ZLS MCU Test Board

MB1364

[No Variations]

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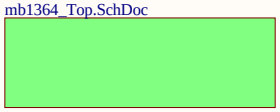
Sheet 7: ST-LINK V3E SWD

U_mb1364_Top
mb1364_Top.SchDoc



Legend

General comment such as function title, configuration, ...

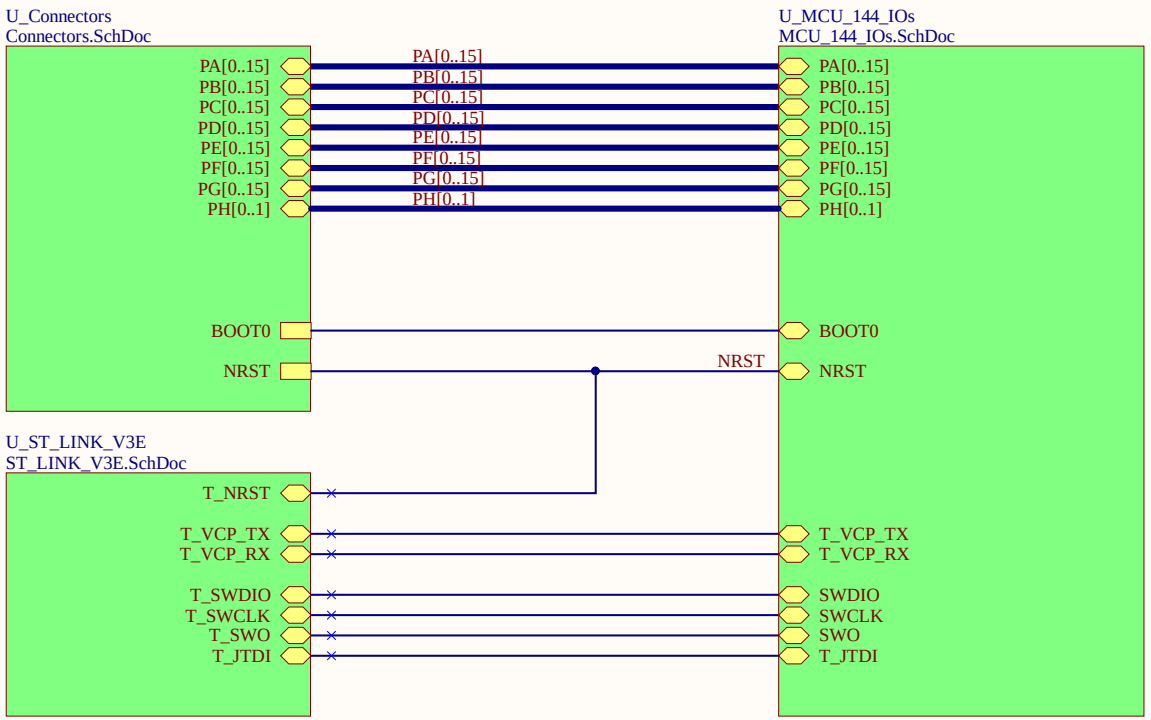
Text to be added to silkscreen.

Warning text.

Notes to generate the board layout.

Title: **Project overview**		
Project: **ZLS MCU Test Board**		
Variant: [No Variations]		
Revision: A-01		Reference: MB1364
Size: A4	Date: 7-SEP-2019	Sheet: 1 of 9

life.augmented



U_MCU_144_POWER
MCU_144_POWER.SchDoc

U_Power_Board
Power_Board.SchDoc

Title	***mb1319 Top: hierarchical view***		*ZLS Corporation* *7801 North Lamar Blvd.* *Suite E-184* *Austin, Texas 78752 USA* *(512) 453-0288*
Size: Orcad A	Number:2	Revision:Not used	
Date: 9/6/2019	Time: 1:44:51 PM	Sheet 2 of 9	
File: C:\Users\zls\Desktop\Land_Meter_PCB\H743ZI2-MCU\MB1364_Top.SchDoc			

MCU IO CLK and RST

U14A
MCU_IOs (A,B,C)
STM32H7A3ZIT6U

USR BUT PA0 34
PA1 35
PA2 36
PA3 37
PA4 40
PA5 41
PA6 42
PA7 43
PA8 100
PA9 101
PA10 102
PA11 103
PA12 104
PA13 105
PA14 109
PA15 110

