

TV CONTROL BOARD SPECIFICATION

MODEL: T.VST29.03

(Asia-V59)

Part Number: MST-12110542

REV: A3

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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.

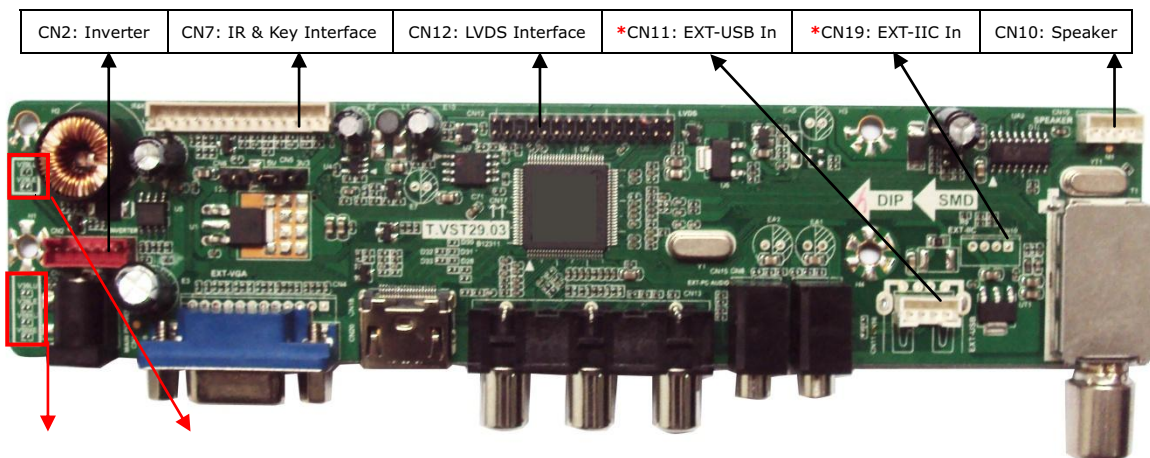
3. FUNCTION LAYOUT

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

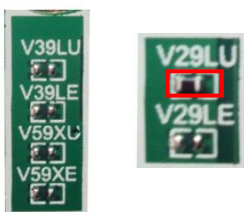
Pictures are for reference only, specific to prevail in kind.

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

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

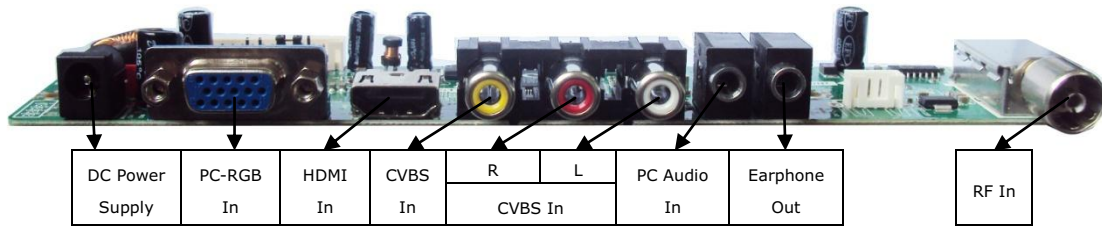


ENLARGED VIEW OF CHIPSET



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

CHIPSET	TSUMV59XU / TSUMV59XE		
MARKET AREA	Asia-Pacific, Middle-East		
OSD LANGUAGE	English, French, German, Italian, Spanish, Portuguese, Russian(optional)		
PANEL	Panel Type	LCD	
	Interface	Single/Dual LVDS	
	Max Resolution	1920×1080	
VIDEO INPUT	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 _{p-p} ±5%	
AUDIO INPUT	PC Audio	Earphone Input	0.2 ~ 2.0 V _{RMS}
	CVBS	L/R RCA Input	0.2 ~ 2.0 V _{RMS}
AUDIO OUTPUT	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 _{RMS})	
POWER	Requirement	12V DC/12V(built in)	
	To Panel	3.3V, 5V,12V	
	Management	Standby Power Consumption < 0.3W(Board Only)	
COMB FILTER	3D		
DEINTERLACE	3D		
KEY FUNCTION	MENU, CH+, CH-, VOL+, VOL-, INPUT, POWER		
EXPANDABLE FUNCTION	EXT-USB In, EXT-IIC In		
Note: 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.

