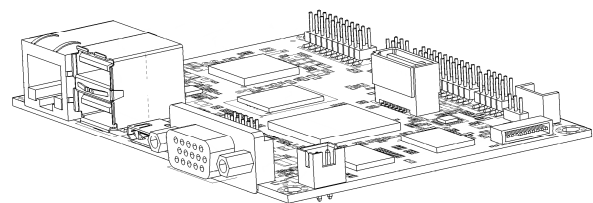


# VAB-800

Pico-ITX Freescale Cortex-A8 Board

## Quick Guide



### Key Features:

- Support 2D/3D video accelerators
- Support two single-channel 18/24-bit LVDS connectors
- Support Mini-HDMI port and VGA connector
- Support four (two as pin header), USB ports, one USB device port and two COM connectors
- Small form factor and low power design

## 1 Specifications

- **Processor**
  - Freescale Cortex-A8 Single-Core iMX537 @ 800MHz
- **System Memory**
  - 1GB DDR3-800 SDRAM using 128M x16 memory devices
- **Flash**
  - 4GB eMMC flash onboard, supports up to 64GB
- **Graphics**
  - Supports two integrated graphics processing: an OpenGL® ES 2.0 3D graphics accelerator and an OpenVG™ 1.1 2D graphics accelerator
- **Ethernet**
  - SMSC LAN8720A 10/100 PHY Transceiver with HP Auto-MDIX support
- **Audio**
  - Freescale SGTL5000 Low Power Stereo Codec with head-phone Amp
- **HDMI**
  - Onboard HDMI Transmitter

- **Onboard I/O**
  - 1 x SATA I connector with voltage select jumper
  - 1 x SATA DOM power supply connector
  - 1 x Micro SD connector
  - 2 x COM connectors with power supply (one supports 8-wire, the other supports 2-wire)
  - 2 x Single-channel, 18/24-bit LVDS connectors
  - 1 x RTC battery pin header
  - 1 x Front audio pin header for line-in, line-out and MIC-in
  - 1 x JTAG connector
  - 1 x Boot flash select pin header
  - 1 x Miscellaneous pin header for two USB2.0 ports, one USB device port, two CAN bus ports, system power-on and reset
  - 1 x Miscellaneous pin header for 4-wire resistive touch screen interface, one I<sup>2</sup>C pair and 8 GPIOs
  - 1 x 5V DC-In power connector

- **Back Panel I/O**
  - 1 x VGA connector
  - 2 x USB 2.0 ports
  - 1 x Mini-HDMI port
  - 1 x RJ-45 LAN port

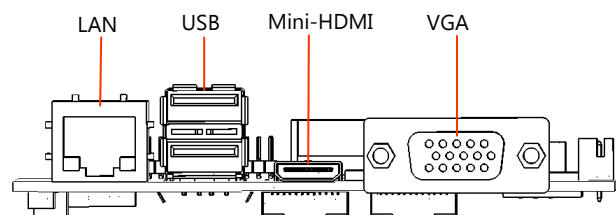
- **Power**
  - 2W typical, 5W max.
- **Operating System**
  - Android 2.3, Embedded Linux 2.6, Windows Embedded Compact 7 (through 3rd party)
- **Operating Temperature**
  - 0 ~ 60 °C (-20 °C ~ 70°C for option)
- **Operating Humidity**
  - 0% ~ 95% (relative humidity; non-condensing)
- **Form Factor**
  - Pico-ITX (6-layer)
  - 10 cm x 7.2 cm

**Note:**  
For the software evaluation, please contact your regional sales or Field Applications Engineer to get the software download link.

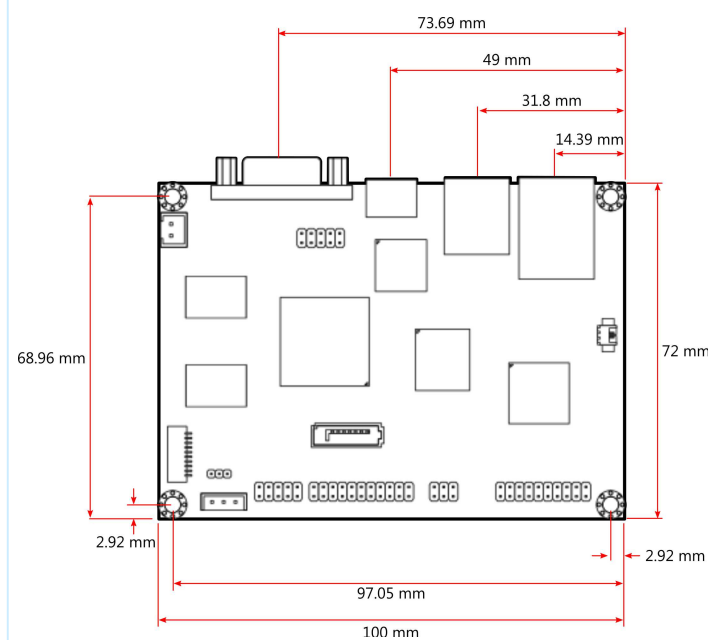
### Packing Lists:

