital input, 8-bit Y/Cr/Cb (ITU-R BT656), 8-bit Y/Pr/Pb, 16-bit Y Cr/Cb (ITU-R BT601), 24-bit RGB, YCrCb, YPrPb
- Input pixel rate up to 75MHz maximum

6.2 Outputs

- Output resolutions include 480p, 576i, 576p, 720p, 1080i, 1080p, and VGA to SXGA
- Interlaced or Progressive output
- In the FLI230x, the output can be either analog YUV/RGB (through the integrated 10-bit DAC), or digital 24-bit RGB, YCrCb, YPrPb (4:4:4), or digital 16/20-bit Y Cr/Cb (4:2:2)
- The FLI2301 can provide 525P/625P Macrovision compliant analog output
- In the FLI2310, digital output of 24-bit RGB, YCrCb, YPrPb (4:4:4), or 16/20-bit Y Cr/Cb (4:2:2) are available
- Output pixel rate up to 150 MHz maximum

6.3 Formats

- Input color manipulation matrix supports all color spaces: RGB, YPrPb, 4:4:4 YCrCb, 4:2:2 YCr/Cb, ITU-R BT656, ITU-R BT601
- Output supports analog RGB, YPrPb, and YCrCb in the FLI230x; and digital RGB, YPrPb, 4:4:4 YCrCb and 4:2:2 YCr/Cb in FLI230x/FLI2310

6.4 Frame Rate Conversion

Tearless Frame Rate Conversion 50/60/72/75/100/120 Hz

6.5 Front End Processing

- Motion Adaptive Noise Reduction – Improves picture quality for off-air material.
- Cross Color Suppressor (CCS) - Removes cross color artifacts in composite video signals due to poor Y/C separation in standard 2-D video decoders, eliminating the need for expensive 3-D video decoders.

6.6 Deinterlacing

- Per-pixel Motion Adaptive Deinterlacing
- Patented FilmMode Processing - Used for proper de-interlacing of 3:2 and 2:2 pulldown material.
- Edit Correction - Film content is continuously monitored for any break in sequence caused by “bad edits” and quickly compensates for the most effective reduction in artifacts.
- DCDi™ - Video is analyzed on a single pixel granularity to detect presence or absence of angled lines and edges, which are then processed to produce a smooth and natural looking image without visible artifacts or “jaggies”.

6.7 Scaling

- High Quality Fully Programmable Two Dimensional Scaler
- Aspect Ratio Conversion for “Anamorphic” or “Panoramic” (non-linear)
- Display 4:3 images on 16:9 displays and vice versa, including Letterbox to Fullscreen, Pillarbox,

and Subtitle Display Modes

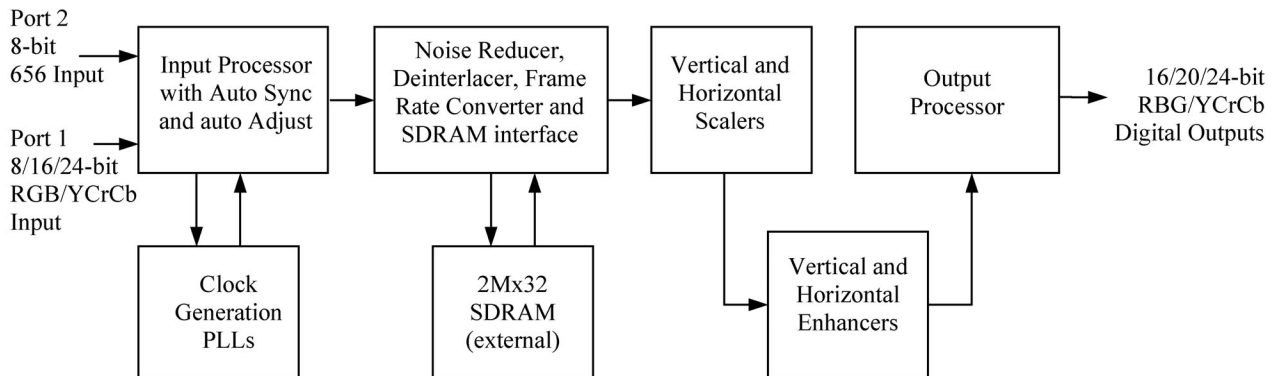
6.8 TrueLife™ Enhancer

Two dimensional, non-linear, luma and chroma video enhancer brings out details in the picture, producing a more life-like image.

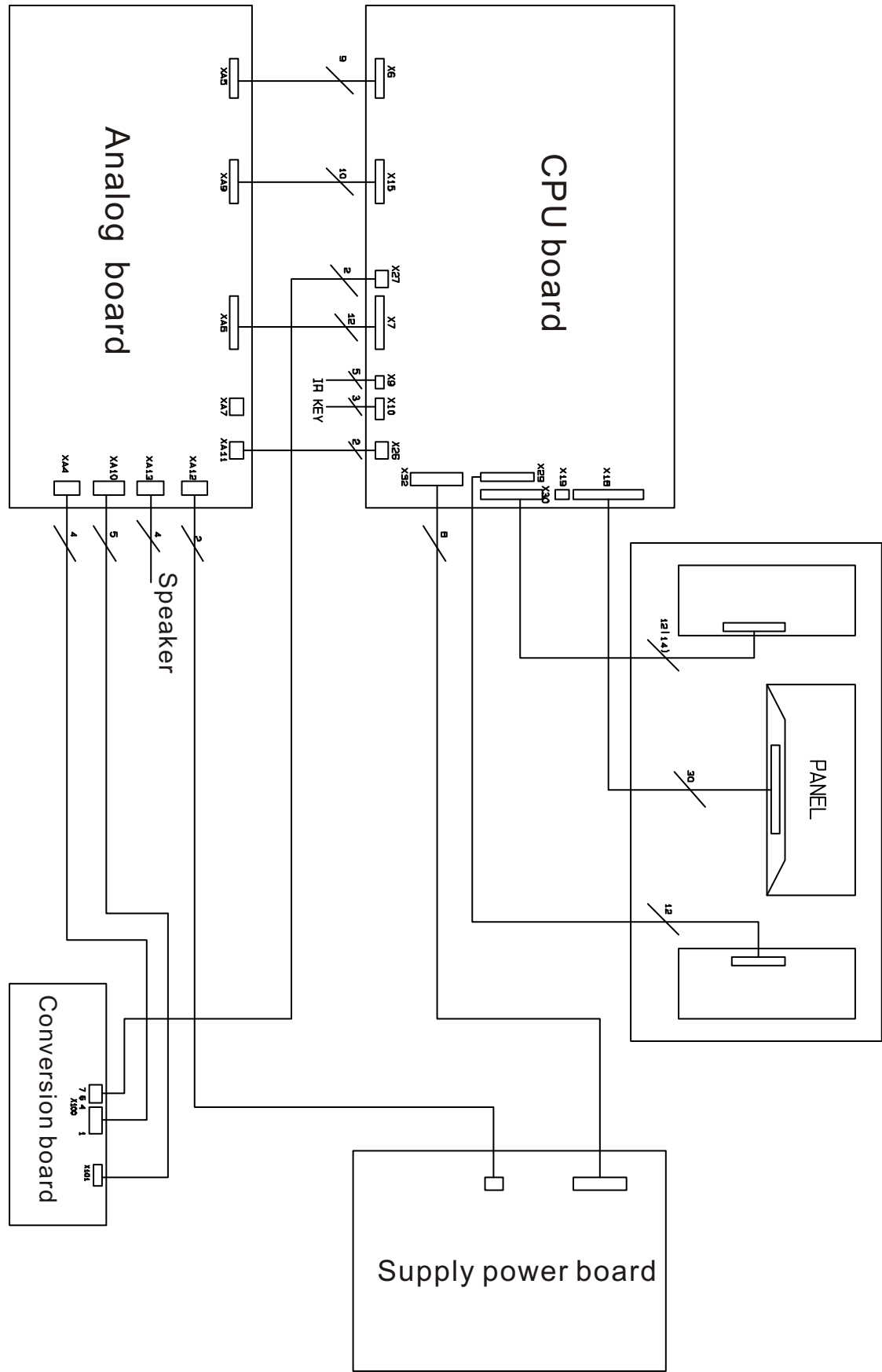
6.9 Memory

32-bit wide SDRAM (i.e. one 2M x 32-bit, or two 1M x 16-bit) controller, up to 166 MHz operation, for external SDRAM

INTERNAL BLOCK DIAGRAM:



Wiring diagram



Trouble shooting

1. Fault clearance

Before servicing please check to find the possible causes of the troubles according to the table below.

1.1 Antenna (signal):

Picture is out of focus or jumping	<ul style="list-style-type: none"> ● Bad status in signal receiving ● Poor signal ● Check if there are failures with the electrical connector or the antenna. ● Check if the antenna is properly connected.
Fringe in picture	<ul style="list-style-type: none"> ● Check if the antenna is correctly oriented. ● Maybe there is electric wave reflected from hilltop or building.
Picture is interfered by stripe shaped bright spots	<ul style="list-style-type: none"> ● Possibly due to interference from automobile, train, high voltage transmission line, neon lamp etc. ● Maybe there is interference between antenna and power supply line. Please try to separate them in a longer distance. ● Maybe the shielded-layer of signal wire is not connected properly to the connector.
There appear streaks or light color on the screen	<ul style="list-style-type: none"> ● Check if interfered by other equipment and if interfered possibly by the equipment like transmitting antenna, non-professional radio station and cellular phone.

