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3	Power Management
4	STM32
5	EnvironmentalElements

REVİZYON / REVISION

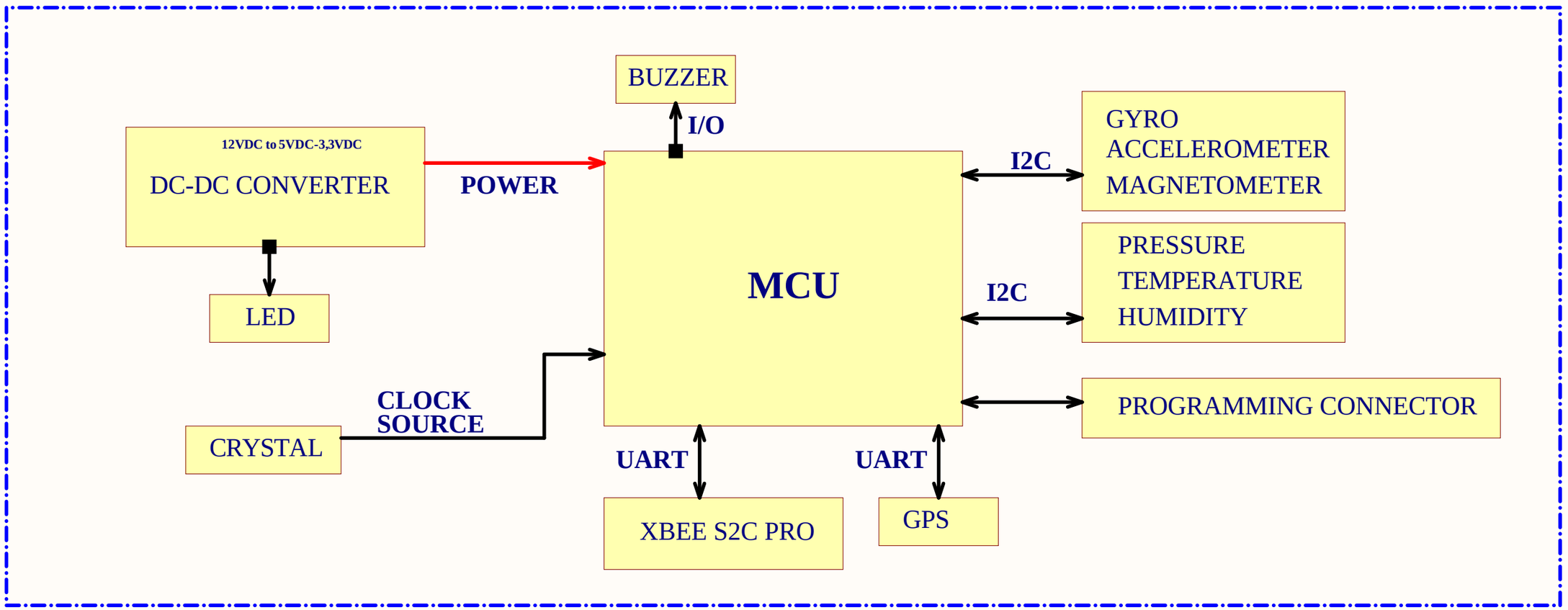
Sayfa Nu. Page No	Tarih Date	Açıklama / Description
1~5	20.10.2024	İlk Yayın

ÜRETİM NOTLARI / PRODUCTION NOTES

	Açıklama / Description
Kart Özellikleri Board Features	
Üretim Çıktıları Gerber Files	
Ekler Attachments	

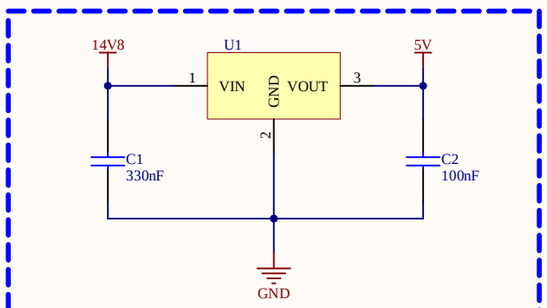
İLETİŞİM / CONTACT

DOSYA ADI / FILE NAME	Cover.SchDoc
TANIM / DESCRIPTION	Uçuş Kontrol Kartı
HAZIRLAYAN / PREPARED BY	Aşlı Kurt
YAYIN TARİHİ / REL. DATE	20.10.2024
BOYUT / SIZE	A3
SAYFA / SHEET	1 / 5



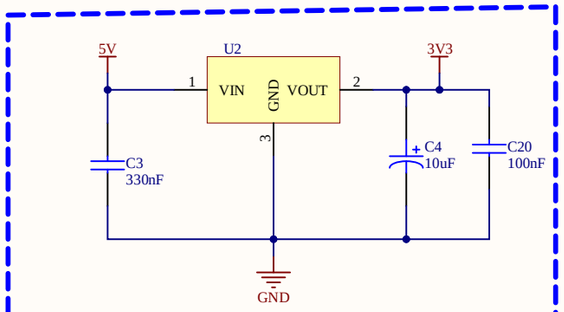
DOSYA ADI / FILE NAME: BlockDiagram.SchDoc	TANIM / DESCRIPTION: Uçuş Kontrol Kartı
Aslı Kurt	HAZIRLAYAN / PREPARED BY: Aslı Kurt
	YAYIN TARİHİ / REL. DATE: 20.10.2024 · BOYUT / SIZE: A3 · SAYFA / SHEET: 2 / 5