PC0 26
PC1 27
PC2 28
PC3 29
PC4 44
PC5 45
PC6 96
PC7 97
PC8 98
PC9 99
PC10 111
PC11 112
PC12 113
PC13 7

PC14 SB41 PC14-OSC32_IN 8
PC15 SB40 PC15-OSC32_OUT 9

PB0 46
PB1 47
PB2 48
PB3 133 SB32 SWO
PB4 134
PB5 135
PB6 136 LPUART1_TX SB9 T_VCP_TX
PB7 137 LPUART1_RX SB34 T_VCP_RX
PB8 139
PB9 140
PB10 69
PB11 70
PB12 73
PB13 74
PB14 75
PB15 76

NRST 25 NRST
BOOT0 138 R33 10K BOOT0
PDR_ON 143 R34 10K 3V3_VDD, R35 10K
PH0-OSC_IN 23 PH0-OSC_IN SB46 PH0
PH1-OSC_OUT 24 PH1-OSC_OUT SB44 PH1

SB should be place close to the MCU to avoid stub on CLK lines

SWDIO PA13
SWCLK PA14
T_JTDI PA15

SNT-100-BK-G
HW3

U14B
MCU_IOs (D,E,F,G)
STM32H7A3ZIT6U

PD0 114
PD1 115
PD2 116
PD3 117
PD4 118
PD5 119
PD6 122
PD7 123
PD8 77
PD9 78
PD10 79
PD11 80
PD12 81
PD13 82
PD14 85
PD15 86

PF0 10
PF1 11
PF2 12
PF3 13
PF4 14
PF5 15
PF6 18
PF7 19
PF8 20
PF9 21
PF10 22
PF11 49
PF12 50
PF13 53
PF14 54
PF15 55

PE0 141
PE1 142
PE2 1
PE3 2
PE4 3
PE5 4
PE6 5
PE7 58
PE8 59
PE9 60
PE10 63
PE11 64
PE12 65
PE13 66
PE14 67
PE15 68

PG0 56
PG1 57
PG2 87
PG3 88
PG4 89
PG5 90
PG6 91
PG7 92
PG8 93
PG9 124
PG10 125
PG11 126
PG12 127
PG13 128
PG14 129
PG15 132

T_VCP_TX T_VCP_TX SB19 USART3_TX PD8
T_VCP_RX T_VCP_RX SB13 USART3_RX PD9

PA[0..15] PA[0..15]
PB[0..15] PB[0..15]
PC[0..15] PC[0..15]
PD[0..15] PD[0..15]
PE[0..15] PE[0..15]
PF[0..15] PF[0..15]
PG[0..15] PG[0..15]
PH[0..1] PH[0..1]

USER BUTTON

USER
3V3_VDD
HW9
BLUE HAT
B1
SWITCH
PC13 SB51
PA0 SB58
R74 330R WAKEUP_KEY
R64 100K
C68 100nF
U23 ESDALC6V1-1U2
Place capacitor close to MCU pad

RESET FUNCTION

NRST
RESET
C59 100nF
U20 ESDALC6V1-1U2
B2
SWITCH
HW11
BLACK HAT
Place capacitor close to MCU pad

EXTERNAL HSE CLK (OPTIONAL)

