

# **TV CONTROL BOARD SPECIFICATION**

**MODEL: T.VST29.03**

**(Asia-V59)**

Part Number: MST-12110542

REV: A3

## **CONTENT**

<b>ITEM</b>	<b>PAGE</b>
1.GENERAL DESCRIPTION	2
2.DIFFERENCE OF FOUR CONFIGURATIONS	2
3.FUNCTION LAYOUT	2
4.FEATURES	3
5.PCB DIMENSIONS	6
6.SCHEMATICS OF IR & KEY BOARD	7
7.INTERFACE DEFINITION	7
8.CONFIGURATION & GENERAL PRECAUTIONS	9
APPENDIX: ANOTHER THREE STRUCTURE	10

## 1. GENERAL DESCRIPTION

T.VST29.03 is analog TV control board, which is suitable for Asia-Pacific and Middle-East market. It can support less than 26 inch LCD panels which resolution is up to 1920×1080.

T.VST29.03 support six kinds of main chip: TSUMV29LU, TSUMV29LE, TSUMV39LU, TSUMV39LE, TSUMV59XU, TSUMV59XE, differences are in the following table.

This specification is only for T.VST29.03 with main chip TSUMV59XU or TSUMV59XE.

Main Chip	TSUMV29LU	TSUMV29LE	TSUMV39LU	TSUMV39LE	TSUMV59XU	TSUMV59XE
TELETEXT or NICAM	No	Yes	No	Yes	No	Yes
USB slot function	updating software		updating software, playing MP3 and JPEG		updating software, playing multimedia	

**Note:** Chipset TSUMV29LU/LE, TSUMV39LU/LE and TSUMV59XU/XE are pin to pin.

## 2. DIFFERENCE OF FOUR CONFIGURATIONS

No.	03_A4	03_A3	03_A2	03_A1
No.3 terminal	S-video	HDMI	S-video	HDMI
USB	USB connector	USB connector	USB terminal	USB terminal

Note: Detail can be found in part4 and appendix.

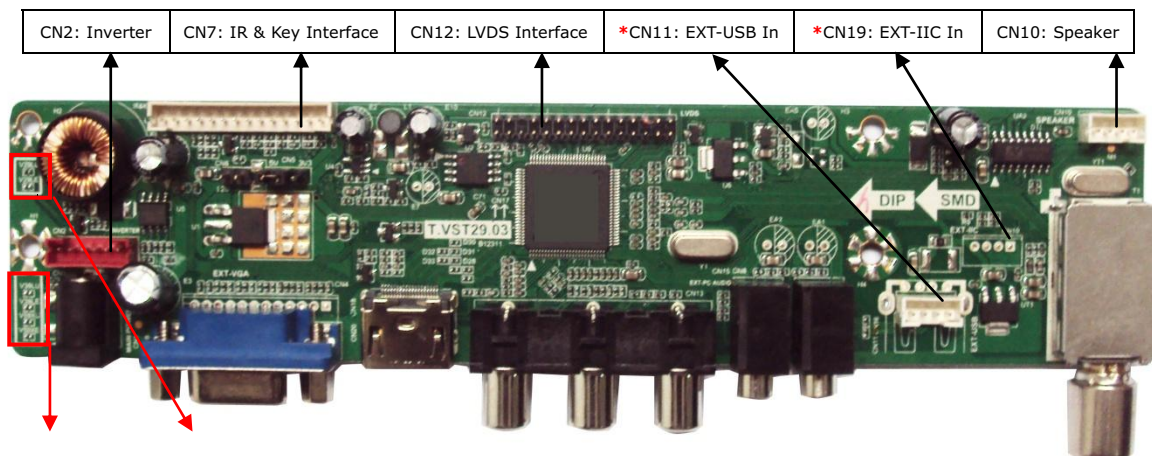
## 3. FUNCTION LAYOUT

This is the standard. There is three kind of structure, details can be found in appendix.

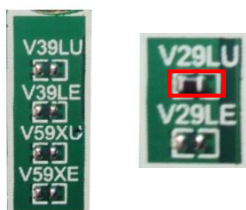
Pictures are for reference only, specific to prevail in kind.

