StarSOM-STM32H757 Datasheet and Pinout

Rev. 20250306165340

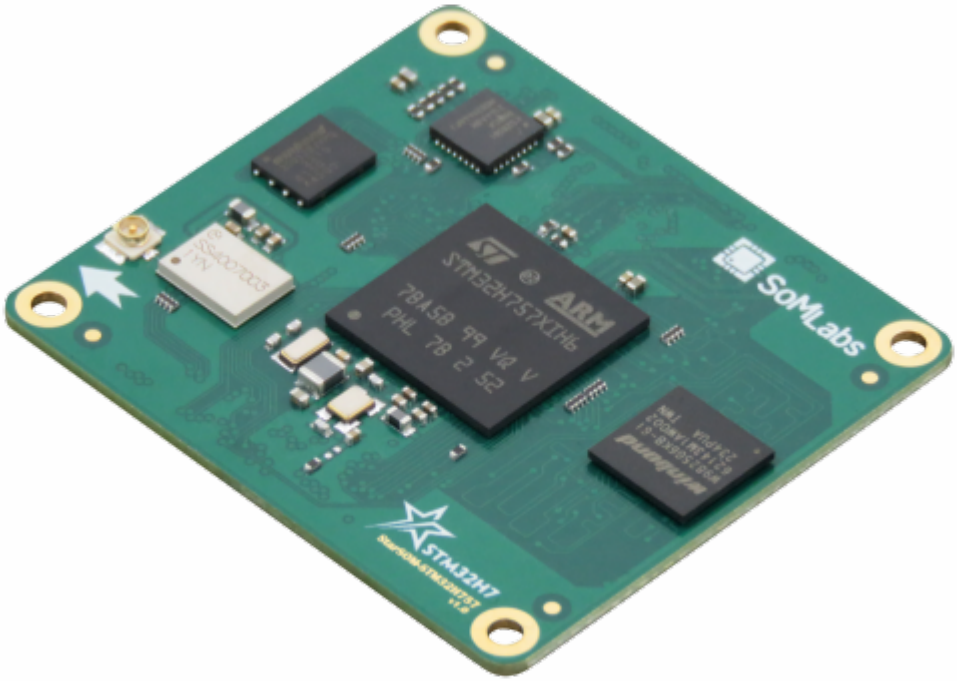
Source URL: https://wiki.somlabs.com/index.php?title=StarSOM-STM32H757_Datasheet_and_Pinout

Table of contents

General description 1
Applications 1
Features 3
Pictures of SOM versions 4
Ordering info 5
Block Diagram 6
Operating ranges 8
Electrical parameters 9
SOM pinout 10
Dimensions 18

StarSOM-STM32H757 Datasheet and Pinout

General description



The StarSOM-STM32H757 family is a small size and low profile SoM based on the STMIcroelectronics dual-core MCU, which features an advanced implementation of a ARM Cortex-M7 (up to @480MHz) and Cortex-M4 (up to @240MHz) cores.

The StarSOM-STM32H757 is a low power highly integrated SoM (System on Module) featuring high computation power, on-board Ethernet PHY 10/100, 802.11b/g/n Wi-Fi and Bluetooth v5.1 connectivity. The option of integrated, fully certified Wi-Fi and Bluetooth module simplifies the carrier board design and is ideally suited for wireless application. The StarSOM-STM32H757 provides a variety internal and external memory configurations, including flexible range of SDRAM, and QSPI Flash that meets our customers requirements.

The SoM supports connections to a variety of interfaces: two high-speed USB on-the-go with PHY, dual Ethernet (single PHY on-board), audio, display with touch panel and serial interfaces. In addition, the system supports industrial grade targeting embedded application.

SoMLabs also provides a complete hardware and software development board for the SoM in the form of a carrier board and optional TFT display and touch panel.

