

SOM-860-E



Revision History

Date	Version	Description
2023-06-27	V1.0	First Released
2023-07-14	V1.1	Check And Correction

Hardware Overview

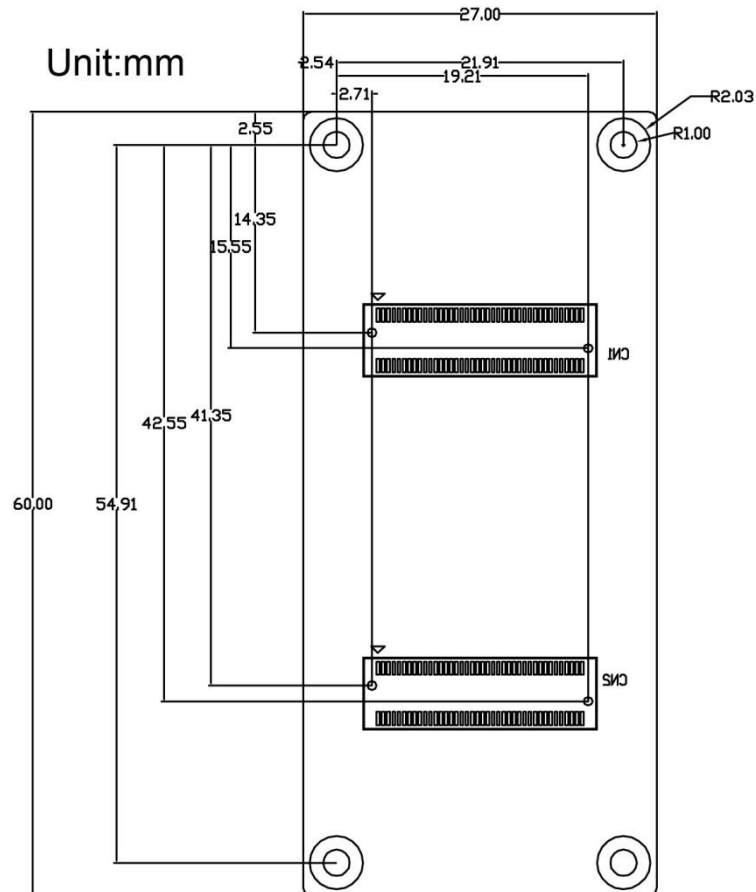
- Mechanical Parameters
 - Working Temperature: 0°C - 70°C
 - Humidity Range: 20% - 90%
 - Dimensions: 60mm x 27mm
 - Stacking Height: 1.5mm
 - Input Voltage: 3.3V
- Processor
 - ARM Cortex-A8 32-Bit RISC Processor up to 1GHz
 - NEON™ SIMD Coprocessor
 - SGX530 3D Graphics Engine
 - Up to 24-Bit Data Output, resolution up to 2048 × 2048
- Memories
 - 512MByte DDR3L @ 400MHz
 - 8GB eMMC
- Interfaces
 - One channel GMII interface
 - Parallel LCD interface
 - 16bit GPMC interface
 - Four channel UART interface
 - Two channel CAN interface
 - USB Host
 - USB OTG
 - Eight channel ADC inputs

- SPI interface
- I2S interface
- SDIO interface
- Data Transfer Interfaces
 - Serial Ports
 - UART0, 2 line serial port, TTL Logic
 - UART1, 2 line serial port, TTL Logic
 - UART3, 2 line serial port, TTL Logic
 - UART4, 2 line serial port, TTL Logic
 - USB Ports:
 - 1 x USB2.0 OTG, 480Mbps
 - 1 x USB2.0 HOST, 480Mbps
 - MMC card interface port by GPMC Interface
 - 1 channel GMAC
 - 1 channel I2C interface
 - 1 channel CAN bus

