

保密等级：机密

SPECIFICATION

产品规格书

产品型号：T.SK105A.03

销售区域：亚太

产品形态：TV

产品类型：基本型|ATV

文档编码：20092243

Approved by Shikun		
Checked by HW	Rechecked by SW/DC	Approved by DC
黄炜敏	吴玉波	张怡晴

Please send the original back to us after you have approved and signed.

客户承认签章后敬请寄回正本一份。

Approved by customer		
Comments 确认意见	Approved by 批准签字	Company's seal 盖章
Customer's Name:		

REVISION HISTORY

VERSION	DATE	BOARD ID	PAGE	DESCRIPTION	AUTHOR
V0	2020.09.22	T.SK105A.03 A20331	All	First Issued.	Yve

Content

1. STANDARD CONFIGURATION (标准配置)	1
2. BOARD PICTURE (板卡外观图)	2
3. FEATURES (特性说明)	2
3.1 TV SYSTEM (TV 制式)	3
3.2 CRITICAL MATERIALS of TV Part (TV 部分关键物料清单)	3
3.3 MULTIMEDIA PLAYBACK FORMAT (USB 多媒体格式播放列表)	4
3.4 ELECTRICAL CHARACTERISTICS & REQUIREMENTS (电气特性和要求)	4
4. SCHEMATICS OF IR & KEY BOARD (遥控按键原理图)	7
5. INTERFACE DEFINITION (接口定义)	8
6. CONFIGURATION & GENERAL PRECAUTIONS (使用注意事项)	11
7. MECHANICAL DIMENSION (结构尺寸图)	12
8. NOTICE REGARDING TV MEDIA FORMAT AND INTERFACE TECHNOLOGY... ..	13
(TV 媒体格式与接口技术说明)	13

1. STANDARD CONFIGURATION (标准配置)

下表为我们主推的标准配置:

标准配置一	亚太纯模拟，单层 USB
FUNCTIONS	【03_A1】VGA,HDMI,CVBS/AUDIO IN,PC AUDIO IN,EARPHONE OUT,USB,ATV
Notes	--
FRONT VIEW	
OPTIONAL FUNCTION	--

备注: 如以上表格不包含您需要的配置，请单独向我司销售人员进行申请。

Note: If the configurations above can't meet your demand, please apply to our sales stuff.

2. BOARD PICTURE (板卡外观图)

Pictures are for reference only, specific to prevail in kind.

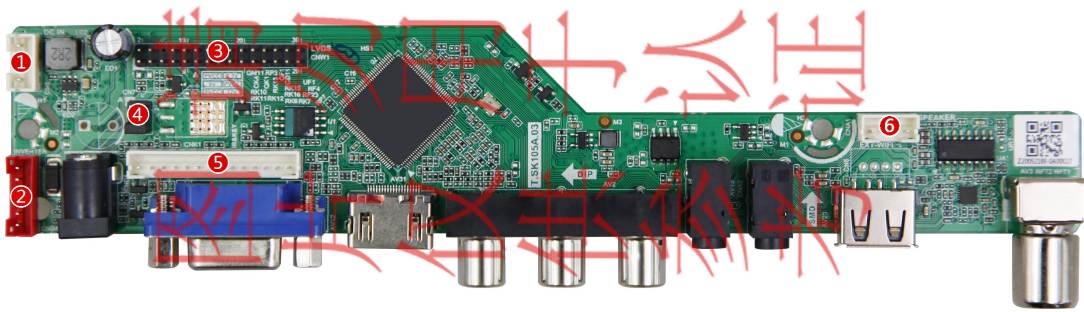
The optional connectors and functions are marked with “*”.

以下图片仅供参考，请以【结构图】或【实物】为准。

可选的接口或者功能都以“*”标示。

尺寸: 188mm(L)*37mm(W)*1.2mm(H) (H 为 PCB 厚度)

No.	Position	Description
1	CN8	DC IN
2	CNG1	INVERTER
3	CNW1	LVDS
4	CN7	PVCC
5	CNK1	IR&KEY
6	CNA1	SPEAKER



备注: 耳机输出不能用于 Line Out.

Note: Earphone output can not be used for Line Out.