- 1 x VAB-800
- 1 x VAB-800-A
- 1 x DC jack power cable
- 1 x COM cable
- 1 x 7" LCD panel
- 1 x LVDS cable

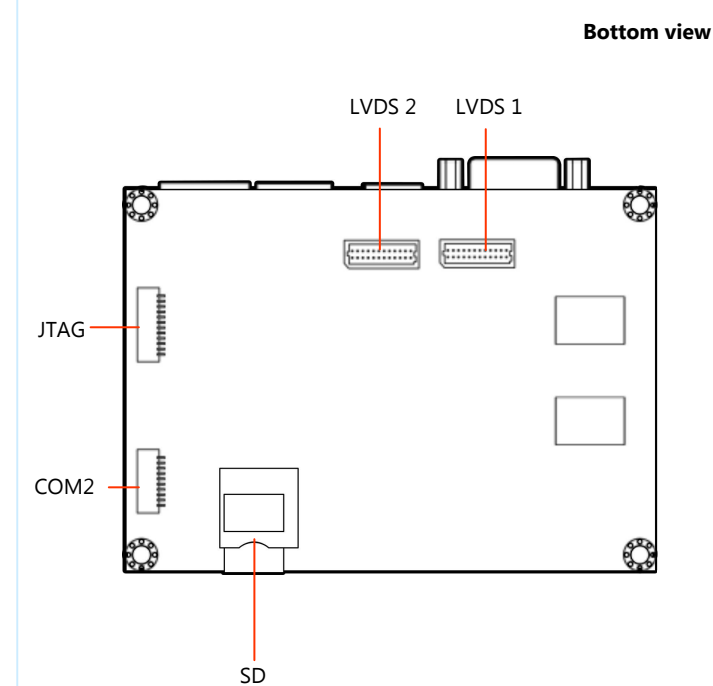
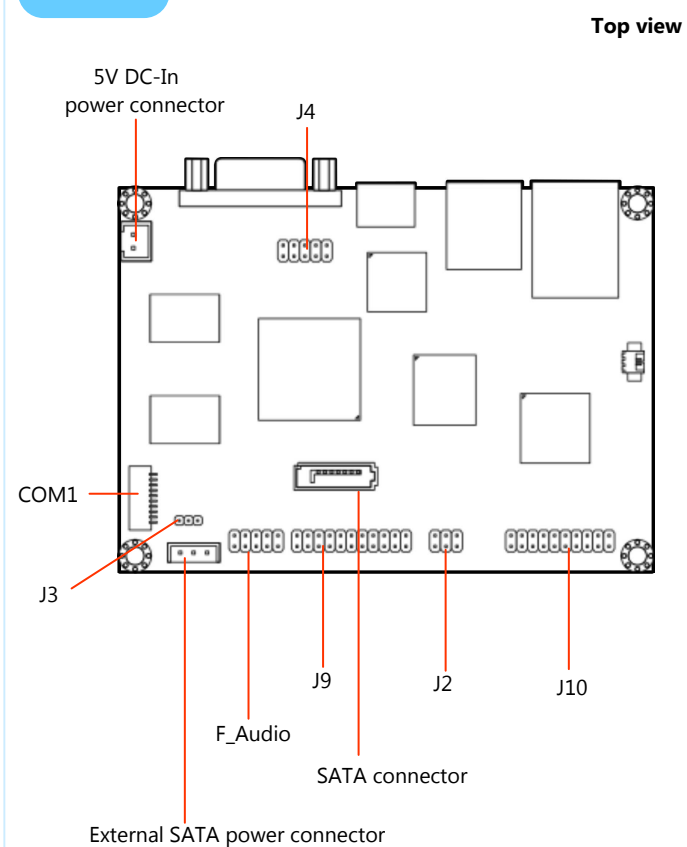
## 2 External I/O Ports



## 3 Dimension



## 4 Layout



# 5 Pinouts and Jumpers

## J2: CAN BUS

CAN Bus Jumper Setting	Pin 1	Pin 3	Pin 5
Enabled CAN Termination (default)	On	On	Off
	Pin 2	Pin 4	Pin 6
	On	On	Off

## J4: Boot select

Pin	Signal	Pin	Signal
1	DCDC_3V2	2	EIM_A20
3	DCDC_3V2	4	EIM_A21
5	DCDC_3V2	6	EIM_DA6
7	DCDC_3V2	8	EIM_DA7
9	1V8_SW5	10	MODE