1.2 TV set:

Symptoms	Possible cause
Unable to switch the power on	<ul style="list-style-type: none"> ● Check to see if the power plug has been inserted properly into the socket.
No picture and sound	<ul style="list-style-type: none"> ● Check to see if the power supply of liquid crystal TV has been switched on. (As can be indicated by the red LED at the front of the TV set) ● See if it's receiving the signal that is transmitted from other source than the station ● Check if it's connected to the wrong terminal or if the input mode is correct. ● Check if the signal cable connection between video frequency source and the liquid crystal TV set is correct.
Deterioration of color phase or color tone	<ul style="list-style-type: none"> ● Check if all the picture setups have been corrected.
Screen position or size is not proper	<ul style="list-style-type: none"> ● Check is the screen position and size is correctly set up.
Picture is twisted and deformed	<ul style="list-style-type: none"> ● Check to see if the picture-frame ratio is properly set up.
Picture color changed or colorless	<ul style="list-style-type: none"> ● Check the "Component" or "RGB" settings of the liquid crystal TV set and make proper adjustment according to the

	signal types.
Picture too bright and there is distortion in the brightest area	<ul style="list-style-type: none"> ● Check if the contrast setting is too high. ● Possibly the output quality of DVD broadcaster is set too high. ● It maybe also due to improper terminal connection of the video frequency signal in a certain position of the system.
Picture is whitish or too bright in the darkest area of the picture	<ul style="list-style-type: none"> ● Check if the setting for the brightness is too high ● Possibly the brightness grade of DVD player (broadcaster) is set too high.
No picture or signal produced from the displayer if “XXX in search” appears.	<ul style="list-style-type: none"> ● Check if the cable is disconnected. ● Check if it’s connected to the proper terminal or if the input mode is correct.
There appears an indication - “outside the receivable scope)	<ul style="list-style-type: none"> ● Check if the TV set can receive input signal. The signal is not correctly identified and VGA format is beyond the specified scope.
Remote control cannot work properly	<ul style="list-style-type: none"> ● Check if the batteries are installed in the reverse order. ● Check if the battery is effective. ● Check the distance or angle from the monitor. ● Check if there is any obstruct between the remote control and the TV set. ● Check if the remote control signal- receiving window is exposed to strong fluorescence.
No picture and sound, but only hash.	<ul style="list-style-type: none"> ● Check if the antenna cable is correctly connected, or if it has received the video signal correctly.
Blur picture	<ul style="list-style-type: none"> ● Check if the antenna cable is correctly connected. ● Of if it has received the right video signal.
No sound	<ul style="list-style-type: none"> ● Check if the “mute” audio frequency setting is selected. ● Check if the sound volume is set to minimum. ● Make sure the earphone is not connected. ● Check if the cable connection is loose.
When playing VHS picture search tape, there are lines at the top or bottom of the picture.	<ul style="list-style-type: none"> ● When being played or in pause VHS picture search tape sometimes can’t provide stable picture, which may lead to incorrect display of the liquid crystal TV, In this case please press “auto” key on the remote control so as to enable the liquid crystal TV set to recheck the signal and then to display correct picture signal

2. Identification criteria for the bright spot and dark spot of the LCD screen

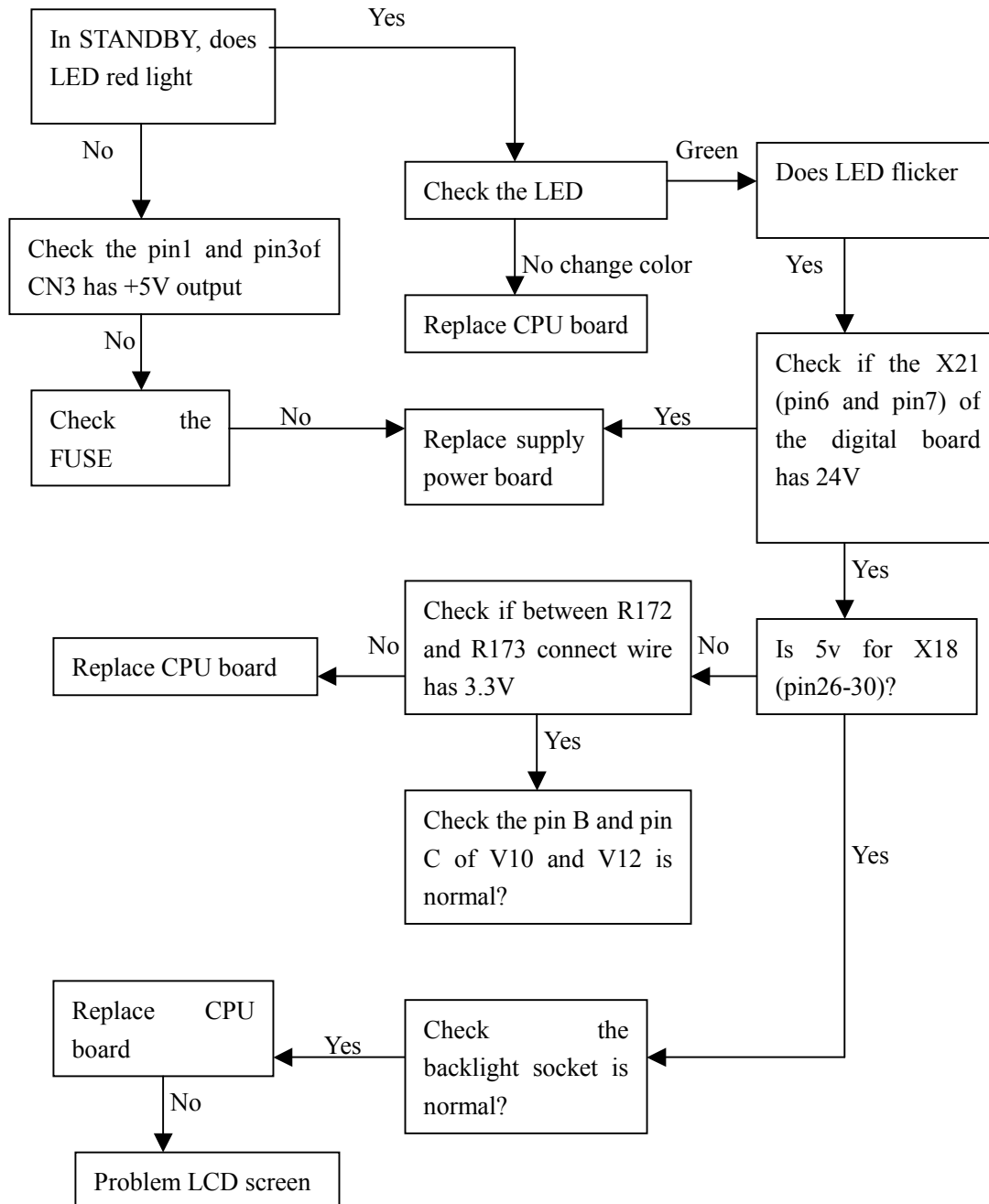
Category	Criteria	Quantity allowed					Distance between two spots				
		15"	20"	22"	30"	40"	15"	20"	22"	30"	40"
Bright spot	One single spot	≤5	≤2	≤5	≤2	≤3	≥15mm	≥15mm			
	Two neighboring spots	≤2	≤1	≤2	≤1	≤1					
	Total No.	≤5	≤2	≤5	≤2	≤3					
Dark spots	One single spot	≤6	≤7	≤5	≤4	≤10		≥10mm	≥5mm		
	Two neighboring spots	≤2	≤2	≤2	≤1	≤5					
	Total No.	≤6	≤7	≤5	≤4	≤10					
Total defected point		≤8	≤7	≤5	≤4	/					

Notes:

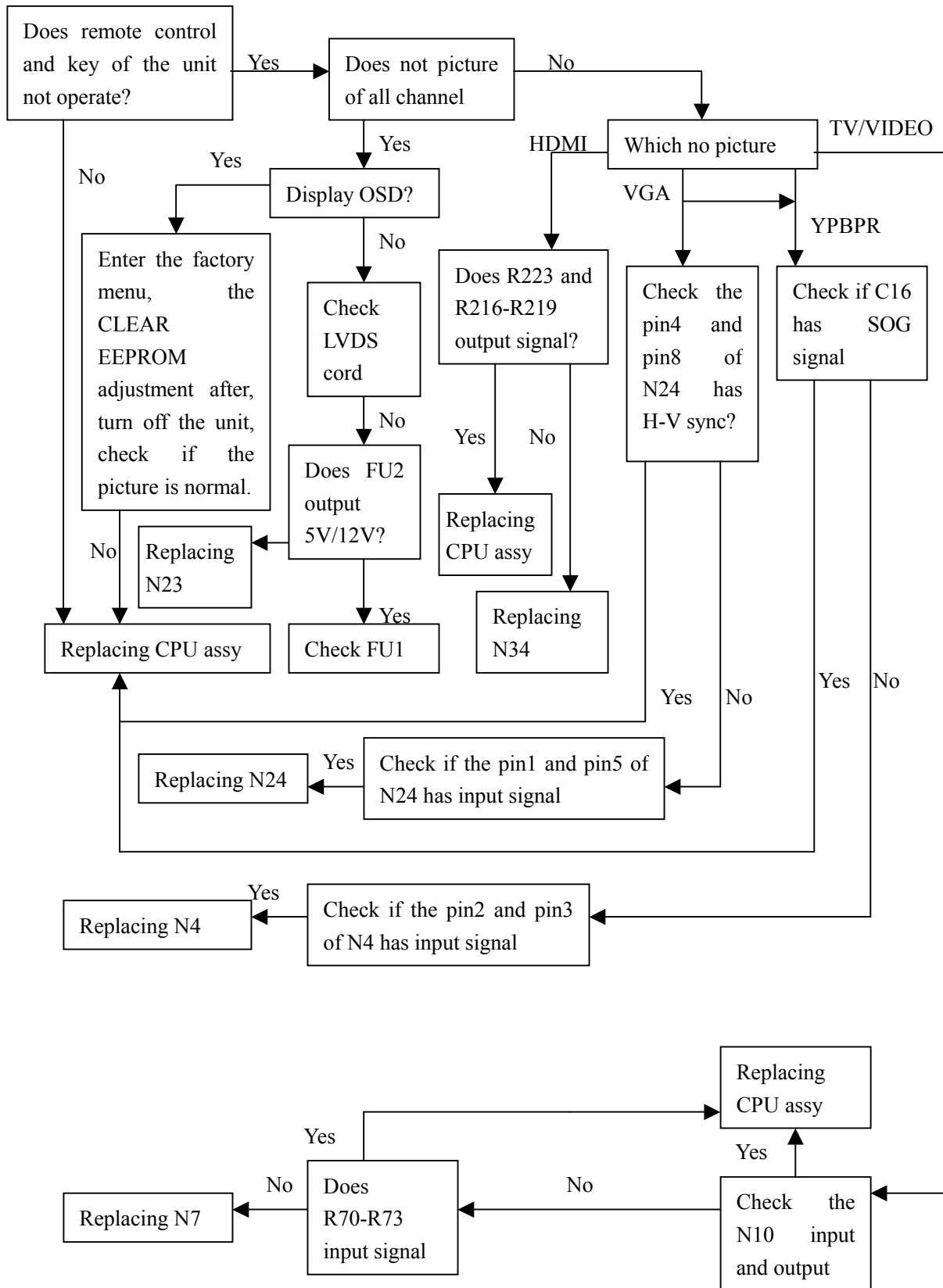
1. Definition of defected point (bright spot, dark spot): It is identified as a defected point if its area exceeds 1/2 of a single picture element (R, G, B).
2. Definition of bright spot: It is identified as a bright spot if it is bright in the state of dark field and its bright size remains unchanged
3. Definition of dark spot: It is identified as a dark spot if it is dark in the state of white field and its dark size remains unchanged
4. Definition of two neighboring points: Defects of a group of picture elements (RB, RG, GB).