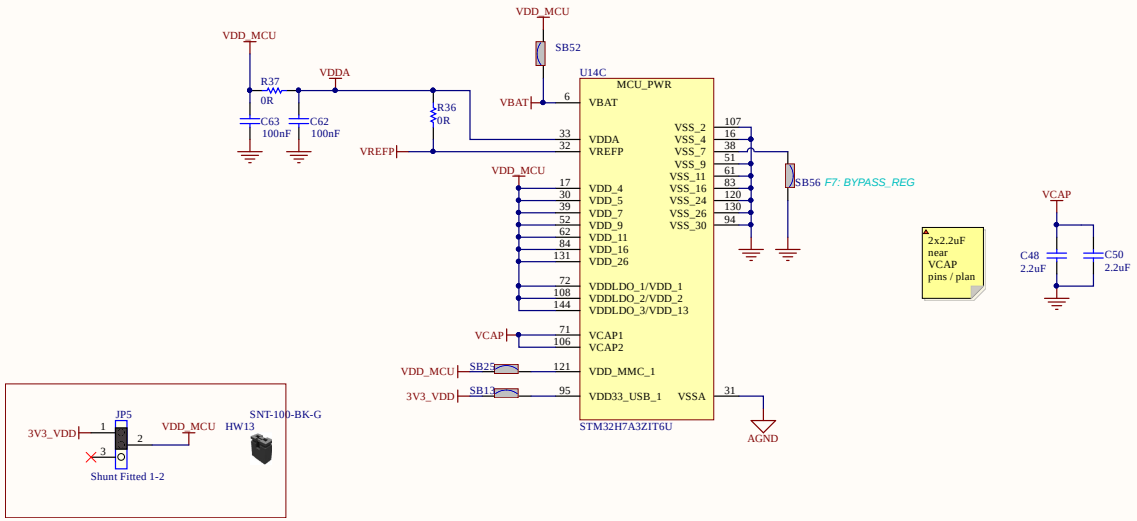
SB3 OSC_IN
PH0-OSC_IN
PH1-OSC_OUT
SB4 OSC_OUT
C70 5.6pF
C69 5.6pF
X3 NX2016SA 25MHz
25M

EXTERNAL LSE CLK

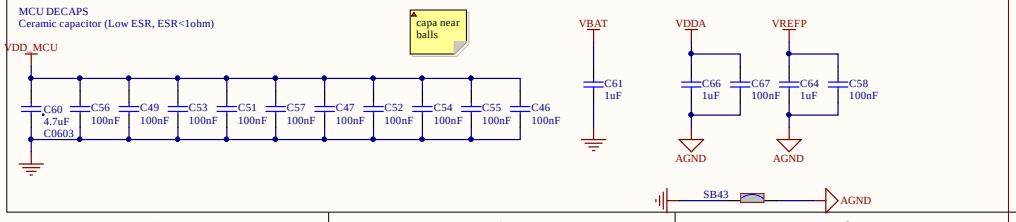
R38 0R OSC32_IN
R39 0R OSC32_OUT
PC14-OSC32_IN
PC15-OSC32_OUT
C71 5.1pF
C72 5.1pF
X2 NX3215SA 32.768KHz
32K

Title	MCU 144 I/Os		ZLS Corporation 7801 North Lamar Blvd. Suite E-184 Austin, Texas 78752 USA (512) 453-0288
Size: Tabloid	Number:3	Revision Not used	
Date: 9/6/2019	Time: 1:44:52 PM	Sheet3 of 9	
File: C:\Users\zls\Desktop\Land_Meter_PCB\H743ZI2-MCU\MCU_144_IOs.SchDoc			