3. FEATURES (特性说明)

MAIN CHIPSET 主芯片	UTS6710-X		
OSD LANGUAGE OSD 语言	Asia	English, French, Farsi, Indonesian, Spanish, Arabic, Hindi	
PANEL 面板	Panel Type	TFT LCD	
	Interface	Dual LVDS(8bit)	
	Max Resolution	1920*1080	
VIDEO INPUT 视频输入	TV(Details in 3.1)	ATV(PAL)	
	PC-RGB	Format	Up to 1920×1080@60Hz
		Video System	PAL/NTSC
	CVBS	Video level	1.0 Vp-p±10%

	HDMI	480i, 480p, 720p, 1080i, 1080p *CEC, *ARC	
		HDCP Version	1.4
AUDIO INPUT 音频输入	PC Audio	PC Audio Input	0.2 ~ 2.0 V _{RMS}
	CVBS	L/R RCA input	0.2 - 2.0V _{RMS}
AUDIO OUTPUT 音频输出	Earphone	Earphone output	130 ~ 150mV _{RMS}
	Frequency response	Speaker	100Hz-15KHz @±3dB(1KHz 0dB reference signal)
		Earphone	150Hz-15KHz @±3dB(1KHz 0dB reference signal)
	Max Output power	2×3W(4Ω) THD+N<10%@1KHz (Audio Input: 0.5V _{RMS})	
POWER TO PANEL 驱屏电压	3.3V,5V, 12V		
Management 电源管理	Standby Power Consumption < 0.2W(Board Only) 待机功耗< 0.2W (仅主板)		
USB FUNCTION USB 功能	software upgrade, multimedia play 软件升级, 多媒体播放		
Button Types 按键类型	Ground Key Interface 对地按键接口		
<p>Note: 1. Licenses involved in specifications above are supposed to be obtained by customers themselves. 2. When 3.3V panel Irush≥1000mA, Inormal≥600mA,please contact CVTE engineers to confirm 3.3V panel power supply component selection. 3. Max current of USB2.0: 500mA. Large impact current of USB device(exceeds 500mA) may lead to board abnormal work; 4. The normal operating current of 5V panel ≤ 1500mA.</p> <p>注意: 1. 以上规格涉及 License 部分需要客户自己获取; 2. 当 3.3V 屏冲击电流大于 1A, 正常电流大于 600mA, 请联系 CVTE 工程师确认 3.3V 屏供电器件选型; 3. USB2.0 最大电流: 500mA, 如果 USB 设备冲击电流过大 (超过 500mA) 将可能导致板卡工作异常; 4. 5V 屏正常工作电流小于 1500mA。</p>			

3.1 TV SYSTEM (TV 制式)

ATV	Reception Range (接收范围)	48.25MHz ~ 855.25MHz
	Input impedance (输入抗阻)	75Ω
	Video System (视频制式)	PAL
	Sound System (声音制式)	BG, DK, I
	Max Storage Channels (最大存台数)	99CH

3.2 CRITICAL MATERIALS of TV Part (TV 部分关键物料清单)

The table is for reference only, specific to prevail in kind. 此表仅供参考, 请以实物为准。

NAME 物料名称	TYPE 型号	BRAND 品牌	BACKUP 备用型号	BACKUP 备用品牌
TUNER	ATBM253	AltoBeam	--	--
AMPLIFIER	CS85636S	CHIPSTAR	--	--
FLASH	GD25Q32CSIG	GigaDevice	--	--
SPXO	SPXO,24MHz,±10ppm, 12pF,SMD3225-金属壳,SMD	JWT	--	--