Applications

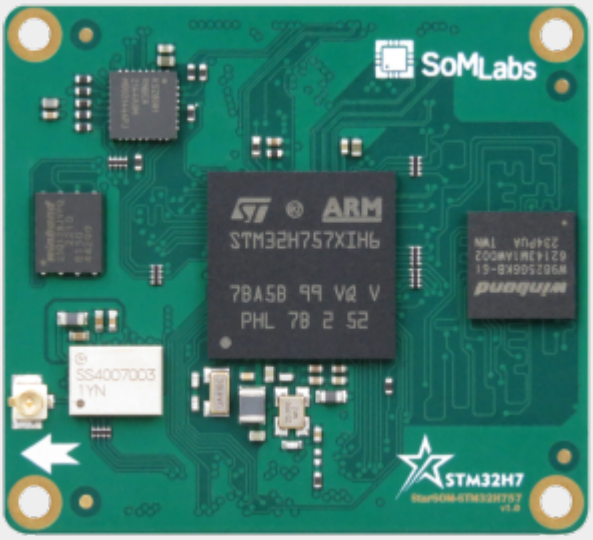
- Industrial embedded real-time computer
- Home Appliances
- Home Automation – Smart Home
- Human-machine Interfaces (HMI)
- Point-of-sales (POS) terminals
- Cash Register
- 2D barcode scanners and printers
- Smart grid infrastructure

- IoT gateways
- Residential gateways
- Machine vision equipment
- Robotics
- Fitness/outdoor equipment

Features

- Powered by ST STM32H757 advanced MCU
- Core clock up to 480 (Cortex-M7)/240 MHz (Cortex-M4)
- Up to 32MB SDRAM
- Up to 32MB QSPI Flash
- Optional Murata 802.11b/g/n Wi-Fi and Bluetooth v5.1 module
- Power-efficient and cost-optimized solution
- Ideal for industrial IoT and embedded applications
- Integrated security features

Pictures of SOM versions

Version	Photo
QSPI and WiFi/BLE on-board	

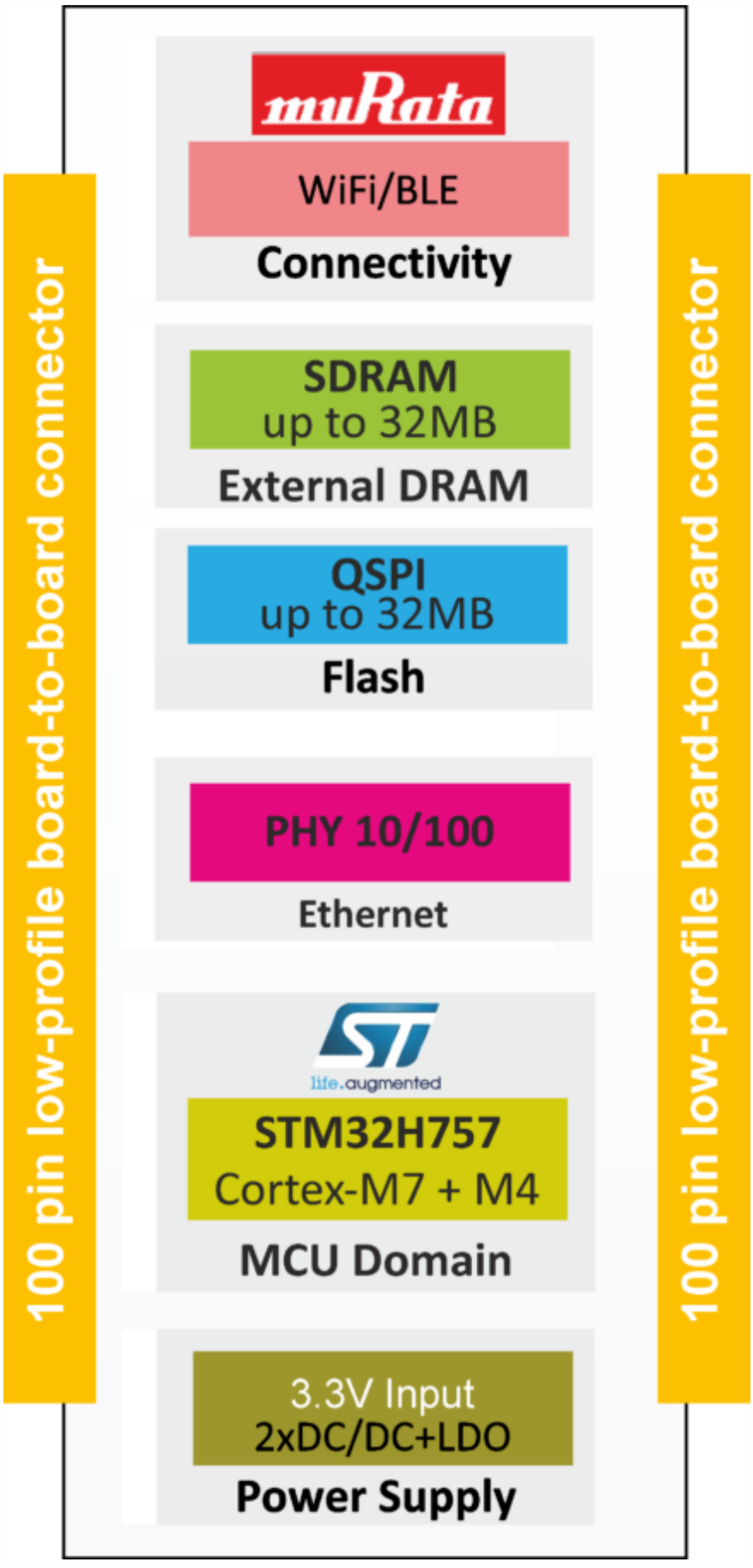
Wi-Fi and Ethernet PHY10/100 are available as an options.