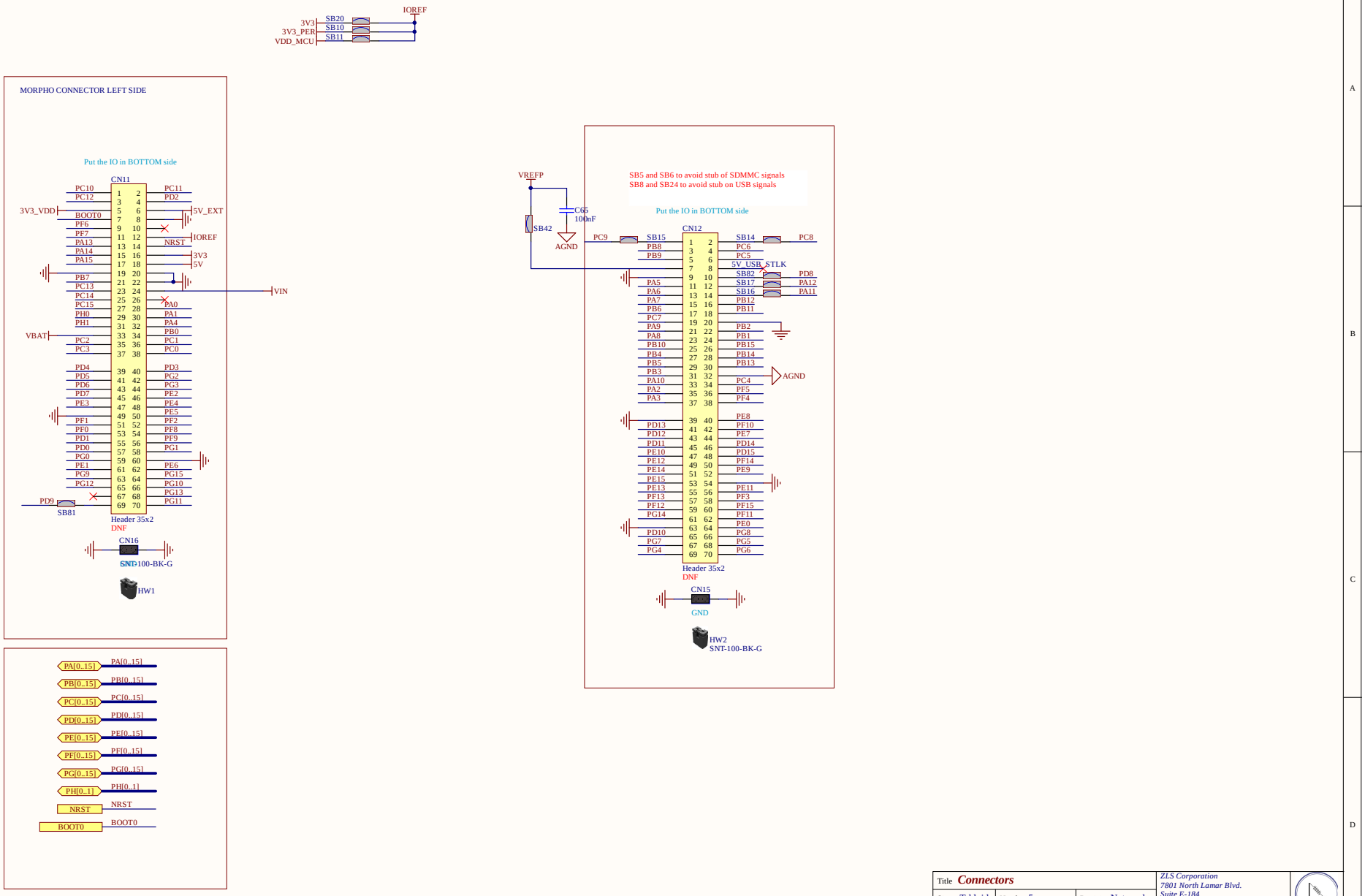
MCU PWR SUPPLIES



MCU DECAPS
Ceramic capacitor (Low ESR, ESR<1ohm)

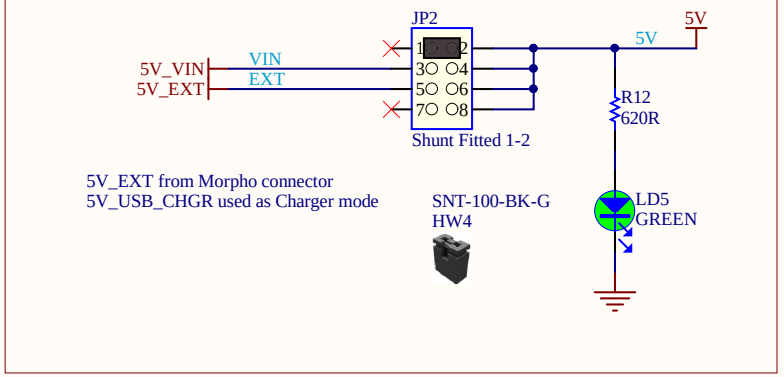


Title	MCU 144 POWER		ZLS Corporation 7801 North Lamar Blvd. Suite E-184 Austin, Texas 78752 USA (512) 453-0288
Size: Tabloid	Number:4	Revision Not used	
Date: 9/6/2019	Time: 1:44:52 PM	Sheet4 of 9	
File: C:\Users\zls\Desktop\Land_Meter_PCB\H743ZI2-MCU\MCU_144_POWER.SchDoc			

