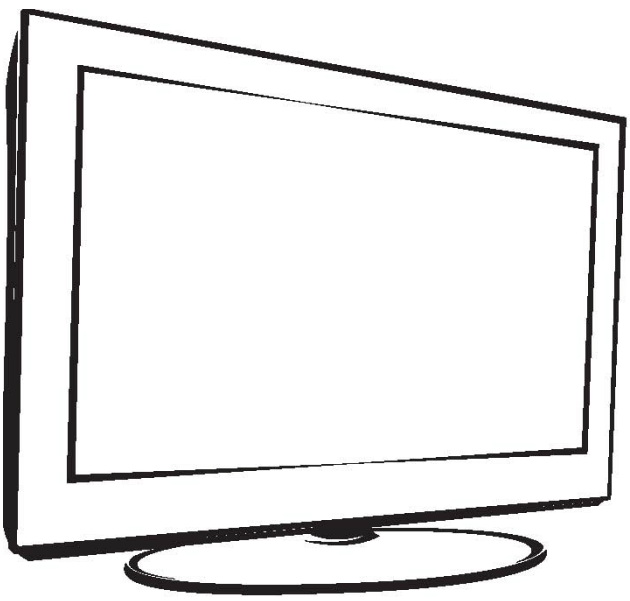
SERVICE MANUAL

8M28A CHASSIS



Design and specifications are subject to change without prior notice. (Only Referrence)

SIZE:A5

Description: SERVICE MANUAL 8M28A	
MODEL.	Brand Name: SKYWORTH
JOB NO.	
Engineering Dept: Artwork By: Date: 2012-4-28	
Checked By: Date:	
Approved By: Date:	

Content

Technical Specification

1.Application Area:

This product standard is used for LED ~~8M26A~~ chassis.

2.Specification:

All the standard are measured under following conditions without other specification.

2.1 Ambient Temperature:20+/-5℃

2.2 Relative Humidity:65+/-10%

2.3 Power Supply Voltage: Standard Input Voltage(100V~240Vac 50/60Hz)

2.4 Adjust after 20 minutes warm-up.

3.Test and check method:

3.1 Capability:According to nation test standard

3.2 Safety:_____ standard

EMC:_____ standard

Technical Specification

4.General Specification

No	Item	Specification	Remark
1.	Receiving and senting method	PAL SECAM / BG DK PAL / I NTSC / M	
2.	Receive Channel	VHF LOW K1~S6 VHF HIGH S7~S36 VHF S37~DS57	44.25MHz ~ 140.25MHz 147.25MHz ~ 423.25MHz 431.25MHz ~ 863.25MHz
3.	Input Voltage	100-240V ~ 50/60HZ	
4.	Market	Asia\Europe	
5.	Tuning System	PLL System	
6.	Operating Environment	1) Temp : 0 ~ 40 deg 2)Humidity : 40 ~ 85 %	
7.	Storage Environment	3)Temp : -20 ~ 50 deg 4)Humidity : ~ 90 %	

5.Feature and Function

No	Item	Specification	Remark
1.	CCD	NO	
2.	REMOCON	TOSHIBA CODE	
3.	AV Input	2REAR, 1SIDE	
4.	Component input	1 REAR	
5.	S-VIDEO	NO	
6.	RGB Input	YES	
7.	2 Carrier Stereo	NO	
8.	NICAM Stereo	YES	
9.	2 Carrier Dual	YES	
10.	NICAM Dual	YES	
11.	SSC (Split Screen) Mode	NO	
12.	MUP (Multi Picture Display) Mode	YES	
13.	Film Mode	NO	
14.	Noise Reduction	NO	
15.	Progressive Scan	YES	
16.	Motion Detection	NO	
17.	Dolby Virtual	NO	
18.	Swivel Speaker	NO	

Technical Specification

6. Safety and Regulation

No	Item	Min	Typ	Max	Unit	Remark
1.	Force Stability – Incline Plane Tip Test		10		deg	
2.	Force Stability – Level Tip Test		100		N	
3.	Isolation Gap, AC-AC/ AC-DC	3			mm	
4.	Isolation Gap	6			mm	
5.	Power Consumption, Max		40		W	For 22" LED
			55		W	For 24" LED
			80		W	For 32" LED
6.	Power Consumption, Stand by			1	W	
7.	Dielectric Voltage	3			kV	
8.	Isolation Resistance	4			MΩ	
9.	Leakage Current		5		mApp	
10.	Power Cord Captivity		40		N	
11.	Flammability – Back Cover		PASS			
12.	Sharp Edge		PASS			
13.	UL Compliance		NO			
14.	FCC Compliance		NO			
15.	CDRH Radiation Compliance		NO			
16.	CSA Compliance		NO			
17.	CEB Compliance		NO			
18.	CE Compliance		NO			
19.	CB Compliance		YES			

7. Video

No	Item	Min	Typ	Max	Unit	Remark
1.	Linearity Distortion, Vertical		1		%	
2.	Linearity Distortion, Horizontal		1		%	
3.	Trapezoidal Distortion, Vertical		1		%	
4.	Trapezoidal Distortion, Horizontal		1		%	
5.	Over Scan, Vertical	90	93	95	%	
6.	Over Scan, Horizontal	90	93	95	%	
7.	Video Noise Limited Sensitivity(@S/N=30db) VHF			51	dBUV	
8.	Video Noise Limited Sensitivity(@S/N=30db) UHF			54	dBUV	

10.	Selectivity -1.5M	35			dB	
11.	Selectivity +8M	40			dB	
12.	Tuning Range	-0.7			MHz	

8. Chroma

No	Item	Min	Typ	Max	Unit	Remark
1.	White Balance, X axis		280			
2.	White Balance, Y axis		290			
3.	White Balance, Color Temperature	6500	9300	13000	kdeg	13000kdeg(268,273) 9300(281,311) 6500(313,329)
4.	Color Sensitivity		30		dB	
5.	Color Burst Lock-in Range	+/-300			Hz	
6.	Color Killer Sensitivity		30		dBuv	

9. Audio

No	Item	Min	Typ	Max	Unit	Remark
1.	Audio Noise Limited Sensitivity, VHF-L		25		dBuv	
2.	Audio Noise Limited Sensitivity, VHF-H		25		dBuv	
3.	Audio Noise Limited Sensitivity, UHF		28		dBuv	
4.	Buzz (S/N Ratio)		40		dB	
5.	Distortion		3		%	
6.	Audio Output, L/R,at 10% THD		5		W	
7.	Audio Output, Center		5		W	
8.	Stereo Separation		21		dB	
9.	Speaker Impedance		8		ohm	(24 inches is 4 ohm)
10.	Speaker Power Rating		5		W	(24 inches is 3W)

Technical Specification

10. Power

No	Item	Min	Typ	Max	Unit	Remark
1.	DC Voltage, Audio		12		V	
2.	DC Voltage, Tuner(5)		5		V	
3.	DC Voltage, Tuning(32)		33		V	

11. External Interface

No	Item	Min	Typ	Max	Unit	Remark
1.	Video Input Level		1		Vpp	75 OHM
2.	Video Input Frequency Response	4.5			MHz	
3.	Video Input S/N		40		dB	
4.	Audio Input Level		0.5		Vrms	
5.	Audio Input Frequency Response			15	kHz	
6.	Audio Input S/N		40		dB	
7.	Audio Input Distortion		3		%	
8.	Audio Input Dynamic Range			2	V	
9.	Video Output Level		1		Vpp	
10.	Video Output Frequency Response		4.2		MHz	
11.	Video Output S/N		50		dB	
12.	Audio Output Level		0.5		Vrms	
13.	Audio Output Frequency Response	80		12000	Hz	
14.	Audio Output S/N		40		dB	
15.	Audio Output Distortion		3		%	

16.	Video Input Level, R/G/B		0.7		Vpp	
17.	Video Input Level, Component(Y, P_B, P_R)		0.7		Vpp	75 ohm
18.	RGB Input Horizontal Frequency		68		kHz	
19.	RGB Input Frame Rate		60		Hz	

12. The others

No	Item	Min	Typ	Max	Unit	Remark
1.	Search Sensitivity		40		dBuv	
2.	Clock, real time gain or loss (sec per day)		NO		sec	
3.	Soft Ware Functionality Test		YES			
4.	REMOCON Working Sensitivity, Straight		8		m	
5.	REMOCON Working Sensitivity, T/B/L/R		6		m	
6.	Closed Caption Sensitivity		46		dBuv	
7.	Teletext Sensitivity		46		dBm	
8.	Resonance of unit (Sweep freq : 50 ~ 1000)		NO			

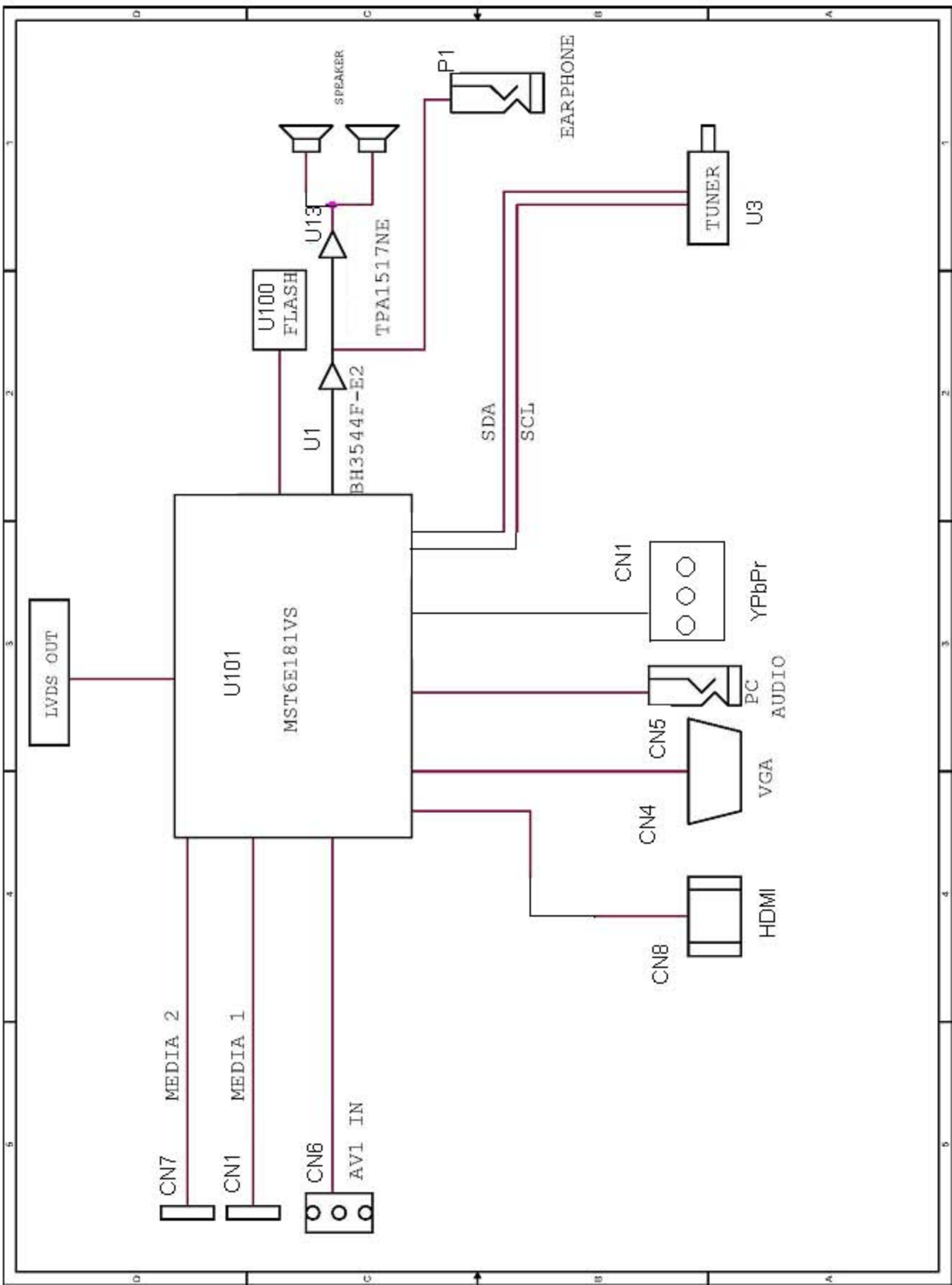
13. Customer Menu Setup (as shipped condition)

No	Item	Specification	Remark
1.	PSM	Standard	
2.	SSM	Standard	
3.	Volume	20	
4.	Mute	Off	
5.	Input Mode	RF	
6.	Customer Menu Language	Spanish	
7.	AVL	Off	
8.	Sleep Timer	Off	
9.	Auto Sleep	Off	
10.	Blue Back	Off	
11.	Surround	On	
12.	Caption	Off	
13.	Noise Reducer	Off	

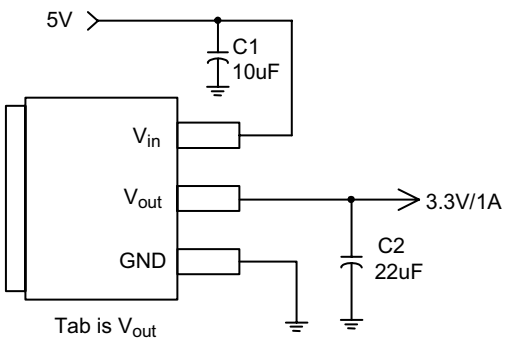
14. Reliability

No	Item	Min	Typ	Max	Unit	Remark
1.	ESD			4	kV	IEC-1000-4-2
2.	EFT/Burst			2	kV	IEC-1000-4-4
3.	Surge Immunity			4	kV	IEC-1000-4--5
4.	Voltage Dip Test, 10ms	0	40	70	%	IEC-1000-4-11
5.	Voltage Dip Test, 100ms	0	40	70	%	IEC-1000-4—11
6.	Operation Temperature	0		40	deg	
7.	Operation Humidity	40		85	%	
8.	Storage Temperature	-20		50	deg	
9.	MTBF (Confidence Level : 90 %)		30000		hour	

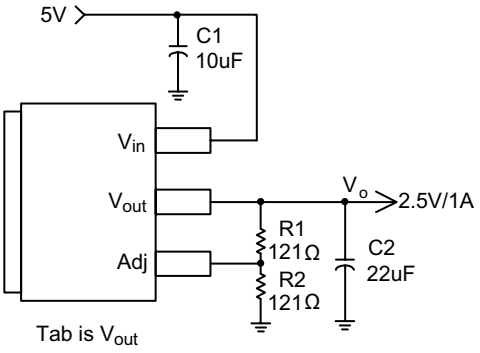
Chassis Block Diagram



Typical Application Circuit



(5V/3.3V fixed output)



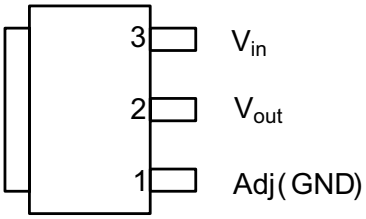
(5V/2.5V ADJ output)

Note: $V_o = V_{REF} * (1 + \frac{R_2}{R_1})$

Connection Diagram

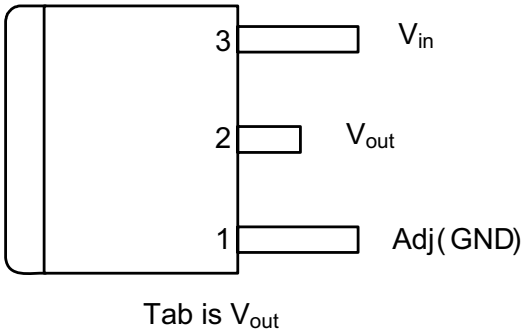
3 PIN SOT223

(Top View)

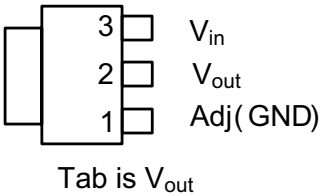


3 PIN TO252 / TO263

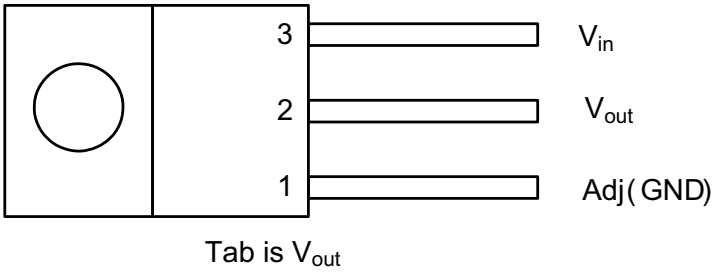
(Top View)