Ordering info

SLSNH757CpuType_Clock_RamSize_FlashSize_SF_TEMP

SLS	Product type SLS - System on Module
N	SOM Name 0 - StarSOM
H757	CPU Family 5 - STM32H757XI
CpuType	CPU Type H757 - Dual core STM32H757XI
Clock	CPU Clock Speed 480C - Cortex-M7 @480MHz/Cortex-M4 @240MHz
RamSize	SDRAM Size 0R - No external SDRAM 32R - 32MB
FlashSize	QSPI Flash Size 0QSPI - no external Flash 4QSPI - 4MB QSPI Flash 16QSPI - 16MB QSPI Flash 32QSPI - 32MB QSPI Flash
SF	Special Features 0SF - No Special Features 1WB - Built-in Murata 802.11b/g/n WiFI/BLE5.1
TEMP	Operating Temperature E - Extended: -30 to +70 C I - Industrial: -40 to +85 C

Block Diagram


100 pin low-profile board-to-board connector
muRata
WiFi/BLE
Connectivity
SDRAM
up to 32MB
External DRAM
QSPI
up to 32MB
Flash
PHY 10/100
Ethernet
life.augmented
STM32H757
Cortex-M7 + M4
MCU Domain
3.3V Input
2xDC/DC+LDO
Power Supply
100 pin low-profile board-to-board connector

Operating ranges

Parameter	Value	Unit	Comment
Power Supply	3.3	V	Connected to +3V3IN pins
Input GPIO voltage	3.3	V	-
Environment temperature[1]	-40...+85	°C	Industrial range w/o WiFi module
	-25...+70		Industrial range with WiFi module
	0...+70		Consumer range

Note:
1. Maximum MCU junction temperature is +125°C.