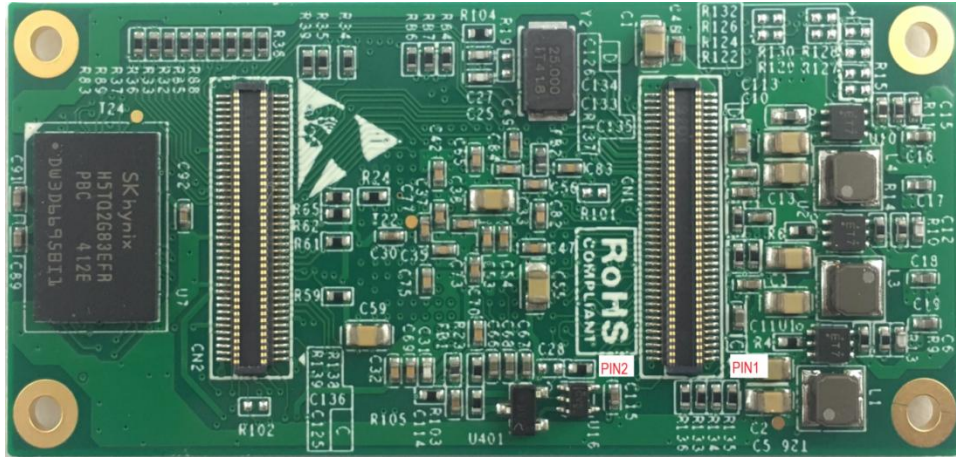
Application

- HMI
- Medical appliances
- Industrial automation
- Weighing Scales
- Smart Toll Systems
- Educational Consoles

Mechanical Dimension



Pin Definition



CN1				
Number	Signal	Power Logic	Input/Output	Pull Down/Up on Board
1	GND			
2	VDDS_RTC		RTC Power In	
3	CLK_OUT1	3.3V	In/Out	
4	CLK_OUT2	3.3V	In/Out	
5	MMC1_DAT0 ¹	3.3V	In/Out	
6	MMC1_DAT1 ²	3.3V	In/Out	
7	MMC1_DAT2 ³	3.3V	In/Out	
8	GLOBLE_RESETN	3.3V	In/Out	100K Pull-Down
9	MMC1_DAT3 ⁴	3.3V	In/Out	
10	AM335X_PWRON_R ESETN	3.3V	In	100K Pull-Up 3.3V
11	GND			
12	GND			
13	AM355X_PRU_UART O_CTS	3.3V	In/Out	
14	AM355X_PRU_UART O_RX	3.3V	In/Out	
15	AM355X_PRU_UART O_RTS	3.3V	In/Out	
16	AM355X_PRU_UART O_TX	3.3V	In/Out	

CN1				
Number	Signal	Power Logic	Input/Output	Pull Down/Up on Board
17	AM355X_UART0_RX	3.3V	In/Out	
18	AM355X_UART3_RX	3.3V	In/Out	
19	AM355X_UART0_TX	3.3V	In/Out	
20	AM355X_UART3_TX	3.3V	In/Out	
21	AM355X_CAN0_RX	3.3V	In/Out	
22	AM355X_I2C0_SDA	3.3V	In/Out	
23	AM355X_CAN0_TX	3.3V	In/Out	
24	AM355X_I2C0_SCL	3.3V	In/Out	
25	AM355X_UART4_RX	3.3V	In/Out	
26	AM355X_UART1_RX	3.3V	In/Out	
27	AM355X_UART4_TX	3.3V	In/Out	
28	AM355X_UART1_TX	3.3V	In/Out	
29	GND			
30	GND			
31	MII1_COL	3.3V	In/Out	
32	AM355X_USB0_DRV VBUS	3.3V	In/Out	
33	MII1_TX_CLK	3.3V	In/Out	
34	AM355X_USB1_DRV VBUS	3.3V	In/Out	
35	MII1_TX_EN	3.3V	In/Out	
36	MII1_REF_CLK	3.3V	In/Out	
37	MII1_TXD3	3.3V	In/Out	
38	MII1_CRS	3.3V	In/Out	
39	MII1_TXD2	3.3V	In/Out	
40	MII1_RX_ER	3.3V	In/Out	
41	MII1_TXD1	3.3V	In/Out	
42	MII1_RX_DV	3.3V	In/Out	
43	MII1_TXD0	3.3V	In/Out	
44	MII1_RX_CLK	3.3V	In/Out	
45	MII_MDIO	3.3V	In/Out	
46	MII1_RXD3	3.3V	In/Out	
47	MII_MDC	3.3V	In/Out	
48	MII1_RXD2	3.3V	In/Out	
49	GND			
50	MII1_RXD1	3.3V	In/Out	
51	AM355X_USB0_DM	3.3V	In/Out	
52	MII1_RXD0	3.3V	In/Out	