## J4: Boot select jumper setting

Setting	Pin 1-2	Pin 3-4	Pin 5-6	Pin 7-8	Pin 9-10
eMMC	On	On	On	Off	Off
Micro-SD	Off	On	Off	Off	Off
USB device	Off	Off	Off	Off	On

## J10: DIO, Touch, I<sup>2</sup>C

Pin	Signal	Pin	Signal
1	TOPUCH_X0	2	LED+
3	TOPUCH_X1	4	LED-
5	TOPUCH_Y0	6	I2C3_SCL
7	TOPUCH_Y1		
9	GND	10	I2C3_SDA
11	GPO_10	12	GPI_2
13	GPO_11	14	GPI_16
15	GPO_12	16	GPI_18
17	GPO_13	18	GPI_19
19	GND	20	GND

## JTAG Connector

Pin	Signal
1	DCDC_3V2
2	VTREF_JTAG
3	JTAG_nTRST
4	JTAG_TDI
5	JTAG_TMS
6	JTAG_RTCK
7	JTAG_TCK
8	JTAG_TDO
9	JTAG_nSRST
10	JTAG_DE
11	JTAG_DACK
12	GND

## External SATA Power connector

Pin	Signal	Pin	Signal
1	DCDC +5V	2	--
3	GND		

## J3: SATA DOM power select

Pin	Signal	Pin	Signal
1	DCDC +5V	2	SATA1 +5V
3	GND		

## J9: USB, USB device, CAN, RST, PWRON PIN HEADER

Pin	Signal	Pin	Signal
1	GND	2	GND
3	USBD_T3+	4	CANH1
5	USBD_T3-	6	CANL1
7	USB_HOSTSV	8	GND
9	USBD_T4-	10	CANH2
11	USBD_T4+	12	CANL2
13	GND	14	GND
15	PWNON1	16	USB_OTG_DP
17	GLBRST	18	USB_OTG_DN
19	GND	20	EXT_USB5V
21	P_LED		

## COM1 Connector

Pin	Signal
1	--
2	COM_TXD1
3	COM_RXD1
4	COM_DCD1
5	COM_RII
6	GND
7	COM_DTRL
8	COM_CTS1
9	COM_RTS1
10	COM_DSRL

## COM2 Connector

Pin	Signal
1	--
2	COM_RXD2
3	COM_TXD2
4	--
5	--
6	GND
7	--
8	--
9	--
10	--

## F\_AUDIO PIN HEADER

Pin	Signal	Pin	Signal
1	HEAD_RIGHT	2	HEAD_LEFT
3	LINE_IN_R	4	LINE_IN_L
5	MIC_IN	6	MIC_IN
7	--	8	MIC_R_ESD
9	GND_ANALOG	10	GND_ANALOG

## MCIMX537

Pin	Pin definition	Used as	Remark
A6	GPI_2	GPIO	Pull High DCDC_3V2
C6	GPI_16	GPIO	Pull High DCDC_3V2
D7	GPI_18	GPIO	Pull High DCDC_3V2
B4	GPI_19	GPIO	Pull High DCDC_3V2
E14	GPOI_10	GPIO	Pull High DCDC_3V2
C15	GPOI_11	GPIO	Pull High DCDC_3V2
E13	GPOI_12	GPIO	Pull High DCDC_3V2
D14	GPOI_13	GPIO	Pull High DCDC_3V2
R5	TXD1	COM1	
T2	RXD1	COM1	
W1	RTS1	COM1	
V2	CTS1	COM1	
Y2	DTR1	COM1	
W3	DSR1	COM1	
Y1	DCD1	COM1	
Y4	RI1	COM1	
J1	TXD2	COM2	
K4	RXD2	COM2	
K3	RTS2	COM2	
AA1	CTS2	COM2	
C4	TXD1	CAN1	
D5	RXD1	CAN1	
E5	TXD2	CAN2	
E6	RXD2	CAN2	
R4	SCL	I2C1	
T1	SDA	I2C1	
F6	SCL	I2C2	
D4	SDA	I2C2	
A6	SCL	I2C3	
B6	SDA	I2C3	
Y3	CS0	ECS_SPI1	
U6	CLK	ECS_SPI1	
U5	MISO	ECS_SPI1	
V1	MOSI	ECS_SPI1	

## LVDS1 Panel Connector

Pin	Signal	Pin	Signal
1	LVDS0_TX0_N	2	I2C2_SCL
3	LVDS0_TX0_P	4	I2C2_SDA
5	GND	6	PVDD1 (3.3V-default, 5V-optional)
7	LVDS0_TX1_N	8	PVDD1 (3.3V-default, 5V-optional)
9	LVDS0_TX1_P	10	IVDD1 (5V)
11	GND	12	IVDD1 (5V)
13	LVDS0_TX2_N	14	DISP0_CONTRAST
15	LVDS0_TX2_P	16	DISP0_RD
17	GND	18	LCD_BLT_EN
19	LVDS0_CLK_N	20	GND
21	LVDS0_CLK_P	22	LVDS0_TX3_N
23	GND	24	LVDS0_TX3_P