3.3 MULTIMEDIA PLAYBACK FORMAT (USB 多媒体格式播放列表)

● 1. 视频格式

文件格式	视频格式	最高码率	帧率	分辨率
AVI (.avi)	MPEG-4 SP/ASP	30Mbps	30FPS	1920x1080
	H.264	30Mbps	30FPS	1920x1080
	WMV 9 / VC - 1	30Mbps(VC-1) 20Mbps(WMV9)	30FPS	1920x1080
	MJPEG		30FPS	1920x1080
MPEG File Format (.mpg)	MPEG-1 Video	4Mbps #Base on available file	30FPS	1920x1080
	MPEG-2 Video	30Mbps	30FPS	1920x1080
MPEG File Format (.mpeg)	MPEG-1 Video	4Mbps #Base on available file	30FPS	1920x1080
	MPEG-2 Video	30Mbps	30FPS	1920x1080
Video Object (.vob)	MPEG-1 Video	4Mbps #Base on available file	30FPS	1920x1080
	MPEG-2 Video	30Mbps	30FPS	1920x1080
DAT (.dat)	MPEG-1 Video	4Mbps #Base on available file	30FPS	1920x1080
MPEG-4 Part 14 (.mp4)	MPEG-2 Video	30Mbps	30FPS	1920x1080
	MPEG-4 SP/ASP	30Mbps	30FPS	1920x1080
	H.264	30Mbps	30FPS	1920x1080
	H.265	30Mbps	30FPS	1920x1080
	MJPEG		30FPS	1920x1080
MPEG-4 Part 14 (.m4v)	H.264	30Mbps	30FPS	1920x1080
WMV (.wmv)	WMV9(WMV3) / VC-1(WVC1)	15Mbps(WMV3) #Base on available file 20Mbps(WVC1)	30FPS	1920 x 1080
Flash Video (.flv)	Sorenson H.263	1.9Mbps(WMV3) #Base on available file	30FPS	1920 x 1080
	H.264	30Mbps	30FPS	1920x1080
QuickTime	MPEG-4 SP/ASP	30Mbps	30FPS	1920x1080

(.mov) (.3gp) (.3g2)	H.264	30Mbps	30FPS	1920x1080
	MJPEG,		30FPS	1920x1080
Advanced Stream Format (.asf)	WMV9(WMV3) / VC-1(WVC1)	15Mbps(WMV3) #Base on available file 20Mbps(WVC1)	30FPS	1920 x 1080
Matroska (.mkv)	MPEG-2 Video	30Mbps	30FPS	1920x1080
	MPEG-4 SP/ASP	30Mbps	30FPS	1920x1080
	H.264	30Mbps	30FPS	1920x1080
	WMV 9 / VC - 1	30Mbps(VC-1) 20Mbps(WMV9)	30FPS	1920x1080
	H.265	30Mbps	30FPS	1920x1080
MPEG-2 TS Transport Stream (.ts) (.tp) (trp)	MPEG-1 Video	4Mbps #Base on available file	30FPS	1920x1080
	MPEG-2 Video	30Mbps	30FPS	1920x1080
	H.264	30Mbps	30FPS	1920x1080
	WMV 9 / VC-1	30Mbps(VC-1) 20Mbps(WMV9)	30FPS	1920x1080
	AVS / AVS+	14.5Mbps(AVS) #Base on available file 12Mbps(AVS+) #Base on available file	30FPS	1920x1080
Transport Stream (.m2ts <BD>)	MPEG-2 Video	30Mbps	30FPS	1920x1080
	H.264	30Mbps	30FPS	1920x1080
	WMV 9 / VC-1	30Mbps(VC-1) 20Mbps(WMV9)	30FPS	1920x1080
	H.265	30Mbps	30FPS	1920x1080
Transport Stream (MTS<AVCHD>)	H.264	30Mbps	30FPS	1920x1080

● **2.音频格式**

音频文件	音频格式	采样率	码率
Wave Audio Files (.wav)	LPCM	8kHz ~ 96kHz	up to 6.144 Mbps
	ADPCM	8kHz, 11.025 kHz	32kbps, 44.1kbps
MPEG Audio Layer III (.mp3)	MPEG	8kHz ~ 48kHz	8kbps ~ 320kbps
.mp2	MP2	MPEG1:32kHz,44.1kHz, 48kHz	32kbps ~ 384kbps
		MPEG-2 : 16kHz,22.05kHz, 24kHz,32kHz,44.1kHz, 48kHz	8kbps ~ 384kbps
.flac	FLAC	8kHz ~ 192kHz	up to 1171Kbps

● **3.图片格式**

格式	最大分辨率	最小分辨率
png	1920x1080	4x4
jpeg	Baseline 7680x4320 progressive 1920x1080	4x4
bmp	4095 x 4095	4x4

● **4.文本格式**

格式	说明
.txt	Support encoding type : ANSI / UNICODE / UTF8 File size is limited to 10MB. If file pages exceed 999999 , system doesn't perform Goto function. When non-support characters occur, system will display " ? " to replace those characters.

功能说明

Licenses involved in specifications above are supposed to be obtained by customers.