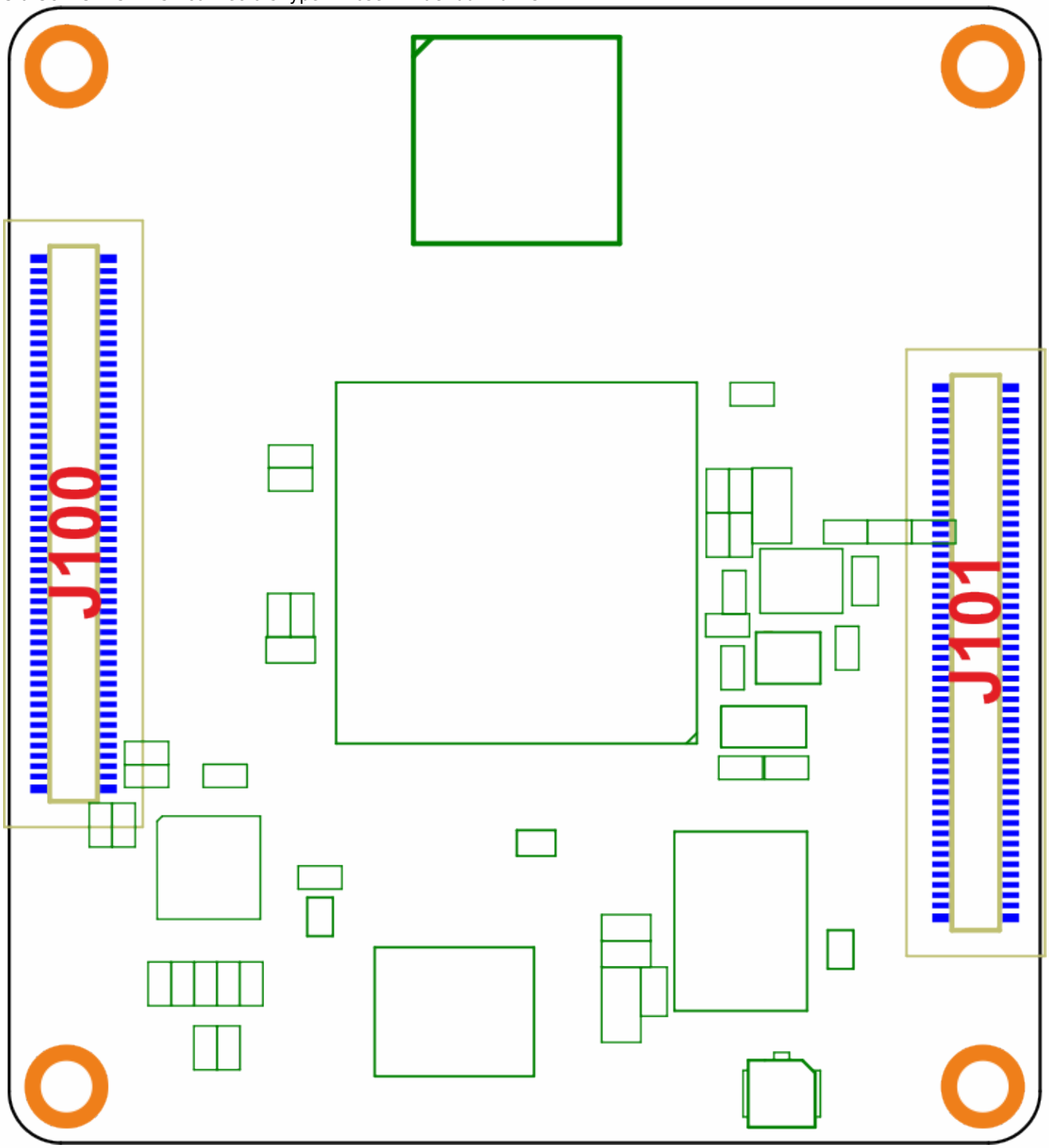
Electrical parameters

SOM signal name	Parameter	Value			Units
		Min.	Typ.	Max.	
VDD-3V3	Supply Voltage	3.15	3.3	3.45	V
$I_{VDD-3V3}$	Total Supply Current	-	115	785	mA
VGPIO (TT_xx)	GPIO Input Voltage	0	3.3	3.6	V
VGPIO (except TT_xx)	GPIO Input Voltage	0	3.3	5.5	V
VBAT	SNVS Backup Battery Supply	1.2	-	3.6	V
VDDA	ADC Inputs Voltage	0	-	3.6	V

Note:
1. VDD50USB and VDD33USB power input are connected to VDD-3V3.
2. VDDA and VREF+ are connected to VDD-3V3.

SOM pinout

StarSOM-STM32H757 board-to-board connectors view (top view)
StarSOM-STM32H757 connectors type: Hirose DF40C100DP04V51



