

TVI3001U-FGB

Ver:1.0

Specification

Geshem product department

Change List			
Version	Date	Comments	Author
V1.0	2015-10-28		Sunxd
V1.0	2015-10-30	Confirm SIM slot- for standard SIM card install	Sunxd
V1.0	2015-11-03	Increase COM port from 3 to 4	Sunxd
V1.0	2015-11-03	Increase Storage Temperature range	Sunxd
V1.0	2015-11-21	COM ports change from 4 to 3	Sunxd
V1.0	2015-11-30	Power Supply change from 9~36V to 4.5V~23V	Sunxd
V1.0	2015-11-30	Backlit voltage added 5V/12V optional	Sunxd
V1.0	2015-11-30	LED cc: commoncathode	Sunxd
V1.0	2015-11-30	Added GPIO definition	Sunxd
V1.0	2015-11-30	Added clock IC as timing switcher	Sunxd
V1.0	2015-11-30	Added Infrared human induction	Sunxd
V1.0	2015-12-2	Storage change to 32GB(2th edition is 8GB)	Sunxd
V1.0	2016-3-7	WIFI change to 8723(WIFI+BT)	tansh
V1.0	2016-3-7	Checking if possible change 3.5mm headphone jack from 3-segment to 4-segment with MIC	tansh
V1.0	2016-3-7	Built-in power supply change to red 6Pin,added 5V STB voltage	tansh
V1.0	2016-3-7	PCB silk screen added Lead-free logo	tansh
V1.0	2016-3-7	Delete OTG Internal/External Pin, use USB Type to burn, add one jumper control.	tansh
V1.0	2016-3-7	Added Burn button &Reset button	tansh
V1.1	2016-7-20	Optimized PCBA pictures	nil
V1.2	2016-9-22	Backlit PWM adding MOS tube, change output power 5V level.	Sunxd
V1.2	2016-9-22	When the power supply board is powered, adjust the 5VSTANDBY function	Sunxd
V1.2	2016-9-22	COM ports change to 4*RS232,delete I2C port	Sunxd

Specification

1.Hardware features

Item	Description
PCB	3" board
	146mm*102mm, 15mm(H)
	Black
CPU	BGA636 19X19, 0.65mm pitch
	RK3288 SoC Cortex-A17 Quad Core @ 1.8GHz Max.
GPU	Mali-T764
Memory	On board 2GB DDR3 , 4GB optional
Storage	EMMC 8GB/16GB/32GB optional (standard 8GB) , NAND Flash compatible
Display port	eDP port, LVDS port (single channel, 6bit dual channel, 8bit /10 bit dual channel)support max resolution 3840*2160, support HDMI 7"-108" , 4K*2K screen, support dual display.
Onboard Backlight	3.3V/5V/12V optional
Touch screen connection	Support I2C port Multi-point resistance touch & Multi-point capacitive touch, Support USB multi-point infrared touch, multi-point capacitive touch, Multi-point nano film touch, Multi-point sound wave / Multipoint optical touch
Network and communications	1*RJ45 1000M LAN port
	With BT+wifi , dual channel 2.4G/5G, support Wi-Fi 802.11a/b/g/n/ac Protocol
	With 3G function,support WCDMA、EVDO、CDMA、GSM) , 2G/3G Vollbild; Mini PCIe slot; SIM slot use standard SIM card --25mm*15mm; Bands: 850/900/1800/1900MHz/2100MHz (optional)
	With 4G function, LTE-TDD/LTE-FDD/TD-SCDMA/EDGE/GPRS/GSM (optional)
GPS	Built-in GSP module, sensitivity: -159dBm RX Frequency : 1575.42MHz Satellite channel : 20 channels, Positional accuracy: <10m (optional)
BEIDOU	Optional
Image rotation	Support manual rotation of 0 degree, 90 degree, 180 degree and 270 degree, support automatic screen rotation function of gravity induction (optional)
HDMI IN Input	Support 1080P HDMI IN(optional)