3. Troubleshooting guide

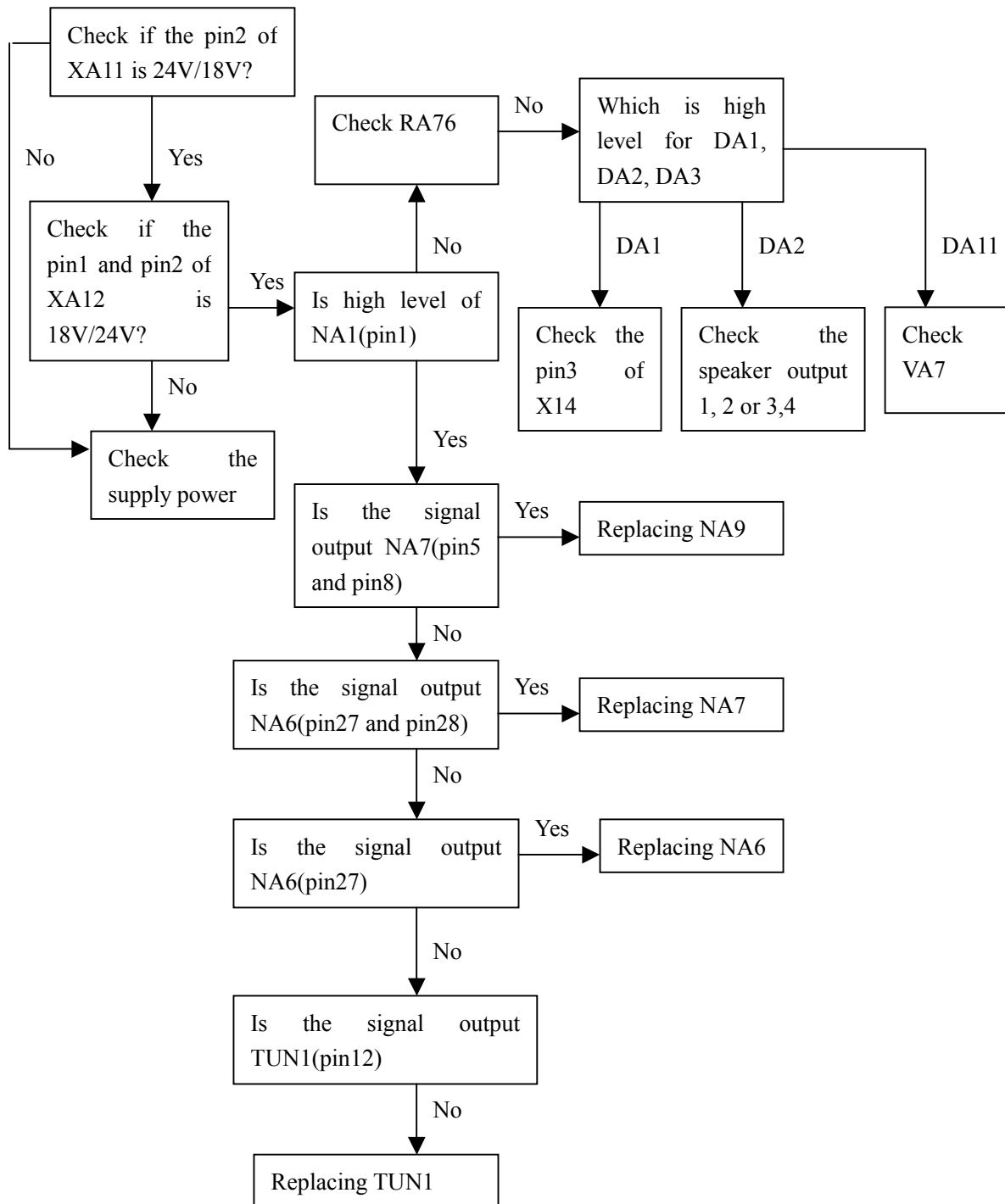
1. Without backlight



2. With backlight, without picture



3. No sound

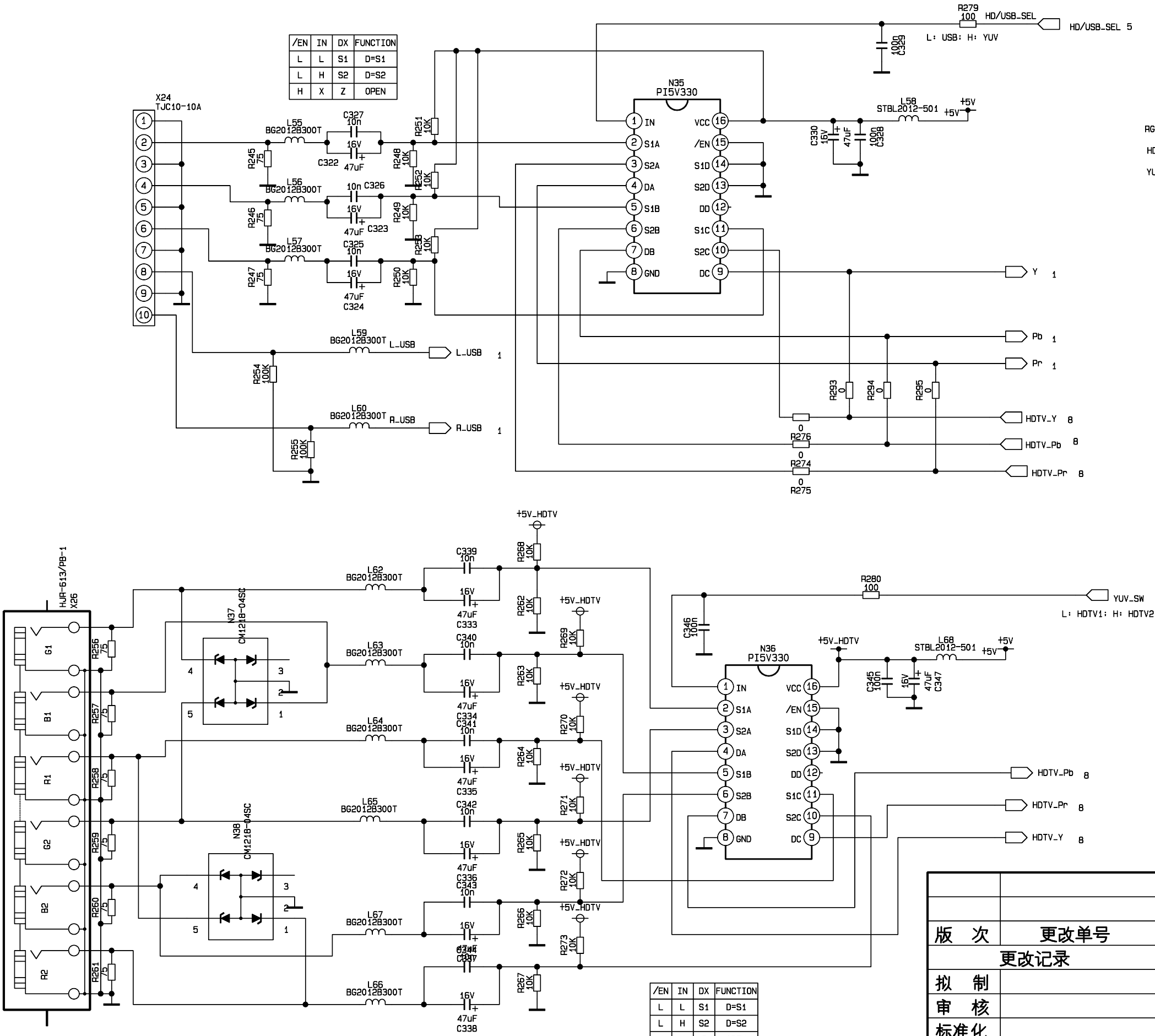


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2

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4



		名称 XX板电路图	编号 203-L27R180-01DL	
版 次	更改单号			
更改记录				
拟 制			版次	A1.0
审 核		第 8 页 共 8 页		
标准化			厦门华侨电子股份有限公司	
工 艺				
批 准				