The optional connectors and terminals are marked with "\*".

### TOP VIEW OF T.VST29.03 (03\_A3)

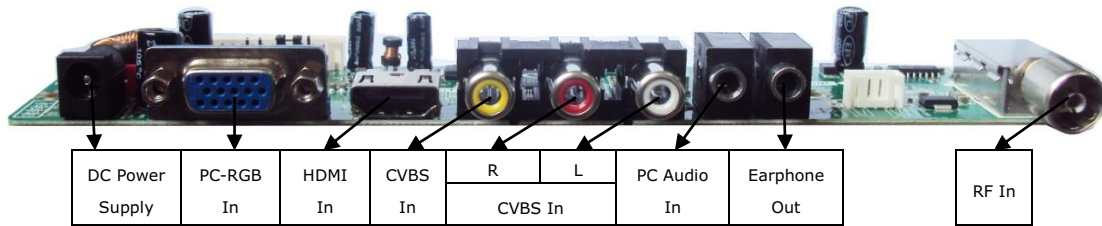


### ENLARGED VIEW OF CHIPSET



As the picture shows in left, to differ the board and chipset by resistance and mark.

**FRONT VIEW OF T.VST29.03B (03\_A3)**



**4. FEATURES**

<b>CHIPSET</b>	TSUMV59XU / TSUMV59XE		
<b>MARKET AREA</b>	Asia-Pacific, Middle-East		
<b>OSD LANGUAGE</b>	English, French, German, Italian, Spanish, Portuguese, Russian(optional)		
<b>PANEL</b>	Panel Type	LCD	
	Interface	Single/Dual LVDS	
	Max Resolution	1920×1080	
<b>VIDEO INPUT</b>	TV	Receiving Range	48.25MHz ~ 863.25MHz
		Input impedance	75Ω
		Video System	PAL, SECAM
		Sound System	BG, DK, I NICAM/A2(only for TSUMV59XE)
		TELETEXT (only for TSUMV59XE)	1000Pages
		Max Storage Channels	199CH
	PC-RGB	Format	Up to 1920×1080@60Hz
CVBS	Video System	PAL/NTSC/SECAM	
	Video level	1.0 V <sub>p-p</sub> ±5%	
<b>AUDIO INPUT</b>	PC Audio	Earphone Input	0.2 ~ 2.0 V <sub>RMS</sub>
	CVBS	L/R RCA Input	0.2 ~ 2.0 V <sub>RMS</sub>
<b>AUDIO OUTPUT</b>	Frequency Response	100Hz~15KHz @±3dB (1KHz reference signal)	
	Max Output power	2x2.5W(4Ω)THD+N<10%@1KHz (Power Supply: 12V, Audio Input: 0.5V <sub>RMS</sub> )	
<b>POWER</b>	Requirement	12V DC/12V(built in)	
	To Panel	3.3V, 5V,12V	
	Management	Standby Power Consumption < 0.3W(Board Only)	
<b>COMB FILTER</b>	3D		
<b>DEINTERLACE</b>	3D		
<b>KEY FUNCTION</b>	MENU, CH+, CH-, VOL+, VOL-, INPUT, POWER		
<b>EXPANDABLE FUNCTION</b>	EXT-USB In, EXT-IIC In		
<b>Note:</b> Licenses involved in specifications above are supposed to be obtained by customers themselves.			

**SUBSTITUTABLE PRIMARY MATERIALS**

The table is for reference only, the actual item is the standard.

<b>NAME</b>	<b>TYPE</b>	<b>BRAND</b>	<b>BACKUP TYPE</b>	<b>BACKUP BRAND</b>
<b>TUNER</b>	R620D	Rafael	--	--
<b>FLASH</b>	GD25Q32BSIG (32M bits)	GIGA	W25Q32BVSSIG	Winbond
<b>AMPLIFIER</b>	NS4263	NXW	--	--

**ELECTRICAL CHARACTERISTICS & REQUIREMENTS**

<b>Power Supply Mode</b>	<b>Symbol</b>	<b>Voltage Range</b>	<b>Max Current</b>	<b>Ripple Voltage@25 °C</b>	<b>Startup Time</b>	<b>Rise Time</b>
12V(Ext. Adaptor)	12V	12V±0.6V	2000mA	120mV <sub>p-p</sub>	--	≤50ms
12V(Built-In)	12V	12V±0.6V	2000mA	120mV <sub>p-p</sub>	--	≤50ms
<b>Note:</b> The current of panel, USB,inverter and extension modules are not included in max current.						

