Embest Mini8600B Processor Card

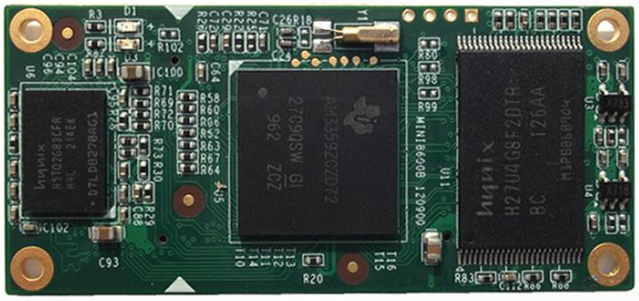

Figure 1-1 Mini8600B Top-View

Figure 1-2 Mini8600B Bottom-View

Features

Mechanical Parameters

- Dimensions: 60.0 mm x 27.0 mm (8 layer PCB design)
- Working temperature: 0~70 Celsius
- Humidity Range: 20% ~ 90%
- Input Voltage: 3.3V

Processor

- TI AM3359 ARM Cortex-A8 microprocessor
  - 720-MHz ARM Cortex-A8 32-bit RISC MPU
  - NEON™ SIMD Coprocessor
  - 32KB/32KB of L1 Instruction/Data Cache with Single-Error Detection (parity)
  - 256KB of L2 Cache with Error Correcting Code (ECC)
  - SGX530 Graphics Engine
  - Programmable Real-Time Unit Subsystem

Memory

- 2*256MByte DDR3 SDRAM
- 512MByte NAND Flash

Expansion Interfaces and Signals Routed to Pins

- Two 0.4mm space 2*40-pin board-to-board male expansion connectors
  - TFT LCD Interface (support 24-bpp parallel RGB Interface LCD)
  - Two USB 2.0 OTG Ports With Integrated PHY, High-Speed
  - Three inter-integrated circuit (I2C) Bus interfaces
  - Six UART interfaces;
  - One SPI interface;
  - Two 10/100/1000 Mb/s Ethernet MAC (EMAC) with Management Data Input/Output (MDIO) module;
  - A multichannel audio serial ports (McASP);
  - 8-channel 12-bit ADC interfaces;
  - Two 4-line SD/MMC card interfaces;
  - GPMC bus

General Description

Measuring only 60mm by 27mm, the Mini8600B processor card is a small form-factor controller board based on TI's Sitara AM3359 ARM Cortex-A8 processor. The tiny module integrates 2*256MBytes DDR3 SDRAM and 512Mbytes NAND Flash and uses two 0.4mm space 2*40-pin board-to-board male expansion connectors to bring out many hardware peripheral signals and GPIOs from the CPU.

Embest has designed a single board computer SBC8600B which has an expansion board to carry the Mini8600B. The flexible design allows the fast and easy way of realizing and upgrading the controller's capabilities. In additional to those features offered by Mini8600B, the SBC8600B features 5 serial ports (including 2 RS232 and 3 TTL), 2 USB Host and 1 USB OTG, 2 Ethernet ports, CAN, RS485, LCD, Touch screen, Audio, ADC and more other peripherals. The SBC8600B is a ready-to-run platform to support for Linux 3.2.0, Android 2.3 and WinCE 7 operating systems.