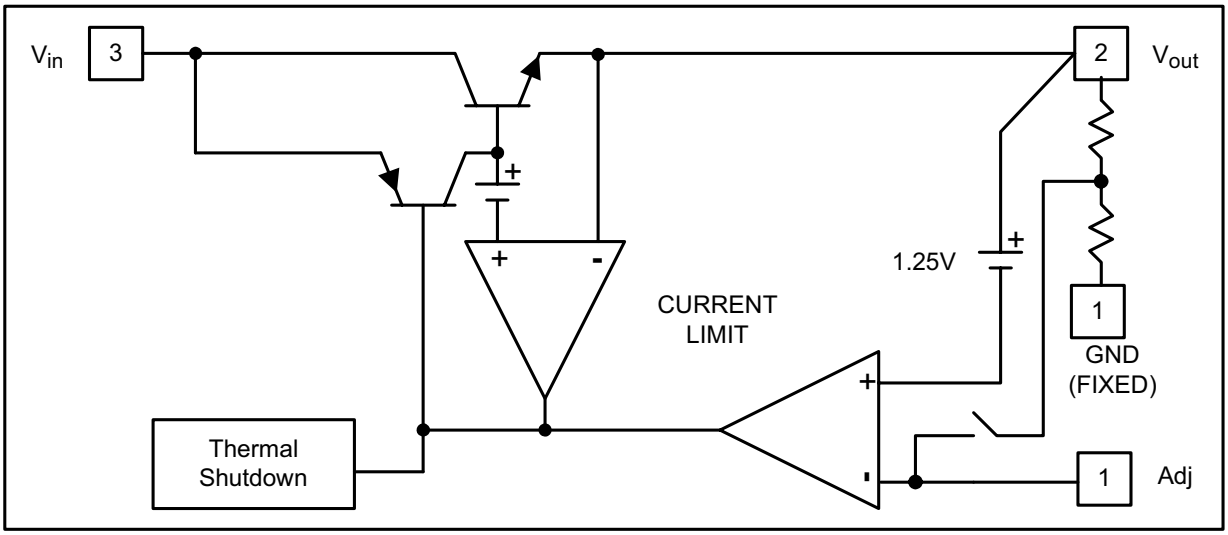
3 PIN SOT89



3 PIN TO220



Block Diagram

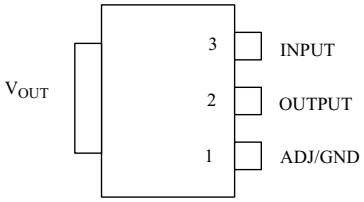


Pin Descriptions

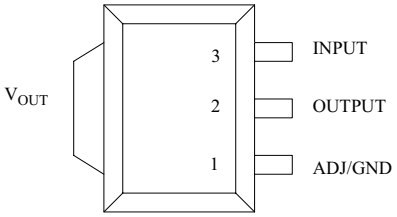
NAME	I/O	PIN #	FUNCTION
Adj (GND)	I	1	A resistor divider from this pin to the V_{out} pin and ground sets the output voltage (Ground only for Fixed-Mode).
V_{out}	O	2	The output of the regulator. A minimum of 10uF capacitor (0.15Ω ≤ ESR ≤ 20Ω) must be connected from this pin to ground to insure stability.
V_{in}	I	3	The input pin of regulator. Typically a large storage capacitor (0.15Ω ≤ ESR ≤ 20Ω) is connected from this pin to ground to insure that the input voltage does not sag below the minimum dropout voltage during the load transient response. This pin must always be 1.3V higher than V_{out} in order for the device to regulate properly.

Pin Configurations

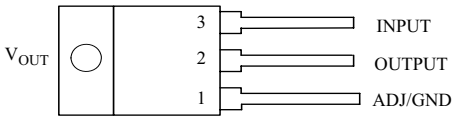
L Package
(SOT-223)



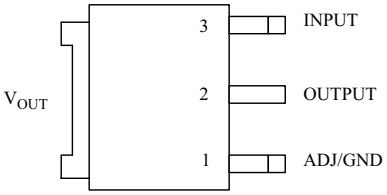
U Package
(SOT-89)



T Package
(TO-220)



R Package
(TO-252)



S Package
(TO-263)

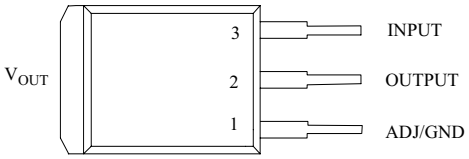


Figure 2. Pin Configurations of AS1117

Functional Block Diagram

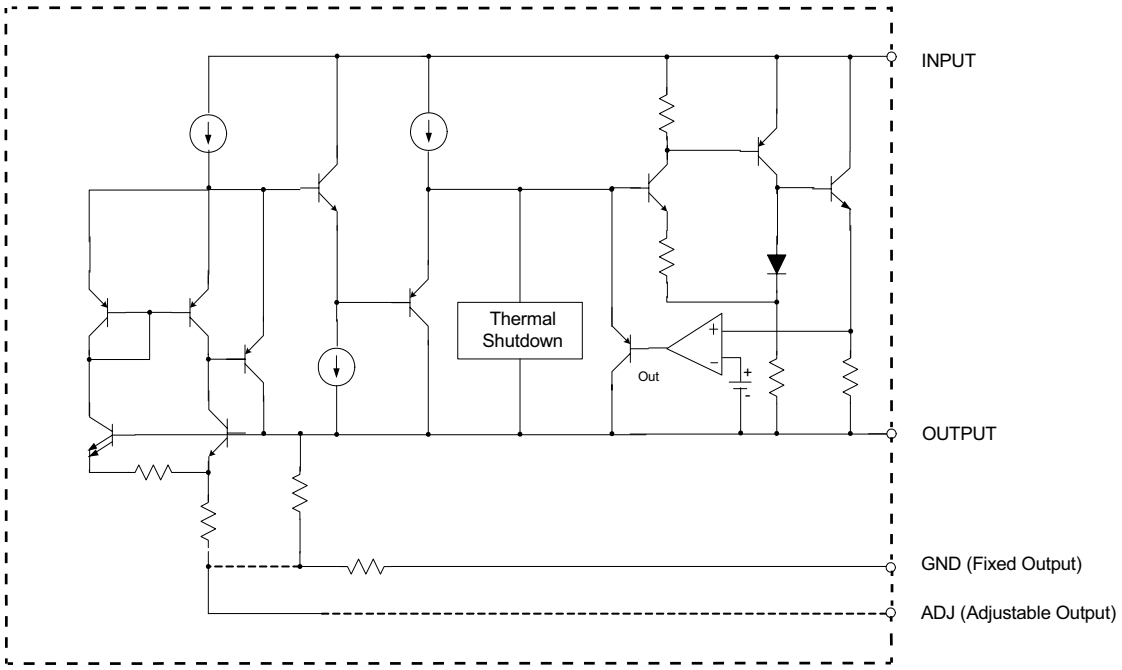


Figure 3. Functional Block Diagram of AS1117

AOZ1051PI

EZBuck™ 3 A Synchronous Buck Regulator

General Description

The AOZ1051PI is a high efficiency, easy to use, 3 A synchronous buck regulator. The AOZ1051PI works from 4.5 V to 18 V input voltage range, and provides up to 3 A of continuous output current with an output voltage adjustable down to 0.8 V.

The AOZ1051PI comes in an exposed pad SO-8 package and is rated over a -40 °C to +85 °C operating ambient temperature range.

Features

- 4.5 V to 18 V operating input voltage range
- Synchronous Buck: 70 mΩ internal high-side switch and 40 mΩ internal low-side switch (at 12 V)
- Up to 95 % efficiency
- External soft start
- Output voltage adjustable to 0.8 V
- 3 A continuous output current
- 500 kHz PWM operation
- Cycle-by-cycle current limit
- Pre-bias start-up
- Short-circuit protection
- Thermal shutdown
- Exposed pad SO-8 package

Applications

- Point of load DC/DC converters
- LCD TV
- Set top boxes
- DVD and Blu-ray players/recorders
- Cable modems

Typical Application

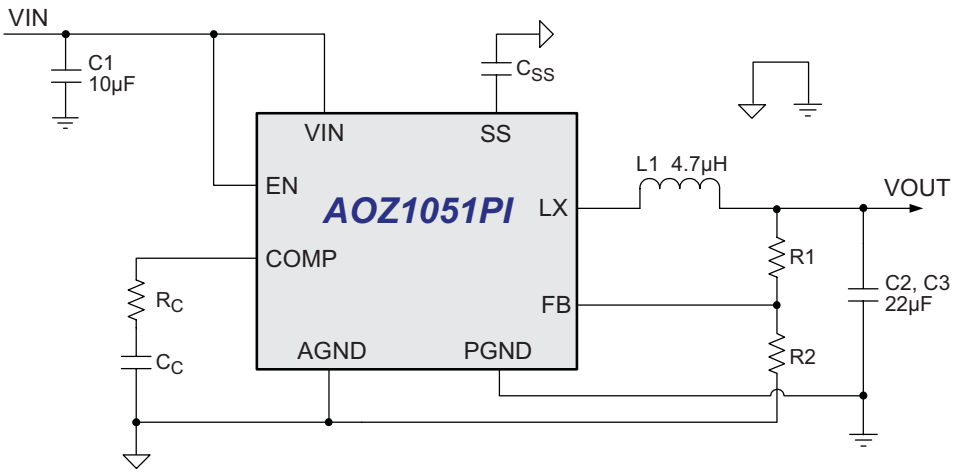


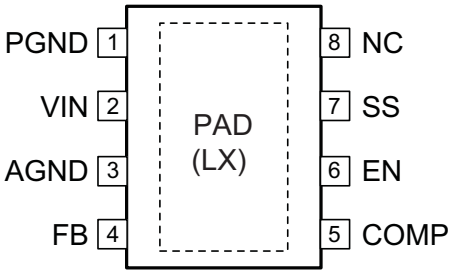
Figure 1. 3.3 V 3 A Synchronous Buck Regulator, Fs = 500 kHz

Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ1051PI	-40 °C to +85 °C	EPAD SO-8	Green Product

AOS Green Products use reduced levels of Halogens, and are also RoHS compliant.
Please visit www.aosmd.com/web/quality/rohs_compliant.jsp for additional information.

Pin Configuration

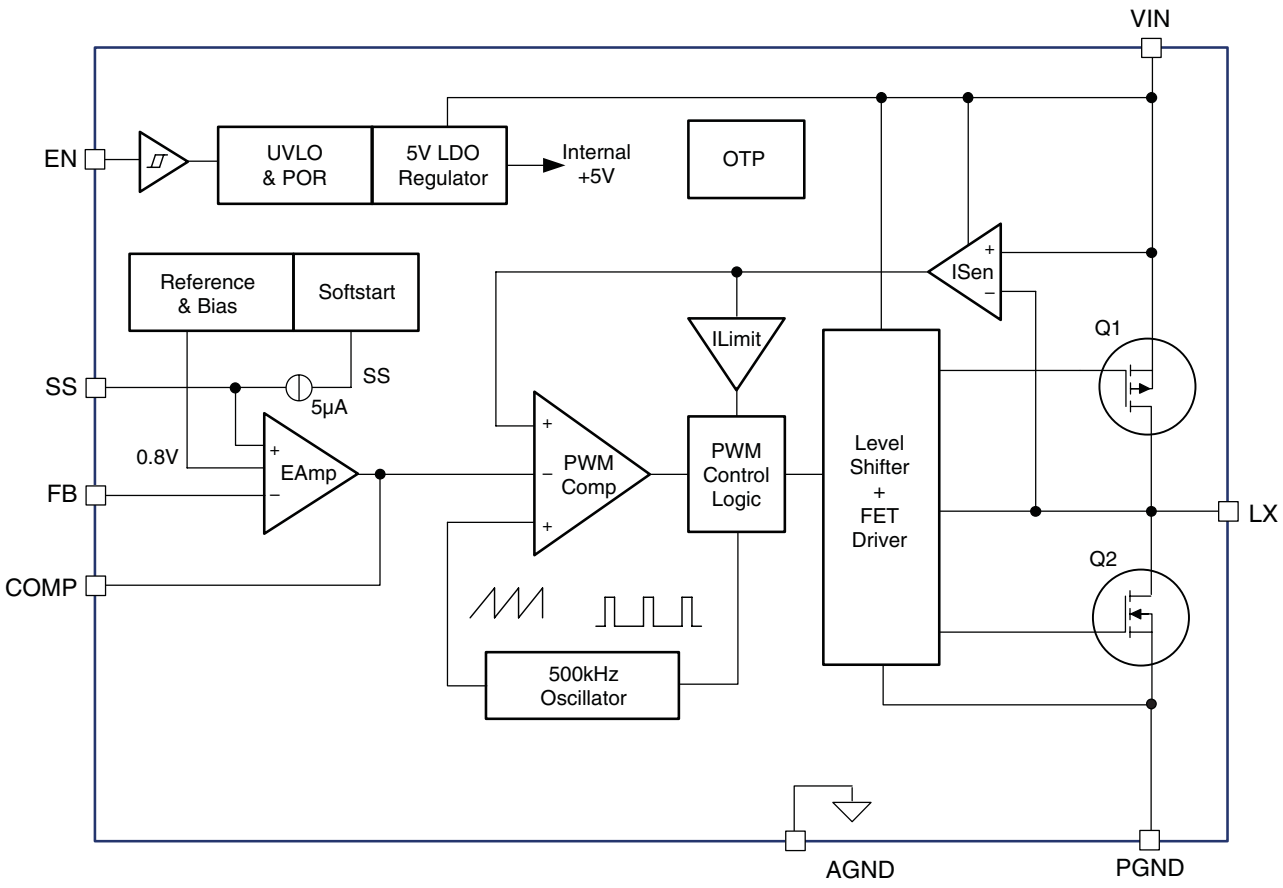


Exposed Pad SO-8
(Top View)

Pin Description

Pin Number	Pin Name	Pin Function
1	PGND	Power ground. PGND needs to be electrically connected to AGND.
2	VIN	Supply voltage input. When VIN rises above the UVLO threshold and EN is logic high, the device starts up.
3	AGND	Analog ground. AGND is the reference point for controller section. AGND needs to be electrically connected to PGND.
4	FB	Feedback input. The FB pin is used to set the output voltage via a resistive voltage divider between the output and AGND.
5	COMP	External loop compensation pin. Connect a RC network between COMP and AGND to compensate the control loop.
6	EN	Enable pin. Pull EN to logic high to enable the device. Pull EN to logic low to disable the device. If on/off control in not needed, connect EN to VIN and do not leave it open.
7	SS	Soft-start pin. 5 µA current charging current.
8	NC	No Connect Pin. Pin 8 is not internally connected. Connect this pin externally to LX and use it for better thermal performance.
Exposed pad	LX	Switching node. LX is the drain of the internal PFET. LX is used as the thermal pad of the power stage.

Block Diagram



Absolute Maximum Ratings

Exceeding the Absolute Maximum Ratings may damage the device.

Parameter	Rating
Supply Voltage (V_{IN})	20 V
LX to AGND	-0.7 V to V_{IN}+0.3 V
LX to AGND (20 ns)	-5 V to 22 V
EN to AGND	-0.3 V to V_{IN}+0.3 V
FB, SS, COMP to AGND	-0.3 V to 6.0 V
PGND to AGND	-0.3 V to +0.3 V
Junction Temperature (T_J)	+150 °C
Storage Temperature (T_S)	-65 °C to +150 °C
ESD Rating[1]	2.0 kV

Note:

1. Devices are inherently ESD sensitive, handling precautions are required. Human body model rating: 1.5 kΩ in series with 100 pF.

Recommended Operating Conditions

The device is not guaranteed to operate beyond the Maximum Recommended Operating Conditions.

Parameter	Rating
Supply Voltage (V_{IN})	4.5 V to 18 V
Output Voltage Range	0.8 V to 0.85 • V_{IN}
Ambient Temperature (T_A)	-40 °C to +85 °C
Package Thermal Resistance Exposed Pad SO-8 (Θ_{JA})[2]	50 °C/W

Note:

2. The value of Θ_{JA} is measured with the device mounted on a 1-in^2 FR-4 board with 2 oz. Copper, in a still air environment with T_A = 25 °C. The value in any given application depends on the user's specific board design.

SY8086

High Efficiency 1.4MHz, 1A Synchronous Step Down Regulator

Preliminary Specification

General Description

The SY8086 is a high-efficiency 1.4MHz synchronous step-down DC-DC regulator ICs capable of delivering up to 1A output current. The SY8086 operates over a wide input voltage range from 2.5V to 5.5V and integrate main switch and synchronous switch with very low $R_{DS(ON)}$ to minimize the conduction loss.

Low output voltage ripple and small external inductor and capacitor sizes are achieved with 1.4MHz switching frequency. This along with small SOT-23 footprint provides small PCB area application.