**USB MULTIMEDIA PLAYBACK FORMAT**

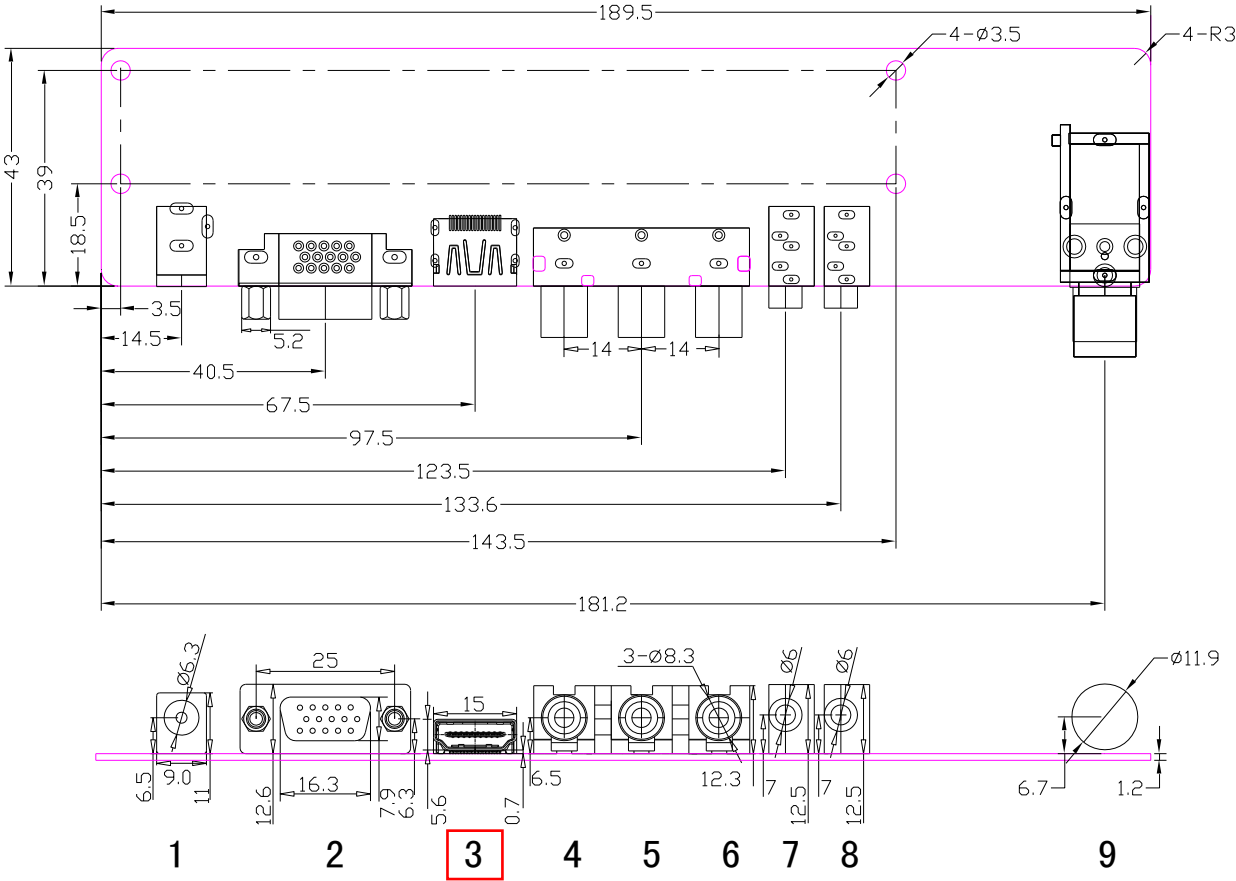
Media	File Ext.	Codec		Remark	
		Video	Audio		
Movie	.avi	MJPEG	MP3, WMA, AAC, MP2, PCM, AC3	<b>Max Resolution And Frame Rate:</b> 640×480@30fps <b>Max Data Rate:</b> 10 Mbps	
		Xvid, MPEG-2, MPEG-4, DivX, H.264		<b>Max Resolution And Frame Rate:</b> 1920×1080@30fps <b>Max Data Rate:</b> 20 Mbps	
	.mp4	MPEG-2, MPEG-4, DivX, H.264			
	.ts/ .trp	MPEG-2, H.264			
	.mkv/ .mov	MPEG-4, H.264			
	.mpg	MPEG-1, MPEG-2			
	.dat	MPEG-1			MP2
	.vob	MPEG-2		<b>Max Resolution:</b> 720×576 <b>Max Data Rate:</b> 20 Mbps	
.rm/ .rmvb	RV8, RV9, RV10	COOK	<b>Max Resolution And Frame Rate:</b> 1280×720@30fps <b>Max Data Rate:</b> 10 Mbps		
Music	.mp3	--	MP3	<b>Sample Rate:</b> 32K~48KHz <b>Bit Rate:</b> 32K~320Kbps <b>Channel:</b> Mono/Stereo	
	.wma	--	WMA	<b>Sample Rate:</b> 8K~48KHz <b>Bit Rate:</b> 128K~320Kbps <b>Channel:</b> Mono/Stereo	
	.m4a/ .aac	--	AAC	<b>Sample Rate:</b> 8K~48KHz <b>Bit Rate:</b> 128K~442Kbps <b>Channel:</b> Mono/Stereo	
Photo	.jpg/ .jpeg	Progressive JPEG		<b>Max Resolution:</b> 1024×768	
		Baseline JPEG		<b>Max Resolution:</b> 15360×8640	
	.bmp	--		<b>Max Resolution:</b> 9600×6400	
	.png	Non-Interlaced		<b>Max Resolution:</b> 9600×6400	
Interlaced		<b>Max Resolution:</b> 1200×800			
Text	.txt	ANSI/UNICODE GB/UTF8		<b>File Size:</b> Max 1MB	
<p><b>File system:</b> Hi Speed FS, FAT32, FAT16, NTFS(NTFS compressed file is not supported).</p> <p><b>Note:</b></p> <p>1.Licenses involved in specifications above are supposed to be obtained by customers themselves, eg:AC3 and DivX.</p> <p>2.MP4 cannot support GMC.</p>					