SoM pin number	Default function	GPIO	TFBGA265 ball	Notes
			J100	

1	GND	-	-	
2	GND	-	-	
3	USB2.VBUS	PB13	U14	
4	DSI.CK_P	DSI_CKP	L16	MIPI-DSI display interface line
5	USB2.D_N	PB14	U15	USB transceiver line
6	DSI.CK_N	DSI_CKN	L17	MIPI-DSI display interface line
7	USB2.D_P	PB15	T15	USB transceiver line
8	GND	-	-	
9	GND	-	-	
10	DSI.D0_P	DSI_D0P	M16	MIPI-DSI display interface line
11	USB2.ID	PB12	T14	
12	DSI.D0_N	DSI_D0N	M17	MIPI-DSI display interface line
13	PORTB.1	PB1	T5	
14	GND	-	-	
15	-	-	-	
16	DSI.D1_P	DSI_D1P	K16	MIPI-DSI display interface line
17	-	-	-	
18	DSI.D1_N	DSI_D1N	K17	MIPI-DSI display interface line
19	-	-	-	
20	GND	-	-	
21	-	-	-	
22	PORTB.0	PB0	U5	
23	-	-	-	
24	I2C3.SDA	PH8	T13	
25	-	-	-	
26	I2C3.SCL	PH7	U13	
27	-	-	-	
28	PORTH.6	PH6	T11	
29	-	-	-	
30	PORTB.11	PB11	P12	
31	GND	-	-	
32	PORTH.11	PH11	R14	
33	PORTB.2	PB2	R6	
34	PORTB.10	PB10	P11	
35	USB1.VBUS	PA9	D15	
36	LCD.CLK	PG7	F16	
37	USB1.D_N	PA11	E17	USB transceiver line
38	GND	-	-	
39	USB1.D_P	PA12	E16	USB transceiver line
40	LCD.VSYNC	PI13	H2	
41	GND	-	-	
42	LCD.HSYNC	PI12	H1	
43	USB1.ID	PA10	D14	
44	LCD.DE	PK7	D7	
45	-	-	-	
46	GND	-	-	

47	-	-	-	
48	LCD.R7	PJ6	N15	
49	-	-	-	
50	LCD.R6	PJ5	R12	
51	-	-	-	
52	LCD.R5	PJ4	U7	
53	-	-	-	
54	LCD.R4	PJ3	U6	
55	-	-	-	
56	LCD.R3	PJ2	T6	
57	GND	-	-	
58	LCD.R2	PJ1	P6	
59	LED0	-	-	LED0/nWAYEN of KSZ8081RNBCA (on-board Ethernet PHY)
60	LCD.R1	PJ0	N6	
61	LED1	-	-	LED1/SPEED of KSZ8081RNBCA (on-board Ethernet PHY)
62	LCD.R0	PI15	P5	
63	GND	-	-	
64	GND	-	-	
65	ETH.TX_P	-	-	TXP output of KSZ8081RNBCA (on-board Ethernet PHY)
66	LCD.G7	PK2	H17	
67	ETH.TX_N	-	-	TXN output of KSZ8081RNBCA (on-board Ethernet PHY)
68	LCD.G6	PK1	J15	
69	GND	-	-	
70	LCD.G5	PK0	J14	
71	ETH.RX_P	-	-	RXP input of KSZ8081RNBCA (on-board Ethernet PHY)
72	LCD.G4	PJ11	K14	
73	ETH.RX_N	-	-	RXN input of KSZ8081RNBCA (on-board Ethernet PHY)
74	LCD.G3	PJ10	L14	
75	GND	-	-	
76	LCD.G2	PJ9	M14	
77	GND	-	-	
78	LCD.G1	PJ8	N13	
79	GND	-	-	
80	LCD.G0	PJ7	N14	
81	VDD-3V3	-	-	External power supply
82	GND	-	-	
83	VDD-3V3	-	-	External power supply
84	LCD.B7	PK6	C7	
85	VDD-3V3	-	-	External power supply
86	LCD.B6	PK5	A8	
87	VDD-3V3	-	-	External power supply
88	LCD.B5	PK4	B8	

89	VDD-3V3	-	-	External power supply
90	LCD.B4	PK3	C8	
91	VDD-3V3	-	-	External power supply
92	LCD.B3	PJ15	B10	
93	VDD-3V3	-	-	External power supply
94	LCD.B2	PJ14	D10	
95	VDD-3V3	-	-	External power supply
96	LCD.B1	PJ13	E10	
97	VDD-3V3	-	-	External power supply
98	LCD.B0	PJ12	D11	
99	VDD-3V3	-	-	External power supply
100	GND	-	-	
J101				
1	GND	-	-	
2	GND	-	-	
3	PA1_C	PA1_C	T2	
4	RECOVERY			If "RECOVERY"=0 then BOOT0=1 (pin E8) Leave open for normal boot
5	PA0_C	PA0_C	T1	
6	-	-	-	
7	PC3_C	PC3_C	R2	
8	RESET	nRST	K1	Reset input
9	PC2_C	PC2_C	R1	
10	GND	-	-	
11	GND	-	-	
12	-	-	-	
13	PORTA.0	PA0	N5	
14	-	-	-	
15	PORTA.5	PA5	T3	
16	GND	-	-	
17	PORTH.5	PH5	P4	
18	UART7.CTS	PF9	L4	
19	PORTH.4	PH4	P3	
20	UART7.RTS	PF8	K4	
21	PORTH.3	PH3	P2	
22	UART7.RXD	PF6	K2	
23	PORTH.2	PH2	N2	
24	UART7.TXD	PF7	K3	
25	PORTI.11	PI11	F4	
26	GND	-	-	
27	PORTE.6	PE6	E5	
28	PDR-ON	PDR-ON	E7	Internally pulled-up with 10kOhm
29	-	-	-	
30	GND	-	-	
31	-	-	-	
32	-	-	-	