Features

- Low $R_{DS(ON)}$ for internal switches (top/bottom): 250mΩ /200mΩ
- 2.5-5.5V input voltage range
- 1.4MHz switching frequency minimizes the external components
- Internal softstart limits the inrush current
- RoHS Compliant and Halogen Free
- Compact package: SOT23 5 pin

Applications

- Portable Navigation Device
- Smart phone
- USB Dongle
- Set Top Box
- Media Player

Ordering Information

SY8086□(□□)□

- Temperature Code
- Package Code
- Optional Spec Code

Temperature Range: -40° C to 85° C

Ordering Number	Package type	Note
SY8086AAC	SOT23-5	1A

Typical Applications

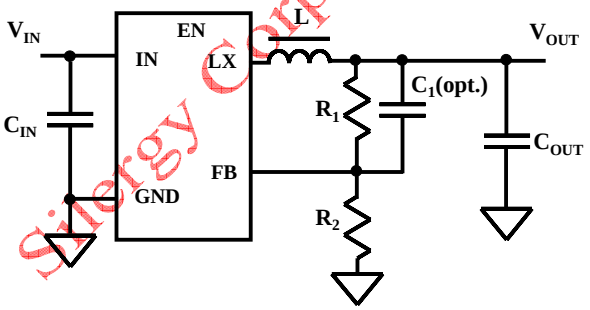


Figure 1. Schematic Diagram

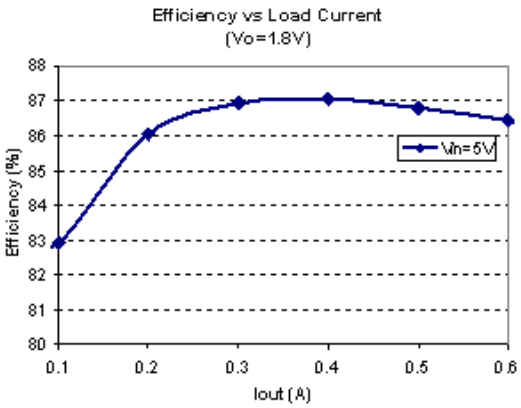
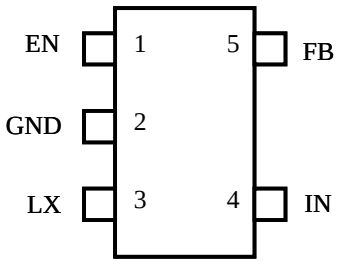


Figure2 Efficiency vs Load Current

Pinout (top view)



SOT23-5

Top mark: **BE*xyz*** (Device code: BE, ***x=year code, y=week code, z= lot number code***)

Pin Name	Pin Number	Pin Description
EN	1	Enable control. Pull high to turn on. Do not float.
GND	2	Ground pin
LX	3	Inductor pin. Connect this pin to the switching node of inductor
IN	4	Input pin. Decouple this pin to GND pin with at least 1uF ceramic cap
FB	5	Output Feedback Pin. Connect this pin to the center point of the output resistor divider (as shown in Figure 1) to program the output voltage: Vout=0.6*(1+R_1/R_2)

Absolute Maximum Ratings (Note 1)

Supply Input Voltage ---------- 6.0V
Enable, FB Voltage---------- V_{IN} + 0.6V
Power Dissipation, P_D @ T_A = 25°C SOT-23-5 ---------- 0.4W
Package Thermal Resistance (Note 2)
SOT23-5, θ_{JA} ---------- 250°C/W
SOT23-5, θ_{JC} ----------130°C/W
Junction Temperature Range ---------- 150°C
Lead Temperature (Soldering, 10 sec.) ---------- 260°C
Storage Temperature Range ---------- -65°C to 150°C
ESD Susceptibility (Note 2)
HBM (Human Body Mode) ---------- 2kV
MM (Machine Mode) ----------200V

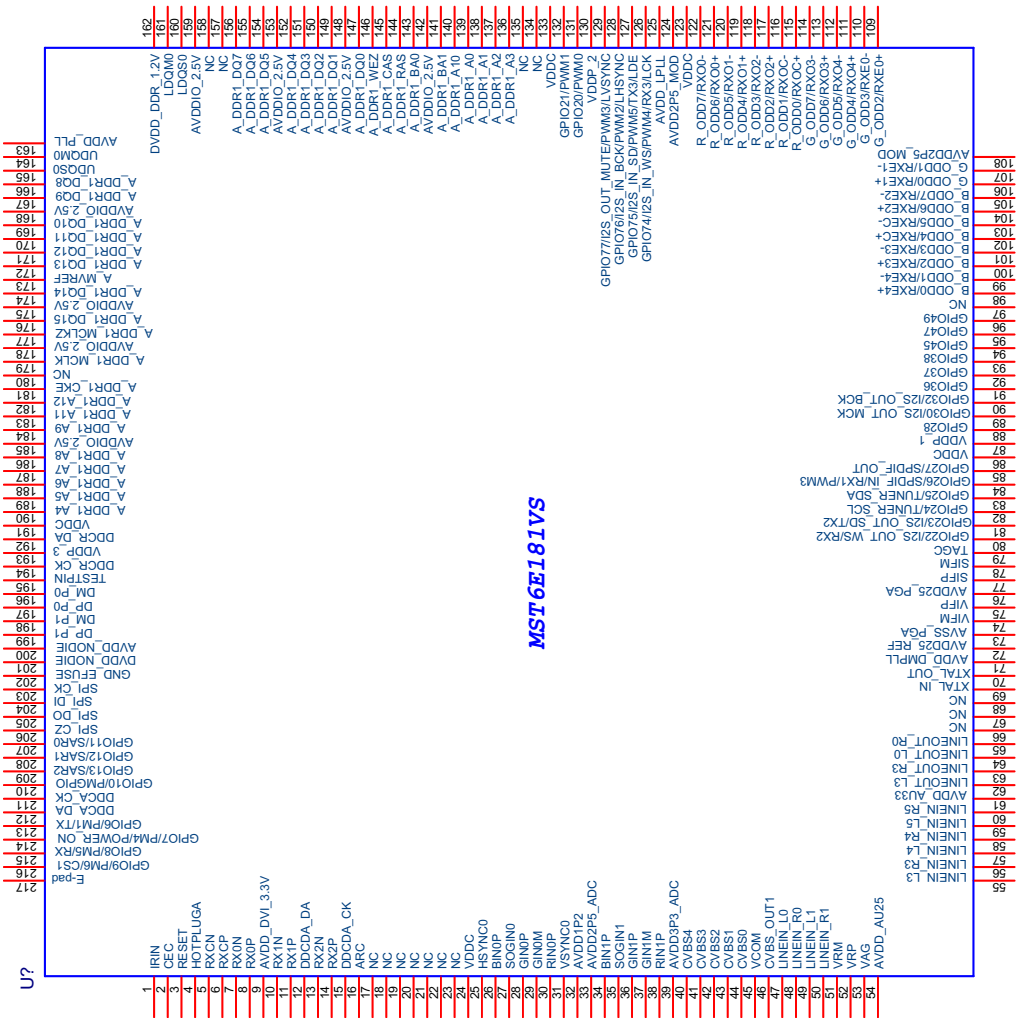
Recommended Operating Conditions (Note 3)

Supply Input Voltage ---------- 2.5V to 5.5V
Junction Temperature Range ---------- -40°C to 125°C
Ambient Temperature Range ---------- -40°C to 85°C

IC Block Diagram

U10(LCDTV CONTROLLER WITH VIDEO ECODE)MST6E181VS

PIN DIAGRAM (MST6E181VS)



Attention Please: Under the technology license agreement between MStar and Dolby/SRS/BBE/DivX/Microsoft/QSound, MStar is obliged not to provide samples that incorporate Dolby/SRS/BBE/DivX/Microsoft/QSound technology to any third party who is not a qualified licensee of Dolby/SRS/BBE/DivX/Microsoft/QSound respectively.

FEATURES

MST6M182VG, a single chip Multimedia TV SoC that supports TV channel decoding, and media-centre functionality enabled by a high performance AV CODEC and CPU

Key features includes,

1. *Analog TV Front-End Demodulator*
2. *A Multi-Standard A/V Format Decoder*
3. *The MStarACE-5 Video Processor*
4. *Home Theater Sound Processor*
5. *Peripheral and Power Management*

- High Performance Micro-processor
  - High speed/performance 32-bit RISC CPU
  - Two full duplex UARTs
  - Supports USB and ISP programming
  - DMA Engine
- MPEG-2 Video Decoder
  - ISO/IEC 13818-2 MPEG-2 video MP@HL
  - Automatic frame rate conversion
  - Supports resolution up to HDTV (1080i, 720p) and SDTV
- MPEG-4 Video Decoder
  - ISO/IEC 14496-2 MPEG-4 ASP video decoding
  - Supports resolutions up to HDTV (1080p@30fps)
  - Supports DivX[1] Home Theater & HD profiles[Optional]
- RealMedia Decoder
  - Supports maximum resolution up to 1080p@30fps
  - Supports RV8, RV9, RV10, RA8-LBR and HE-AAC decoders
  - Supports file formats with RM and RMVB
  - Supports Picture Re-sampling
  - Supports in-loop de-block for B-frame
- Hardware JPEG
  - Supports sequential mode, single scan
  - Supports both color and grayscale pictures
  - Following the file header scan the hardware decoder fully handles the decode process
  - Supports programmable Region of Interest (ROI)
  - Supports formats: 422/411/420/444/422T
  - Supports scaling down ratios: 1/2, 1/4, 1/8
  - Supports picture rotation
- NTSC/PAL/SECAM Video Decoder
  - Supports NTSC-M, NTSC-J, NTSC-4.43, PAL (B, D, G, H, M, N, I, Nc), and SECAM standards
  - Automatic standard detection
  - Motion adaptive 3D comb filter
  - Three configurable CVBS & Y/C S-video inputs
  - Supports Closed Caption (analog CC 608/ analog CC 708/digital CC 608/digital CC 708), V-chip and SCTE
- Multi-Standard TV Sound Processor
  - SIF audio decoding
  - Supports BTSC/A2/EIA-J demodulation
  - Supports FM/AM demodulation
  - Supports MTS Mode Mono/Stereo/SAP in BTSC/ EIA-J mode
  - Supports Mono/Stereo/Dual in A2 mode
  - Built-in audio sampling rate conversion (SRC)
  - Audio processing for loudspeaker channel, including volume, balance, mute, tone, EQ, virtual stereo/surround and treble/bass controls
  - Advanced sound processing options available, for example: Dolby[2], SRS[3], BBE[4], QSound[5]
  - Supports digital audio format decoding:
    - MPEG-1, MPEG-2 (Layer I/II), MP3, Dolby Digital (AC-3) [Optional], AAC-LC, WMA
    - Dolby Digital Plus [Optional]

[1] **Trademark of DivX, Inc.**

[Optional] **Please see Ordering Guide for details.**

[2] **Trademark of Dolby Laboratories**

[3] **Trademark of SRS Labs, Inc.**

[4] **Registered trademark of BBE Sound, Inc.**

[5] **Registered trademark of QSound Labs, Inc.**

- Audio Interface
  - Four L/R audio line-inputs
  - Two L/R outputs for main speakers and additional line-outputs
  - I2S digital audio input & output
  - S/PDIF digital audio output
  - HDMI audio channel processing
  - Programmable delay for audio/video synchronization
- Analog RGB Compliant Input Ports
  - Two analog ports support up to 1080P
  - Supports PC RGB input up to SXGA@75Hz
  - Supports HDTV RGB/YPbPr/YCbCr
  - Supports Composite Sync and SOG Sync-on-Green
  - Automatic color calibration
  - AV-link support
- Analogue RGB Auto-Configuration & Detection
  - Auto input signal format and mode detection
  - Auto-tuning function including phasing, positioning, offset, gain, and jitter detection
  - Sync Detection for H/V Sync
- DVI/HDCP/HDMI Compliant Input Port
  - One HDMI/DVI Input port
  - HDMI 1.3/1.4 Compliant
  - HDCP 1.2 Compliant
  - 225MHz @ 1080P 60Hz input with 12-bit Deep-color support
  - Supports CEC
  - Supports HDMI 3D format input
  - Supports HDMI 4Kx2K input
  - Supports HDMI ARC
  - Single link DVI 1.0 compliant
  - Robust receiver with excellent long-cable support
- MStar Advanced Color Engine (MStarACE-5)
  - Fully programmable multi-function scaling engine
    - Nonlinear video scaling supports various modes including Panorama
    - Supports dynamic scaling for RM, VC-1
  - Advanced video processing engine
    - 3D video deinterlacer with edge and artifact smoother
    - Edge-oriented deinterlacer with edge and artifact smoother
    - Automatic 3:2/2:2/M:N pull-down detection and recovery
    - 3D noise reduction for lousy air/cable input
    - Motion adaptive SNR
    - Arbitrary frame rate conversion
  - MStar Professional Picture Enhancement:
    - Dynamic brilliant and fresh color
    - Dynamic *Blue Stretch*
    - Intensified contrast and details
    - Dynamic *Vivid Skin*
    - Dynamic sharpened Luma/Chroma edges
    - Global and local dynamic depth of field perception
    - Accurate and independent color control
    - Supports sRGB and xvYCC color processing
    - Supports HDMI 1.3 deep color format
  - Programmable 12-bit RGB gamma CLUT

- Output Interface
  - Single/dual link 8/10-bit Mini-LVDS output
  - Supports panel resolution up to Full-HD (1920x1080) @ 60Hz
  - Programmable TCON control signals generation
  - Supports TH/TI format
  - Supports dithering options to 6/8-bit output
  - Spread spectrum output for EMI suppression
  - Supports 60Hz 3D passive panel (Line alternative mode)
- CVBS Video Outputs
  - Supports CVBS bypass output
- 3D-like Graphics Engine
  - Hardware Graphics Engine for responsive interactive applications
  - Supports point draw, line draw, rectangle draw/fill, text draw and trapezoid draw
  - BitBlt, stretch BitBlt, trapezoid BitBlt, mirror BitBlt and rotate BitBlt
  - Supports alpha and destination alpha compare
  - Raster Operation (ROP)
  - Support Porter-Duff
- VIF Demodulator
  - Compliant with NTSC M/N, PAL B, G/H, I, D/K, SECAM L/L' standards
  - Digital low IF architecture
  - Audio/Video dual-path processor
  - Stepped-gain PGA with 25 dB tuning range and 1 dB tuning resolution
  - Maximum IF gain of 37 dB
  - Programmable TOP to accommodate different tuner gain and SAW filter insertion loss to optimize noise and linearity performance
  - Multi-standard processing with single SAW or sawless
  - Supports silicon tuner low IF output architecture
- Connectivity
  - Two USB 2.0 host ports
  - USB architecture designed for efficient support of external storage devices in conjunction with off air broadcasting
- Miscellaneous
  - Bootable SPI interface with serial flash support
  - Power control module in standby mode
  - 13.5x13.5 BGA package
  - Operating Voltages: 1.26V (core), 1.8V (DDR2), 2.5V and 3.3V (I/O and analog)

GENERAL DESCRIPTION

The MST6M182VG is MStar's most up-to-date system-on-chip solution for flat panel integrated digital television products. Building on the success of MStar's preceding SOC series, the MST6M182VG provides most cost-effective solution for multimedia TV application with creative and attractive features exclusively presented by MStar.

The MST6M182VG integrates TV/multi-media all-purpose AV decoder, VIF demodulator, and advanced Sound/Video processor into a single device. This allows the overall BOM to be reduced significantly making the MST6M182VG a very competitive multi-media TV solution.

The powerful multimedia A/V decoder inside MST6M182VG is hosted with a dedicated hardware video codec engine to secure fast and stable video stream playback, an audio application specific DSP for digital audio format decoding and advanced sound effects, and a high performance RISC CPU to manipulate all possible user playback and control activities. With extendable USB 2.0 connectivity, an MST6M182VG based system can be switched to a high quality media-center in a simple manner.

For standard users, the MST6M182VG provides multi-standard analog TV support with adaptive 3D video decoding and VBI data extraction. The build-in audio decoder is capable of decoding FM, AM, A2, BTSC and EIA-J sound standards. The MST6M182VG supplies all the necessary A/V inputs and outputs to complete a receiver design including a HDMI receiver and component video ADC. All input selection multiplexed for video and audio are integrated, including full SCART support with CVBS output. The equipped MStar MStarACE-5 color engine is the latest masterpiece of MStar famous color engine series providing excellent video and picture quality in Full-HD and large-scale displaying system.

To meet the increasingly popular energy legislative requirements without the use of additional hardware, the MST6M182VG has an ultra low power standby mode.

ELECTRICAL SPECIFICATIONS

Analog Interface Characteristics

Parameter	Min	Typ	Max	Unit
VIDEO ADC Resolution		10		Bits
DC ACCURACY				
Differential Nonlinearity		TBD		LSB
Integral Nonlinearity		TBD		LSB
VIDEO ANALOG INPUT				
Input Voltage Range				
Minimum		0.5		V p-p
Maximum		TBD		V p-p
Input Bias Current			1	uA
SWITCHING PERFORMANCE				
Maximum Conversion Rate	170			MSPS
Minimum Conversion Rate			12	MSPS
HSYNC Input Frequency	15		200	kHz
PLL Clock Rate	12		170	MHz
PLL Jitter		TBD		ps p-p
Sampling Phase Tempco		TBD		ps/°C
DIGITAL INPUTS				
Input Voltage, High (V_{IH})	2.5			V
Input Voltage, Low (V_{IL})			0.8	V
Input Current, High (I_{IH})			-1.0	uA
Input Current, Low (I_{IL})			1.0	uA
Input Capacitance		5		pF
DIGITAL OUTPUTS				
Output Voltage, High (V_{OH})	VDDP-0.1			V
Output Voltage, Low (V_{OL})			0.1	V
VIDEO ANALOG OUTPUT				
CVBS Buffer Output				
Output Low		0.2		V
Output High		1.2		V
AUDIO				
ADC Input		2.8		V p-p
DAC Output		2.8		V p-p
SIF Input Range				
Minimum			0.1	V p-p
Maximum	1.0			V p-p

Parameter	Min	Typ	Max	Unit
SAR ADC Input	0		3.3	V
FB ADC Input*	0		1.2	V

Specifications subject to change without notice.
Note: Input full scale is 1.2V, but input range is 0 ~ 3.3V.