### 4. PCB DIMENSIONS

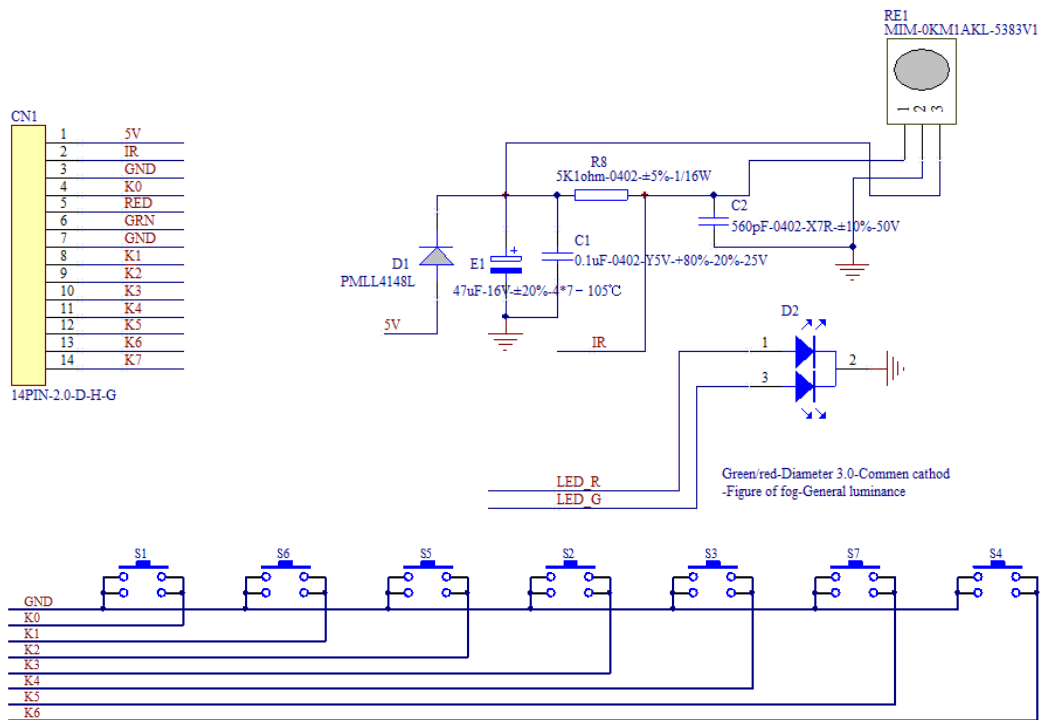
The size of T.VST29.03A is 181.2mm(L)\*43mm(W)\*17mm(H).