***Need the specific chip and Hash Key to support.**

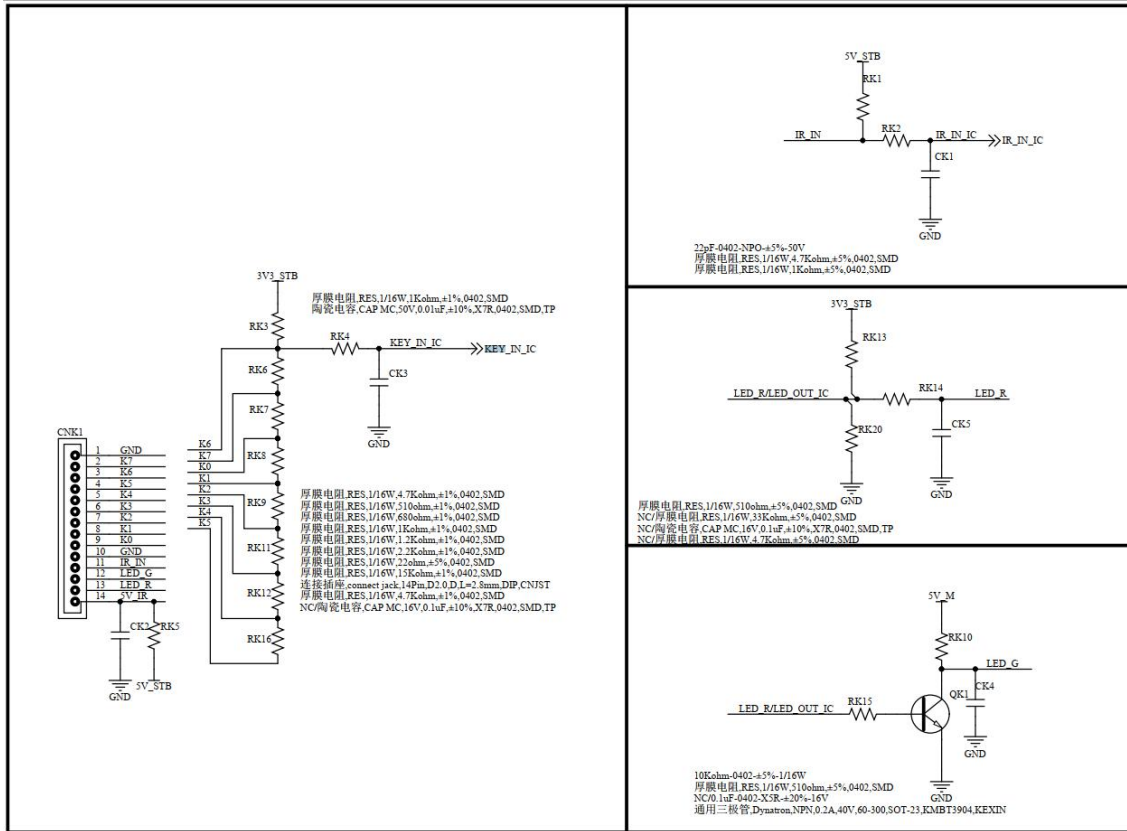
3.4 ELECTRICAL CHARACTERISTICS & REQUIREMENTS

(电气特性和要求)

Sym bol	Voltage Range			Ripple	Total curre nt	MAX. current(mA) of Individual part			
	MIN	TYP	MAX	Voltage		Mainboard	AMP	USB	Panel
12V	11	12	13	1200 mV	Ct1 ^②	2150	-	-	IPANEL
5V	4.75	5	5.25 ^①	250 mV	Ct2 ^②	-	1500mA	500mA	IPANEL
3.3V	3.135	3.3	3.465	55 mV	Ct3 ^②	450mA	-	-	IPANEL
1.8V	1.746	1.8	1.854	70 mV	Ct4 ^②	180mA	-	-	-
1V	0.97	1	1.03	70mV	Ct5 ^②	910mA	-	-	-

Note^①: Don't exceed 5.25V when make the certification practice test.
Note^②: CtN = The sum of MAX. current(mA) of individual part.

4. SCHEMATICS OF IR & KEY BOARD (遥控按键原理图)



按键功能: 信号源, 菜单, 音量+, 音量-, 频道+, 频道-, 电源


KEY FUNCTION: TV/AV, MENU, VOL+, VOL-, CH+, CH-, POWER

Note: The dividing resistor which is corresponding to the power key must be zero(equivalent to the voltage is zero). Otherwise, the board will not work. K6 is default power.