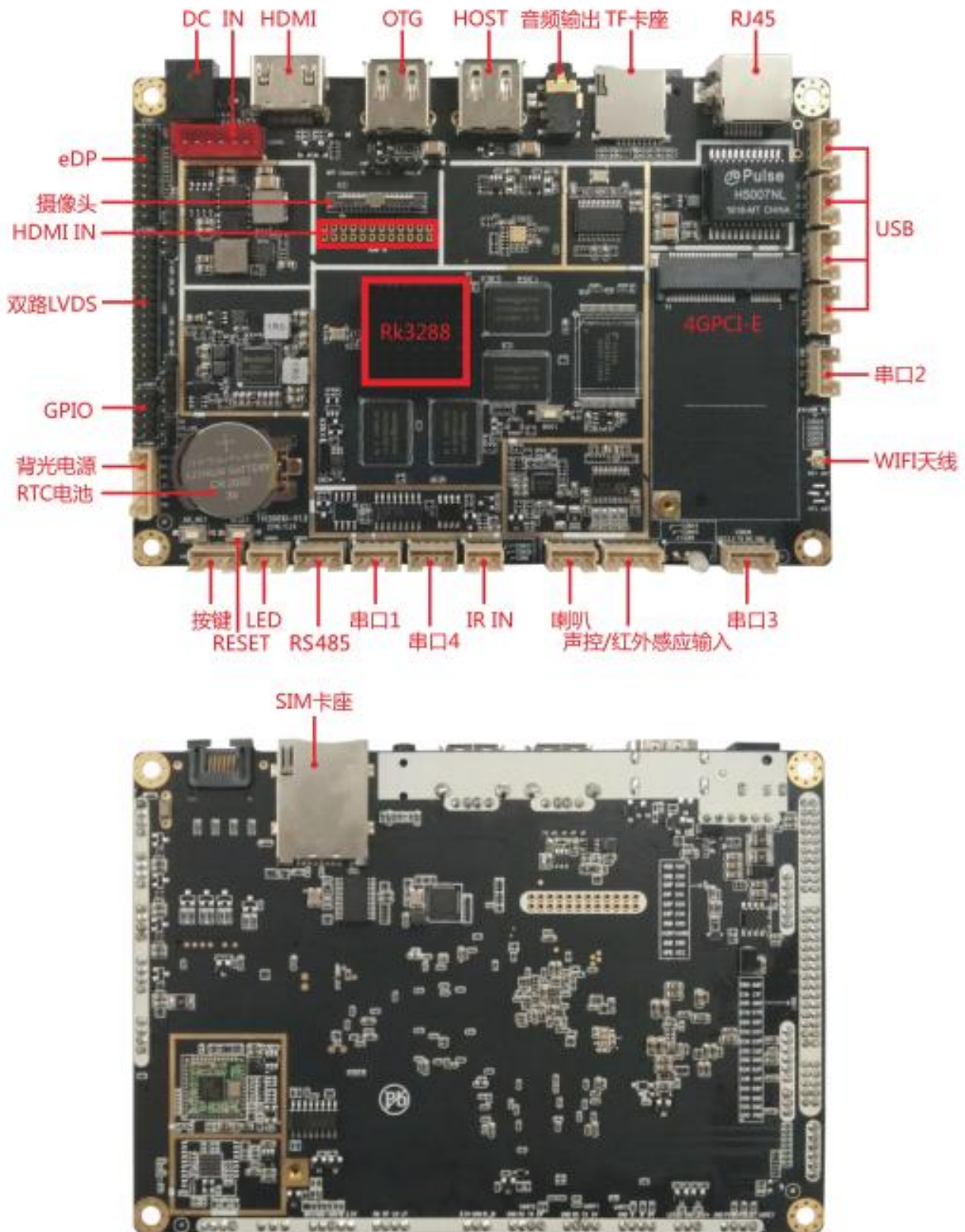
MIPI camera input	Support 1300W ,MIPI camera (optional)
Real-time clock	Built-in real-time clock power supply battery, support timing switch on device
WinPatrol	Support software watchdog
Interface Ports	Support USB camera, up to 800W pixels
	Support infrared remote control
	Support HDMI, 4K*2K output
	Support eDP interface display
	Support LVDS interface display screen
	6 *USB HOST、1 *USB OTG (Automatic identification with USB Type A)
	4 *COM,Support external serial port equipment module (3/4G , NFC , printer, Credit card machine,scanner,ID Card recognition)One of them is reserved for RS485
	4 *IO Port, Support human infrared sensor
	TF card, max to 64GB
	D class large internal speaker, 6W*2 4R,Support headphone interface output
	Support 3.5mm Jack; Reserve pins;
Audio	Support MP3,WMA,WAV, APE,FLAC,AAC, OGG,M4A,3GPP
Video	Support H.264, VP8, MAV, WMV, AVS H.263, MPEG4 video format, etc 1080P multi-video decoding, YouTube and other online video, up to 4K*2K output
Picture	Image support JPG, BMP, PNG and other image formats browse and support rotation/slide show play/picture zoom function
Power supply	DC12V 2A (With DC-JACK&1*4pin Wafer co-lay) , support 4.5~23V input (optional) ; Support 5V Standby voltage
Environmental conditions	Operating Temperature: 0~45℃ Storage Temperature: -20~65℃ Relative humidity95%
Certification requirement	No