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

ELECTRICAL CHARACTERISTICS & REQUIREMENTS

Power Supply Mode	Symbol	Voltage Range	Max Current	Ripple Voltage@25 °C	Startup Time	Rise Time
12V(Ext. Adaptor)	12V	12V±0.6V	2000mA	120mV _{p-p}	--	≤50ms
12V(Built-In)	12V	12V±0.6V	2000mA	120mV _{p-p}	--	≤50ms

Note: The current of panel, USB,inverter and extension modules are not included in max current.

USB MULTIMEDIA PLAYBACK FORMAT

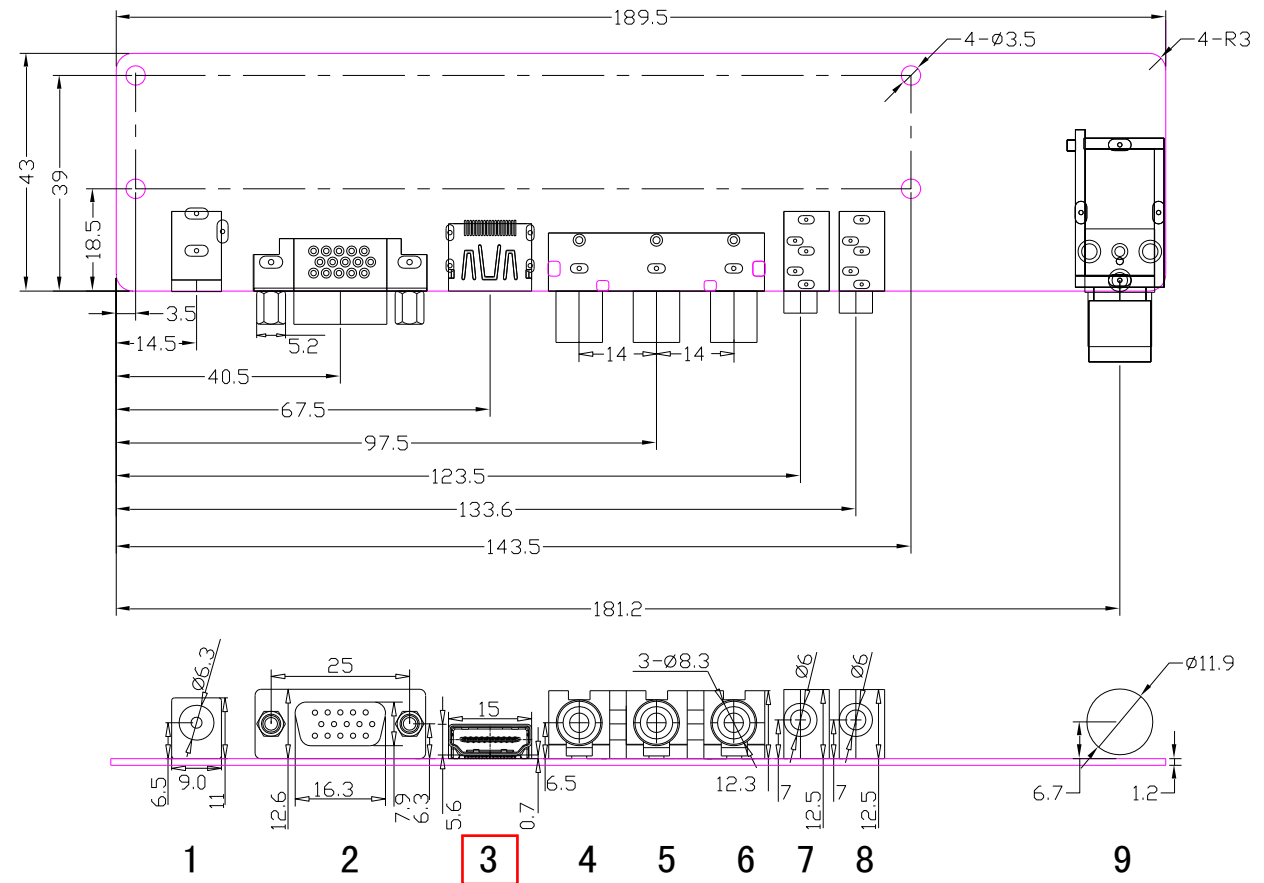
Media	File Ext.	Codec		Remark	
		Video	Audio		
Movie	.avi	MJPEG	MP3, WMA, AAC, MP2, PCM, AC3	Max Resolution And Frame Rate: 640×480@30fps Max Data Rate: 10 Mbps	
		Xvid, MPEG-2, MPEG-4, DivX, H.264		Max Resolution And Frame Rate: 1920×1080@30fps Max Data Rate: 20 Mbps	
	.mp4	MPEG-2, MPEG-4, DivX, H.264			
	.ts/ .trp	MPEG-2, H.264			
	.mkv/ .mov	MPEG-4, H.264			
	.mpg	MPEG-1, MPEG-2			
	.dat	MPEG-1		MP2	Max Resolution: 352×288 Max Data Rate: 20 Mbps
	.vob	MPEG-2			Max Resolution: 720×576 Max Data Rate: 20 Mbps
.rm/ .rmvb	RV8, RV9, RV10	COOK	Max Resolution And Frame Rate: 1280×720@30fps Max Data Rate: 10 Mbps		
Music	.mp3	--	MP3	Sample Rate: 32K~48KHz Bit Rate: 32K~320Kbps Channel: Mono/Stereo	
	.wma	--	WMA	Sample Rate: 8K~48KHz Bit Rate: 128K~320Kbps Channel: Mono/Stereo	
	.m4a/ .aac	--	AAC	Sample Rate: 8K~48KHz Bit Rate: 128K~442Kbps Channel: Mono/Stereo	
Photo	.jpg/ .jpeg	Progressive JPEG		Max Resolution: 1024×768	
		Baseline JPEG		Max Resolution: 15360×8640	
	.bmp	--		Max Resolution: 9600×6400	
	.png	Non-Interlaced		Max Resolution: 9600×6400	
Interlaced		Max Resolution: 1200×800			
Text	.txt	ANSI/UNICODE GB/UTF8		File Size: Max 1MB	
<p>File system: Hi Speed FS, FAT32, FAT16, NTFS(NTFS compressed file is not supported).</p> <p>Note:</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