Recommended Operating Power Conditions

Parameter	Symbol	Min	Typ	Max	Units
3.3V Supply Voltages	V_{VDD_33}	3.14		3.46	V
1.8V Supply Voltages	$V_{VDD\ 18}$	1.70		1.90	V
1.26V Supply Voltages	V_{VDD_126}	1.20		1.32	V

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units
3.3V Supply Voltages	V_{VDD_33}		3.6	V
1.8V Supply Voltages	V_{VDD_18}		1.98	V
1.26V Supply Voltages	V_{VDD_126}		1.32	V
Input Voltage (5V tolerant inputs)	$V_{IN5Vtol}$		5.0	V
Input Voltage (non 5V tolerant inputs)	V_{IN}		V_{VDD_33}	V
Ambient Operating Temperature	T_A	0	70	℃
Storage Temperature	T_{STG}	-40	150	℃
Junction Temperature	T_J		150	℃

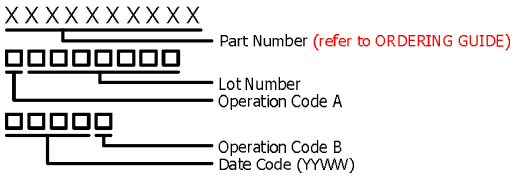
Note: Stresses above those listed in Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only and does not imply functional operation of the device. Exposure to absolute maximum ratings for extended periods may affect device reliability.

ORDERING GUIDE

Part Number	Temperature Range	Package Description	Package Option
MST6M182VG-LF	0°C to +70°C	BGA	200
MST6M182VG-LF-XX	0°C to +70°C	BGA	200

Note:
XX suffix represents advanced features. Please contact MStar sales for details.

MARKING INFORMATION



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Electrostatic charges accumulate on both test equipment and human body and can discharge without detection. MST6M182VG comes with ESD protection circuitry; however, the device may be permanently damaged when subjected to high energy discharges. The device should be handled with proper ESD precautions to prevent malfunction and performance degradation.

REVISION HISTORY

Document	Description	Date
MST6M182VG_pb_v01	• Initial release	Aug 2011
MST6M182VG_pb_v02	• Updated Features	Aug 2011

PIN DIAGRAM (MST6M181VG/MST6M182VG)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
A		RXCKP	RXCKN		NC	NC			HWRESET	GPIO7	GPIO6	GND	USB1_DM	USB0_DP	USB0_DM		A
B	RX1N	RX0P	RX0N	NC	NC	NC	NC		IRIN	GPIO8	SAR0	PWM0	USB1_DP	DDCR_CK	SCZ	SDO	B
C	RX2N	RX2P	RX1P	NC	NC	NC	NC		GPIO9	SAR2	SAR1	PWM1	GND	DDCR_DA	SCK	SDI	C
D	DDCD_CK	ARC	DDCD_DA	HOTPLUGA	NC	CEC	BYPASS		AVDD_DDR	DDCA_CK	DDCA_DA	GPIO10	GND	LEDON	HCON	DPM	D
E		SOGIN0	BIN0P	HSYNC0									AVDD_DDR	SCAN_BLK	POL	GOE/GCLK2	E
F	RIN0P	GIN0M	GIN0P	VSYNC0									GND	SCAN_BLK1	WPWM	OPT_P	F
G	GND	GND	GND					AVDD_DDR					GND	SAR3	OPT_N	GCLK4	G
H		SOGIN1	BIN1P	AVDD_ALIVE		AVDD_25	AVDD_126	DVDD_DDR	GND	GND	GND			GSP/VST	SOE	FLK3	H
J	RIN1P	GIN1M	GIN1P	AVDD_33	AVDD_MEMPLL	AVDD_AU25	VDDC	VDDC	GND	GND	GND			GSP_R/GCLK1	GSC/GCLK3	FLK	J
K	CVBS2	CVBS1	NC	AVDD_DMPLL	AVDD_MOD	AVDD_REF	VDDC	VDDC	GND	GND	GND		MVREF	VGH_ODD	GCLK5	VGH_EVEN	K
L	CVBS0	VCOM	AUVAG	AUVRP	AVDD_MOD	VDDP	VDDC	VDDC						FLK2	GCLK6	RLV2P	L
M	CVBSOUT	AUL0	AUL3	GND	AVDD_AU33	VDDP				AVDD_DDR	AVDD_DDR			RLVCKM	RLVCKP	RLV2M	M
N	AUR0	AUL1	AUR3	AUOUTL1	AVDD_PGA	GND		NC	NC	RLV1M	RLV1P	RLV0M	RLV0P	RLV3M	RLV3P		N
P	AUR1	AUL2	AUOUTR1	GND	PGA_COM	GND	GND	I2S_OUT_SD	SPDIFI	LLV5M	LLV4M	LLV3P	LLV2M	LLV1M	RLV4M	RLV4P	P
R	AUR2	AUOUTL0	XOUT	GND	GND	VIFM	GND	I2S_OUT_MCK	I2S_OUT_BCK	LLV5P	LLV4P	LLVCKP	LLV2P	LLV1P	RLV5M	RLV5P	R
T		AUOUTR0	XIN	TAGC	GND	VIFP	GND	I2S_OUT_WS	SPDIFO		LLV3M	LLVCKM		LLV0M	LLV0P		T
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	

PIN DESCRIPTION

Analog Interface

Pin Name	Pin Type	Function	Pin
HSYNC0	Schmitt Trigger Input w/ 5V-tolerant	HSYNC / Composite Sync for VGA Input from channel 0	E4
VSYNC0	Schmitt Trigger Input w/ 5V-tolerant	VSYNC for VGA Input from channel 0	F4
BIN0P	Analog Input	Analog Blue Input from Channel 0	E3
SOGIN0	Analog Input	Sync On Green Input from Channel 0	E2
GIN0P	Analog Input	Analog Green Input from Channel 0	F3
GIN0M	Analog Input	Reference Ground for Analog Green Input from Channel 0	F2
RIN0P	Analog Input	Analog Red Input from Channel 0	F1
BIN1P	Analog Input	Analog Blue Input from Channel 1	H3
SOGIN1	Analog Input	Sync On Green Input from Channel 1	H2
GIN1P	Analog Input	Analog Green Input from Channel 1	J3
GIN1M	Analog Input	Reference Ground for Analog Green Input from Channel 1	J2
RIN1P	Analog Input	Analog Red Input from Channel 1	J1

Analog Video Input/Output Interface

Pin Name	Pin Type	Function	Pin
CVBS2	Analog Input	CVBS (Composite) Video Input Channel 2	K1
CVBS1	Analog Input	CVBS (Composite) Video Input Channel 1	K2
CVBS0	Analog Input	CVBS (Composite) Video Input Channel 0	L1
VCOM	Analog Input	CVBS Input Reference Ground	L2
CVBSOUT	Analog Output	CVBS (Composite) Video Output Channel	M1

Analog Audio Input/Output Interface

Pin Name	Pin Type	Function	Pin
I2S_OUT_WS	I/O w/ 5V-tolerant	Word Select Output; 4mA driving strength / Universal Asynchronous Receiver 2 (UART2_RX)	T8
I2S_OUT_SD	I/O w/ 5V-tolerant	Audio Serial Data Output; 4mA driving strength / Universal Asynchronous Transmitter 2 (UART2_TX)	P8
SPDIFI	Input w/ 5V-tolerant	S/PDIF Audio Input / Pulse Width Modulation Output; 4mA driving strength (PWM3)	P9
SPDIFO	Output	S/PDIF Audio Output; 4mA driving strength	T9

Pin Name	Pin Type	Function	Pin
I2S_OUT_MCK	Output w/ 5V-tolerant	Audio Master Clock Output	R8
I2S_OUT_BCK	Output w/ 5V-tolerant	Audio Bit Clock Output	R9
AUL0	Analog Input	Audio Line Input Left Channel 0	M2
AUR0	Analog Input	Audio Line Input Right Channel 0	N1
AUL1	Analog Input	Audio Line Input Left Channel 1	N2
AUR1	Analog Input	Audio Line Input Right Channel 1	P1
AUL2	Analog Input	Audio Line Input Left Channel 2	P2
AUR2	Analog Input	Audio Line Input Right Channel 2	R1
AUL3	Analog Input	Audio Line Input Left Channel 3	M3
AUR3	Analog Input	Audio Line Input Right Channel 3	N3
AUVRP	Analog Output	Positive Reference Voltage for Audio ADC	L4
AUVAG	Analog Output	Reference Voltage for Audio Common Mode	L3
AUOUTL1	Analog Output	Main Audio Output Left Channel 1	N4
AUOUTR1	Analog Output	Main Audio Output Right Channel 1	P3
AUOUTL0	Analog Output	Main Audio Output Left Channel 0	R2
AUOUTR0	Analog Output	Main Audio Output Right Channel 0	T2

Mini-LVDS Interface

Pin Name	Pin Type	Function	Pin
LLV5M	Output	Mini-LVDS L-Link Channel 5 Negative Data Output	P10
LLV5P	Output	Mini-LVDS L-Link Channel 5 Positive Data Output	R10
LLV4M	Output	Mini-LVDS L-Link Channel 4 Negative Data Output	P11
LLV4P	Output	Mini-LVDS L-Link Channel 4 Positive Data Output	R11
LLV3M	Output	Mini-LVDS L-Link Channel 3 Negative Data Output	T11
LLV3P	Output	Mini-LVDS L-Link Channel 3 Positive Data Output	P12
LLV2M	Output	Mini-LVDS L-Link Channel 2 Negative Data Output	P13
LLV2P	Output	Mini-LVDS L-Link Channel 2 Positive Data Output	R13
LLV1M	Output	Mini-LVDS L-Link Channel 1 Negative Data Output	P14
LLV1P	Output	Mini-LVDS L-Link Channel 1 Positive Data Output	R14
LLV0M	Output	Mini-LVDS L-Link Channel 0 Negative Data Output	T14
LLV0P	Output	Mini-LVDS L-Link Channel 0 Positive Data Output	T15
LLVCKM	Output	Mini-LVDS L-Link Negative Clock Output	T12
LLVCKP	Output	Mini-LVDS L-Link Positive Clock Output	R12
RLV5M	Output	Mini-LVDS R-Link Channel 5 Negative Data Output	R15
RLV5P	Output	Mini-LVDS R-Link Channel 5 Positive Data Output	R16

Pin Name	Pin Type	Function	Pin
RLV4M	Output	Mini-LVDS R-Link Channel 4 Negative Data Output	P15
RLV4P	Output	Mini-LVDS R-Link Channel 4 Positive Data Output	P16
RLV3M	Output	Mini-LVDS R-Link Channel 3 Negative Data Output	N14
RLV3P	Output	Mini-LVDS R-Link Channel 3 Positive Data Output	N15
RLV2M	Output	Mini-LVDS R-Link Channel 2 Negative Data Output	M16
RLV2P	Output	Mini-LVDS R-Link Channel 2 Positive Data Output	L16
RLV1M	Output	Mini-LVDS R-Link Channel 1 Negative Data Output	N10
RLV1P	Output	Mini-LVDS R-Link Channel 1 Positive Data Output	N11
RLV0M	Output	Mini-LVDS R-Link Channel 0 Negative Data Output	N12
RLV0P	Output	Mini-LVDS R-Link Channel 0 Positive Data Output	N13
RLVCKM	Output	Mini-LVDS R-Link Negative Clock Output	M14
RLVCKP	Output	Mini-LVDS R-Link Positive Clock Output	M15

TCON Interface

Pin Name	Pin Type	Function	Pin
POL	Output	Polarity Control Single	E15
SOE	Output	Source Output Enable	H15
GSP/ VST	Output	Gate Start Pulse for LTD Panel / Vertical start pulse for GIP Panel	H14
GCLK6	Output	Gate Clock for GIP Panel	L15
GCLK5	Output	Gate Clock for GIP Panel	K15
GCLK4	Output	Gate Clock for GIP Panel	G16
GSC/ GCLK3	Output	Gate Shift Clock for LTD Panel / Gate Clock for GIP Panel	J15
GOE/ GCLK2	Output	Gate Clock for GIP Panel / Gate Output Enable for LTD Panel	E16
GSP_R/ GCLK1	Output	Right Gate Start Pulse for LTD Panel / Gate Clock for GIP Panel	J14
SCAN_BLK1	Output	Scan Backlight Control Signal 1	F14
SCAN_BLK	Output	Scan Backlight Control Signal	E14
OPT_N	Output	The Output Pin to Indicate Reverse State	G15
OPT_P	Output	The Output Pin to Indicate Reverse State	F16
FLK3	Output	Gate Modulation Signal	H16
FLK2	Output	Gate Modulation Signal	L14
FLK	Output	Gate Modulation Signal	J16

Pin Name	Pin Type	Function	Pin
WPWM	Output	PWM Output for Wavy Noise	F15
HCON	Output	H Inversion Control Signal on DPC	D15
DPM	Output	Power Sequence Control Signal	D16
LEDON	Output	LED On	D14
VGH_ODD	Output	VGH Odd for GIP Panel	K14
VGH_EVEN	Output	VGH Even for GIP Pane	K16

DVI/HDMI Interface

Pin Name	Pin Type	Function	Pin
RXCKN	DVI/HDMI Input	Negative DVI/HDMI Input for A Link Clock Channel	A3
RXCKP	DVI/HDMI Input	Positive DVI/HDMI Input for A Link Clock Channel	A2
RX0N	DVI/HDMI Input	Negative DVI/HDMI Input for A Link Data Channel 0	B3
RX0P	DVI/HDMI Input	Positive DVI/HDMI Input for A Link Data Channel 0	B2
RX1N	DVI/HDMI Input	Negative DVI/HDMI Input for A Link Data Channel 1	B1
RX1P	DVI/HDMI Input	Positive DVI/HDMI Input for A Link Data Channel 1	C3
RX2N	DVI/HDMI Input	Negative DVI/HDMI Input for A Link Data Channel 2	C1
RX2P	DVI/HDMI Input	Positive DVI/HDMI Input for A Link Data Channel 2	C2
ARC	DVI/HDMI Output	Audio Return Channel	D2

Serial Flash Interface

Pin Name	Pin Type	Function	Pin
SCK	Output	SPI Flash Serial Clock	C15
SDI	Output	SPI Flash Serial Data Input	C16
SDO	Input w/ 5V-tolerant	SPI Flash Serial Data Output	B16
SCZ	Output	SPI Flash Chip Select	B15
IRIN	Input w/ 5V-tolerant	IR Receiver Input	B9

GPIO Interface

Pin Name	Pin Type	Function	Pin
GPIO10	I/O w/ 5V-tolerant	General Purpose Input/Output; 4mA driving strength	D12
GPIO9	I/O w/ 5V-tolerant	General Purpose Input/Output; 4mA driving strength	C9
GPIO8	I/O w/ 5V-tolerant	General Purpose Input/Output / Universal Asynchronous Receiver 0 (UART0_RX)	B10
GPIO7	I/O w/ 5V-tolerant	General Purpose Input/Output; 4mA driving strength For Power Management Only	A10

Pin Name	Pin Type	Function	Pin
GPIO6	I/O w/ 5V-tolerant	General Purpose Input/Output / Word Select Output; 4mA driving strength (I2S_OUT_WS) / Universal Asynchronous Transmitter 0 (UART0_TX)	A11
PWM1	Output w/ 5V-tolerant	Pulse Width Modulation Output; 4mA driving strength	C12
PWM0	Output w/ 5V-tolerant	Pulse Width Modulation Output; 4mA driving strength	B12
SAR3	Analog Input	SAR Low Speed ADC Input 3	G14
SAR2	Analog Input	SAR Low Speed ADC Input 2	C10
SAR1	Analog Input	SAR Low Speed ADC Input 1	C11
SAR0	Analog Input	SAR Low Speed ADC Input 0	B11

USB Interface

Pin Name	Pin Type	Function	Pin
USB0_DP	Analog I/O	USB Non Inverting Data Input/Output for Port 0	A14
USB0_DM	Analog I/O	USB Inverting Data Input/Output for Port 0	A15
USB1_DP	Analog I/O	USB Non Inverting Data Input/Output for Port 1	B13
USB1_DM	Analog I/O	USB Inverting Data Input/Output for Port 1	A13

VIF Interface

Pin Name	Pin Type	Function	Pin
VIFM	Analog Input	Negative Video IF Input	R6
VIFP	Analog Input	Positive Video IF Input	T6
TAGC	Analog Output	Tuner Automatic Gain Control Output	T4
PGA_COM	Analog Input	VIF PGA Negative Source	P5