5. INTERFACE DEFINITION (接口定义)

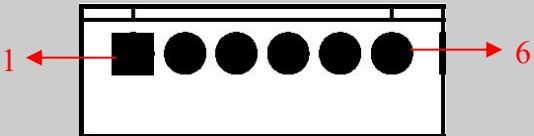
The optional connectors and terminals are marked with "*".标“*”的为可选。

◆ CN8(4PIN/2.0): DC IN CONNECTOR (直流电输入接口)



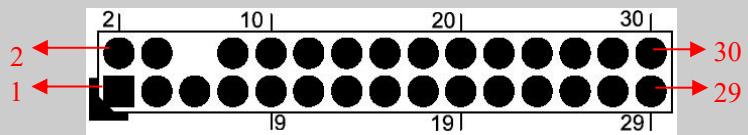
NO.	SYMBOL	DESCRIPTION
1	12V	+12V DC Power Supply
2	12V	
3	GND	Ground
4	GND	

◆ CNG1(6PIN/2.0): INVERTER CONNECTOR (INVERTER 接口)



NO.	SYMBOL	DESCRIPTION
1	GND	Ground
2	GND	
3	ADJ	Brightness Adjustment for Panel
4	BLO	Back-Light ON/OFF Control for Panel
5	12V	+12V DC Power Supply
6	12V	

◆ CNW1(2×15PIN/2.0): LVDS CONNECTOR (LVDS 接口)



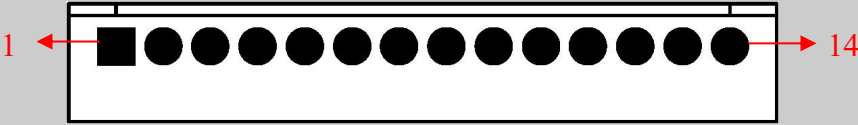
NO.	SYMBOL	DESCRIPTION
1	VCC-PANEL	Power Supply for Panel
2	VCC-PANEL	
3	VCC-PANEL	
4	GND	Ground
5	GND	
6	NC	No Connection
7	RX00-	LVDS ODD 0- Signal
8	RX00+	LVDS ODD 0+ Signal

9	RXO1-	LVDS ODD 1- Signal
10	RXO1+	LVDS ODD 1+ Signal
11	RXO2-	LVDS ODD 2- Signal
12	RXO2+	LVDS ODD 2+ Signal
13	GND	Ground
14	GND	
15	RXEC-	LVDS EVEN Clock- Signal
16	RXEC+	LVDS EVEN Clock+ Signal
17	RXO3-	LVDS ODD 3- Signal
18	RXO3+	LVDS ODD 3+ Signal
19	RXE0-	LVDS EVEN 0- Signal
20	RXE0+	LVDS EVEN 0+ Signal
21	RXE1-	LVDS EVEN 1- Signal
22	RXE1+	LVDS EVEN 1+ Signal
23	RXE2-	LVDS EVEN 2- Signal
24	RXE2+	LVDS EVEN 2+ Signal
25	GND	Ground
26	GND	
27	RXEC-	LVDS EVEN Clock- Signal
28	RXEC+	LVDS EVEN Clock+ Signal
29	RXE3-	LVDS EVEN 3- Signal
30	RXE3+	LVDS EVEN 3+ Signal

◆ **CN7(2×3PIN/2.0): PVCC CONNECTOR (PVCC 接口)**

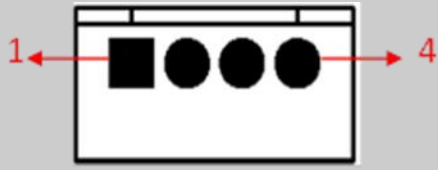
NO.	SYMBOL	DESCRIPTION
1	PVCC	PVCC
2	3.3V	+3.3V Power supply
3	5V	+5V Power supply
4	PVCC	PVCC
5	PVCC	
6	12V	+12V Power supply