#### (03\_A3) HDMI +USB connector

Ver.	V1.1
NO.	Description
1	DC IN
2	VGA IN
3	HDMI IN
4	CVBS IN
5	CVBS RIN
6	CVBS LIN
7	PC AUDIO IN
8	EARPHONE OUT
9	RF IN



## 5. SCHEMATICS OF IR BOARD & KEY BOARD



**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.

## 6. INTERFACE DEFINITION

The optional connectors are marked with "\*".

### ◆ CN2(6PIN/2.0): INVERTER CONNECTOR

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

### ◆ CN7(14PIN/2.0): IR & KEY BOARD CONNECTOR

NO.	SYMBOL	DESCRIPTION
1	5V	+5V DC Power Supply
2	IR	IR Receiver
3	GND	Ground
4	K0	Key0
5	RED	Red Indicator
6	GRN	Green Indicator
7	GND	Ground



**T.VST29.03(Asia-V29V39)-SPECIFICATION**

NO.	SYMBOL	DESCRIPTION
8	K1	Key1
9	K2	Key2
10	K3	Key3
11	K4	Key4
12	K5	Key5
13	K6	Key6
14	K7	Key7

**◆ CN12(2×15PIN/2.0): LVDS INTERFACE CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	VSEL	Power Supply for Panel
2	VSEL	
3	VSEL	
4	GND	Ground
5	GND	
6	NC	No Connection
7	TX00-	LVDS ODD 0- Signal
8	TX00+	LVDS ODD 0+ Signal
9	TX01-	LVDS ODD 1- Signal
10	TX01+	LVDS ODD 1+ Signal
11	TX02-	LVDS ODD 2- Signal
12	TX02+	LVDS ODD 2+ Signal
13	GND	Ground
14	GND	
15	TXOC-	LVDS ODD Clock- Signal
16	TXOC+	LVDS ODD Clock+ Signal
17	TX03-	LVDS ODD 3- Signal
18	TX03+	LVDS ODD 3+ Signal
19	TXE0-	LVDS EVEN 0- Signal
20	TXE0+	LVDS EVEN 0+ Signal
21	TXE1-	LVDS EVEN 1- Signal
22	TXE1+	LVDS EVEN 1+ Signal
23	TXE2-	LVDS EVEN 2- Signal
24	TXE2+	LVDS EVEN 2+ Signal
25	GND	Ground
26	GND	
27	TXEC-	LVDS EVEN Clock- Signal
28	TXEC+	LVDS EVEN Clock+ Signal
29	TXE3-	LVDS EVEN 3- Signal
30	TXE3+	LVDS EVEN 3+ Signal

◆ \*CN11(4PIN/2.0): EXTERNAL USB CONNECTOR

NO.	SYMBOL	DESCRIPTION
1	5V	+5V DC Power Supply for USB
2	DM	USB Data-
3	DP	USB Data+
4	GND	Ground

◆ \*CN19(4PIN/2.0): EXTERNAL I<sup>2</sup>C CONNECTOR

NO.	SYMBOL	DESCRIPTION
1	GND	Ground
2	SDA	External I <sup>2</sup> C SDA
3	SCL	External I <sup>2</sup> C SCL
4	5V	+5V DC Power Supply