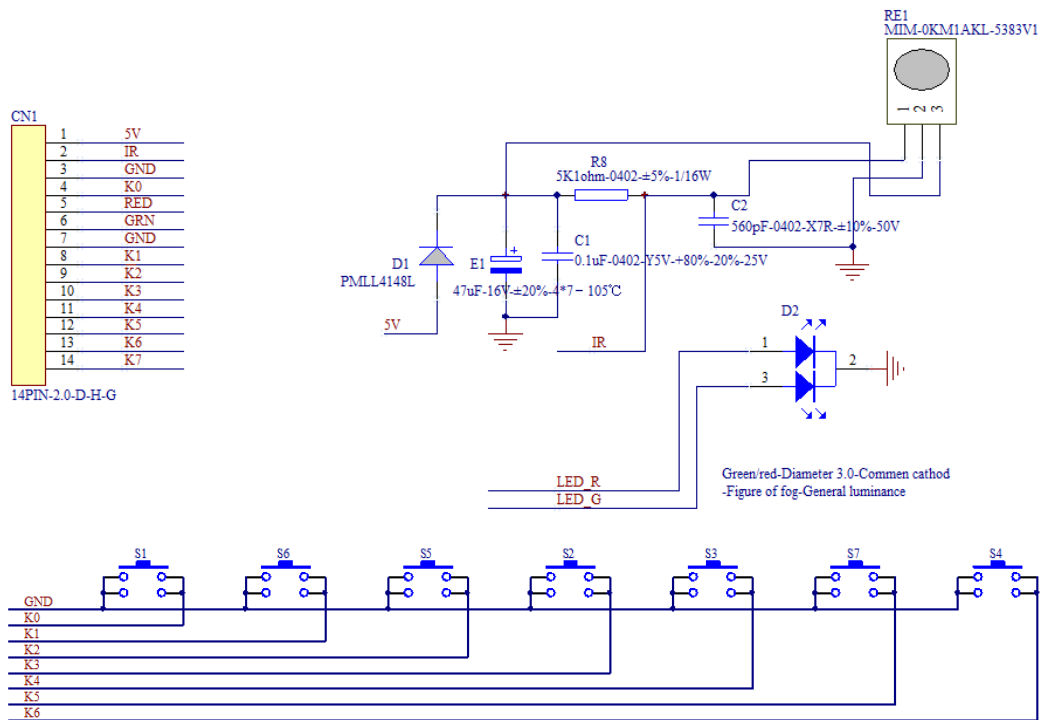
The size of T.VST29.03A is 181.2mm(L)*43mm(W)*17mm(H).