33	GND	-	-	
34	-	-	-	
35	I2C1.SCL	PB8	D5	
36	PORTH.9	PH9	R13	
37	I2C1.SDA	PB9	D4	
38	PORTH.10	PH10	P13	
39	PORTE.5	PE5	D1	
40	PORTG.10	PG10	A9	
41	PORTE.3	PE3	D3	
42	PORTH.12	PH12	R14	
43	USART1.RXD	PB7	C5	
44	PORTE.4	PE4	D2	
45	USART1.TXD	PB6	B5	
46	PORTI.4	PI4	A4	
47	-	-	-	
48	PORTI.6	PI6	A2	
49	-	-	-	
50	PORTI.7	PI7	B3	
51	-	-	-	
52	PORTA.6	PA6	R3	
53	PORTB.5	PB5	A5	
54	PORTA.4	PA4	U3	
55	PORTD.7	PD7	C11	
56	PORTI.5	PI5	A3	
57	PORTG.14	PG14	D8	
58	GND	-	-	
59	PORTG.9	PG9	A10	
60	VBAT	VBAT	B1	
61	CAN1.RX	PH14	B17	
62	GND	-	-	
63	CAN1.TX	PH13	D16	
64	JTAG.TCK	PA14	B14	SWCLK interface
65	GND	-	-	
66	JTAG.TDI	PA15	A14	
67	PORTI.10[1]	PI10	F3	Shared with BT-HWAKE (1DX) Used by WiFi/BLE 1DX module if installed
68	JTAG.TDO	PB3	C6	
69	PORTI.9[1]	PI9	E2	Shared with BT-WAKE (1DX) Used by WiFi/BLE 1DX module if installed
70	JTAG.TMS	PA13	C15	SWDIO interface
71	PORTI.8[1]	PI8	E4	Shared with BT-EN (1DX) Used by WiFi/BLE 1DX module if installed
72	JTAG.TRST	PB4	B7	
73	PORTI.14[1]	PI14	H3	Shared with WLAN-HWAKE (1DX) Used by WiFi/BLE 1DX module if installed
74	GND	-	-	
75	PORTC.7[1]	PC7	F13	Shared with WLAN-EN (1DX) Used by WiFi/BLE 1DX module if installed