◆ CN10(4PIN/2.0): SPEAKER CONNECTOR

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

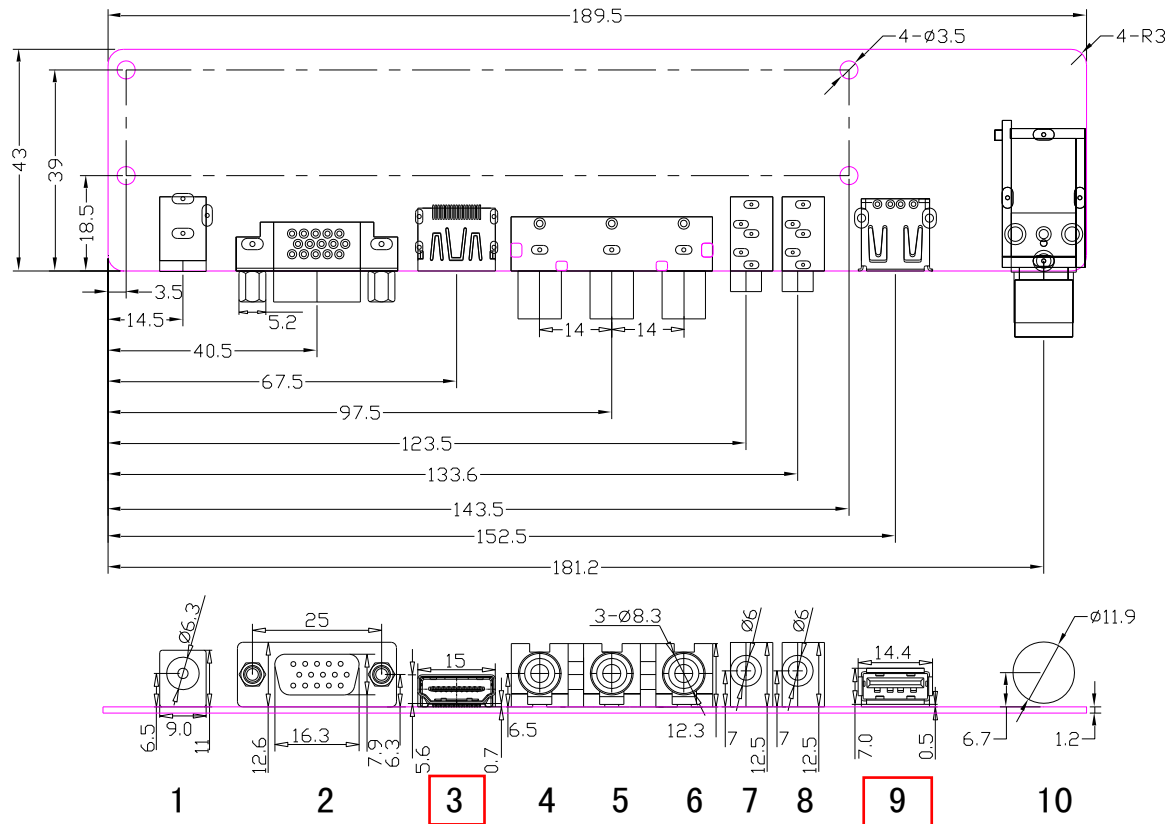
## 7. CONFIGURATION & GENERAL PRECAUTIONS

- Relative humidity: ≤ 80%.
- Storage temperature: -10~60°C.
- Operation temperature: 0~40°C.
- Protect the board from static electricity in case of damage to the IC.
- Keep the board away from conductor when it is working.
- Don't push or pull the connectors when the board is working.
- Don't press, distort or disassemble the board.
- Clean the board with soft dry cloth when it's dirty.
- Don't wire in the board to power supply before panel is correctly connected.