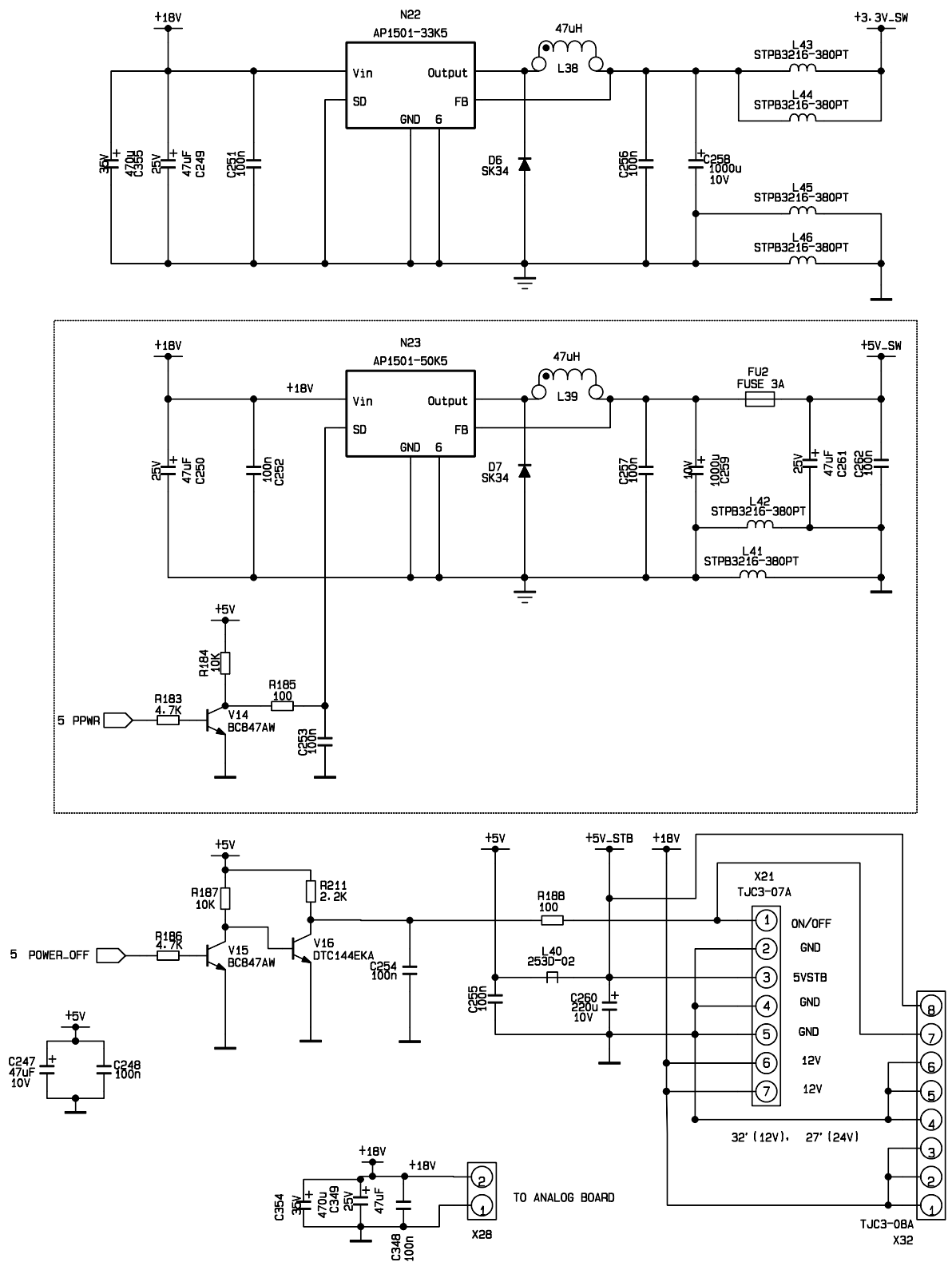
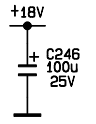
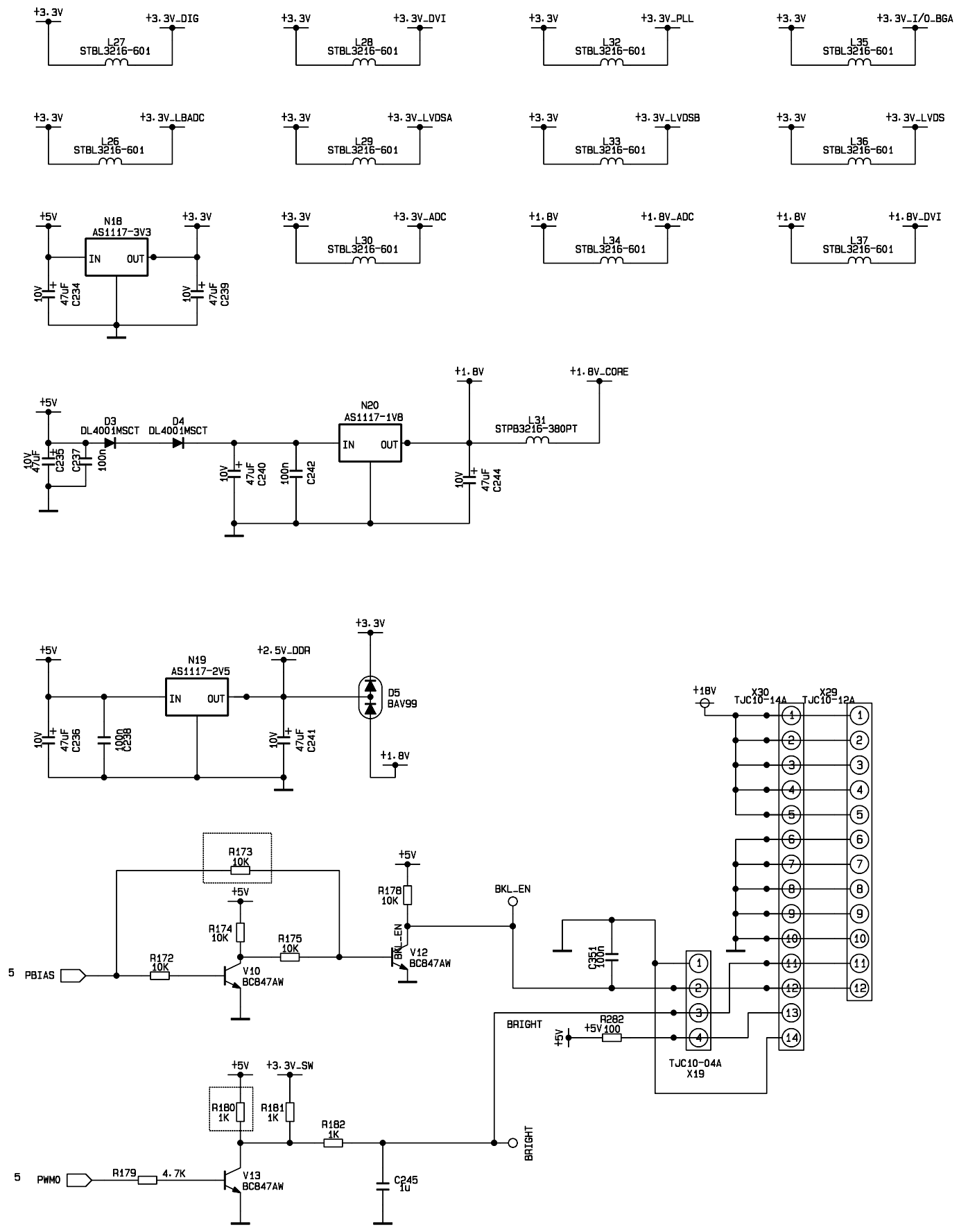
1

2

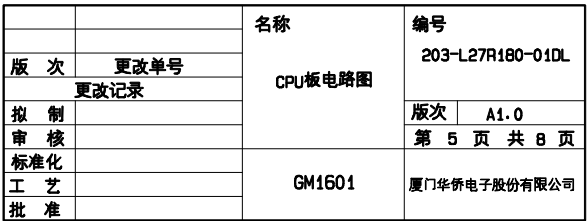
3

4

5



		名称 CPU板电路图	编号 203-L27R180-01DL	
版次	更改单号			
更改记录				
拟制			版次	A1.0
审核		第 7 页 共 8 页		
标准化		Power	厦门华侨电子股份有限公司	
工艺				
批准				