Remark :

1. Ensure stable quality of the main IC (network card, power chip, CLOCK chip, serial port chip, etc.), no less than two years supply availability, driving environment, stability.
2. Ensure reliability and stable supply of critical connectors

3. DC power solution reliability assurance.
4. Attention to I/O interface protection, make sure supply current is correct as customer needs.

Full function IO Port:



2. Basic software specifications

O/S	Google Android 5.1 and above
Basic software functions	Camera, web browsing, web chat, email, ebook, resource manager
Sound modes	Clock, alarm clock, calculator, recording
Language support	Multiple languages
Record	Support MP3, WMA format recording
Instrument	Calendar
	Alarm Clock
	Calculator
	Notepaper
	Weather + clock
	Record
	Calendar
Word processing	EPUB, WORD, EXCEL, POWERPOINT, PDF, TXT
E-book	PDF/TXT/CHM/DOC/EXCEL/EPUB/RTF/FB2
Input method	Standard Andriod keyboard , optional third party input method (Chinese, Korean, Japanese, etc.)
Network	Browser -ChromeLite
	GOOGLE Market
	Email
	Gmail
	Google talk
System management	APK installer
	The original Android system, open root permission, can be customized product development
	System setting
	Google Maps
	Global time
	Support OTA remote upgrade

3. Interface definition

• Power port (CON45)

Item	Definition	Nature	Description
1	STB_CTL	Output	STB voltage control
2	5V_STB	Input	5V STB input
3	GND	Ground wire	Ground wired Ground wire
4	GND	Ground wire	Ground wire
5	12V_In	Input	12V power input
6	12V_In	Input	12V power input

• USBOTG selection (JUMP-CON46) (revised version deleted)

Item	Definition	Nature	Description
1	1-2	1-2Pin connect	USB2 first pin is 5V, provide normal input/output for USB
2			
3	NC	blank	Dis-connected
4	4-5	4-5Pin connect	USB2 be used as USB-OTG port
5			

• LVDS backlight power port (LVDS LCD_VDC-CON25)

Item	Definition	Nature	Description
1	12V	When 12V is selected, 1 and 2 connections are required	
2	LCDVDD1		
3	5V	When 5V is selected, 3 and 4 connections are required	
4	LCDVDD2		
5	3.3V	When 3.3V is selected, 5 and 6 connections are required	
6	LCDVDD3		

• eDP backlight power port EDP LCD_VDD-CON2)