◆ **CNK1(14PIN/2.0): IR & KEY CONNECTOR (遥控和按键控制接口)**



NO.	SYMBOL	DESCRIPTION
1	GND	Ground
2	NC	Key7(Reserved)
3	K6	Key6
4	K5	Key5
5	K4	Key4
6	K3	Key3
7	K2	Key2
8	K1	Key1
9	K0	Key0
10	GND	Ground
11	IR	IR Receiver, $V_{IH} \geq 2V$, $V_{IL} \leq 1V$, $I_{Lmin} : 1mA$, $I_{IHmin} : 1mA$
12	GRN	Green Indicator, $V_{OH} \geq 2V$ ($I_{OHMAX} : 2mA$), $V_{OL} \leq 0.8V$ ($I_{OLMAX} : 2mA$)
13	RED	Red Indicator, $V_{OH} \geq 2V$ ($I_{OHMAX} : 1.3mA$), $V_{OL} \leq 0.8V$ ($I_{OLMAX} : 0.5mA$)
14	5V	+5V DC Power Supply

◆ **CNA1(4PIN/2.0): SPEAKER CONNECTOR (喇叭输出接口)**



NO.	SYMBOL	DESCRIPTION
1	ROUT+	Audio Right Channel Output+
2	ROUT-	Audio Right Channel Output-
3	LOU-	Audio Left Channel Output-
4	LOU+	Audio Left Channel Output+

NOTE:

(1) 参数说明

V_{OH} : 高电平输出电压; I_{OHMAX} : 高电平输出驱动电流; V_{OL} : 低电平输出电压; I_{OLMAX} : 低电平输出驱动电流;

V_{IH} : 高电平输入电压; V_{IL} : 低电平输入电压; I_{Lmin} : 低电平最小输入电流; I_{IHmin} : 高电平最小输入电流;