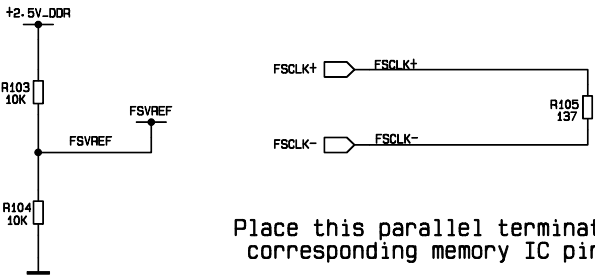
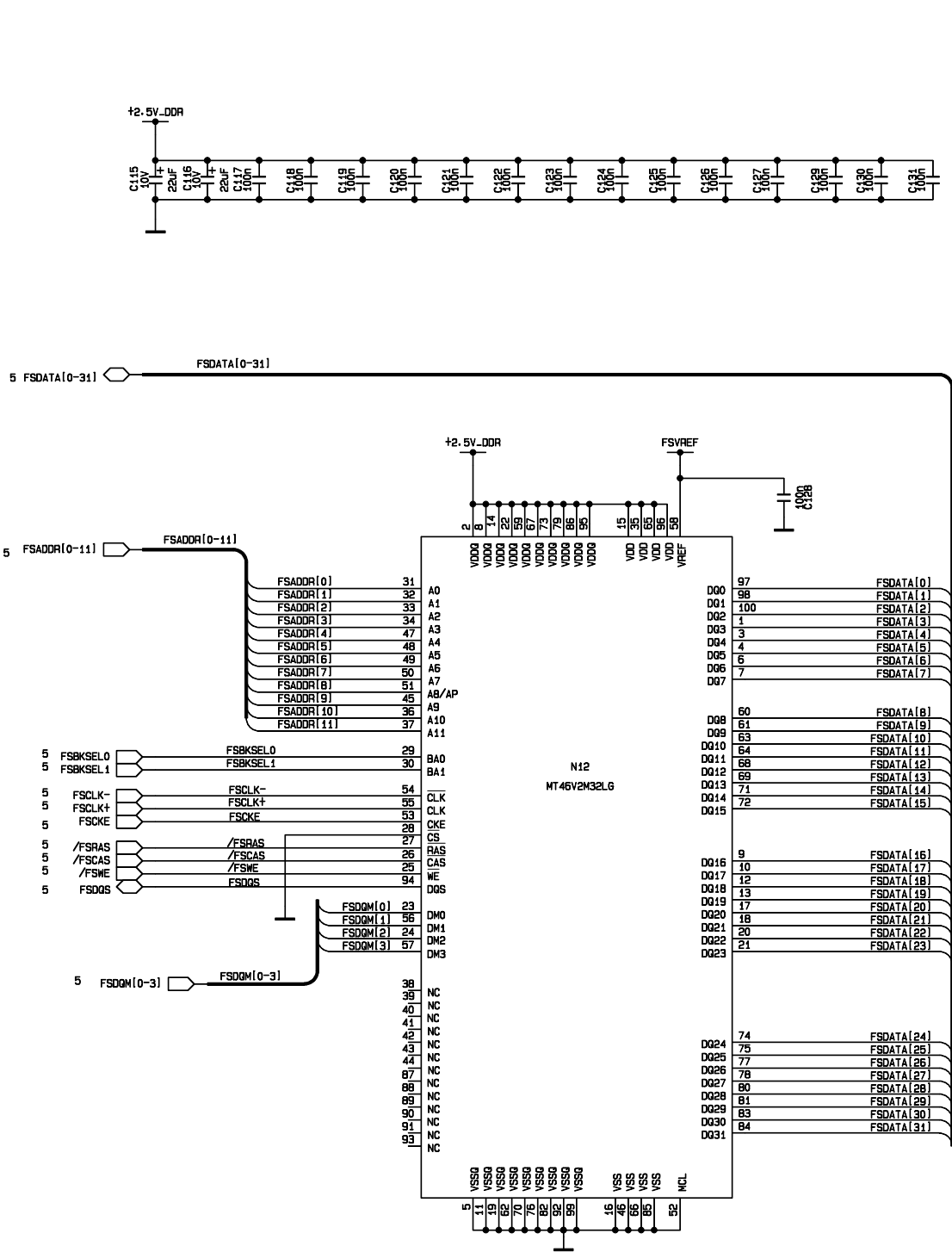
1

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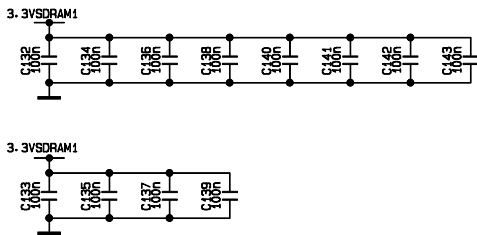
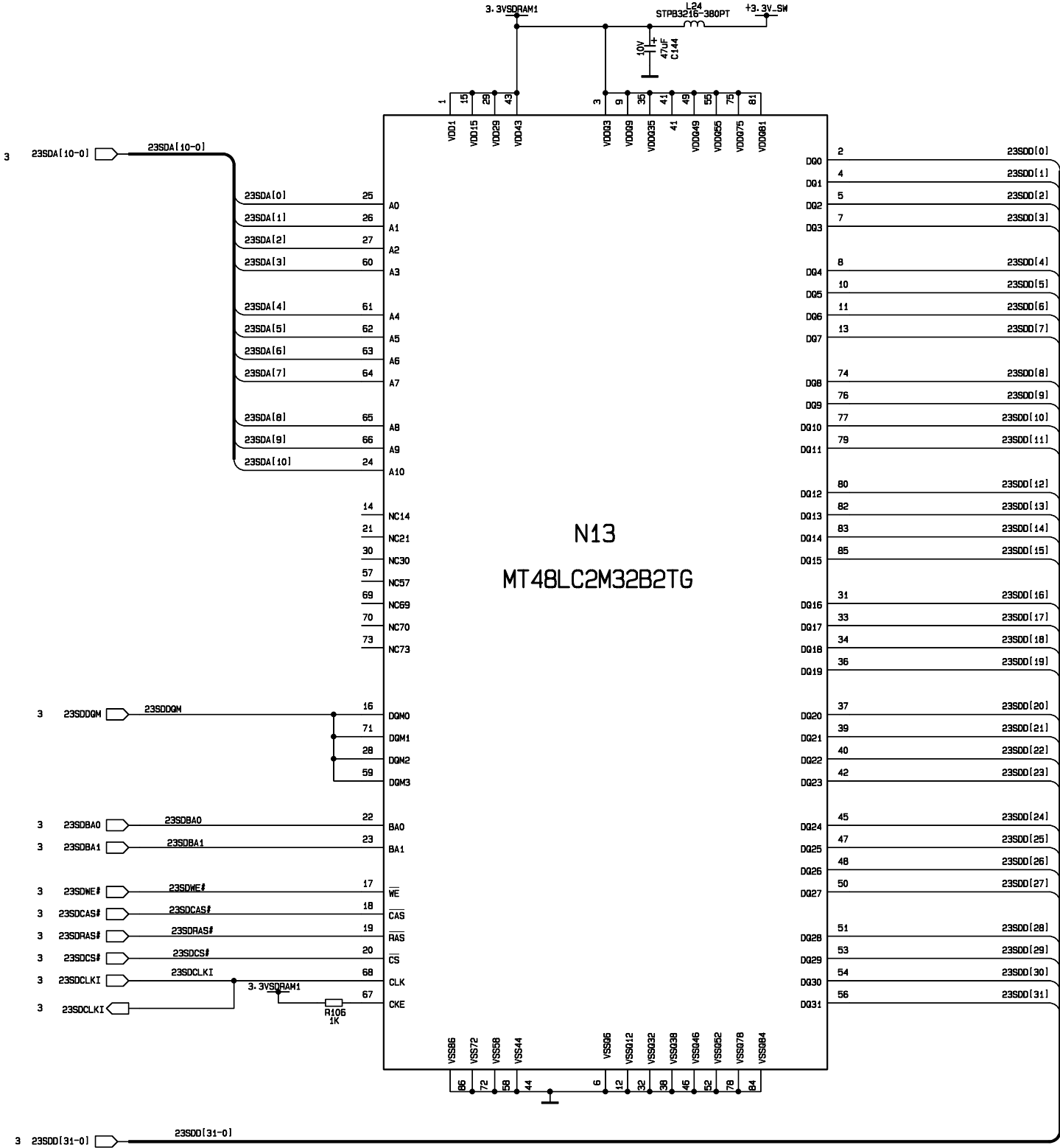
3