Figure 1-3 SBC8600B Single Board Computer

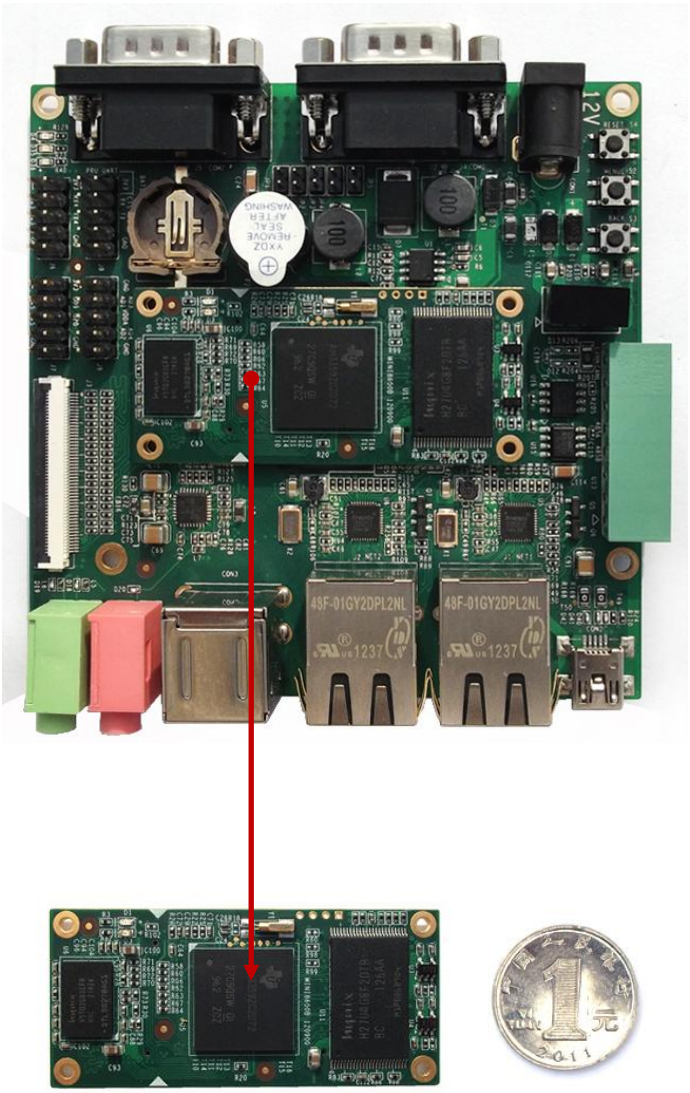

Figure 1-4 Mini8600B Processor Card

Functional Block Diagram

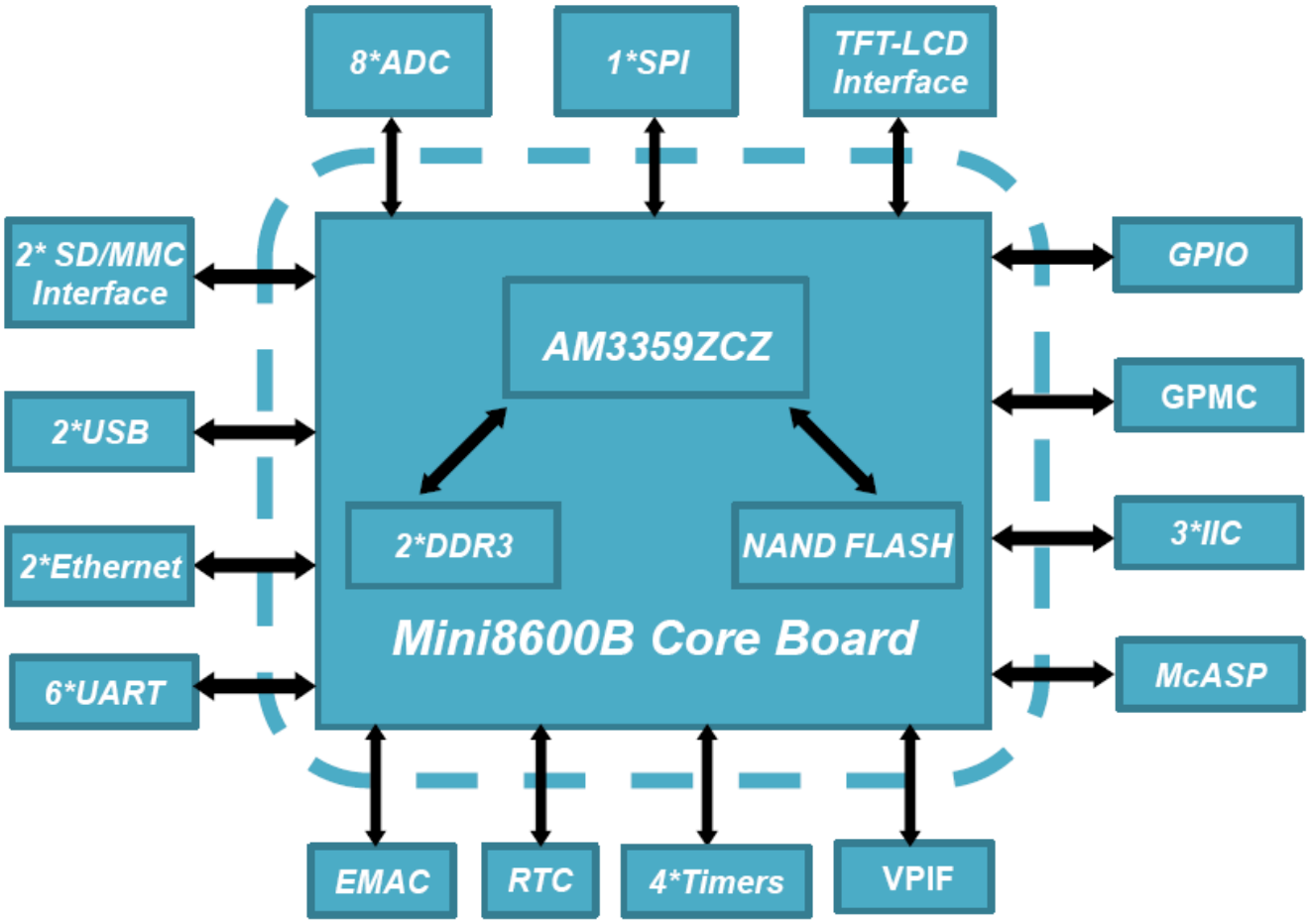

Figure 1-5 Mini8600B Function Block Diagram

Dimensions

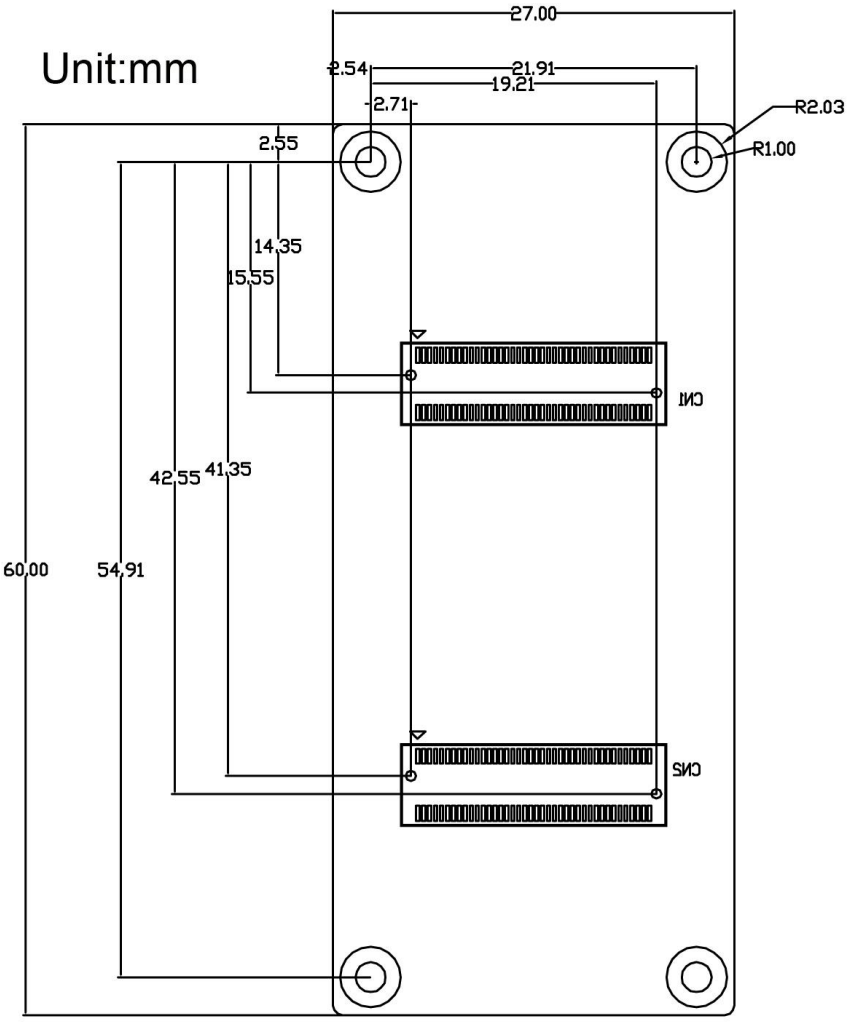

Figure 1-6 Mini8600B Dimension Chart

Two 0.4mm space 2*40-pin board-to-board expansion connectors

Embest Mini8600 processor card is connected to the carrier board via two 0.4mm space 2*40-pin board-to-board male expansion connectors.

- The connector marked in red below is CN1; table 1-1 described the pin signals of CN1 connector.