Misc. Interface

Pin Name	Pin Type	Function	Pin
HWRESET	Schmitt Trigger Input w/ 5V-tolerant	Hardware Reset; active high	A9
DDCD_DA	I/O w/ 5V-tolerant	HDCP Serial Bus Data / DDC Data of DVI/HDMI	D3
DDCD_CK	Input w/ 5V-tolerant	HDCP Serial Bus Clock / DDC Clock of DVI/HDMI	D1
DDCR_DA	I/O w/ 5V-tolerant	DDC Data for ROM	C14
DDCR_CK	Input w/ 5V-tolerant	DDC Clock for ROM	B14
HOTPLUGA	I/O w/ 5V-tolerant	Hot-plug control for DVI/HDMI	D4
DDCA_DA	I/O w/ 5V-tolerant	DDC Data for Analog port	D11
DDCA_CK	I/O w/ 5V-tolerant	DDC Clock for Analog port	D10

Pin Name	Pin Type	Function	Pin
XIN	Crystal Oscillator Input	Crystal Oscillator Input	T3
XOUT	Crystal Oscillator Output	Crystal Oscillator Output	R3
BYPASS		For External Bypass Capacitor	D7
CEC	I/O	Consumer Electronics Control	D6
MVREF	Input	Reference Voltage for DDR SDRAM Interface	K13

Power Pins

Pin Name	Pin Type	Function	Pin
AVDD_33	3.3V Power	Analog 3.3V Power	J4
AVDD_25	2.5V Power	Analog 2.5V Power	H6
AVDD_126	1.26V Power	Analog 1.26V Power	H7
AVDD_AU25	2.5V Power	Audio 2.5V Power	J6
AVDD_AU33	3.3V Power	Audio 3.3V Power	M5
AVDD_DMPLL	3.3V Power	Crystal Power	K4
AVDD_REF	2.5V Power	Demod ADC Power	K6
AVDD_PGA	2.5V Power	Demod PGA Power	N5
AVDD_MOD	3.3V Power	MOD Power	K5, L5
AVDD_MEMPLL	3.3V Power	PLL Power	J5
AVDD_DDR	1.8V Power	DDR Power	D9, E13, G8, M10, M11
DVDD_DDR	1.26V Power	DDR 1.26V Power	H8
AVDD_ALIVE	3.3V Power	Alive Domain IO Power	H4
VDDC	1.26V Power	Digital Core Power	J7, J8, K7, K8, L7, L8
VDDP	3.3V Power	Digital Input/Output Power	L6, M6
GND	Ground	Ground	A12, C13, D13, F13, G1-G3, G13, H9-H11, J9-J11, K9-K11, M4, N6, P4, P6, P7, R4, R5, R7, T5, T7

No Connects

Pin Name	Pin Type	Function	Pin
NC		No connect	A5, A6, B4-B7, C4-C7, D5, K3, N8, N9

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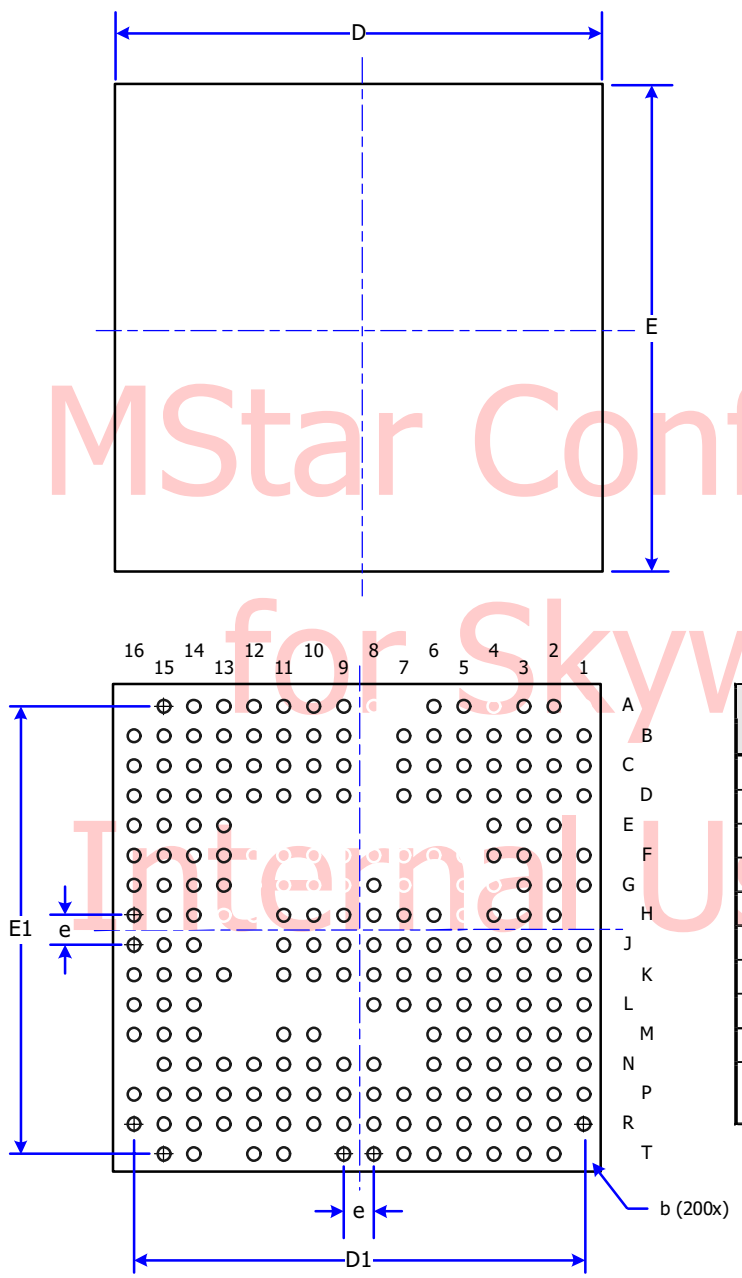
Electrostatic charges accumulate on both test equipment and human body and can discharge without detection. MST6M181VG/MST6M182VG comes with ESD protection circuitry; however, the device may be permanently damaged when subjected to high energy discharges. The device should be handled with proper ESD precautions to prevent malfunction and performance degradation.

REVISION HISTORY

Document	Description	Date
MST6M181VG/MST6M182VG_pin_v01	• Initial release	Aug 2011
MST6M181VG/MST6M182VG_pin_v02	• Added Ball Diameter to Mechanical Dimensions	Aug 2011

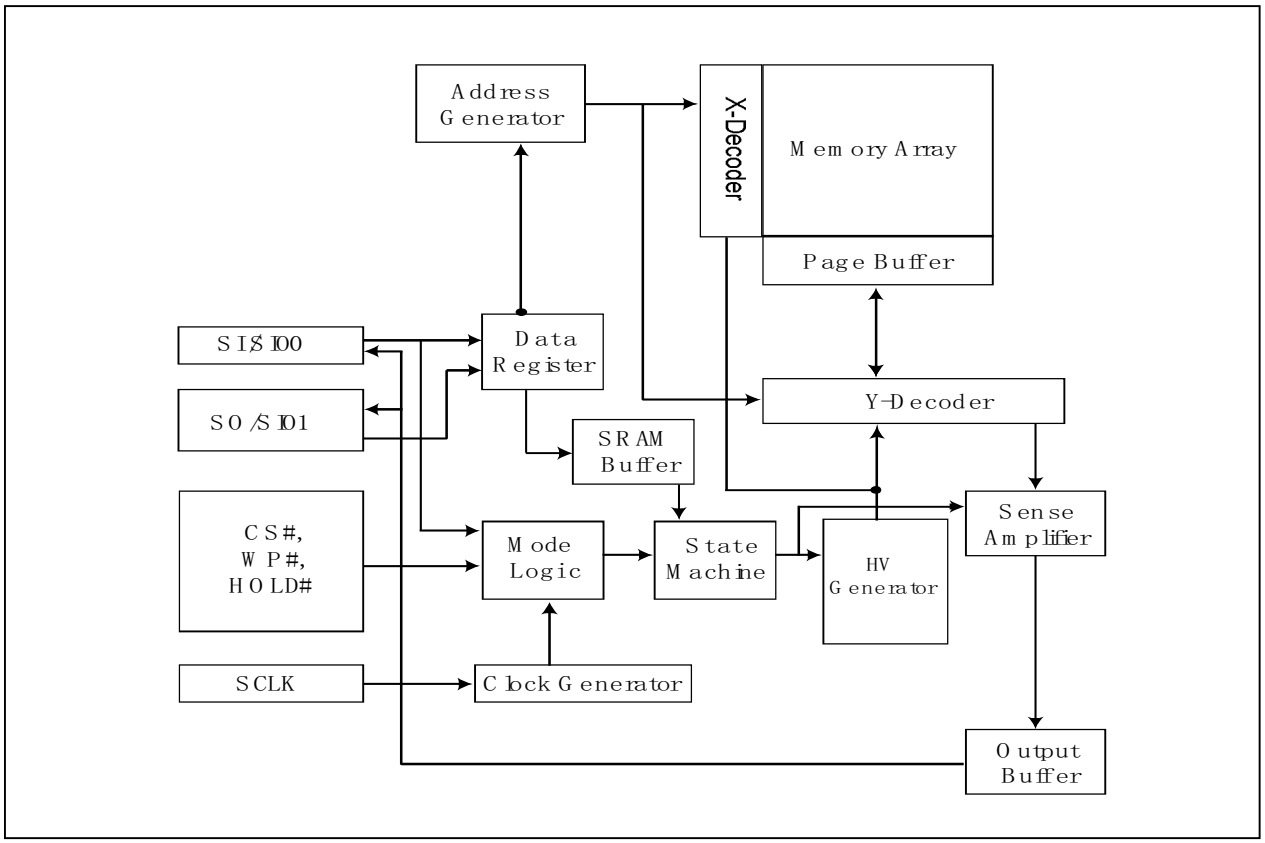
MECHANICAL DIMENSIONS

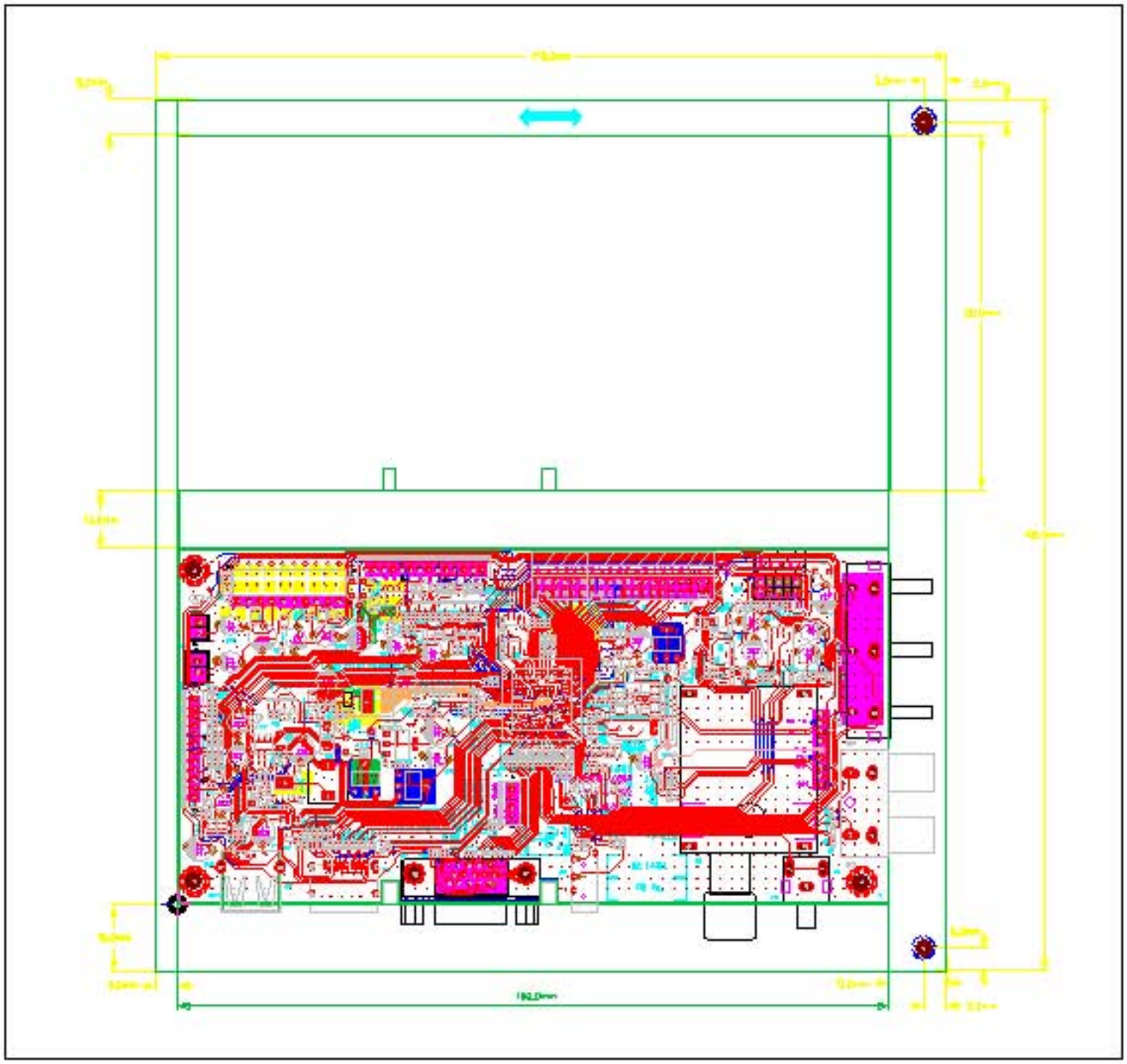


Symbol	Millimeter			Inch		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	-	-	1.40	-	-	0.055
A1	0.27	-	0.37	0.011	-	0.015
M	0.70 REF			0.028 REF		
S	0.22	0.26	0.30	0.009	0.010	0.012
D	-	13.50	-	-	0.531	-
E	-	13.50	-	-	0.531	-
D1	-	12.00	-	-	0.472	-
E1	-	12.00	-	-	0.472	-
e	-	0.80	-	-	0.031	-
Ball Diameter	-	0.40	-	-	0.016	-

IC Block Diagram

U42 (32M BIT CMOS SERIAL FLASH) SOP8





8M28A/S Factory Adjust Menu

(V0.0)

1. Description

Enter factory mode:

Open source menu，and then press digital button “3”, “1”, “9” , “5” in turns to enter the factory menu. Press ↑ and ↓ button to choose the item, press OK button enter the submenu, press MENU to ruturn to upper menu , press ← and → button to adjust the value,

Leave factory mode:

Press menu button to back to upper menu until leave factory mode。

Software information:

Enter factory mode, you can get the software information from the bottom of the menu.

Panel information:

Enter factory mode, enter “Panel SETTING” item, you can get the panel information from the bottom of this menu.

Aging mode:

You can press the shortcut key in the factory remote control to open or close the aging mode.

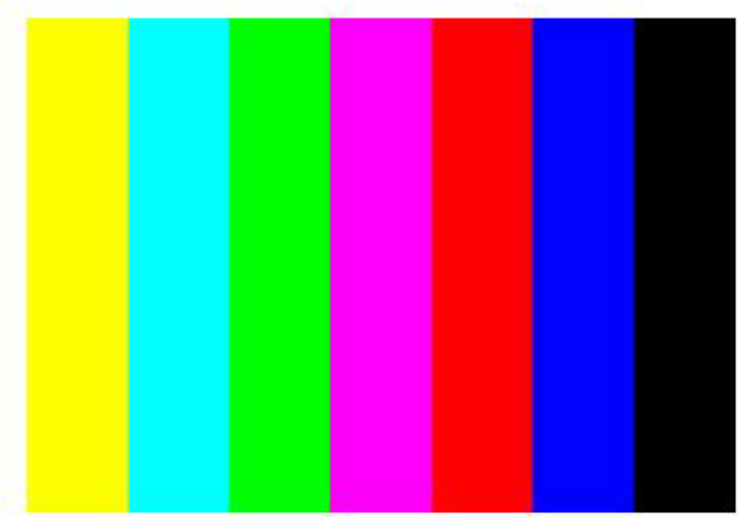
ADC adjusts:

YPBPR source ADC:

Switch to YPBPR source, input 100% color bar pattern, enter

factory, select “AUTO ADC” item in the “ADC CALIBRATION” menu, press → button to begin auto adjust. When it is finish, it will show “OK” or “FAILE”. If “FAILE” is showed, you need to try again.

NOTE: YPBPR ADC need to do twice by use 576P and 720P signal separate.



VGA source ADC:

Switch to PC source, input tessellated white and black signal, enter factory, select “AUTO ADC” item in the “ADC CALIBRATION” menu, press → button to begin auto adjust. When it is finish, it will show “OK” or “FAILE”. If “FAILE” is showed, you need to try again.

White balance:

Enter factory mode, enter “W/B ADJUST” item, you can adjust white balance in this menu.

Over scanning:

Enter factory mode, enter “Panel SETTING” submenu, enter “OVERSCAN” submenu, you can adjust the over scan in these menu.