Item	Definition	Nature	Description
1	12V	When 12V is selected, 1 and 2 connections are required	
2	LCDVDD1		
3	5V	When 5V is selected, 3 and 4 connections are required	
4	LCDVDD2		
5	3.3V	When 3.3V is selected, 5 and 6 connections are required	
6	LCDVDD3		

● eDP definition (CON1)

Item	Definition	Nature	Description
1	VCC1	Output	3.3/5/12V output
2	VCC2	Output	
3	GND1	Ground wire	Ground wire
4	GND2	Ground wire	Ground wire
5	D0-	Output	Data
6	D0+	Output	Data
7	D1-	Output	Data
8	D1+	Output	Data
9	D2-	Output	Data
10	D2+	Output	Data
11	D3-	Output	Data
12	D3+	Output	Data
13	GND3	Ground wire	Ground wire
14	GND4	Ground wire	Ground wire
15	AUX-	Output	Date
16	AUX+	Output	Date
17	GND5	Ground wire	Ground wire
18	GND6	Ground wire	Ground wire
19	3V3	Output	3.3V
20	HPD	Input	HPD detection pin

● LVDS port definition (CON3)

Item	Definition	Nature	Description
1	VCC1	Output	3.3/5/12V output
2	VCC2	Output	
3	VCC3	Output	
4	GND1	Ground wire	Ground wire
5	GND2	Ground wire	Ground wire
6	GND3	Ground wire	Ground wire
7	LVDS AD0 N	Output	Data
8	LVDS AD0 P	Output	Data
9	LVDS AD1 N	Output	Data
10	LVDS AD1 P	Output	Data
11	LVDS AD2 N	Output	Data
12	LVDS AD2 P	Output	Data
13	GND	Ground wire	Ground wire
14	GND	Ground wire	Ground wire
15	LVDS CLK A0 N	Output	Clock
16	LVDS CLK A0 P	Output	Clock
17	LVDS AD3 N	Output	Data
18	LVDS AD3 P	Output	Data

19	LVDS BD5 N	Output	Data
20	LVDS BD5 P	Output	Data
21	LVDS BD6 N	Output	Data
22	LVDS BD6 P	Output	Data
23	LVDS BD7 N	Output	Data
24	LVDS BD7 P	Output	Data
25	GND	Ground wire	Ground wire
26	GND	Ground wire	Ground wire
27	LVDS CLK B0 N	Output	Clock
28	LVDS CLK B0 P	Output	Clock
29	LVDS BD8 N	Output	Data
30	LVDS BD8 P	Output	Data

*Support dual channel 24output

● IO detecting port (CON41)

Item	Definition	Nature	Description
1	3.3V	Output	3.3V output
2	ADIN0	Input	Checking button port
3	ADIN2	Input	Checking button port
4	GPIO7_B4	Input	Default High-level
5	GPIO7_B5	Input	Default High-level
6	GND	Ground wire	Ground wire
7	GPIO7_B3	Input	Default High-level
8	GPIO7_B6	Input	Default High-level
9	I2C4_SDA	Output	Data
10	I2C4_SCL	Output	Clock

● LED back light (CON31)

Item	Definition	Nature	Description
1	12V	Output	12V
2	VCC_LCDLED	Output	LED display back light voltage connection
3	5V	Output	5V

● LCD Backlight control (CON4)

Item	Definition	Nature	Description
1	12V	Output	12V output
2	12V	Output	12V output
3	LED_BLON	Output	Back light control
4	LED_ADJ	Output	Backlight adjustment (5V operation)
5	GND	Ground wire	Ground wire
6	GND	Ground wire	Ground wire

● Power、Reset port (CON33)

Item	Definition	Nature	Description
1	ADKey	Output	AD button
2	Reset	Output	Reset button
3	Power	Output	Power button
4	GND	Ground wire	Ground wire

● Common Cathode LED Indicating light (CON35)

Item	Definition	Nature	Description
1	LED1+	Output	LED1+
2	GND	Ground wire	Ground wire
3	LED2+	Output	LED2+

● RS485 (CON34)