CN1				
Number	Signal	Power Logic	Input/Output	Pull Down/Up on Board
53	AM355X_USB0_DP	3.3V	In/Out	
54	MMC1_CMD ⁵	3.3V	In/Out	
55	GND			
56	USB0_VBUS	5V	USB Power In	
57	AM355X_USB1_DM	3.3V	In/Out	
58	AM355X_USB1_ID	3.3V	In	
59	AM355X_USB1_DP	3.3V	In/Out	
60	AM355X_USB0_ID	3.3V	In	
61	GND			
62	USB1_VBUS	5V	USB Power In	
63	GPMC_A0	3.3V	In/Out	
64	GPMC_A7	3.3V	In/Out	
65	GPMC_A5	3.3V	In/Out	
66	GPMC_A11	3.3V	In/Out	
67	GPMC_A4	3.3V	In/Out	
68	GPMC_A10	3.3V	In/Out	
69	GPMC_A3	3.3V	In/Out	
70	GPMC_A9	3.3V	In/Out	
71	GPMC_A2	3.3V	In/Out	
72	GPMC_A8	3.3V	In/Out	
73	GPMC_A6	3.3V	In/Out	
74	GPMC_A1	3.3V	In/Out	
75	GND			
76	GND			
77	VDD_3V3		Board Power In	
78	VDD_3V3		Board Power In	
79	VDD_3V3		Board Power In	
80	VDD_3V3		Board Power In	

Note:

- 1 Function out from GPMC_AD0, ball U7
- 2 Function out from GPMC_AD1, ball V7
- 3 Function out from GPMC_AD2, ball R8
- 4 Function out from GPMC_AD3, ball T8
- 5 Function out from GPMC_CSN2, ball V9

CN2				
Number	Signal	Power Logic	Input/Output	Pull Down/Up on Board

Official Website: www.emtop-tech.com	Wiki Page: https://github.com/EMTOP-TECH
Sales Contact: sales@emtop-tech.com	Support Contact: support@emtop-tech.com

CN2				
Number	Signal	Power Logic	Input/Output	Pull Down/Up on Board
1	GND			
2	GND			
3	MCASP0_AHCLKX	3.3V	In/Out	
4	MCASP0_ACLKX	3.3V	In/Out	
5	MCASP0_FSX	3.3V	In/Out	
6	MCASP0_AXR0	3.3V	In/Out	
7	MCASP0_AHCLKR	3.3V	In/Out	
8	MMC1_CLK ⁶	3.3V	In/Out	
9	MCASP0_FSR	3.3V	In/Out	
10	MCASP0_AXR1	3.3V	In/Out	
11	GND			
12	GND			
13	VDDA_ADC		ADC Power In	
14	AM355X_ADC0	VDDA_ADC	Analog In	
15	AM355X_ADC1	VDDA_ADC	Analog In	
16	AM355X_ADC2	VDDA_ADC	Analog In	
17	AM355X_ADC3	VDDA_ADC	Analog In	
18	AM355X_ADC4	VDDA_ADC	Analog In	
19	AM355X_ADC5	VDDA_ADC	Analog In	
20	AM355X_ADC6	VDDA_ADC	Analog In	
21	AM355X_ADC7	VDDA_ADC	Analog In	
22	GND_ADC			
23	GND			
24	GND			
25	LCD_DATA1	3.3V	In/Out	100k pull down
26	LCD_DATA12	3.3V	In/Out	100k pull down
27	LCD_DATA0	3.3V	In/Out	100k pull down
28	LCD_DATA10	3.3V	In/Out	100k pull down
29	LCD_DATA5	3.3V	In/Out	100k pull up
30	LCD_DATA13	3.3V	In/Out	100k pull down
31	LCD_DATA4	3.3V	In/Out	100k pull up
32	LCD_DATA11	3.3V	In/Out	100k pull down
33	LCD_DATA6	3.3V	In/Out	100k pull down
34	LCD_DATA14	3.3V	In/Out	100k pull down
35	LCD_DATA8	3.3V	In/Out	100k pull down
36	LCD_VSYNC	3.3V	In/Out	
37	GND			
38	GND			