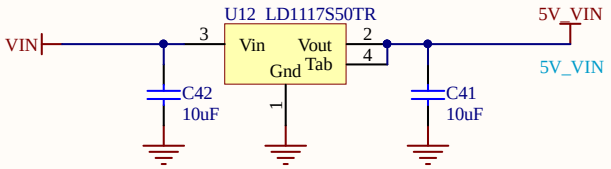


Title	**Connectors**		ZLS Corporation 7801 North Lamar Blvd. Suite E-184 Austin, Texas 78752 USA (512) 453-0288
Size: Tabloid	Number:5	Revision Not used	
Date: 9/6/2019	Time: 1:44:53 PM	Sheet5 of 9	
File: C:\Users\zls\Desktop\Land_Meter_PCB\H743ZI2-MCU\Connectors.SchDoc			

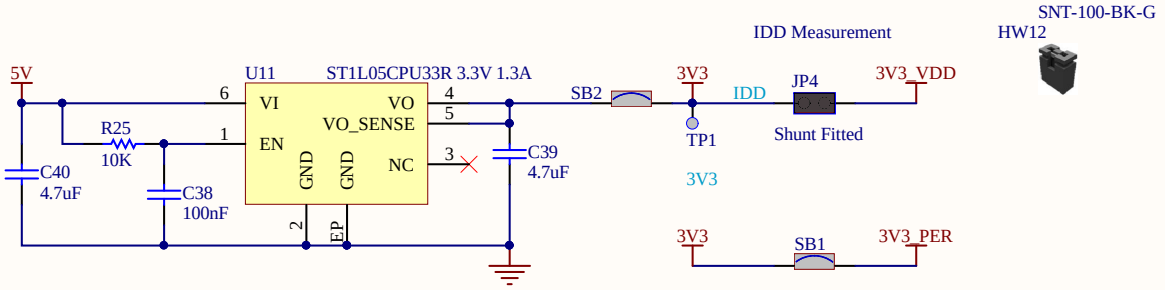
5V PWR SELECTION



VIN / 5V PWR



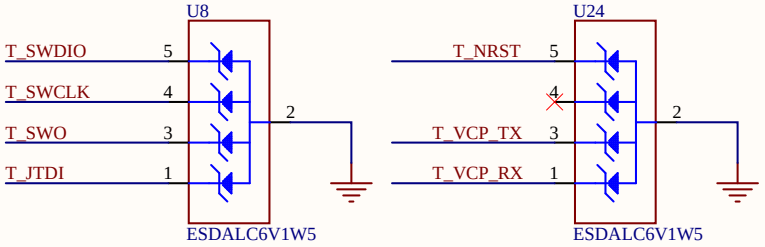
3V3 PWR



Title	***MAIN POWER 5V / 3V3 / 1V8***		
Size: Orcad A	Number:9	Revision:Not used	
Date: 9/6/2019	Time: 1:44:53 PM	Sheet 8 of 9	
File: C:\Users\zls\Desktop\Land_Meter_PCB\H743ZI2-MCU\Power_Board.SchDoc			

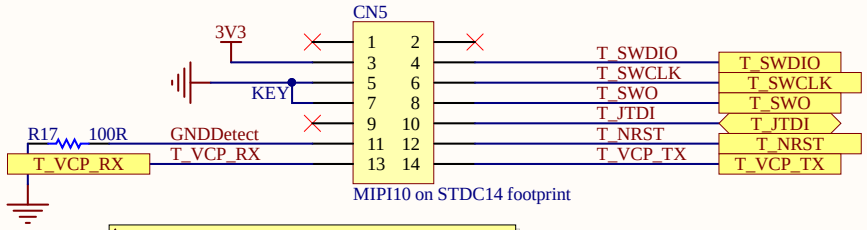
ZLS Corporation
7801 North Lamar Blvd.
Suite E-184
Austin, Texas 78752 USA
(512) 453-0288

ESD PROTECTIONS



Pin attributions on ESD can be swapped for layout optimisation

STDC14 Receiver



Specific constraints for T_SWDIO and T_SWCLK
(must be same length and must be Shielded).