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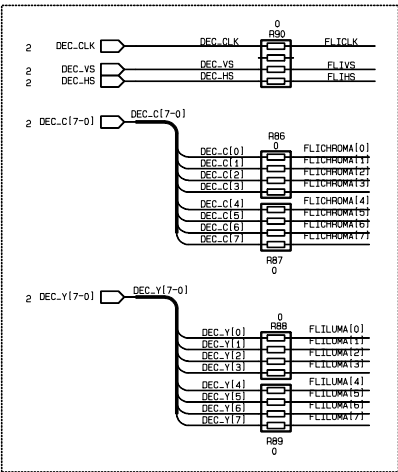
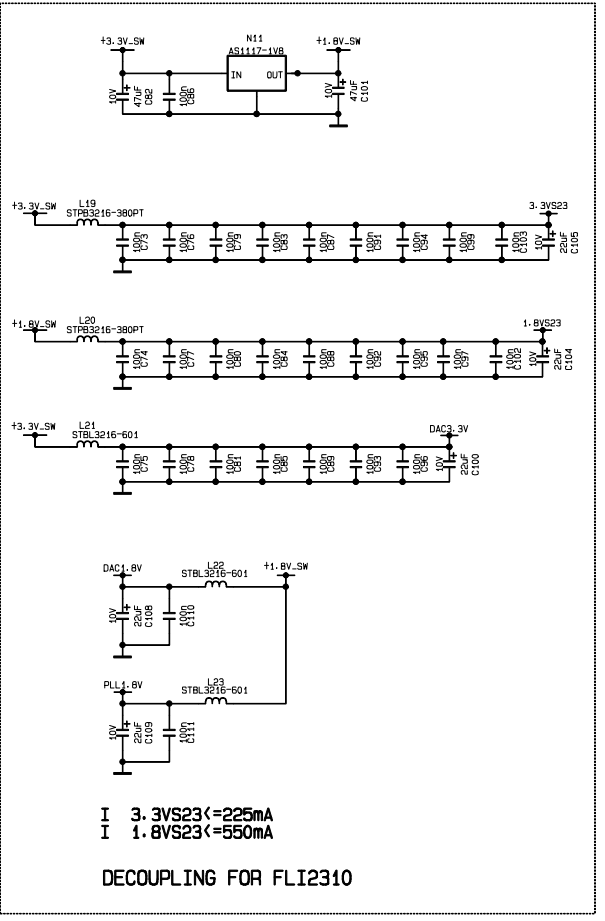
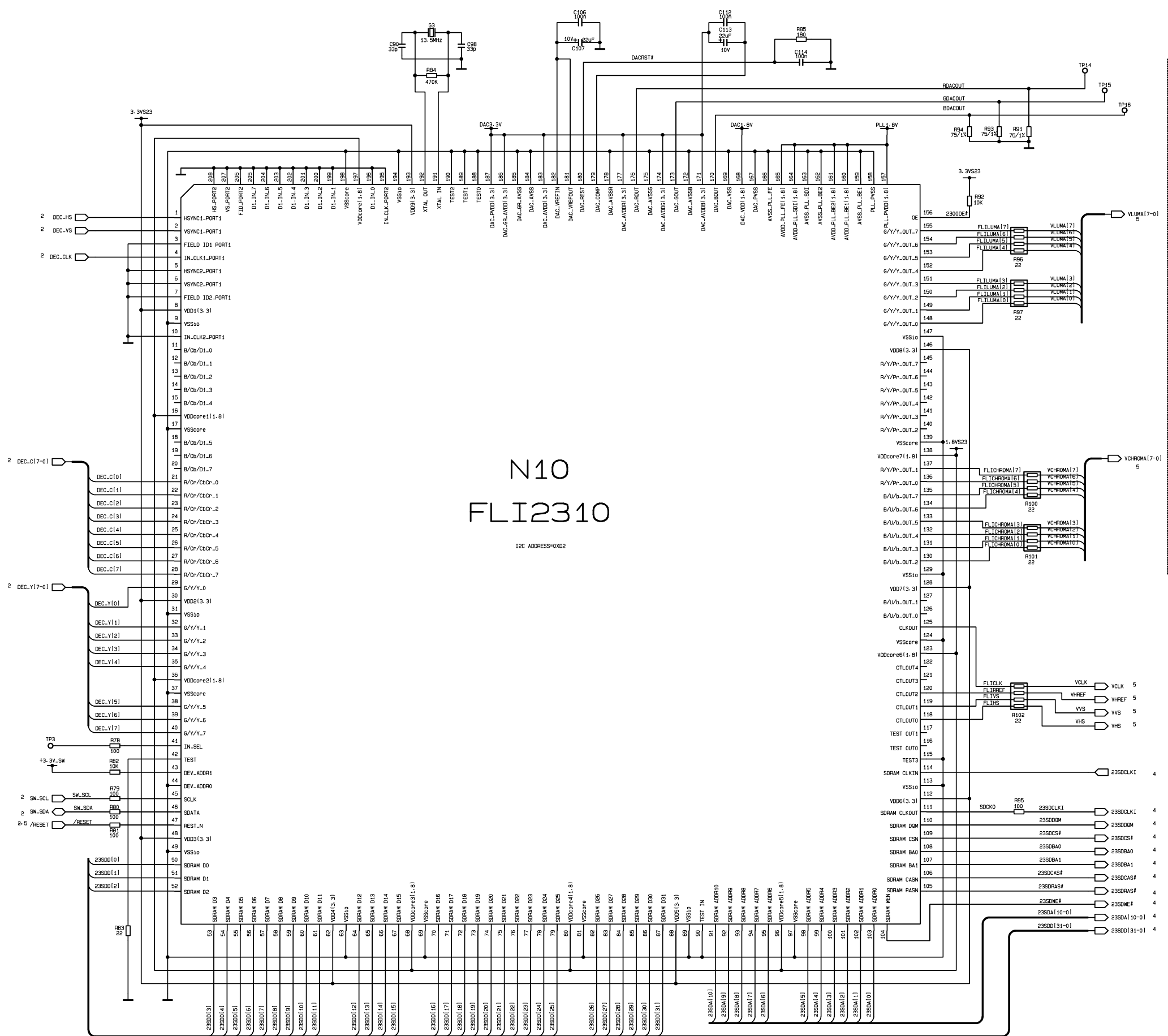
Place this parallel termination close to corresponding memory IC pins



		名称	编号
版次	更改单号	CPU板电路图	203-L27R180-01DL
拟制	更改记录		版次 A1.0
审核			第 4 页 共 8 页
标准化		Frame Memory	厦门华侨电子股份有限公司
工艺			
批准			

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7

A B C D E F G H I



		名称	编号
		CPU板电路图	203-L27R180-01DL
版次	更改单号	版次	A1.0
拟制	更改记录	第 3 页 共 8 页	
审核			
标准化			
工艺			
批准		DEINTERLACER	厦门华侨电子股份有限公司

1

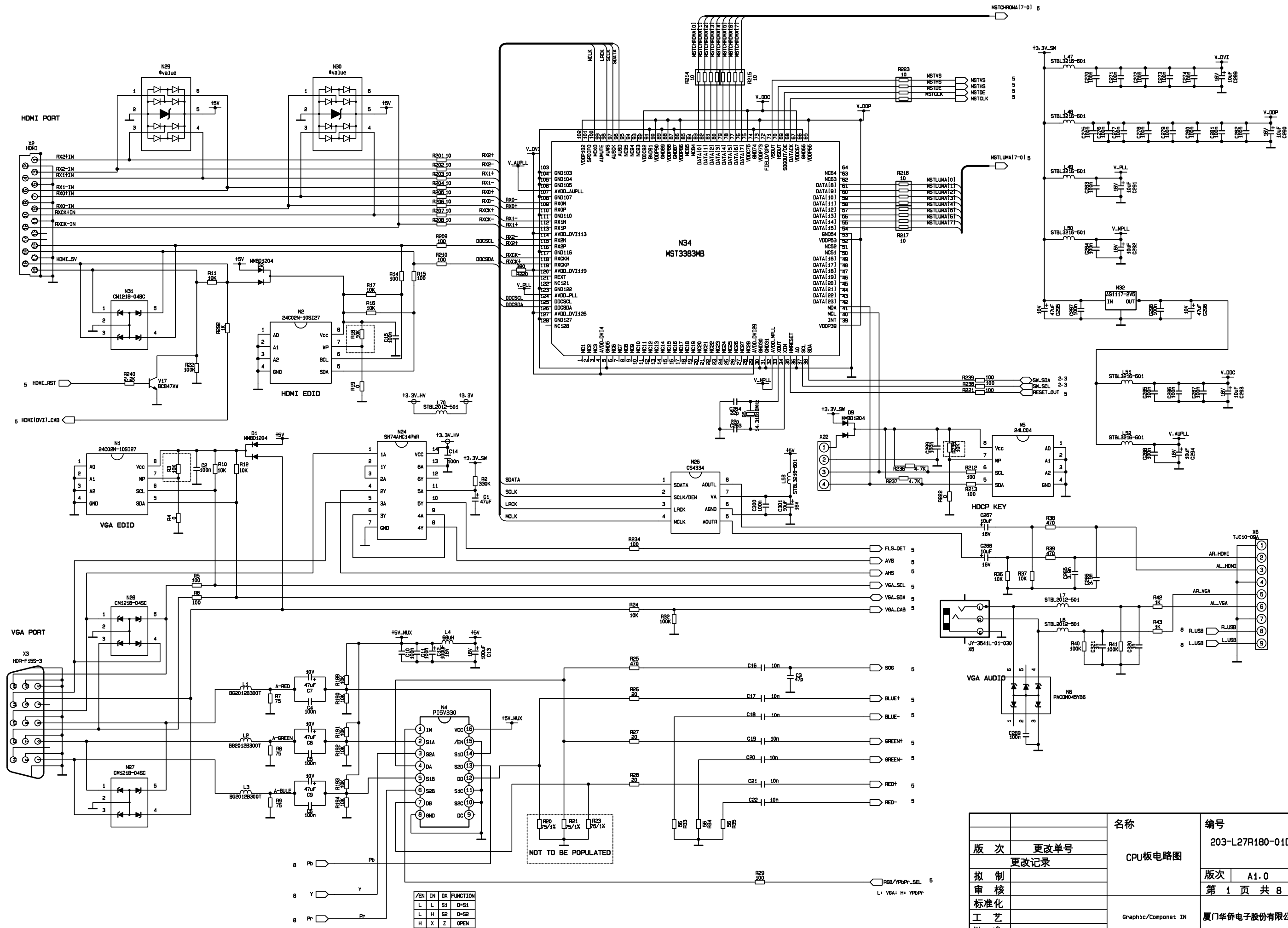
2

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6



名称		编号
CPU板电路图		203-L27R180-01DL
版次	更改单号	版次
更改记录		A1.0
拟制		第 1 页 共 8 页
审核		
标准化		
工艺		
批准		
Graphic/Componet IN		厦门华侨电子股份有限公司