OutFactory reset:

Enter factory mode, enter “SYSTEM SETTING” item, select “OUT FACTORY SET” item and press OK button to reset the flash memory. TV set will restart when it is finish.

INIT EEPROM:

Enter factory mode, enter “SYSTEM SETTING” item, select “FAC RESET DEFAULT” item and press OK button to reset the EEPROM. TV set will restart when it is finish.

Update software (by USB):

Copy the new software (name by “MERGE.bin”) to the root directory of USB drive. Plug the drive to the USB2 socket (if there are two USB socket, make sure you use the socket 2). Enter factory, select “Software Update (USB)” item and press OK button to begin update. TV set will restart when finish. Note, you need to restart the TV set again by AC power.

We suggest you need to do “**INIT EEPROM**” and “**Factory reset**” after software updat

2. More information

FACTORY MENU			Default Value	Remark
ADC ADJUST				
	MODE			Select source
	R-GAIN			Red gain
	G-GAIN			Green gain
	B-GAIN			Blue gain
	R-OFFSET			Red offset
	G-OFFSET			Green offset
	B-OFFSET			Blue offset
	AUTO ADC			Auto ADC calibration
W/B ADJUST				
	MODE			Select source
	TEMPERATURE			Select Neutral/Warm/Cool/Personal
	R-GAIN			Red gain
	G-GAIN			Green gain
	B-GAIN			Blue gain
	R-OFFSET			Red offset
	G-OFFSET			Green offset
	B-OFFSET			Blue offset
	COPY ALL			Copy there values to all source!
PANEL SETTING				
	TI MODE		1	LVDS data format
	LVDS PORT		0	LVDS data interface

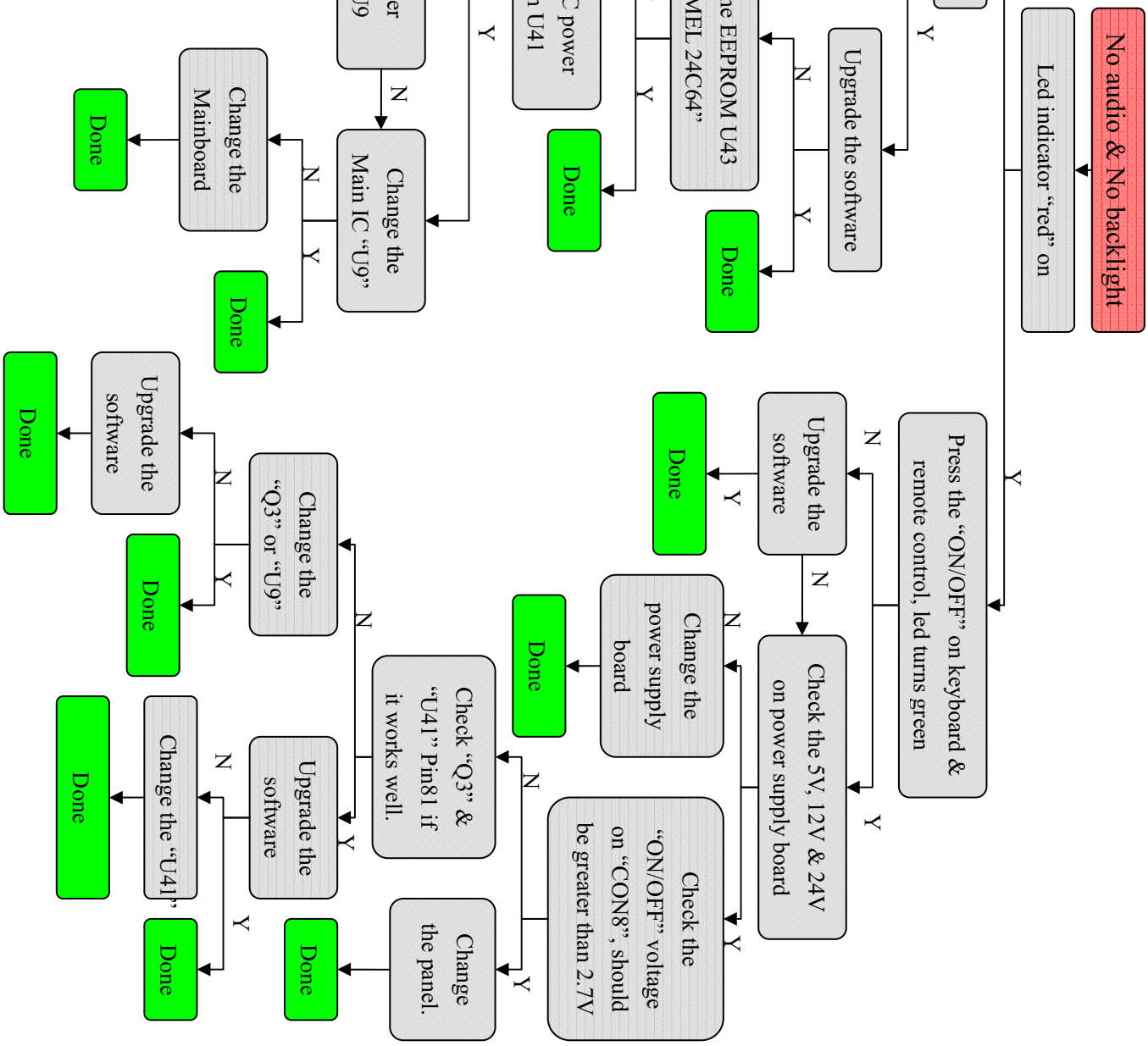
	LVDS BIT		**8BitPanel**	
	PWMFREQUENCY		**0**	
	PWM DUTY			
	OVERSCAN			
		OVERSCAN_RESLUTION		
		HPOSITION		**Horizontal position**
		VPOSITION		**Vertical position**
		HSIZE		**Horizontal size**
		VSIZE		**Vertical size**
SYSTEM SETTING				
	FACHOTKEY		**OFF**	**Factory hot key enable**
	TTX BRI		**170**	**Logo enable**
	WHILE PATTERN		**Off**	**NO USED**
	POWER REMIND		**10**	**Preset the no signal standby time**
	BULE SCREEN		**ON**	**Blue or Black screen when no signal**
	VIDEO AGC		**ON**	
	DLC		**ON**	**DLC enable**
	WHILE BLACK STRENCH		**Off**	**White/black strength enable**
	POWER CONDITION		**Off**	**Power state remember**
	FAC RESET DEFAULT			**Reset the EEPROM**
	OUT FACTORY RESET			**Reset the flash memory**
	AGING MODE		**off**	**If you set this item on, put the "stop"(■) key on the remote control can exit aging mode .**
	CHANNEL PRESET			**Reset channel to default**

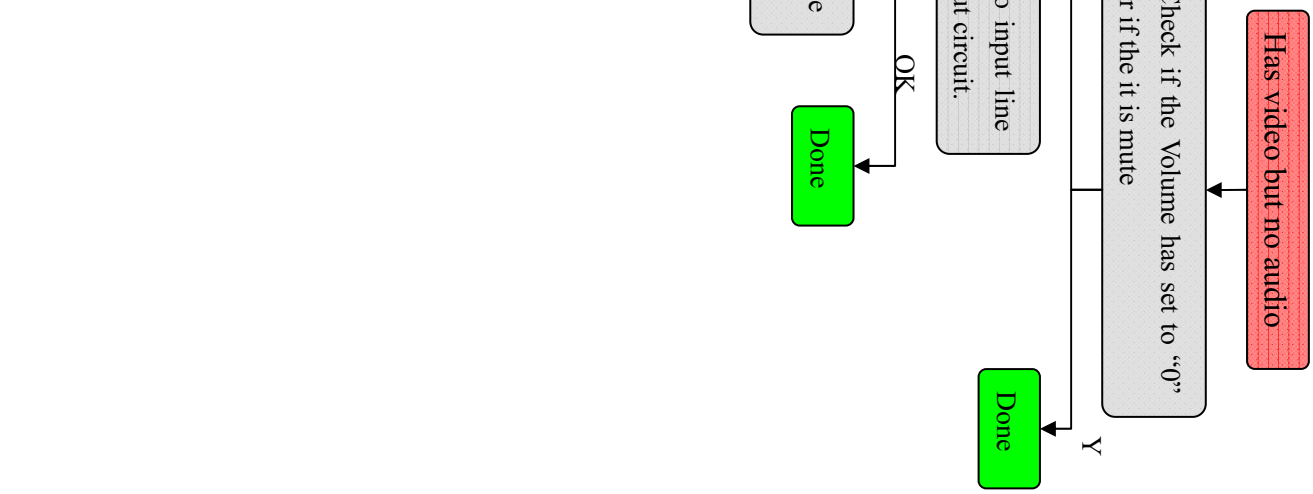
	Channel Preset			**Reset channel to default**
	NO SIGNAL MUTE AMP			
	OUT FAC SOUND SYS		**BG**	
	AGC GAIN		**19**	
LANGUAGE SETTING				
	S-CHINESE			**繁体中文**
	SPANISH			**西班牙语**
	FRENCH			**法语**
	PORTUGUESE			**葡萄牙语**
	RUSSIAN			**俄罗斯语**
	BIG CHINESE			**繁体中文**
	BULGARIAN			**保加利亚语**
	SLOVAK			**斯洛伐克语**
	FINNISH			**芬兰语**
	INDONESIA			**印度尼西亚**
	ARABIC			**阿拉伯语**
	Arabic			**阿拉伯语**
	FARSI			**波斯语**
	HEBREW			**希伯来语**
	THAI			**泰语**
	VIETNAM			**越南文**
	TURKISH			**土耳其文**
SOURCE SETTING				
	TV		**On**	

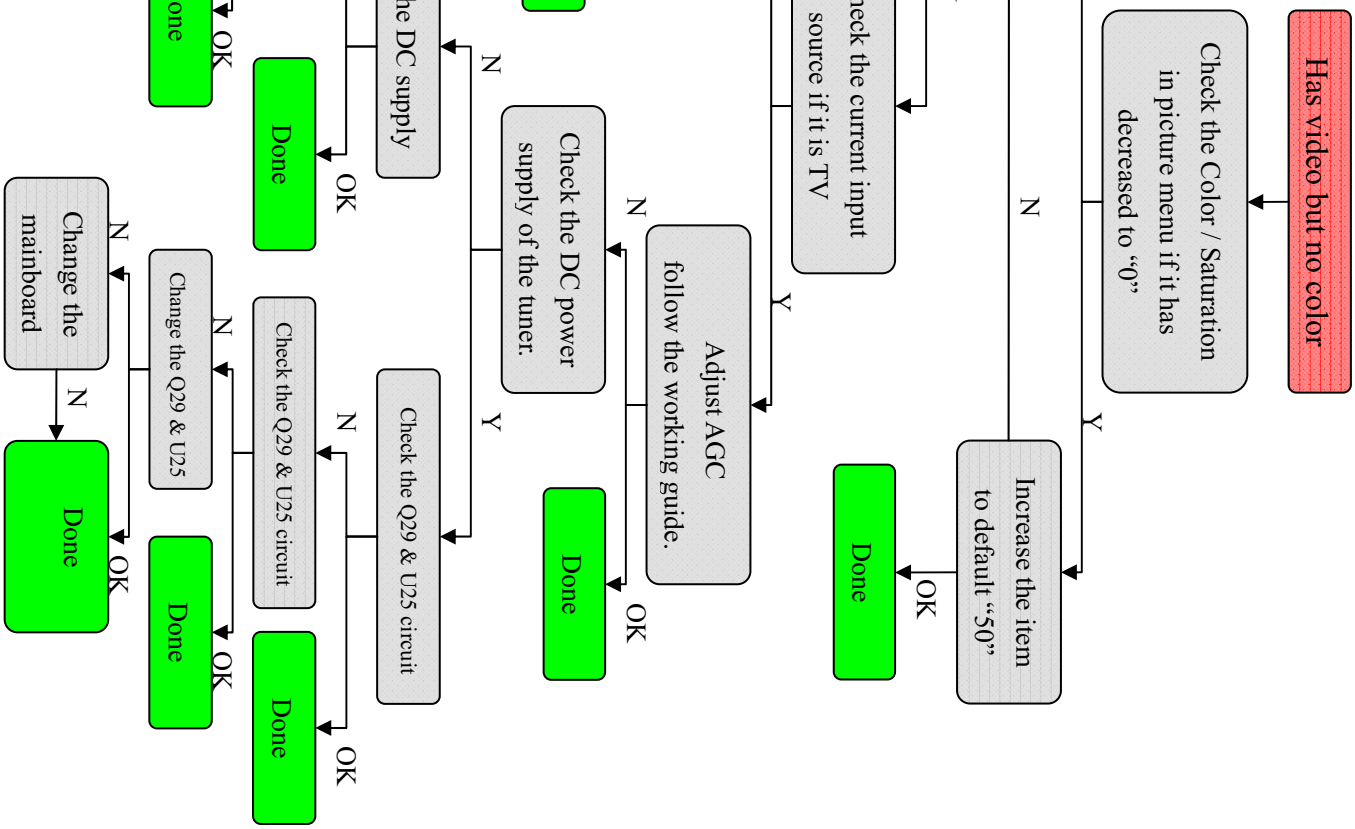
	AV1		**Off**	
	SCART		**Off**	
	HDMI1		**On**	
	HDMI2		**On**	
	HDMI3		**On**	
	YPbPr1		**On**	
	USB1		**On**	
	USB2		**On**	
AGALOG CURVE				
	MODE			
	PICTURE MODE			
	BRIGHTNESS CURVE			
	CONTRAST CURVE			
	SATURATION CURVE			
	HUE CURVE			
	SHARPNESS CURVE			
	VOLUME CURVE			
	BACKLIGHT		**100**	
HOTEL FUNCTION				
	HOTEL MODE		**off**	**Hotel mode enable**
	IR LOCK		**off**	
	LOCAL KEY LOCK		**off**	
	USER SETTING SAVE		**On**	
	VOLUME FIXED		**off**	
	POWER ON VOL VALUE		**10**	

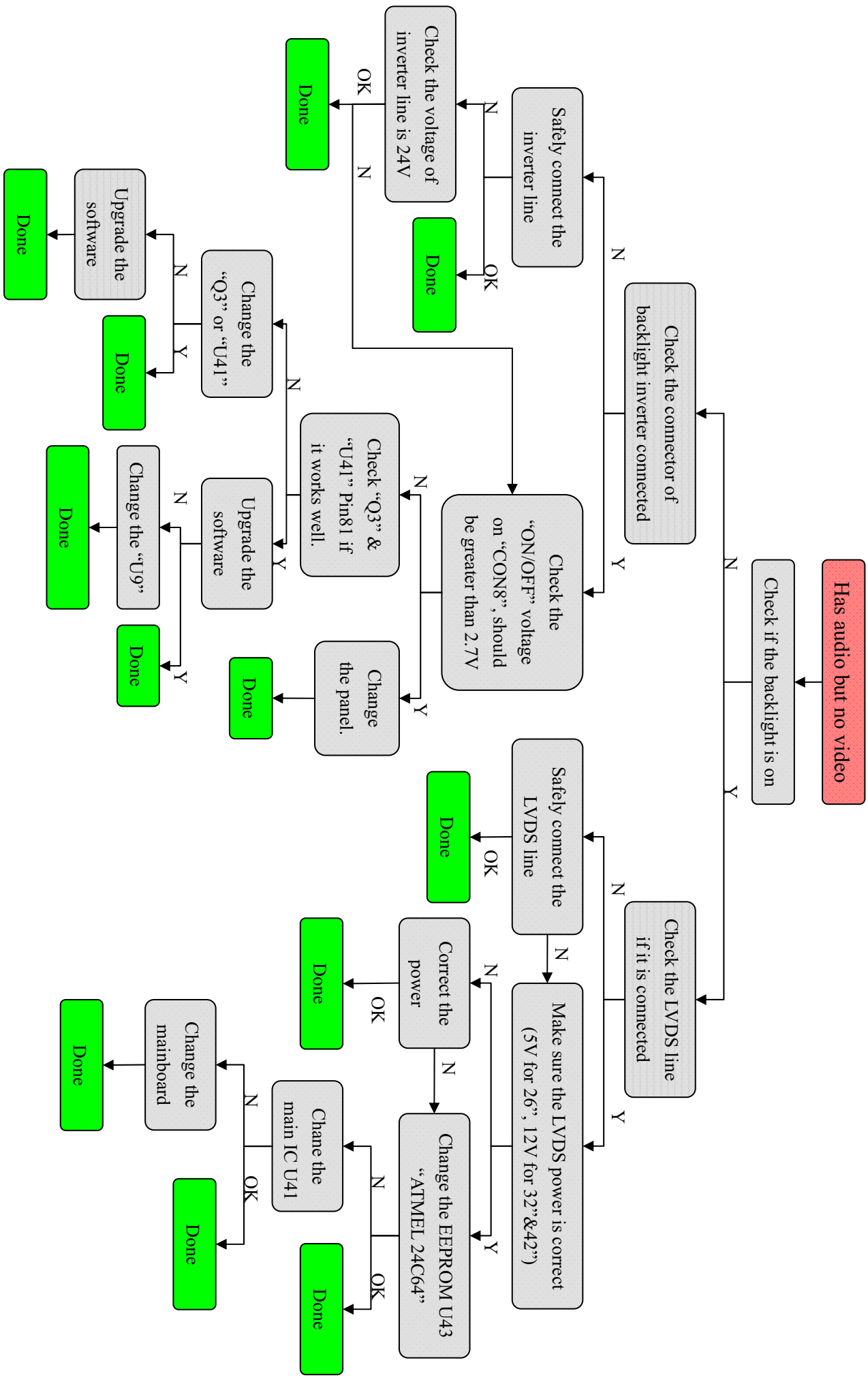
	MAX VOLUME		**30**	
	POWER ON SOURCE		**TV**	
	SCALE LOCK		**off**	
	CHANNEL SEARCH LOCK		**off**	
OTHER OPTION				
	SSC			**LVDS and DDR frequency setting**
	UART DEBUG		**HK**	**NO USED**
	SPECIAL			**NO USED**
	VIF1	**VIF1**		**VIF setting**
		VIF2		**VIF-AGC-VGA-BASE item is used for adjust the TUNER AGC**
		VIF3		
	POWER ON LOGO		**NONE**	
	WDT		**On**	
	Teletext		**On**	**NO USED**
	Nicam		**On**	
	LOGO SET IN USB			
	USB SRC NAME		**USB**	
	Backlight display control			
	3D Key control		**On**	
	Equalizer		**off**	
Software Update(USB)				