## APPENDIX: ANOTHER THREE STRUCTURE

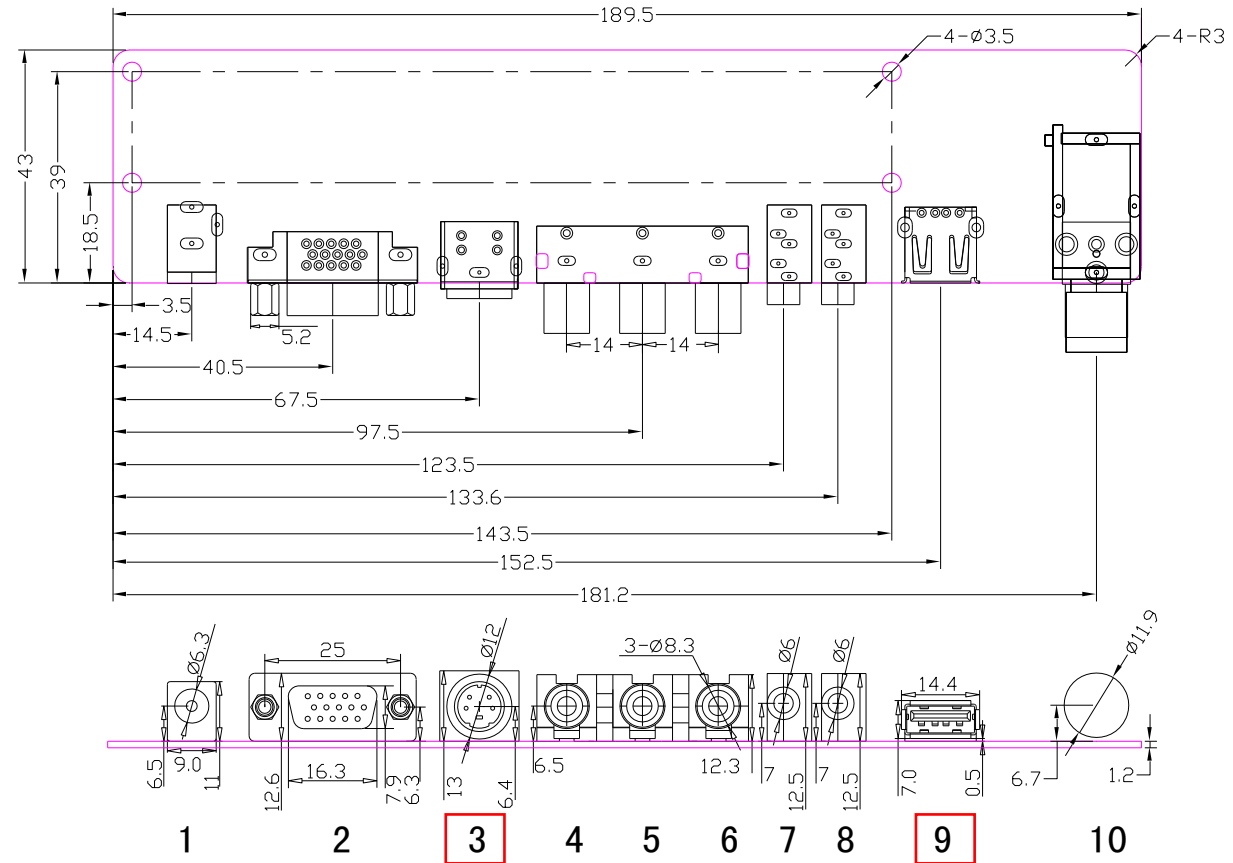
### (03\_A1) HDMI+USB terminal

Ver.	V1.1
NO.	Description
1	DC IN
2	VGA IN
3	HDMI IN
4	CVBS IN
5	CVBS RIN
6	CVBS LIN
7	PC AUDIO IN
8	EARPHONE OUT
9	USB IN
10	RF IN



**(03\_A2) S-video +USB terminal**

Ver.	V1.1
NO.	Description
1	DC IN
2	VGA IN
3	S-VIDEO IN
4	CVBS IN
5	S-VIDEO/CVBS RIN
6	S-VIDEO/CVBS LIN
7	PC AUDIO IN
8	EARPHONE OUT
9	USB IN
10	RF IN



(03\_A4) S-video+USB connector

Ver.	V1.1
NO.	Description
1	DC IN
2	VGA IN
3	S-VIDEO IN
4	CVBS IN
5	S-VIDEO/CVBS RIN
6	S-VIDEO/CVBS LIN
7	PC AUDIO IN
8	EARPHONE OUT
9	RF IN