1

2

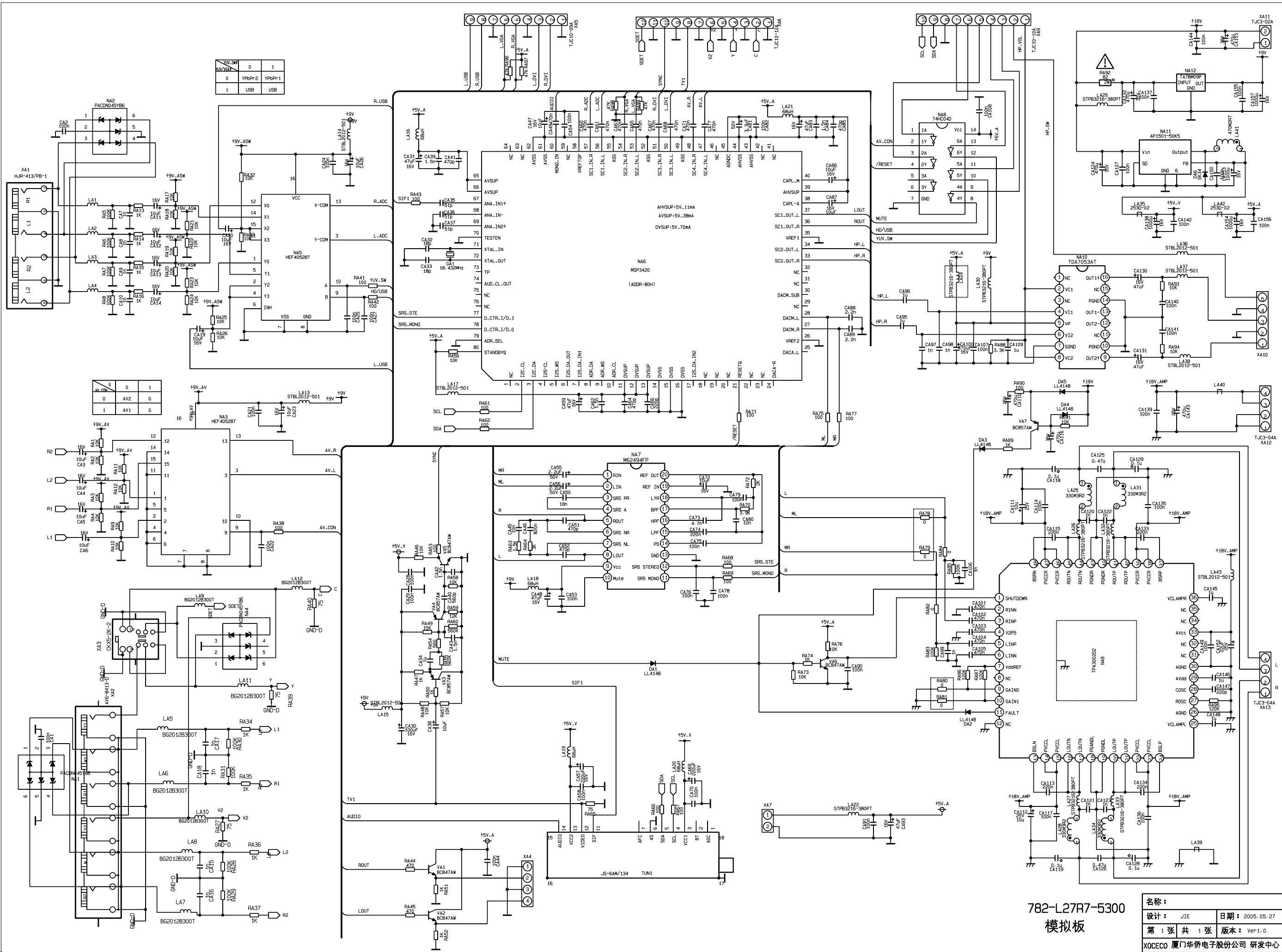
3

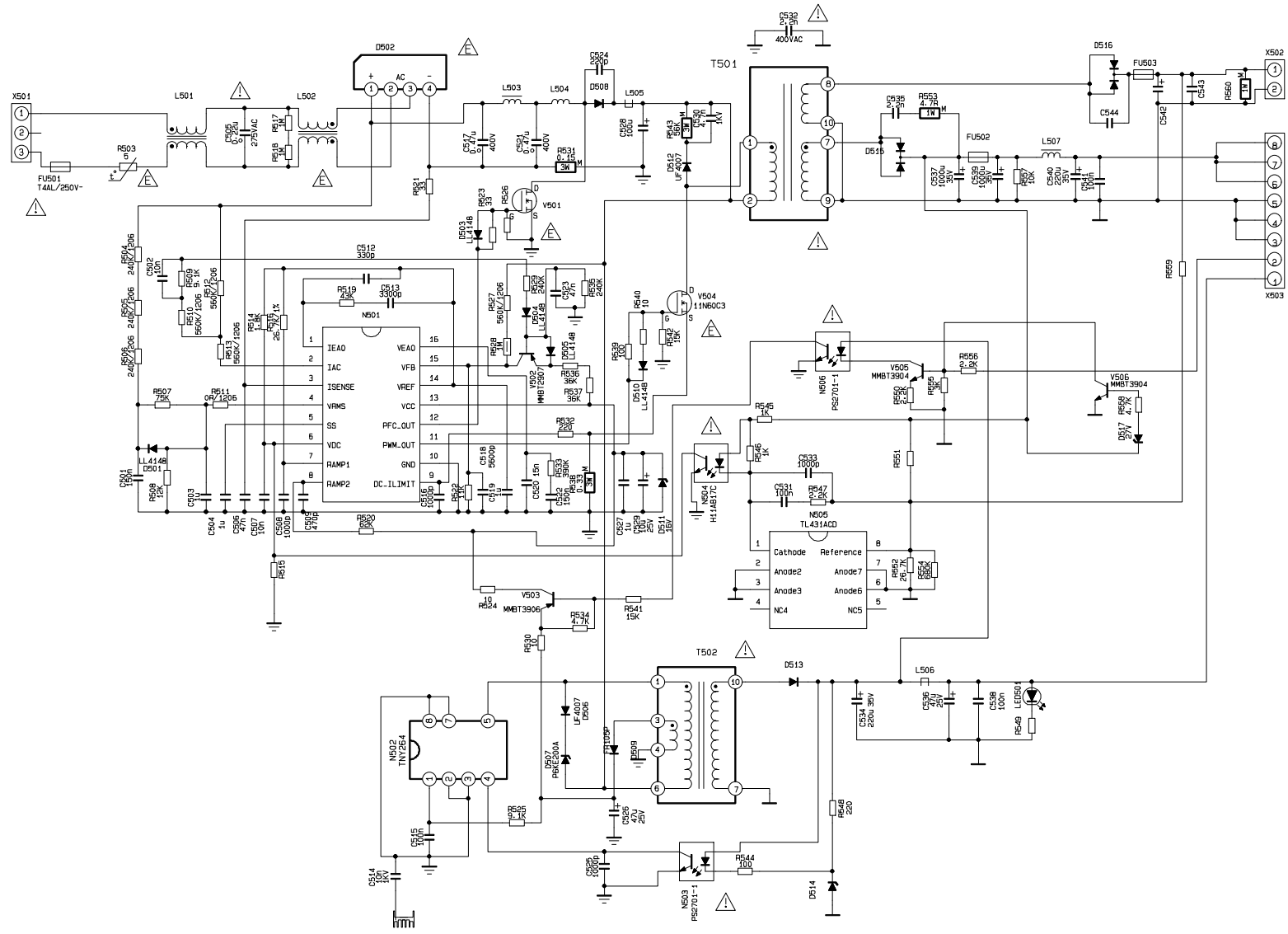
4

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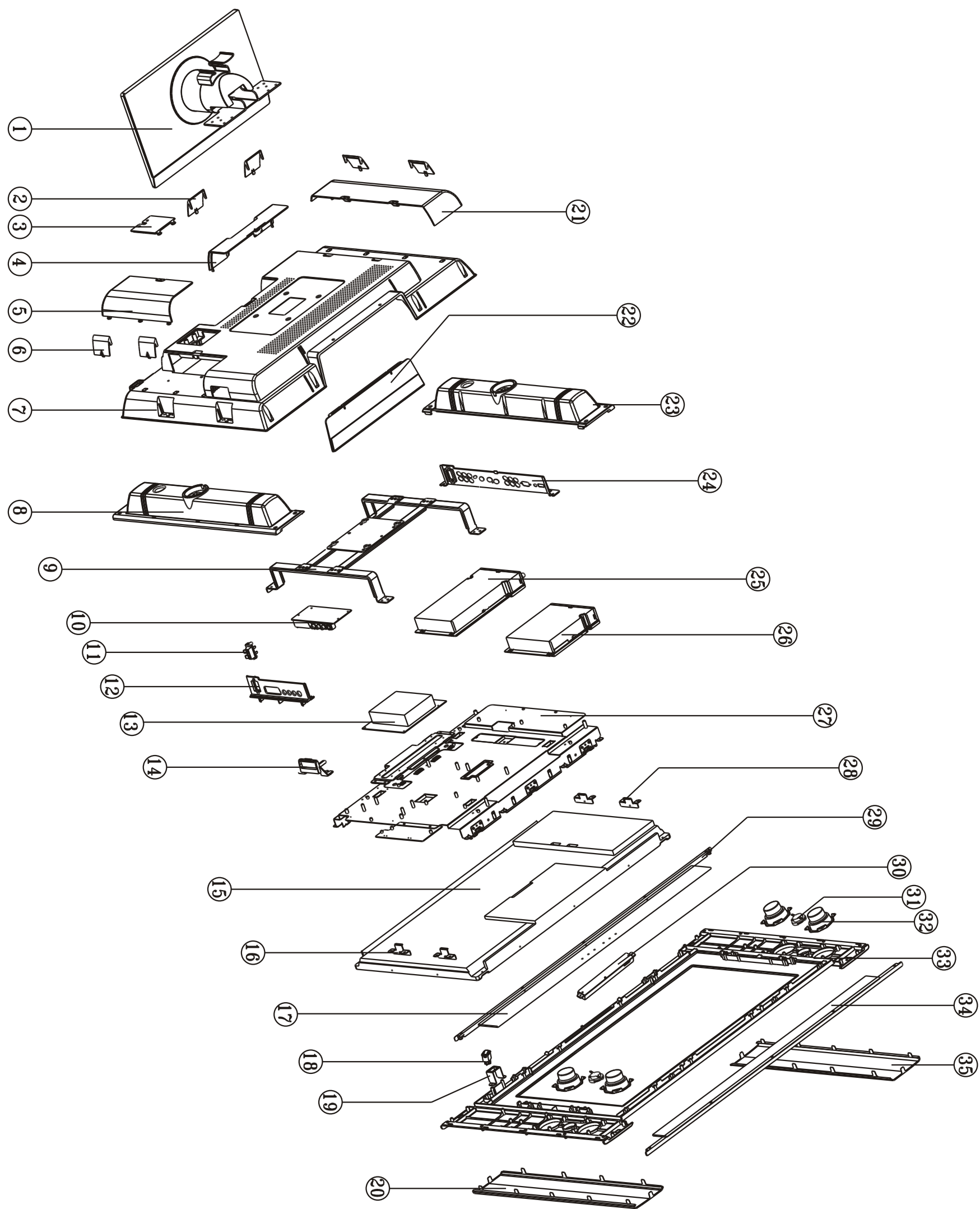
APPENDIX-A : Main assembly