(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

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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	TXO0-	LVDS ODD 0- Signal
8	TXO0+	LVDS ODD 0+ Signal
9	TXO1-	LVDS ODD 1- Signal
10	TXO1+	LVDS ODD 1+ Signal
11	TXO2-	LVDS ODD 2- Signal
12	TXO2+	LVDS ODD 2+ Signal
13	GND	Ground
14	GND	
15	TXOC-	LVDS ODD Clock- Signal
16	TXOC+	LVDS ODD Clock+ Signal
17	TXO3-	LVDS ODD 3- Signal
18	TXO3+	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 I²C CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	GND	Ground
2	SDA	External I ² C SDA
3	SCL	External I ² 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+

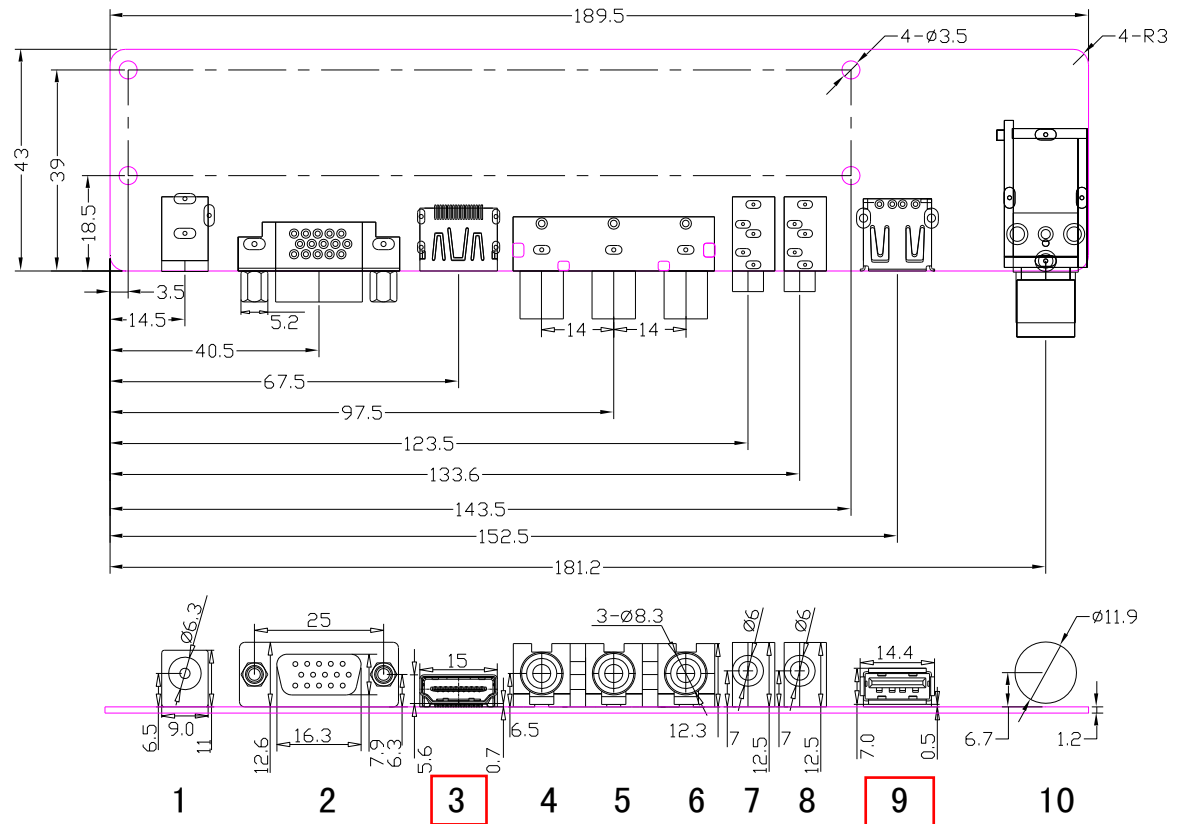
7. CONFIGURATION & GENERAL PRECAUTIONS

- **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

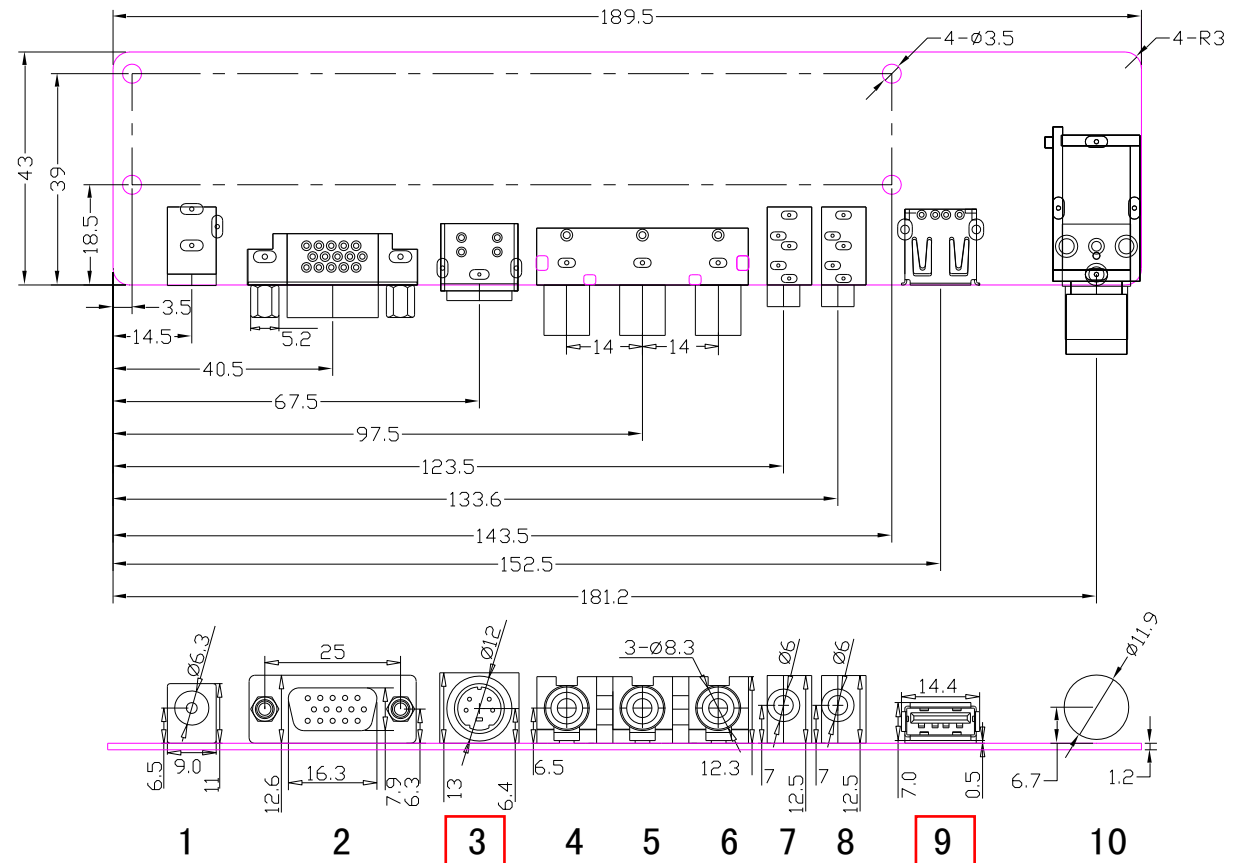
(03_A1) HDMI+USB terminal

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