CN2				
Number	Signal	Power Logic	Input/Output	Pull Down/Up on Board
39	LCD_DATA9	3.3V	In/Out	100k pull up
40	LCD_PCLK	3.3V	In/Out	
41	LCD_DATA15	3.3V	In/Out	100k pull up
42	GPMC_AD11	3.3V	In/Out	
43	LCD_DATA3	3.3V	In/Out	100k pull up
44	GPMC_AD15	3.3V	In/Out	
45	LCD_DATA2	3.3V	In/Out	100k pull down
46	GPMC_AD14	3.3V	In/Out	
47	LCD_DATA7	3.3V	In/Out	100k pull down
48	GPMC_WAIT0	3.3V	In/Out	
49	LCD_HSYNC	3.3V	In/Out	
50	GPMC_BEN1	3.3V	In/Out	
51	GND			
52	GND			
53	LCD_EN	3.3V	In/Out	
54	GPMC_WPN	3.3V	In/Out	
55	GPMC_AD13	3.3V	In/Out	
56	GPMC_CSN3	3.3V	In/Out	
57	GPMC_AD9	3.3V	In/Out	
58	GPMC_CSN2	3.3V	In/Out	
59	GPMC_AD10	3.3V	In/Out	
60	GPMC_CLK	3.3V	In/Out	
61	GPMC_AD8	3.3V	In/Out	
62	GPMC_AD6	3.3V	In/Out	
63	GPMC_AD12	3.3V	In/Out	
64	GND			
65	GND			
66	GPMC_CSN1	3.3V	In/Out	
67	GPMC_ADVN_ALE	3.3V	In/Out	
68	GPMC_AD5	3.3V	In/Out	
69	GPMC_BEN0_CLE	3.3V	In/Out	
70	GPMC_AD4	3.3V	In/Out	
71	GPMC_OEN_REN	3.3V	In/Out	
72	GPMC_AD1	3.3V	In/Out	
73	GPMC_AD2	3.3V	In/Out	
74	GPMC_AD0	3.3V	In/Out	
75	GPMC_AD3	3.3V	In/Out	
76	GPMC_CSN0	3.3V	In/Out	

CN2				
Number	Signal	Power Logic	Input/Output	Pull Down/Up on Board
77	GPMC_AD7	3.3V	In/Out	
78	GPMC_WEN	3.3V	In/Out	
79	GND			
80	GND			