(2) 在匹配应用时, 各控制和通讯口以及供电须在本规格书中描述的电气特性范围内, 若有特殊需求, 请与我司硬件工程师联系确认。

6. CONFIGURATION & GENERAL PRECAUTIONS

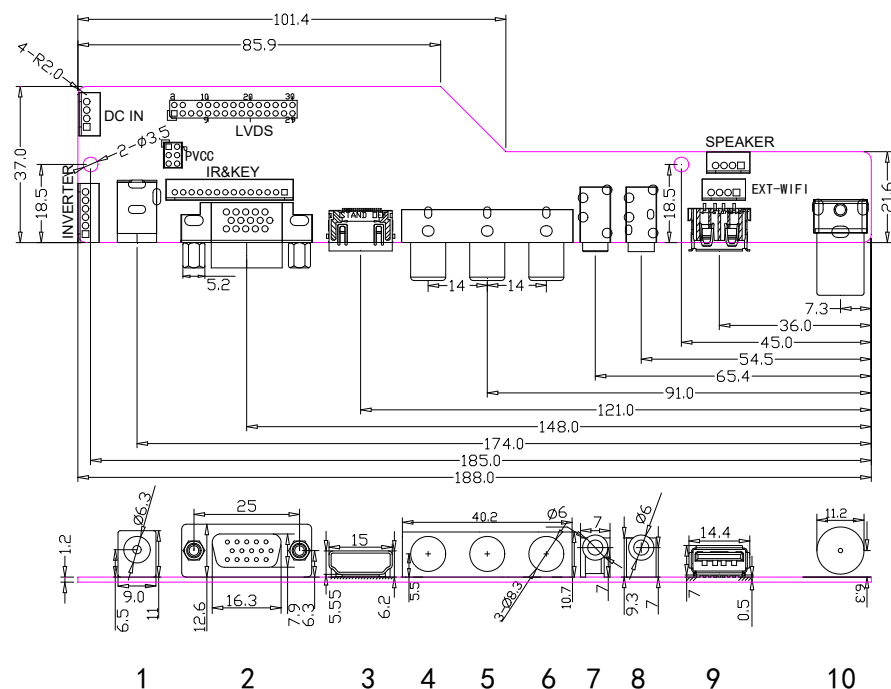
（使用注意事项）

- Relative humidity: $\leq 80\%$.
- 相对湿度: $\leq 80\%$ 。
- Storage temperature: $-10\sim 60^{\circ}\text{C}$.
- 存储温度: $-10\sim 60^{\circ}\text{C}$ 。
- Operation temperature: $0\sim 40^{\circ}\text{C}$.
- 使用温度: $0\sim 40^{\circ}\text{C}$ 。
- Protect the board from static electricity in case of damage to the IC.
- 请使板卡远离静电。
- Keep the board away from conductor when it is working.
- 请确保板卡工作时远离导体。
- Do not press the PCBA during transportation or placement.
- 在运输、放置时, 请勿重压板卡。
- Do not bend or deform the board during the whole machine assembling, especially when connecting the cable.
- 在整机组装过程, 特别是接插线时, 请勿使板卡弯折变形。
- Do not plug or unplug the cable while the board is working..
- 板卡工作时, 请勿插拔线材。
- Mount the board considering the heat dissipation direction of your TV set to avoid abnormal system work because of poor heat dissipation.
- 请注意结合整机散热方向安装板卡, 避免散热不佳引起系统工作异常。
- Clean the board with soft dry cloth when it's dirty.
- 如果板卡上有灰尘, 请用干布擦拭。
- Don't power on before panel is correctly connected.
- 正确接好驱屏线前请勿接通电源。
- The whole machine certification performance will be subject to the impact of the whole machine, must use the whole machine to test and confirm.
- 整机认证性能会受整机匹配的影响, 必须使用整机进行测试确认。

7. MECHANICAL DIMENSION (结构尺寸图)

配置1【03_A1】	
Ver.	A0
NO.	Description
1	DC IN
2	VGA IN
3	HDMI IN
4	CVBS IN
5	CVBS LIN
6	CVBS RIN
7	PC AUDIO IN
8	EARPHONE OUT
9	USB IN
10	RF IN

PCB Tolerance		Connector Tolerance
PCB size	±0.15mm	(Unless Otherwise Stated)
PCB thickness	≤1.0mm ±0.1mm >1.0mm ±10%	±0.3mm



NOTE:

- 除特殊说明区域，顶层器件最高14.5mm，底层器件最高2.5mm、焊脚最高2.5mm；
- 螺丝（包括螺帽）选用需与板卡孔位及露铜匹配，避免出现装配或电气不良。CVTE推荐：螺帽直径至少为D+3mm（D为螺丝孔的直径）。
- 公板设计未预留特定的壁挂位置，请以最高器件预留安全间距设计壁挂，避免板卡迭代出现干涉问题。

8. NOTICE REGARDING TV MEDIA FORMAT AND INTERFACE TECHNOLOGY (TV 媒体格式与接口技术说明)

概述

本文档用于描述 TV 产品可能涉及的媒体格式和接口技术。

媒体格式		接口技术及其他	
Dolby Digital Decoder	MPEG2/MPEG4	HDMI	Hbbtv2.0
Dolby Digital Plus Decoder	AMR-NB	HDCP	Netflix
Dolby MS11	AMR-WB	Wi-Fi	Freeview Play
Dolby MS12	DRA	USB	NTFS
Dolby Atmos	AAC/HEAAC	MHL	Seraphic Open Browser
Dolby Vision	H.264	Bluetooth	Seraphic TV Portal
DTS Sound	H.265	NFC	—
DTS TruSurround	DivX	DVB-T2	—
DTS HD	RMVB	DVB-S2x	—
DTS 2.0+Digital Out	WMA	ATSC	—
DTS Express 5.1	WMA Pro	PlayReady	—
DTS Studio Sound	dbx-tv	MSS	—
DTS Studio Sound II	—	Widevine	—

说明

如贵司定制/采购的液晶显示主板中包含在整机上支持上述媒体格式与接口技术的硬件（例如主控芯片、端子接口等）和/或软件，则由于该等媒体格式与接口技术中可能涉及第三方技术及 IP，视琨特进行如下提示：

1. 贵司向视琨特支付的合作款项中不包含整机使用特定媒体格式与接口技术时应向权利人支付的授权许可费用，如权利人提出要求，贵司应自行向权利人取得有效许可并付费；
2. 如贵司需要取消对应的媒体格式或接口技术，贵司应在确认板卡规格或支付货款前书面通知视琨特；
3. 如贵司定制/采购的液晶显示主板不包含在整机上支持媒体格式及接口技术的硬件或软件（全部不支持或部分不支持），对于不支持的部分，则本说明对贵司不适用；
4. 媒体格式与接口技术涉及的硬件、软件及技术均由第三方提供，视琨特会不定期更新本说明；如贵司发现有疏漏，还请告知我们。感谢！

Introduction

This document is used to specify media formats, interface technologies and others that may be involved in TV products.