Service Flow Chart

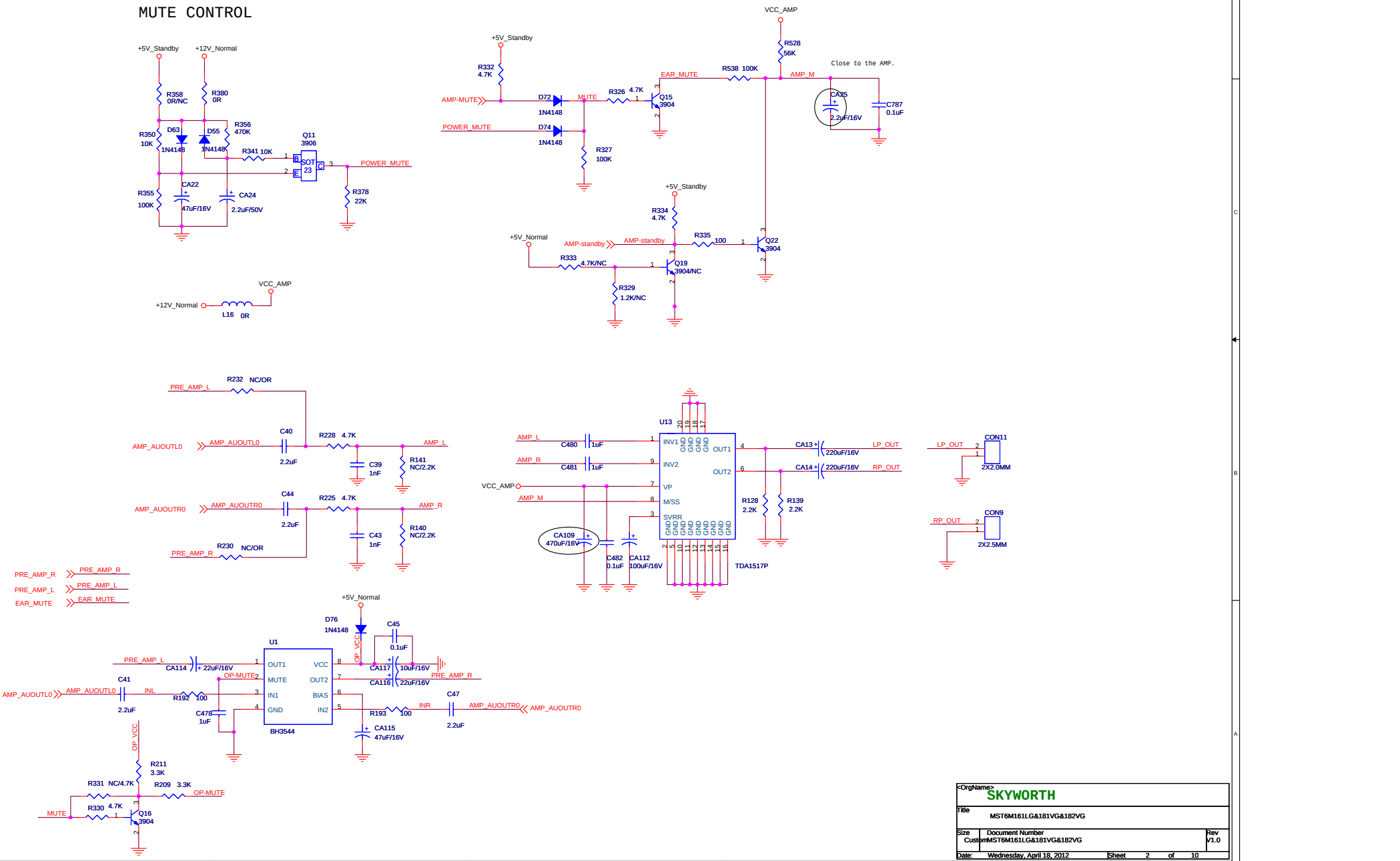



Has video but no audio
Check if the Volume has set to “0” or if the it is mute
N
Y
Done
Check the audio input line & the audio input circuit.
N
OK
Done
Check the voltage of “Mute” pin beside the amplifier IC. It should not be 0V.
= 0V
> 0V
Check the mute circuit if it is OK.
N
Y
Fix the mute circuit
Done
Upgrade the software
N
OK
Done
Change the main IC “U41”
N
OK
Done
Change the mainboard
Done


Has video but no color
Check the Color / Saturation in picture menu if it has decreased to "0"
Increase the item to default "50"
Done
Check the cable input if it has exactly connected
Well connect the cable
Done
Change the mainboard
Done
Change the main IC "U41"
Done
Check the current input source if it is TV
Adjust AGC follow the working guide.
Done
Check the DC power supply of the tuner.
Fix the DC supply
Done
Change the tuner
Done
Change the mainboard
Done
Check the Q29 & U25 circuit
Done
Change the Q29 & U25
Done
Change the mainboard
Done
Y
N
OK


Has audio but no video
Check if the backlight is on
N
Y
Check the connector of backlight inverter connected
N
Y
Safely connect the inverter line
N
OK
Done
Check the voltage of inverter line is 24V
OK
N
Done
Change the "Q3" or "U41"
N
Y
Done
Upgrade the software
N
Y
Done
Check the "ON/OFF" voltage on "CON8", should be greater than 2.7V
N
Y
Check "Q3" & "U41" Pin81 if it works well.
N
Y
Done
Change the "U9"
N
Y
Done
Change the panel.
Done
Check the LVDS line if it is connected
N
Y
Safely connect the LVDS line
N
OK
Done
Make sure the LVDS power is correct (5V for 26", 12V for 32"&42")
N
Y
Correct the power
N
OK
Done
Change the EEPROM U43 "ATMEL 24C64"
N
Y
OK
Done
Chane the main IC U41
N
OK
Done
Change the mainboard
Done

MUTE CONTROL



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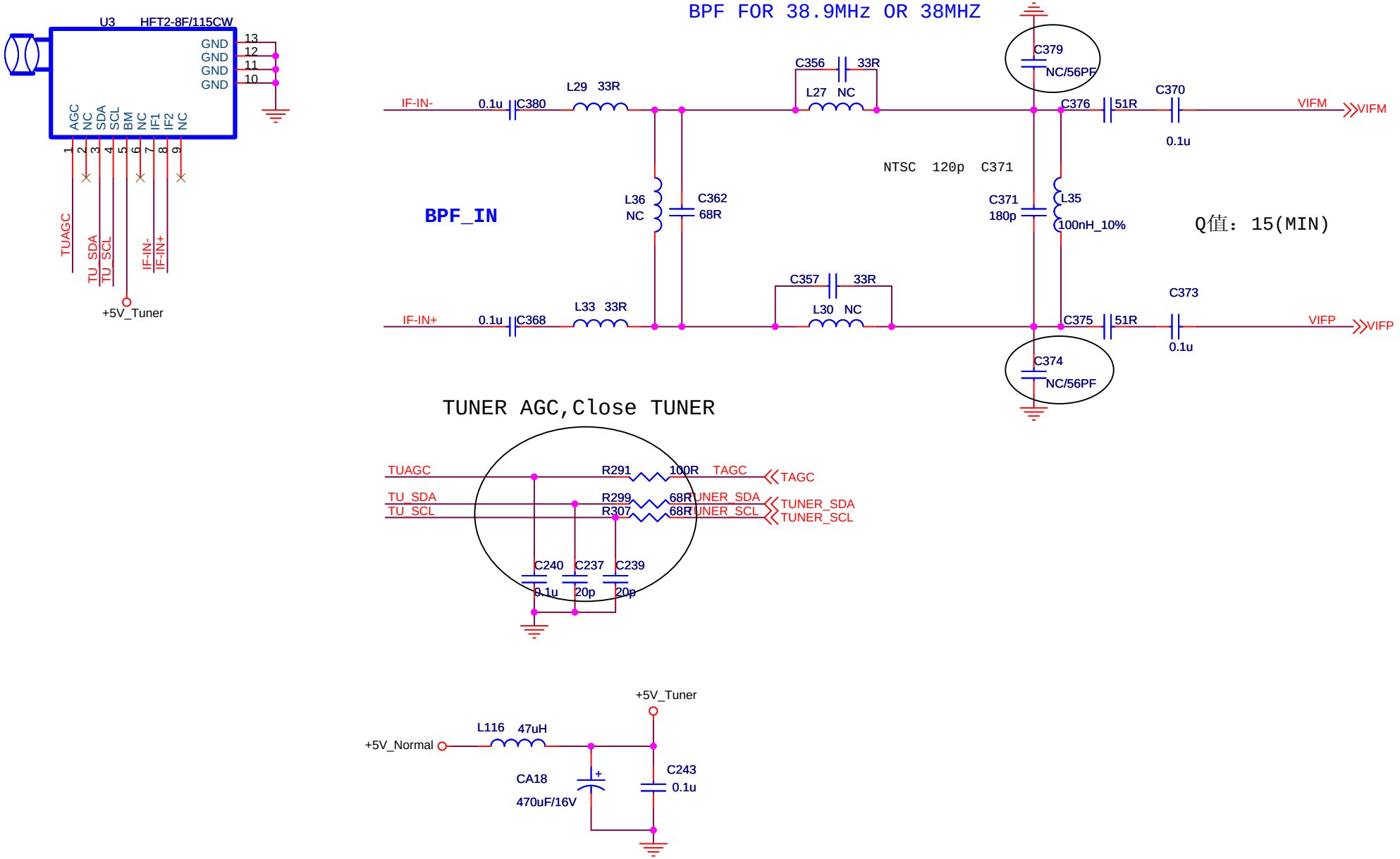

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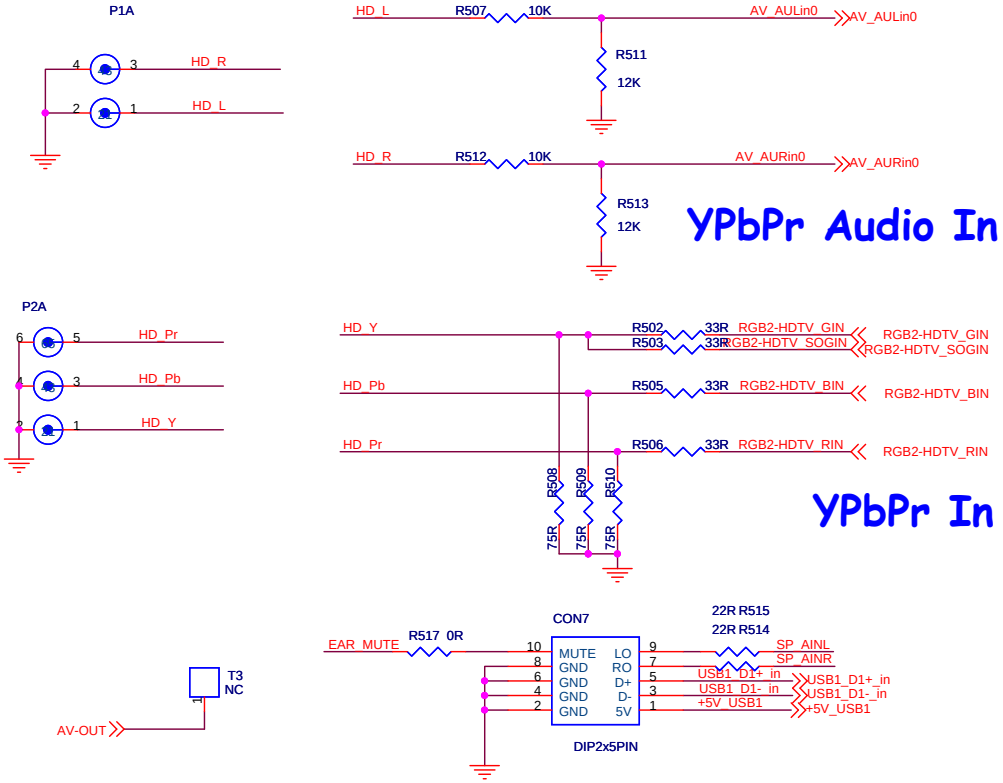

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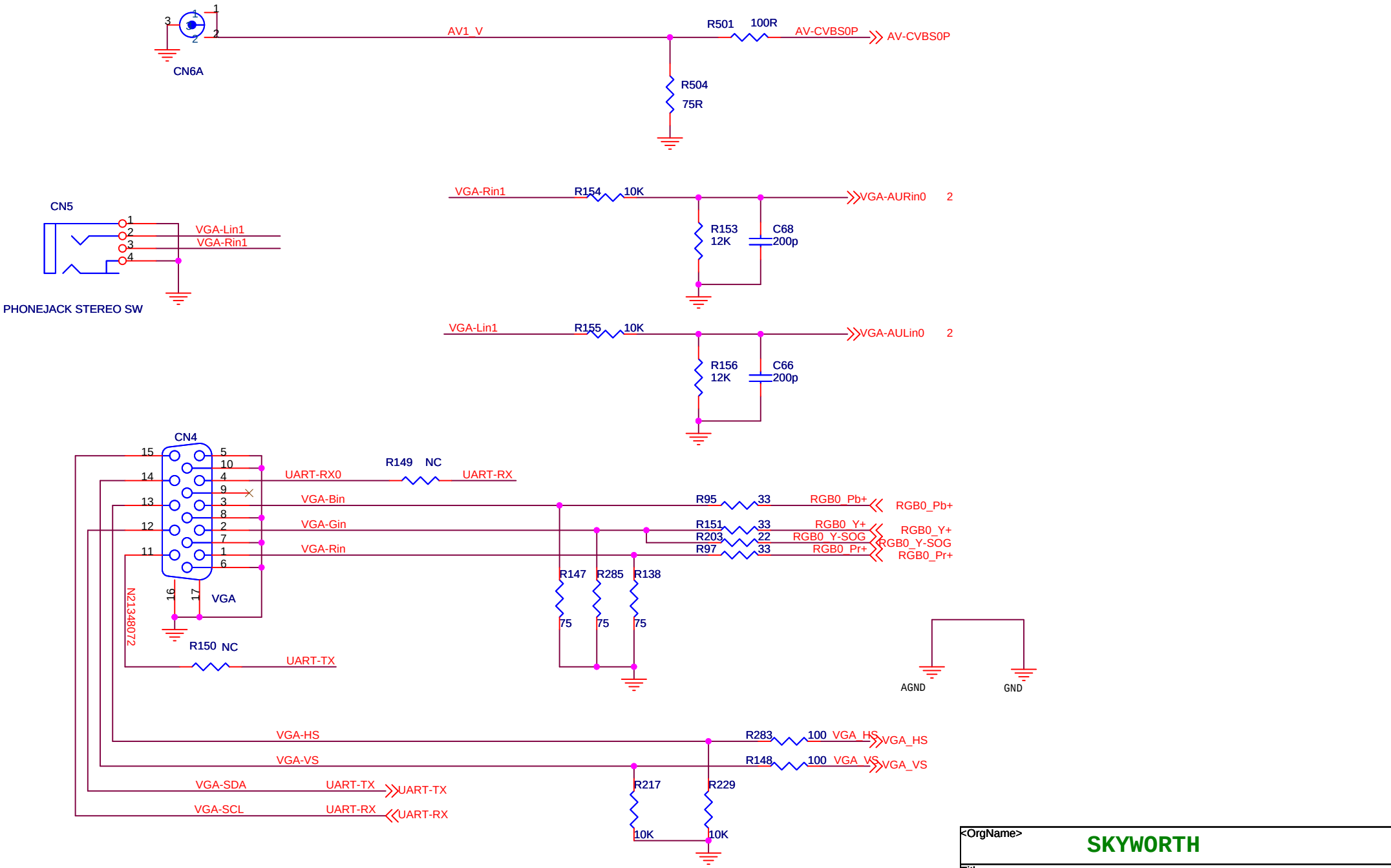