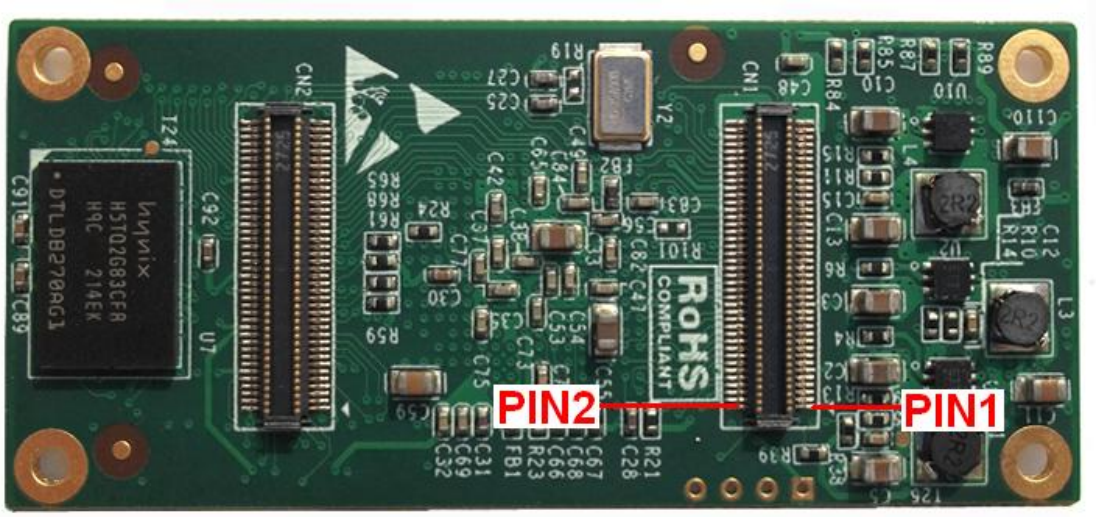

Table 1-1

CN1		
Pin	**Signal**	**Description**
1	GND	GND
2	VDDS_RTC	Supply voltage for RTC
3	CLK_OUT1	Clock out1
4	CLK_OUT2	Clock out2
5	MMC0_DAT0	MMC0 data bus
6	MMC0_DAT1	MMC0 data bus
7	MMC0_DAT2	MMC0 data bus
8	GLOBLE_RESETN	SYS_RESET IN/ OUTPUT
9	MMC0_DAT3	MMC0 data bus
10	AM335X_PWRON_RESETN	CPU PWRON Reset
11	GND	GND
12	GND	GND
13	AM355X_PRU_UART0_CTS	PRU UART0 Clear To Send
14	AM355X_PRU_UART0_RX	PRU UART0 receive data
15	AM355X_PRU_UART0_RTS	PRU UART0 request to send
16	AM355X_PRU_UART0_TX	PRU UART0 transmit data

17	AM355X_UART0_RX	UART0 receive data
18	AM355X_UART3_RX	UART3 receive data
19	AM355X_UART0_TX	UART0 transmit data
20	AM355X_UART3_TX	UART3 transmit data
21	AM355X_CAN0_RX	CAN0 receive data
22	AM355X_I2C0_SDA	I2C0 master serial data
23	AM355X_CAN0_TX	CAN0 transmit data
24	AM355X_I2C0_SCL	I2C0 master serial clock
25	AM355X_UART4_RX	UART4 receive data
26	AM355X_UART1_RX	UART1 receive data
27	AM355X_UART4_TX	UART4 transmit data
28	AM355X_UART1_TX	UART1 transmit data
29	GND	GND
30	GND	GND
31	MII1_COL	MII1 collision detect
32	AM355X_USB0_DRVVBUS	USB0 controller VBUS control output
33	MII1_TX_CLK	MII1 transmit clock
34	AM355X_USB1_DRVVBUS	USB1 controller VBUS control output
35	MII1_TX_EN	MII1 transmit enable
36	MII1_REF_CLK	MII1 reference clock
37	MII1_TXD3	MII1 transmit data
38	MII1_CRS	MII1 carrier sense
39	MII1_TXD2	MII1 transmit data
40	MII1_RX_ER	MII1 receive data error
41	MII1_TXD1	MII1 transmit data
42	MII1_RX_DV	MII1 receive data valid
43	MII1_TXD0	MII1 transmit data
44	MII1_RX_CLK	MII1 receive clock
45	MII_MDIO	MII MDIO DATA
46	MII1_RXD3	MII1 receive data
47	MII_MDC	MII MDIO CLK
48	MII1_RXD2	MII1 receive data
49	GND	GND