Media Format		Interface Technology & Others	
Dolby Digital Decoder	MPEG2 / MPEG4	HDMI	Hbbtv2.0
Dolby Digital Plus Decoder	AMR-NB	HDCP	Netflix
Dolby MS11	AMR-WB	Wi-Fi	Freeview Play
Dolby MS12	DRA	USB	NTFS

Dolby Atmos	AAC/HEAAC	MHL	Seraphic Open Browser
Dolby Vision	H.264	Bluetooth	Seraphic TV Portal
DTS Sound	H.265	NFC	-
DTS TruSurround	DivX	DVB-T2	-
DTS HD	RMVB	DVB-S2x	-
DTS 2.0+Digital Out	WMA	ATSC	-
DTS Express 5.1	WMA Pro	PlayReady	-
DTS Studio Sound	dbx-tv	MSS	-
DTS Studio Sound II	-	Widevine	-

Notice

In the event the LCD TV Driver Boards (“Boards”) purchased or customized by your good company include any hardware(e.g. TV master chip, output connector) and/or software that support the above mentioned media formats, interface technologies & others which may involve third party technologies or intellectual properties, your company is hereby kindly reminded as follows:

1. The product price under the sale contracts between us does not include any royalties, licensing fees or expenses payable to the IP right holders for acquiring the right to use the third party technologies or the license of the third party’s intellectual properties which may be involved due to the Boards’ and relating TV sets’ supporting of the above mentioned media formats, interface technologies & others. If the IP right holders so request, you shall obtain valid license from the right holders and make payment at your own cost for such license.
2. If your company requests to reduce or cancel the media formats or interface technologies & others supported by the Boards, you shall, upon your confirmation of the Boards’ specifications, or upon payment of the contract price, whichever is earlier, notice us such requests in writing.
3. In the event the “Boards” purchased or customized by your good company do not include hardware and/or software that support part or entire of the above mentioned media formats and interface technologies & others, this Notice shall not be applicable to your company with respect to the media formats and interface technologies & others that not supported by the Boards.
4. The hardware, software and technologies related to the media formats and interface technologies & others that may be involved in the Boards are all provided by third parties . We may update this Notice from time to time. If you find any omissions, please do not hesitate to let us know.

由于在本产品技术要求确认书列明的主板产品（以下简称“主板”，包括其内含的芯片）实现的或通过主板在整机上实现的功能（含专利功能）和出厂预装的软件版本均系由买方最终确认和决定，买方负责自行向相应权利人取得资质授权、确认是否允许开通、提报交易数据并缴纳相应专利许可费用。

由于我司作为主板供应商，无法获知整机产品的性能要求或规格参数，我司仅能保证供应的主板符合双方已确认的《技术要求确认书》，请贵司自行根据最终整机产品及对应主板进行调试、测试并申请认证，以确保产品符合终端销售区域的法律法规要求。

Regarding the TV mainboard Products (following referred as “the Mainboard”), the technical requirements of which are wholly listed and defined under this Letter of Confirmation for Product Technical Requirements, due to the fact that it was ultimately confirmed and determined by the buyer regarding the software programmed to the Mainboard, and the Mainboard’s features and functions (including patented features and functions, whether the features and functions are realized and practiced through the chips embodied in the Mainboard, the Mainboard itself, or through the TV sets embodying the Mainboard), the buyer shall be responsible for obtaining appropriate licenses from the relating intellectual property right holders and other right holders, acquiring appropriate permissions to use the software programmed to the Mainboard, obtaining appropriate permissions to realize and practice the relating features and functions of the Mainboard, reporting the transaction data, arranging the payment of royalties, and performing other duties and responsibilities which are necessary to use, sell, offer for sale, import or otherwise to dispose of the Mainboard with programmed software without infringing the intellectual property rights of any third party.

As our company is specialized TV mainboard supplier and unable to acquire the performance or specifications requirements of the TV sets embodying the Mainboard, we hereby guarantee that the TV mainboard products supplied by our company are in conformance with the Letter of Confirmation for Product Technical Requirements which was confirmed in writing by both parties, and your company shall be responsible for the testing, debugging, tuning of the TV sets embodying the Mainboard, application for certifying the Mainboard and the TV sets embodying the Mainboard, and performing other duties and responsibilities which are necessary for complying with the law and regulations of the countries and regions, where the Mainboard and the TV sets embodying the Mainboard were imported and sold.