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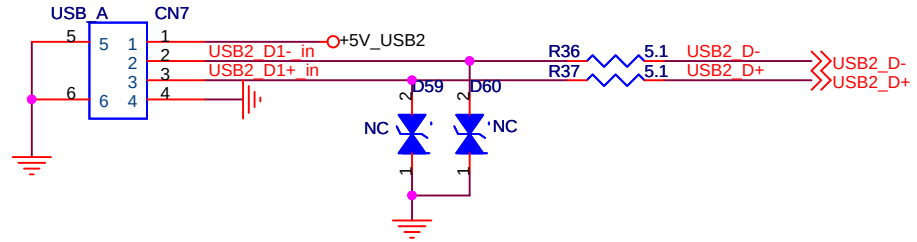

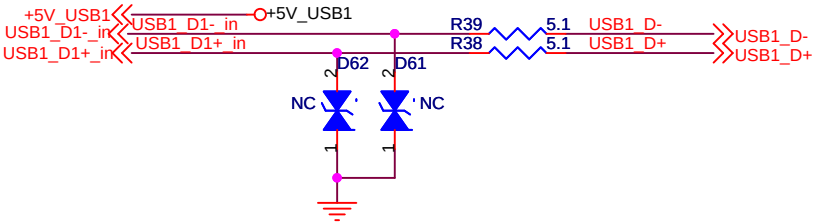

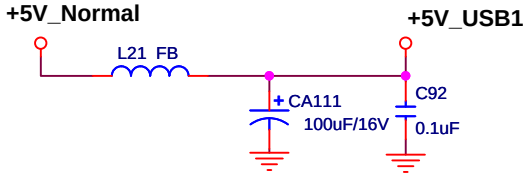

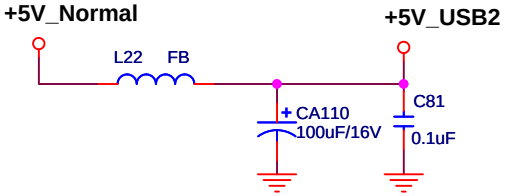

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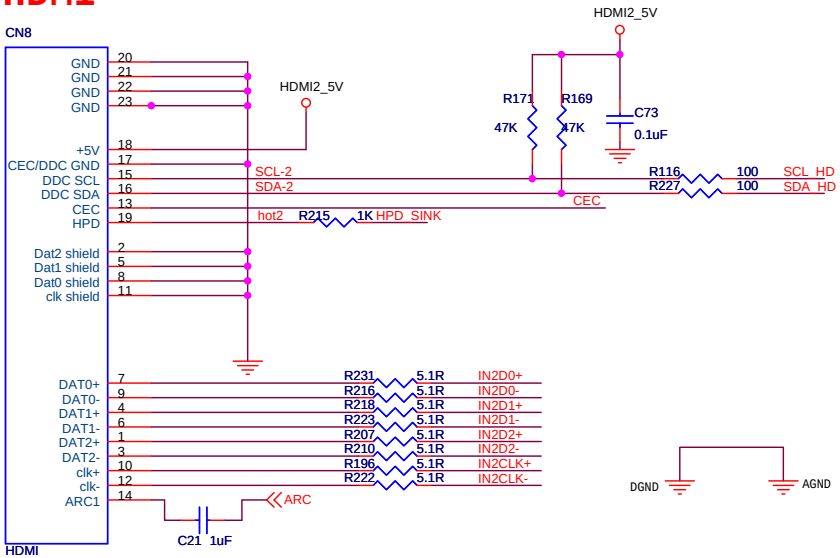
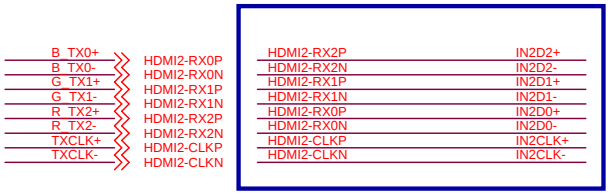
Date: Thursday, March 01, 2012	Sheet 2 of 10	

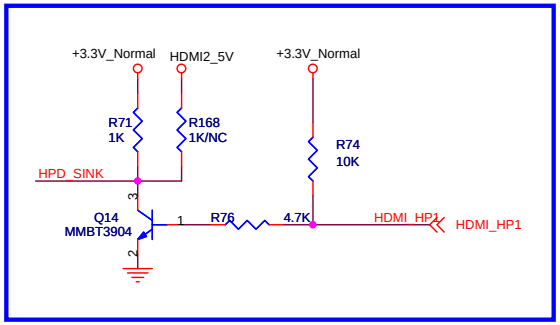
HDMI



HDMI BYPASS



HOTPLUG



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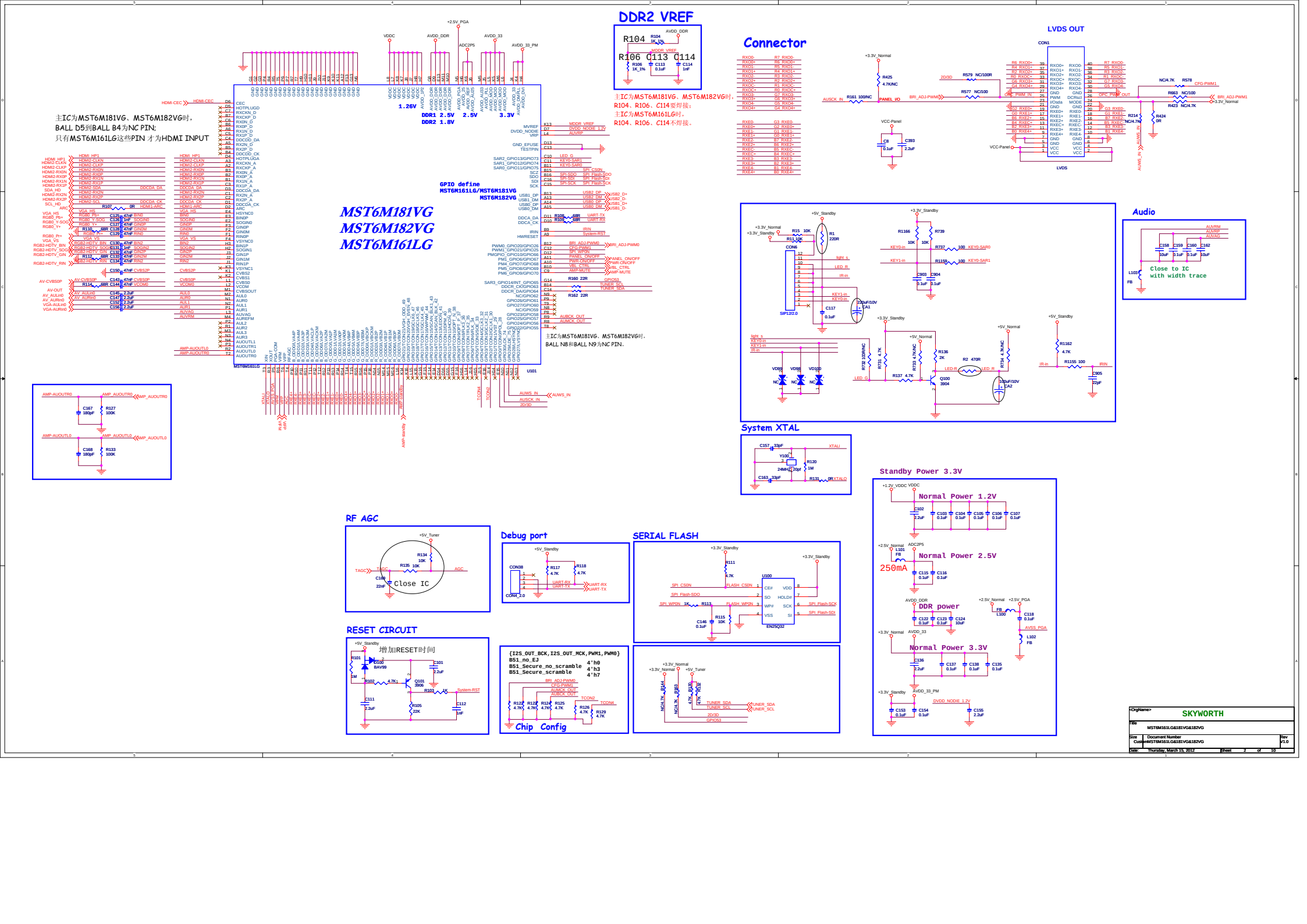
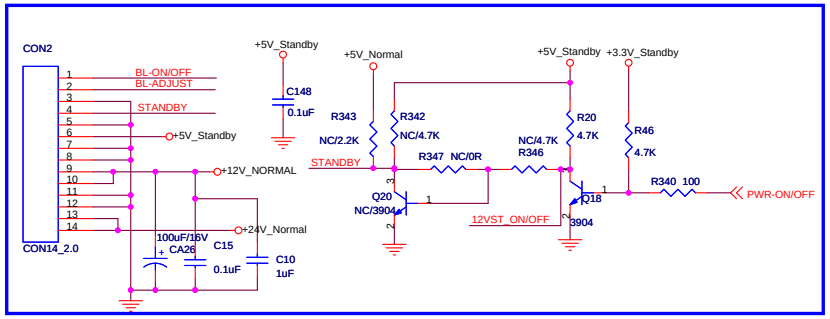
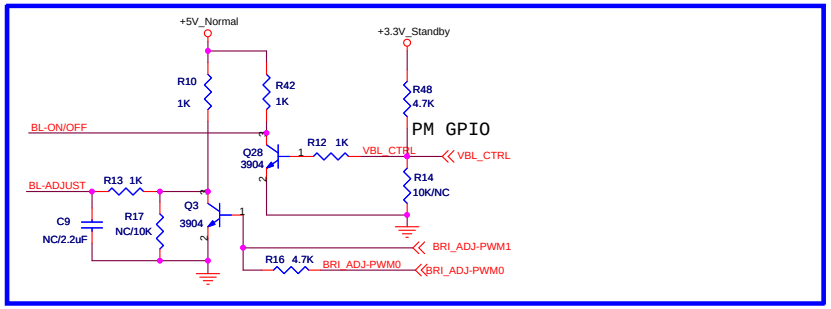
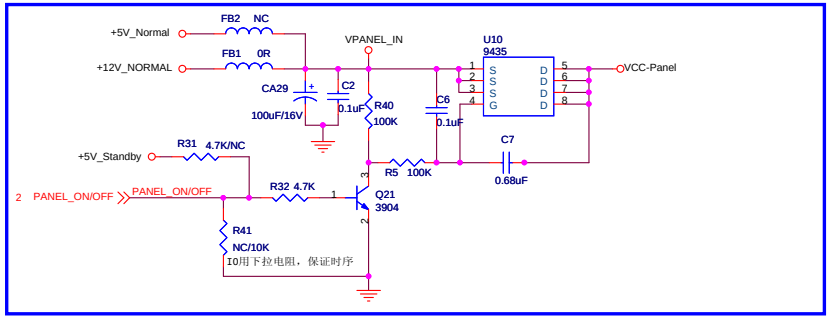
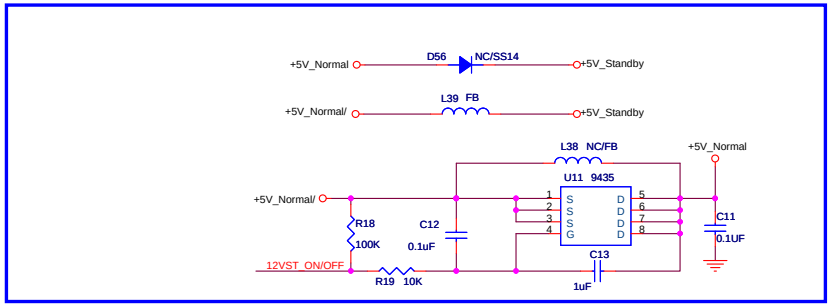
Date: Thursday, March 01, 2012	Sheet 2 of 10	

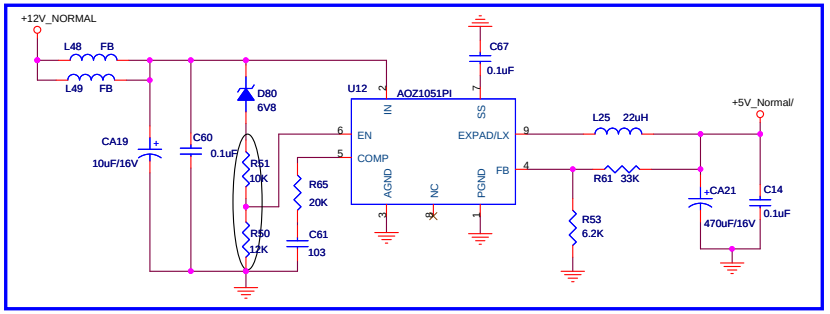

DDR2 VREF
Connector
LVDS OUT
主IC为MST6M181VG、MST6M182VG时，
BALL D5到BALL B4为NC PIN;
只有MST6M161LG这些PIN 才为HDMI INPUT
主IC为MST6M181VG、MST6M182VG时，
R104、R106、C114要焊接；
主IC为MST6M161LG时，
R104、R106、C114不焊接。
GPIO define
MST6M161LG/MST6M181VG
MST6M182VG
MST6M181VG
MST6M182VG
MST6M161LG
Audio
Close to IC
with width trace
System XTAL
Standby Power 3.3V
Normal Power 1.2V
Normal Power 2.5V
250mA
DDR power
Normal Power 3.3V
RF AGC
Close IC
Debug port
SERIAL FLASH
RESET CIRCUIT
增加RESET时间
Chip Config
SKYWORTH
MST6M161LG&181VG&182VG
Thursday, March 15, 2012

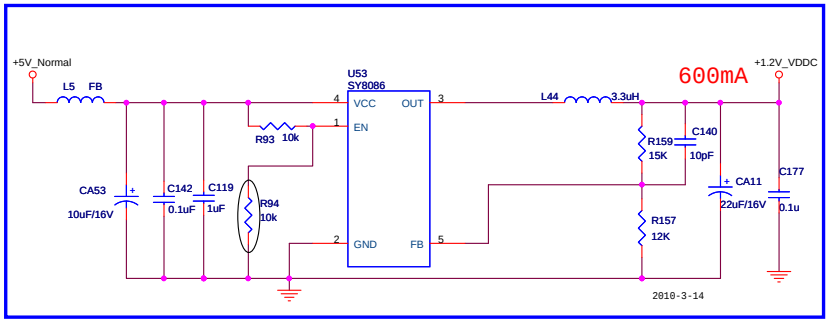


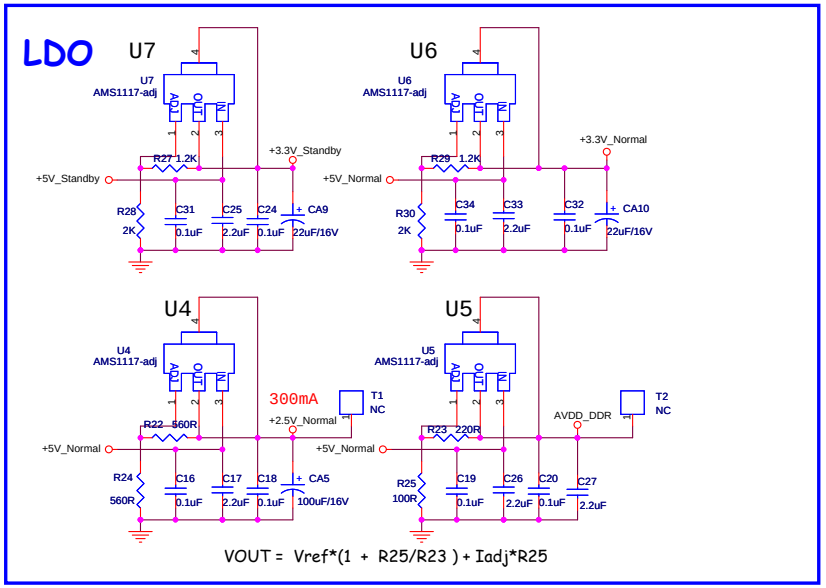






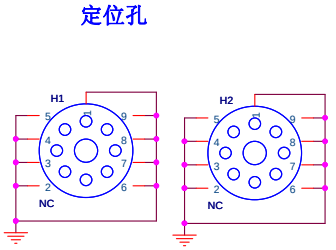


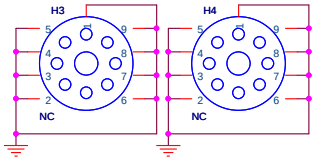


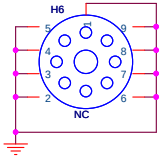


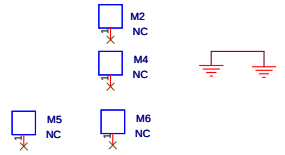
备注：

1：U5是为DDR提供电源,MST6M182VG内包DDR2,输出为1.8V。









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