50	MII1_RXD1	MII1 receive data
51	AM355X_USB0_DM	USB0 DM-
52	MII1_RXD0	MII1 receive data
53	AM355X_USB0_DP	USB0 DP
54	MMC0_CMD	MMC0 Command Signal
55	GND	GND
56	USB0_VBUS	USB0 bus voltage
57	AM355X_USB1_DM	USB1 data-
58	AM355X_USB1_ID	USB1 ID
59	AM355X_USB1_DP	USB1 data+
60	AM355X_USB0_ID	USB0 ID
61	GND	GND
62	USB1_VBUS	USB1 bus voltage
63	GPMC_A0	GPMC address
64	GPMC_A7	GPMC address
65	GPMC_A5	GPMC address
66	GPMC_A11	GPMC address
67	GPMC_A4	GPMC address
68	GPMC_A10	GPMC address
69	GPMC_A3	GPMC address
70	GPMC_A9	GPMC address
71	GPMC_A2	GPMC address
72	GPMC_A8	GPMC address
73	GPMC_A6	GPMC address
74	GPMC_A1	GPMC address
75	GND	GND
76	GND	GND
77	VDD_3V3	Power
78	VDD_3V3	Power
79	VDD_3V3	Power
80	VDD_3V3	Power

- The connector marked in red below is CN2; table 1-2 described the pin signals of CN2 connector.

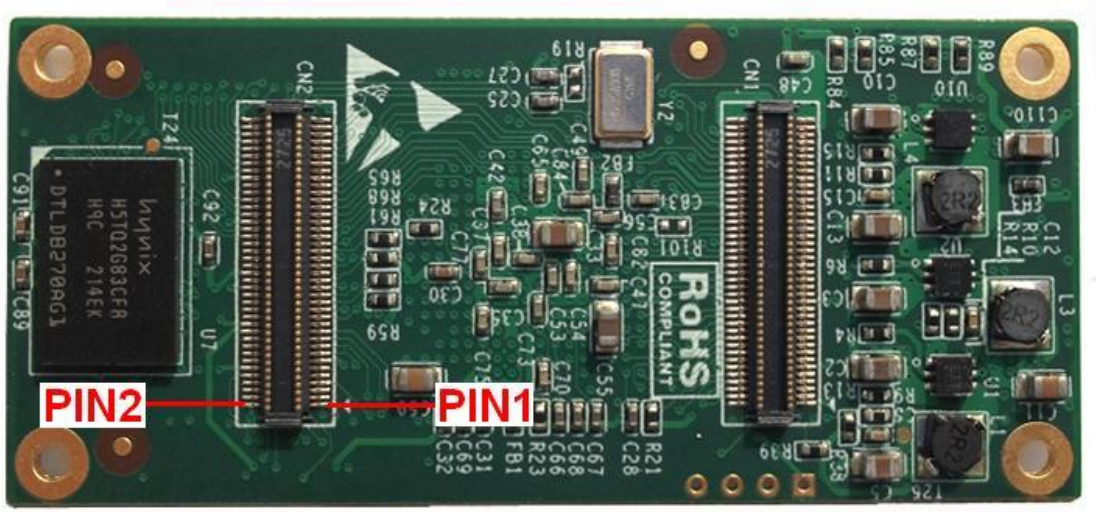

Table 1-2

CN2		
Pin	**Signal**	**Description**
1	GND	GND
2	GND	GND
3	MCASP0_AHCLKX	MCASP0 transmit master clock
4	MCASP0_ACLKX	MCASP0 transmit bit clock
5	MCASP0_FSX	MCASP0 transmit frame sync
6	MCASP0_AXR0	MCASP0 serial data(I/O)
7	MCASP0_AHCLKR	MCASP0 receiver master clock
8	MMC0_CLK	MMC0 clock
9	MCASP0_FSR	MCASP0 receive frame sync
10	MCASP0_AXR1	MCASP0 serial data(I/O)
11	GND	GND
12	GND	GND
13	VDDA_ADC	Supply voltage range for ADC
14	AM355X_ADC0	ADC0
15	AM355X_ADC1	ADC1
16	AM355X_ADC2	ADC2
17	AM355X_ADC3	ADC3
18	AM355X_ADC4	ADC4
19	AM355X_ADC5	ADC5