## LVDS2 Panel Connector

Pin	Signal	Pin	Signal
1	LVDS1_TX0_N	2	I2C3_SCL
3	LVDS1_TX0_P	4	I2C3_SDA
5	GND	6	PVDD2 (3.3V-default, 5V-optional)
7	LVDS1_TX1_N	8	PVDD2 (3.3V-default, 5V-optional)
9	LVDS1_TX1_P	10	IVDD2 (5V)
11	GND	12	IVDD2 (5V)
13	LVDS1_TX2_N	14	DISP0_CONTRAST
15	LVDS1_TX2_P	16	DISP1_RD
17	GND	18	LCD1_BLT_EN
19	LVDS1_CLK_N	20	GND
21	LVDS1_CLK_P	22	LVDS1_TX3_N
23	GND	24	LVDS1_TX3_P

## 5V DC-In Power Connector

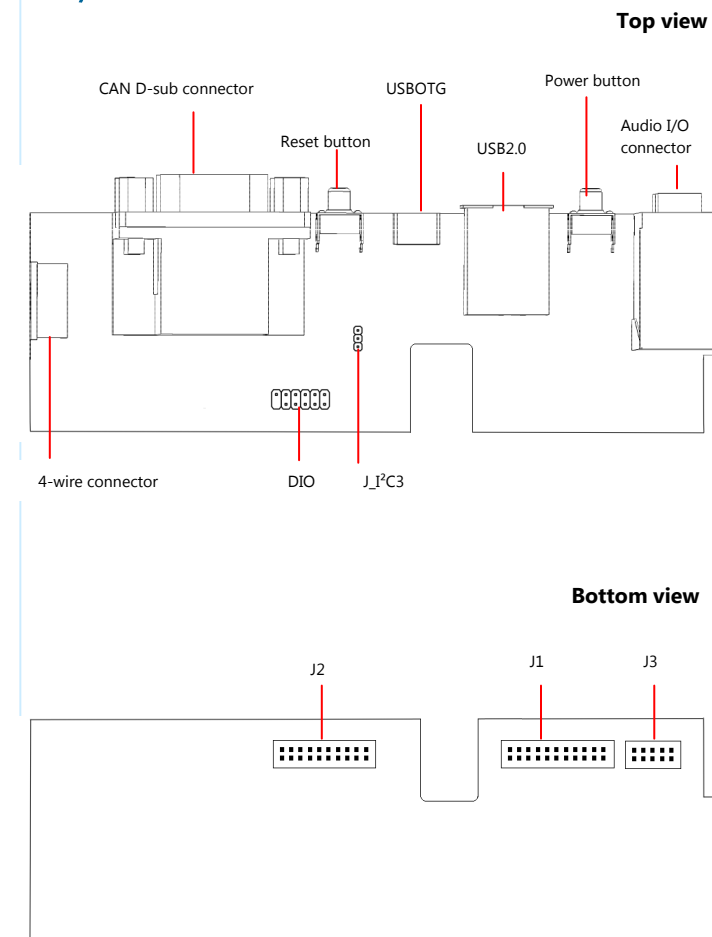
Pin	Signal	Pin	Signal
1	+5V@3A Max.	2	GND

# VAB-800-A

## Specifications

- Onboard I/O
  - 1 x I<sup>2</sup>C pin header
  - 1 x DPIO pin header (4 Ins and 4 OUTs)
  - 1 x 4-wire connector for the resistive touch screen
- Back Panel I/O
  - 1 x Stack type 3 ports audio I/O connector (support Lin-out, Line-in and MIC-in)
  - 1 x Power button
  - 1 x Stack type 2 ports USB2.0 connector
  - 1 x USBOTG connector for USB device
  - 1 x Reset button
  - 1 x Stack type 2 ports CAN D-sub connector
- Form Factor
  - 4-layers
  - 11.3 cm x 3.5 cm

## Layout



## Pinouts and Jumpers

### DIO

Pin	Signal	Pin	Signal
1	NC	2	--
3	GPO_10	4	GPI_2
5	GPO_11	6	GPI_16
7	GPO_12	8	GPI_18
9	GPO_13	10	GPI_19
11	GND		

### 4-wire resistive touch

Pin	Signal
1	TOPUCH_X+
2	TOPUCH_Y+
3	TOPUCH_X-
4	TOPUCH_Y-

### J\_I<sup>2</sup>C3

Signal	Pin	Signal
I2C3_SCL	2	I2C3_SDA
GND	3	

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