Title	***STLINK_V3E***		*ZLS Corporation* *7801 North Lamar Blvd.* *Suite E-184* *Austin, Texas 78752 USA* *(512) 453-0288*
Size: Orcad A	Number:10	Revision:Not used	
Date: 9/6/2019	Time: 1:44:53 PM	Sheet 9 of 9	
File: C:\Users\zls\Desktop\Land_Meter_PCB\H743ZI2-MCU\ST_LINK_V3E.SchDoc			

Comment	Description	Designator	Quantity	Manufacturer	Manufacturer_Part_Number
SW-PUSH-CMS	Non-Open Push-Button	B1	1	WEALTHMETAL	TD-0341
SW-PUSH-CMS	Non-Open Push-Button	B2	1	WEALTHMETAL	TD-0341
Capacitor	Capacitor, MLCC, 100	C38, C46, C47, C49, C	19	YAGEO, MURATA	CC0402KRX7R7BB104, NRND_GRM155R71A104KA01, CC0402BRNPO9BN5R6, CC0402CRNPO9BN5R1
Capacitor	Capacitor, MLCC, 4.7µ	C39, C40, C48, C50, C	11	MURATA, YAGEO	GRM188R61A475ME15, GRM188R61C475KE11, CC0603KRX5R6BB225, CC0603KRX5R5BB104, CC0603KRX5R5BB105
Capacitor	Capacitor, MLCC, 10uF	C41, C42	2	YAGEO	CC0805KRX5R8BB106
Header 7x2	Header 5x2, 1.27mm,	CN5	1	SAMTEC	FTSH-105-01-L-DV-K
Header 35x2	Header, 35x2, 2,54mm	CN11, CN12	2	SAMTEC	TSW-135-07-x-D
Jumper_Header 2x1	Header, 2x1, 2,54mm,	CN15, CN16	2	SAMTEC	TSW-102-09-x-S
Shunt Black 2.54mm	SHUNT 2.54mm BLACK	HW1, HW2, HW3, HW4	6	SAMTEC	SNT-100-BK-G
BUTTON_HAT_BLUE	Blue Hat for switch TD	HW9	1	JIUBABA	988.16.09.3.00002_SH-517
BUTTON_HAT_BLACK	Black Hat for switch T	HW11	1	JIUBABA	988.16.09.3.00003_SH-517
Jumper_Header 4x2 Fitted 1-2	Header, 4x2, 2,54mm,	JP2	1	SAMTEC	TSW-104-07-x-D
Jumper_Header 2x1 Fitted	Header, 2x1, 2,54mm,	JP4	1	SAMTEC	TSW-102-07-x-S
Jumper_Header 3x1 Fitted 1-2	Header, 3x1, 2,54mm,	JP5	1	SAMTEC	TSW-103-07-F-S
LED_green	LED Green, 0603 SMD	LD5	1	OSRAM OPTO SEM	LG Q396-PS-35
Resistor	Resistor,620R,060	R12, R33, R34, R35, R	10	YAGEO	RC0603FR-07620RL, RC0603FR-0710KL, RC0603JR-070RL, RC0603FR-07100KL, RC0603FR-07330RL
Resistor	Resistor,100R,0402,	R17, R25	2	YAGEO	RC0402FR-07100RL, RC0402FR-0710KL
SB_ON	Solder Bridge ON	SB1, SB2, SB3, SB4,	28	YAGEO	RC0603JR-070RL
SB_ON	Solder Bridge 0402 ON	SB81, SB82	2	YAGEO	RC0402JR-070RL
ESDALC6V1W5	Dual Transil array for	U8, U24	2	STMICROELECTRO	ESDALC6V1W5
ST1L05CPU33R	LDO, 3.3V, 1.3A, Very	U11	1	STMICROELECTRO	ST1L05CPU33R
LD1117S50TR	IC REG LDO 5V 0.8A S	U12	1	STMICROELECTRO	LD1117S50TR
STM32H7A3ZIT6	STM32H7A3ZIT6U, LQ	U14	1	STMICROELECTRO	STM32H7A3ZIT6U
ESD-TRANSIL	ESD protection 6V1	U20, U23	2	STMICROELECTRO	ESDALC6V1-1U2
XTAL_2_PINS	Crystal 32.768kHz, 6p	X2	1	NDK	NX3215SA 32.768KHz EXS00A-MU00525
XTAL_4_PINS	Crystal 25MHz, 6pF, +	X3	1	NDK	NX2016SA 25MHz EXS00A-CS11321