20	AM355X_ADC6	ADC6
21	AM355X_ADC7	ADC7
22	GND_ADC	GND ADC
23	GND	GND
24	GND	GND
25	LCD_DATA1	LCD data bus
26	LCD_DATA12	LCD data bus
27	LCD_DATA0	LCD data bus
28	LCD_DATA10	LCD data bus
29	LCD_DATA5	LCD data bus
30	LCD_DATA13	LCD data bus
31	LCD_DATA4	LCD data bus
32	LCD_DATA11	LCD data bus
33	LCD_DATA6	LCD data bus
34	LCD_DATA14	LCD data bus
35	LCD_DATA8	LCD data bus
36	LCD_VSYNC	LCD vertical sync
37	GND	GND
38	GND	GND
39	LCD_DATA9	LCD data bus
40	LCD_PCLK	LCD pixel clock
41	LCD_DATA15	LCD data bus
42	GPMC_AD11	GPMC address & data
43	LCD_DATA3	LCD data bus
44	GPMC_AD15	GPMC address & data
45	LCD_DATA2	LCD data bus
46	GPMC_AD14	GPMC address & data
47	LCD_DATA7	LCD data bus
48	GPMC_WAIT0	GPMC wait0
49	LCD_HSYNC	LCD horizontal sync
50	GPMC_BEN1	GPMC byte enable 1
51	GND	GND
52	GND	GND

53	LCD_EN	LCD AC bias enable chip select
54	GPMC_WPN	GPMC write protect
55	GPMC_AD13	GPMC address & data
56	GPMC_CSN3	GPMC chip select
57	GPMC_AD9	GPMC address & data
58	GPMC_CSN2	GPMC chip select
59	GPMC_AD10	GPMC address & data
60	GPMC_CLK	GPMC clock
61	GPMC_AD8	GPMC address & data
62	GPMC_AD6	GPMC address & data
63	GPMC_AD12	GPMC address & data
64	GND	GND
65	GND	GND
66	GPMC_CSN1	GPMC chip select1
67	GPMC_ADVN_ALE	GPMC address valid/address latch enable
68	GPMC_AD5	GPMC address & data
69	GPMC_BEN0_CLE	GPMC byte enable 0/Command latch enable
70	GPMC_AD4	GPMC address & data
71	GPMC_OEN_REN	GPMC output /read enable
72	GPMC_AD1	GPMC address & data
73	GPMC_AD2	GPMC address & data
74	GPMC_AD0	GPMC address & data
75	GPMC_AD3	GPMC address & data
76	GPMC_CSN0	GPMC chip select0
77	GPMC_AD7	GPMC address & data
78	GPMC_WEN	GPMC write enable
79	GND	GND
80	GND	GND

Software Features

OS	Item		Remark
Linux	BIOS	SPL (First boot loader)	NAND
			MMC/SD
			FAT
		U-boot (Second boot loader)	NAND
			MMC/SD
			FAT
			NET
	Kernel	Linux-3.2.0	Supports ROM/CRAM/EXT2/EXT3/FAT/NFS/ JFFS2/UBIFS file systems
	Driver	NAND Flash, SDRAM, Serial port, RTC, Ethernet, TFT LCD, Touch screen, TF card, USB OTG, Audio input/output, LED, Key, CAN, RS485, Power Management (backlight, PWM, ADC) (provided with source code)	
		2D/3D (not provided with source code)	
Android	Kernel	Linux-3.1.0	Gingerbread
	Driver	NAND Flash, SDRAM, Serial port, RTC, Ethernet, TFT LCD, Touch screen, TF card, USB OTG, Audio input/output, LED, Key, Power Management (backlight, PWM) (provided with source code)	
		2D/3D (not provided with source code)	
WinCE7	BIOS	X-loader (First boot loader)	NAND
			MMC/SD
			FAT
		EBOOT (Second boot loader)	NAND
			MMC/SD
			FAT
			NET
	OAL	OAL module	Boot parameter
			KILT(EMAC)
			Serial debug
			REBOOT
			Watchdog
			RTC
			Kernel profiler
			System timer
			Interrupt controller
			MMU
	Driver	NAND Flash, SDRAM, Serial port, RTC, Ethernet, TFT LCD, Touch screen, TF card, USB OTG, Audio input/output, LED, Key, RS485, Power Management (backlight) (provided with source code)	
		CAN, 2D/3D (not provided with source code)	

Order Information

Order No.	T400414
Item	Mini8600B Processor Card
Options	● A pair of 0.4mm space 2*40-pin board-to-board connectors (including the male and female connectors) ● SBC8600B Single Board Computer
Price	Please contact Embest

Embest Technology Co., LTD.

Room 509, Luohu Science&Technology Building,
#85 Taining Rd., Shenzhen, Guangdong, China 518020
Tel: +86-755-25635656/25636285
Fax: +86-755-25616057
Email: market@embedinfo.com
http://www.embedinfo.com/english
http://www.armkits.com