203-L27R250-11

NAME	NO.	MAIN COMPONENT AND ITS NO.	
Analog board	667-L27R18-53	NA6 NA7 NA9	MSP3420 (353-34200-10) M62494FP (353-62494-20) TPA3008D2 (353-30080-10)
CPU board	667-L27R18-56	N15 N10 N7 N34	GM1501 (353-15010-60) FLI2310 (353-23100-10) TVP5160 (353-51600-10) MST3383MB (353-33830-10)
Keypad board	667-L27R25-05		
Trans-connect board	667-L27R18-46		
Power board	667-L27R18-20		
Remote control	301-D47R27-07A	RC-D07-0A	
Panel	335-27003-00	V270B1-L01	

203-L32R260-10

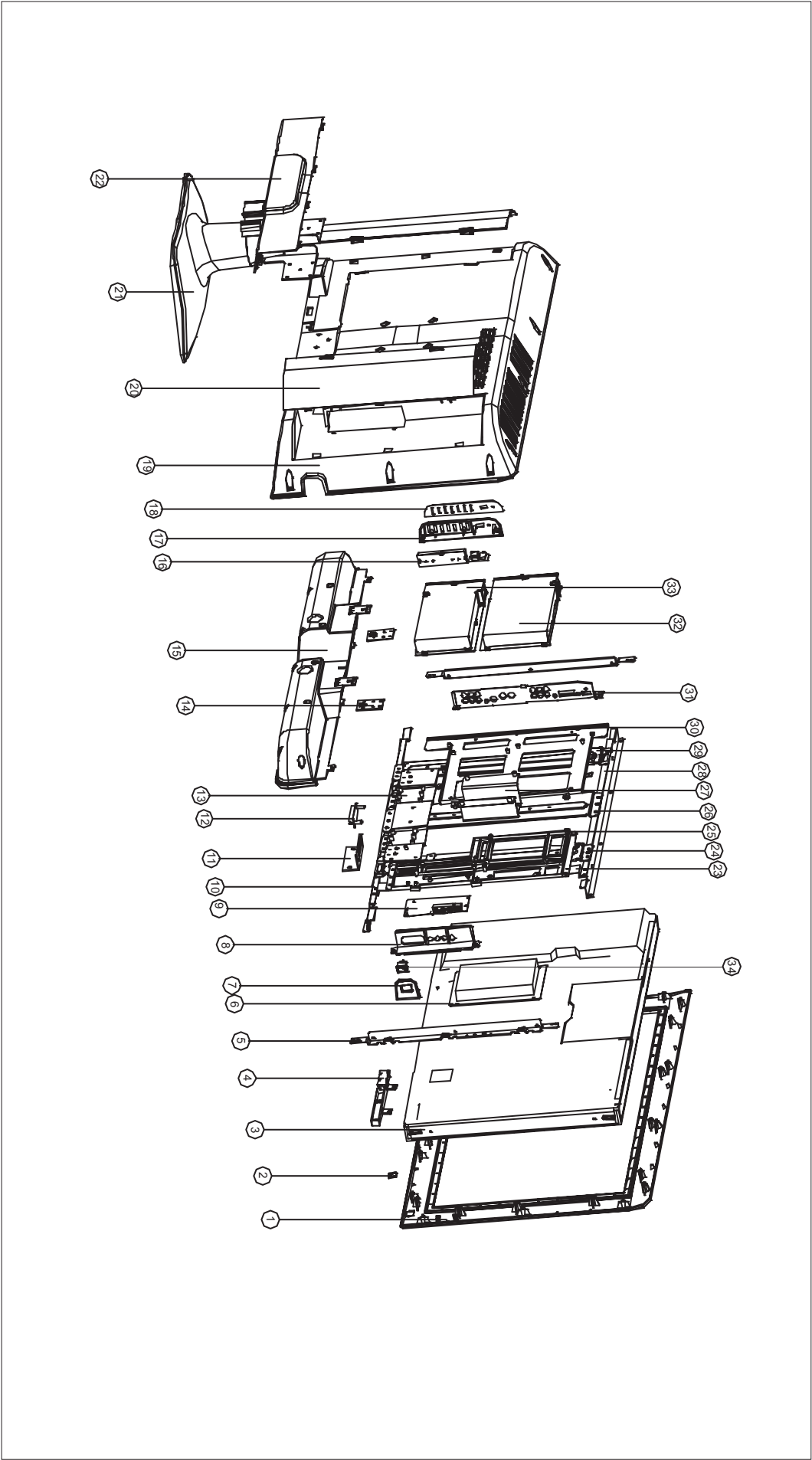
NAME	NO.	MAIN COMPONENT AND ITS NO.	
Analog board	667-L27R18-53	NA6 NA7 NA9	MSP3420 (353-34200-10) M62494FP (353-62494-20) TPA3008D2 (353-30080-10)
CPU board	667-L27R18-56	N15 N10 N7 N34	GM1501 (353-15010-60) FLI2310 (353-23100-10) TVP5160 (353-51600-10) MST3383MB (353-33830-10)
Keypad board	667-L26R26-05		
IR receive board	667-L26R26-09		
Trans-connect board	667-L27R18-46		
Power board	667-L32T18-20		
Remote control	301-CL37R7-090B	RC-C09-0B	
Panel	335-32012-00	V320B1-L01	



PART LIST OF EXPLODED VIEW (LC-27X25)

NO.	PART NO.	DESCRIPTION
1	615-10547-00	Stand assy
2	808-10838-00	bottom decorative cover
3	808-10812-AF0	Power lead cover
4	808-10836-00	transfer axis cover
5	808-10833-00	Rear cabinet(right)
6	808-10837-00	Side decorate cover
7	780-U18RH-00	Rear cabinet
8	780-30188-00	Speaker back cover(right)
9	615-10545-00	Mounting holder assy
10		Sound trans-connecting assy
11	364-42201-00	Socket
12	808-1B842-00	AV baffle (right)
13		Power board assy
14	870-3A183-AF0	USB bracket
15	335-27001-00	Screen
16	870-10157-00	CHI MEI bracket(right)
17	808-20337-00	PMMA Decorative board (bottom)
18	360-30042-00	Power switch
19	870-10285-00	Power supply socketbracket
20	864-10223-00	Speaker net (right)
21	808-10835-00	Rear cabinet(left)
22	743-1C180-00	Button decorate piece
23	780-30187-00	Speaker back cover(left)
24	804-1B841-00	AV baffle (left)
25		TV assy
26		CPU assy
27	615-10542-00	LCD screen fixed mount assy
28	870-10156-00	CHI MEI bracket(left)
29	743-10192-00	Decorative piece
30	667-L27U25-05	Button board assy
31	384-20508-80	Speaker
32	384-21908-W0	Speaker
33	780-X25W0-00	Front cover
34	808-20336-00	PMMA Decorative board (upper)
35	864-10222-00	Speaker net (left)

APPENDIX: Exploded view (LC-32X26)



PART LIST OF EXPLODED VIEW (LC-32X26)		
NO.	PART NO.	DESCRIPTION
1	780-G26W0-AC0	Front cover
2	615-10425-00	Trans-connecting bracket assy
3		Screen
4		reception board assy
5	870-10288-00	Connecting bracket of screen(left right)
6		Power board assy
7	870-3A241-120/870-30241-120	Main switch bracket
8	808-1E969-121	AV baffle (right)
9		Trans-connecting board assy
10	870-10417-00	crystal FRAME (bottom)
11	808-10970-120	AV baffle (bottom)
12	364-44206-00	Socket
13	870-10409-00	Stand bracket
14	804-20468-00	Connecting piece of speaker box(2)
15	615-20558-00	Speaker box assy
16		button board assy
17	870-30239-120	SIDE Button bracket
18	808-60947-3C1	Buttonbaffle
19	780-G26WH-120	Rear cabinet
20	808-10966-120	Rear cabinetCover(1)
21	615-10649-00	Stand assy
22	808-10967-120	Rear cabinetCover(2)
23	870-10411-00	trans-connector
24	870-1A408-00	crystal frame (right)
25	863-6A189U000	Power board frame
26	870-10407-00	crystal frame (middle)
27	870-10410-00	Mounting holder
28	870-10416-00	crystal frame (upper)
29	870-1A406-00	crystal frame (left)
30	863-60188U000	Main board frame
31	808-1F968-120	AV baffle (left)
32		CPU board assy
33		Analog board assy
34	360-30042-00 (option)	Power switch