Note

6 Function out from GPMC_CSN1, ball U9

Connector

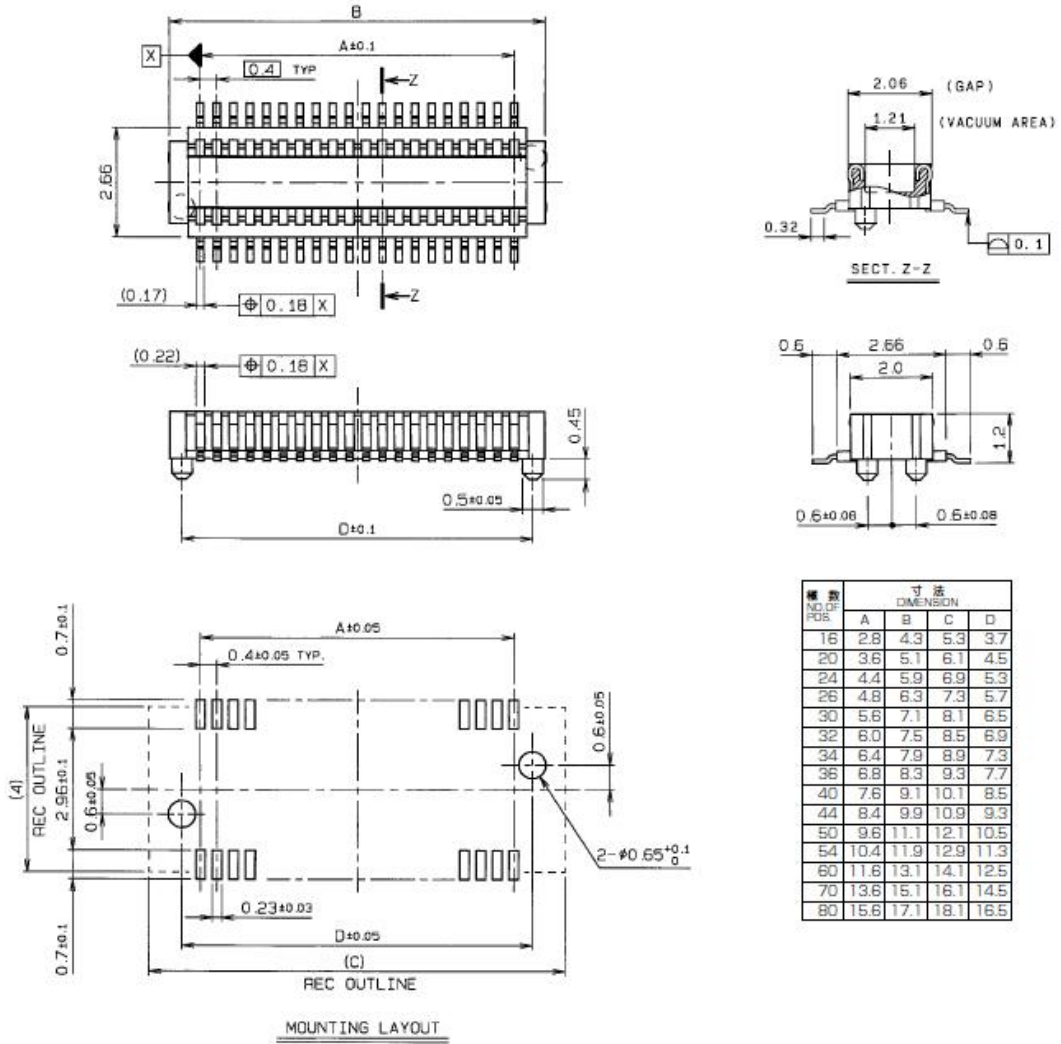
The BTB connector mount on core board is [14 5602 080 001 829H+](#) supply by Kyocera. The detail of the connector is:

0.4mm Pitch

SERIES

5602

プラグ ST SMT 金具無し
Plug Vertical SMT Without metal tab



注文コード ORDERING CODE
14 5602 XXX 00X 829 H+

RoHS 対応品
RoHS Compliant Product

0 : 金具無し・ボス無し Without metal tab or boss
1 : 金具無し・ボス有り Without metal tab, With boss

極数 Number of positions

注) 生産可能極数については営業部にご確認ください。
Note) Feel free to contact our sales department for available numbers of positions.