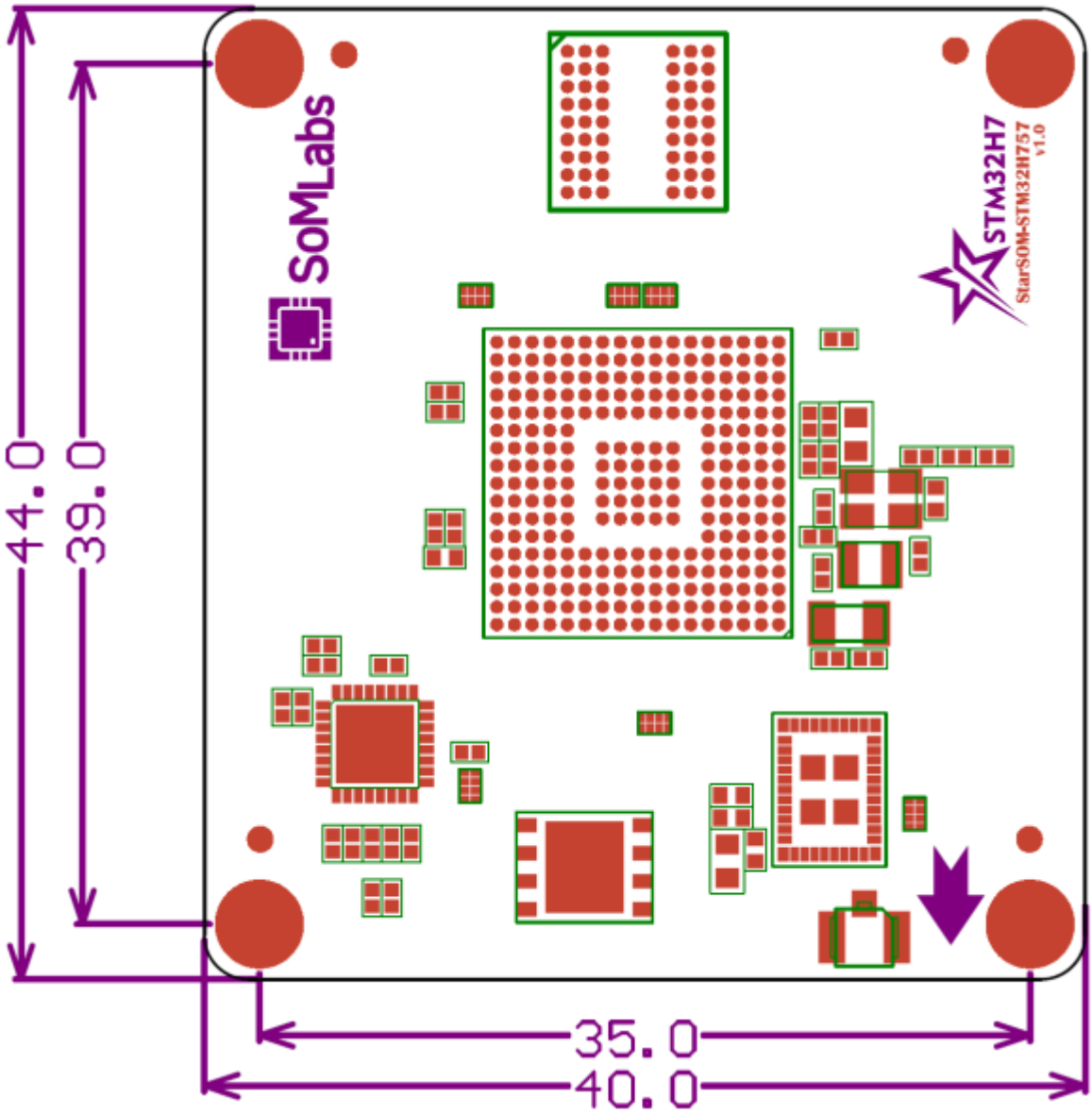
76	-	-	-	
77	UART2X.CTS[1]	PD3	B12	Shared with WLAN-EN (1DX) Used by WiFi/BLE 1DX module if installed
78	-	-	-	
79	UART2X.RTS[1]	PD4	A12	Shared with WLAN-EN (1DX) Used by WiFi/BLE 1DX module if installed
80	-	-	-	
81	UART2X.RXD[1]	PD6	B11	Shared with WLAN-EN (1DX) Used by WiFi/BLE 1DX module if installed
82	-	-	-	
83	UART2X.TXD[1]	PD5	A11	Shared with WLAN-EN (1DX) Used by WiFi/BLE 1DX module if installed
84	-	-	-	
85	GND	-	-	
86	GND	-	-	
87	SDMMC1X.D1[1]	PC9	E14	SDMMC1.D1 line separated from SDMMC1X.D1 with 0 Ohm Used by WiFi/BLE 1DX module if installed
88	I2S2.WS	PI0	A16	
89	SDMMC1X.D0[1]	PC8	E13	SDMMC1.D0 line separated from SDMMC1X.D0 with 0 Ohm Used by WiFi/BLE 1DX module if installed
90	I2S2.CK	PI1	A15	
91	SDMMC1X.CK[1]	PC12	C12	SDMMC1.CK line separated from SDMMC1X.CK with 0 Ohm Used by WiFi/BLE 1DX module if installed
92	I2S2.SDI	PI2	B15	
93	SDMMC1X.CMD[1]	PD2	D12	SDMMC1.CMD line separated from SDMMC1X.CMD with 0 Ohm Used by WiFi/BLE 1DX module if installed
94	I2S2.SDO	PI3	C14	
95	SDMMC1X.D3[1]	PC11	B13	SDMMC1.D1 line separated from SDMMC1X.D3 with 0 Ohm Used by WiFi/BLE 1DX module if installed
96	GND	-	-	
97	SDMMC1X.D2[1]	PC10	A13	SDMMC1.D1 line separated from SDMMC1X.D2 with 0 Ohm Used by WiFi/BLE 1DX module if installed
98	I2S2.MCK	PC6	F14	
99	GND	-	-	
100	GND	-	-	
Internal system connections				
	-	PC14-OSC32_IN	C2	32 kHz crystal connected
	-	PC14-OSC32_OUT	C1	32 kHz crystal connected
	QSPI.NCS	PG6	G15	On-board QSPI Flash memory
	QSPI.CLK	PF10	L3	
	QSPI.IO0	PD11	R15	
	QSPI.IO1	PD12	R16	
	QSPI.IO2	PE2	C3	
	QSPI.IO3	PD13	R17	