Item	Definition	Nature	Description
1	5V	Output	5V output
2	B	Output	Data
3	A	Output	Data
4	GND	Ground wire	Ground wire

● RS232 (CON36)

Item	Definition	Nature	Description
1	5V	Output	5V output
2	TX4	Output	Data
3	RX4	Output	Data
4	GND	Ground wire	Ground wire

● RS232 (CON37)

Item	Definition	Nature	Description
1	5V	Output	5V output
2	TX1	Output	Data
3	RX1	Output	Data
4	GND	Ground wire	Ground wire

● Infrared receiver (CON6)

Item	Definition	Nature	Description
1	IR	Input	Reception
2	GND	Ground wire	Ground wire
3	3.3V	Output	3.3V

● Speaker port (CON44)

Item	Definition	Nature	Description
1	RP	Output	Right channel +
2	RN	Output	Right channel -
3	LN	Output	Left channel -
4	LP	Output	Left channel +

● Infrared human detection (CON40)

Item	Definition	Nature	Description
1	3.3V	Output	3.3V
2	IR-DET	Output	Infrared detection
3	GND	Ground wire	Ground wire
4	MIC-		
5	MIC+		

● RS232 (CON39)

Item	Definition	Nature	Description
1	3.3V	Output	3.3 V output
2	TX3	Output	Data
3	RX3	Output	Data
4	GND	Ground wire	Ground wire

● RS232 (CON47)

Item	Definition	Nature	Description
1	3.3V	Output	3.3V output
2	TX4	Output	Data
3	RX4	Output	Data
4	GND	Ground wire	Ground wire

● USB port (CON28,29,30,24)

Item	Definition	Nature	Description
1	5V	Output	5V output
2	DM	Output	Data
3	DP	Output	Data
4	GND	Ground wire	Ground wire

● HDMI_In port (CON15)

Item	Definition	Nature	Description
1	VCC	Power supply	5V output
2	PWREN	Output	Enable pin
3	GND	Ground wire	Ground wire
4	GND	Ground wire	Ground wire
5	D0N	Output	Data

6	D0P	Output	Data
7	D1N	Output	Data
8	D1P	Output	Data
9	D2N	Output	Data
10	D2P	Output	Data
11	D3N	Output	Data
12	D4P	Output	Data
13	CLKN	Output	Clock
14	CLKP	Output	Clock
15	INT	Output	Break off
16	STBY	Output	Dormancy
17	HPDOUT	Output	Detection
18	RST	Output	Reset
19	RLCK_RX	Output	Data
20	SCLK	Output	Clock
21	CLK	Output	Clock
22	SDI	Output	Data
23	SDA3	Output	Data
24	SCL3	Output	Clock

● MIPI CSI port (Con32)

Item	Definition	Nature	Description
1	NC	Blank pin	Blank pin
2	VDD28	Output	2.8V output
3	VDD12	Output	1.2V output
4	VDD18	Output	1.8V output
5	NC	Blank pin	Blank pin
6	GND	Ground wire	Ground wire
7	VDD28	Output	2.8V output
8	GND	Ground wire	Ground wire
9	SDA	Output	Data
10	SCL	Output	Clock
11	RST	Output	Reset
12	PWDN0	Output	Enable
13	GND	Ground wire	Ground wire
14	MLCK	Output	Clock
15	GND	Ground wire	Ground wire
16	DP3	Output	Data
17	DN3	Output	Data
18	GND	Ground wire	Ground wire
19	DP2	Output	Data
20	DN2	Output	Data
21	GND	Ground wire	Ground wire

22	DP1	Output	Data
23	DN1	Output	Data
24	GND	Ground wire	Ground wire
25	CLKP	Output	Clock
26	CLKN	Output	Clock
27	GND	Ground wire	Ground wire
28	DP0	Output	Data
29	DN0	Output	Data
30	GND	Ground wire	Ground wire

4. FCC Caution

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance

could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.

FCC ID: 2AQR9TVI-3001U-FGB