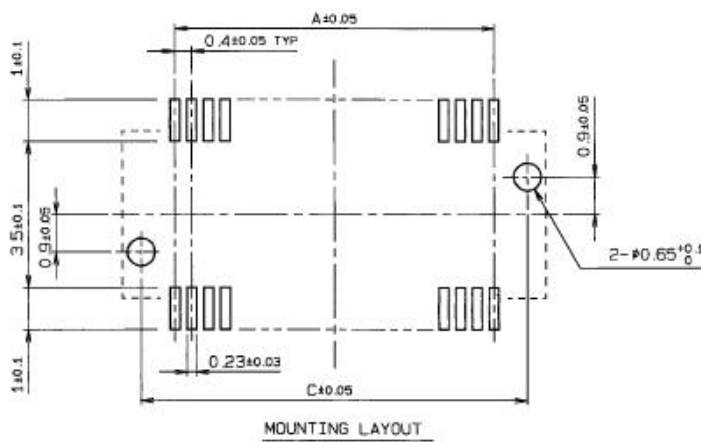
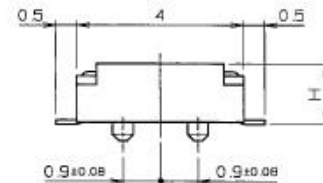
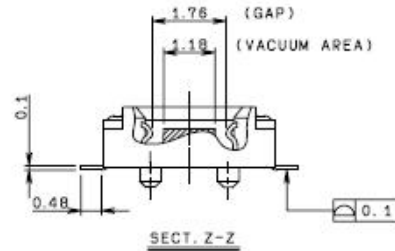
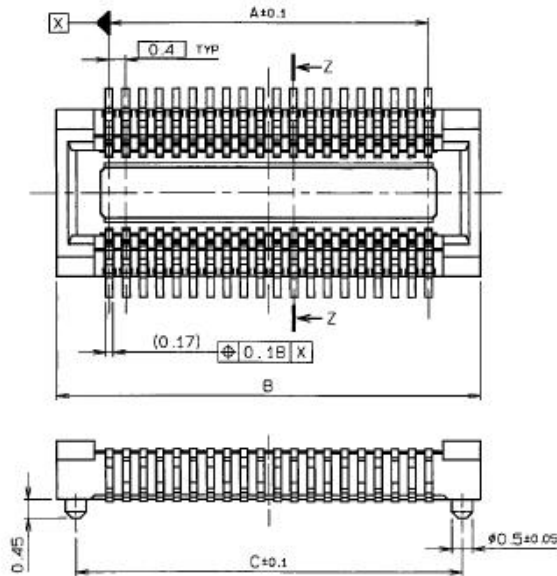
梱包数量 : 2000個/リール
PACKING QUANTITY : 2000/Reel

The recommend BTB connector will be mounted on carrier board is [24 5602 680 001 829H+](#) supply by Kyocera, The detail of the connector is:

0.4mm Pitch
SERIES

5602

リセ ST SMT 金具無し
Receptacle Vertical SMT Without metal tab



種数 NO. OF POS.	寸法 DIMENSION		
	A	B	C
16	2.8	5.3	4.4
20	3.6	6.1	5.2
24	4.4	6.9	6.0
28	4.8	7.3	6.4
30	5.6	8.1	7.2
32	6.0	8.5	7.6
34	6.4	8.9	8.0
36	6.8	9.3	8.4
40	7.6	10.1	9.2
44	8.4	10.9	10.0
50	9.6	12.1	11.2
54	10.4	12.9	12.0
60	11.6	14.1	13.2
64	12.4	14.9	14.0
70	13.6	16.1	15.2
80	15.6	18.1	17.2

嵌合高さ Stacking Height	H
1.5mm	1.45
1.7mm	1.65
2.0mm	1.95
2.8mm	2.75

注文コード ORDERING CODE
24 5602 XXX OXX 829 H+

RoHS対応品
RoHS Compliant Product

- 0: 金具無し・ボス無し Without metal tab or boss
- 1: 金具無し・ボス有り Without metal tab, With boss
- 0: 嵌合高さ Stacking Height = 1.5mm
- 1: 嵌合高さ Stacking Height = 1.7mm
- 5: 嵌合高さ Stacking Height = 2.0mm
- 3: 嵌合高さ Stacking Height = 2.8mm

種数 Number of positions

注) 生産可能種数については営業部にご確認ください。
Note) Feel free to contact our sales department for available numbers of positions.

梱包数量: 1000個/リール (嵌合高さ2.8mm)
2000個/リール (嵌合高さ2.8mm以外)
PACKING QUANTITY: 1000/Reel (Stacking Height 2.8mm)
2000/Reel (Others)

Software

Items		Notes
OS	Linux	Version 4.1.6
Device Driver	Serial	Serial driver
	Rtc	Hardware clock driver
	Net	2*10M/100M/Gb Ethernets
	Display	Display port (RGB TFT)
	MMC/SD	4-bit SDIO
	eMMC	8GB eMMC
	USB	3 High speed USB ports (2*Host, 1*OTG)
	Audio	Analog (headphone/MIC)
	RS485	1*RS485 port
	CAN	1*CAN Bus port
	Keypad	GPIO keyboard driver
	LED	User leds driver
	Buzzer	1*buzzer