	DRAM.CKE	PC3	M4	
	DRAM.CLK	PG8	F15	
	DRAM.DM0	PE0	C4	
	DRAM.DM1	PE1	B4	
	DRAM.CS0	PC2	M3	
	DRAM.WE	PC0	L2	
	DRAM.CAS	PG15	D6	
	DRAM.RAS	PF11	T7	
	DRAM.BA0	PG4	H14	
	DRAM.BA1	PG5	G15	
	DRAM.A0	PF0	G4	
	DRAM.A1	PF1	G3	
	DRAM.A2	PF2	G15	
	DRAM.A3	PF3	H4	
	DRAM.A4	PF4	J5	
	DRAM.A5	PF5	J4	
	DRAM.A6	PF12	R7	
	DRAM.A7	PF13	P7	
	DRAM.A8	PF14	P8	
	DRAM.A9	PF15	R9	On-board SDRAM memory
	DRAM.A10	PG0	T8	
	DRAM.A11	PG1	U8	
	DRAM.A12	PG2	H16	
	DRAM.D0	PD14	P16	
	DRAM.D1	PD15	P15	
	DRAM.D2	PD0	D13	
	DRAM.D3	PD1	E12	
	DRAM.D4	PE7	U9	
	DRAM.D5	PE8	T9	
	DRAM.D6	PE9	P9	
	DRAM.D7	PE10	N9	
	DRAM.D8	PE11	P10	
	DRAM.D9	PE12	R10	
	DRAM.D10	PE13	T10	
	DRAM.D11	PE14	U10	
	DRAM.D12	PE15	R11	
	DRAM.D13	PD8	U16	
	DRAM.D14	PD9	T17	
	DRAM.D15	PD10	T16	

	ENET.MDIO	PA2	N3	On-board Ethernet PHY
	ENET.MDC	PC1	M2	
	ENET.RXD0	PC4	T4	
	ENET.RXD1	PC5	U4	
	ENET.CRS-DV	PA7	R5	
	ENET.REF-CLK	PA1	N4	
	ENET.TXD0	PG13	D9	
	ENET.TXD1	PG12	C9	
	ENET.TXEN	PG11	B9	
	ENET.INT	PG3	H15	
	ENET.RST	PH15	B16	
	CLK-25MHz	PA8	E15	
	WLAN-EN[1]	PC7	F13	On-board WiF/BLE module
	WLAN-HWAKE[1]	PI14	H3	
	SDMMC1.CK[1]	PC12	C12	
	SDMMC1.CMD[1]	PD2	D12	
	SDMMC1.D0[1]	PC8	E13	
	SDMMC1.D1[1]	PC9	E14	
	SDMMC1.D2[1]	PC10	A13	
	SDMMC1.D3[1]	PC11	B13	
	CLK-32KHz	PA3	U2	
	BT-WAKE[1]	PI9	E2	
	BT-HWAKE[1]	PI10	F3	
	BT-EN[1]	PI8	E4	
	UART2.CTS[1]	PD3	B12	
	UART2.RTS[1]	PD4	A12	
	UART2.RXD[1]	PD6	B11	
	UART2.TXD[1]	PD5	A11	

Note:
1. Dual use pins: if 1DX (WiFi/BLE) module is installed on the StarSOM-STM32H757 module these pins are not available for user.

Dimensions



SoMLabs
Lwowska 5
05-120 Legionowo
Poland
Tel. +48 22 767 36 20
Email: contact@somlabs.com
http://somlabs.com