REGULATOR CIRCUITS



5V REGULATOR

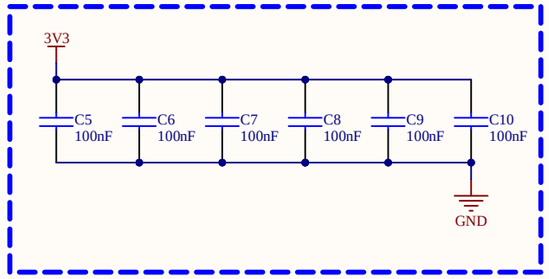
14.7V IN - 5V OUT



3.3V REGULATOR

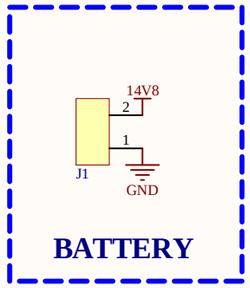
5V IN - 3.3V OUT

POWER CAPACITORS

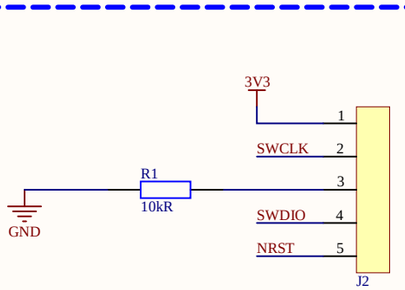


STM32 - BYPASS CAPACITORS

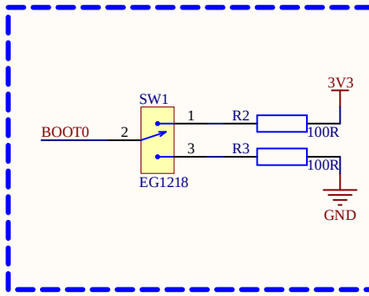
TERMINALS



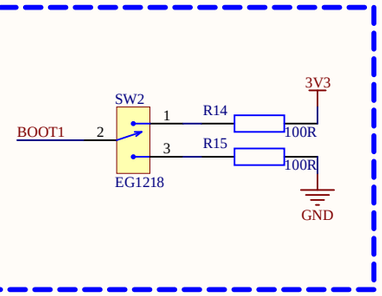
BATTERY



BOOT SWITCH



BOOT0 SWITCH

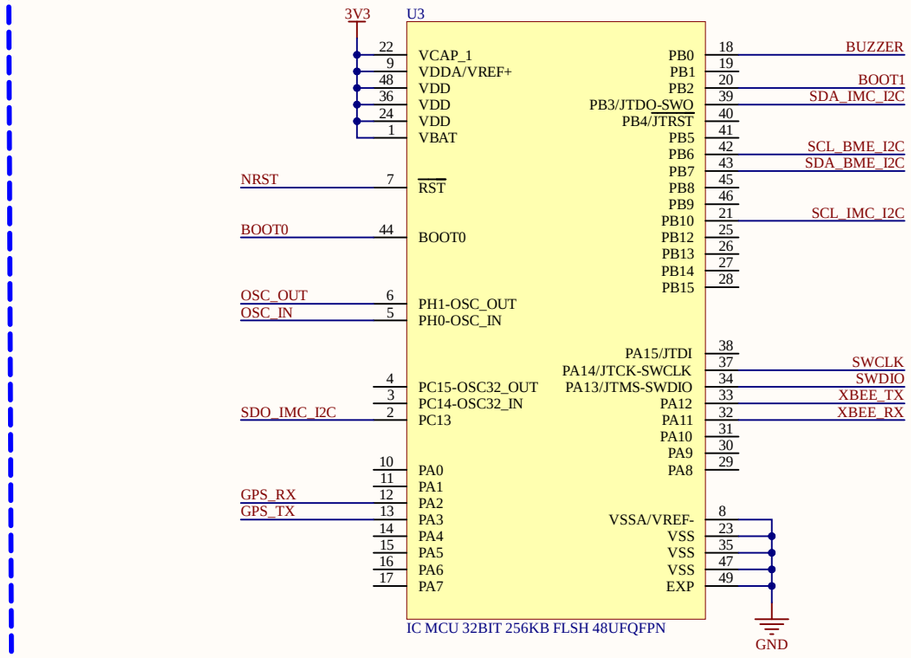


BOOT1 SWITCH

BOOT1	BOOT0	Memory
X	0	Main Flash
0	1	System
1	1	Embedded SRAM

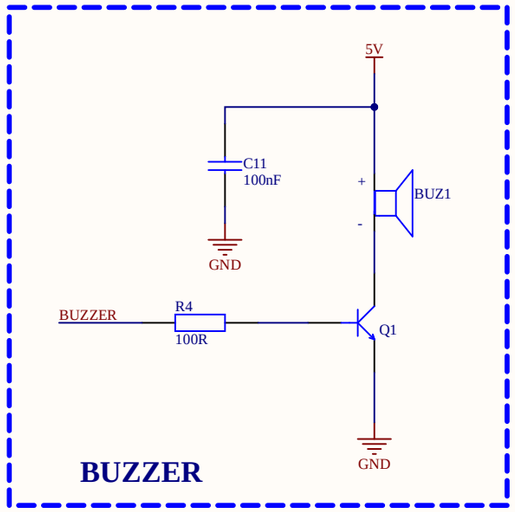
DOSYA ADI / FILE NAME: PowerManagement.SchDoc	TANIM / DESCRIPTION: Uçuş Kontrol Kartı
Aslı Kurt	HAZIRLAYAN / PREPARED BY: Aslı Kurt
YAYIN TARİHİ / REL. DATE: 20.10.2024	BOYUT / SIZE: A3
	SAYFA / SHEET: 3 / 5

STM32 CIRCUIT

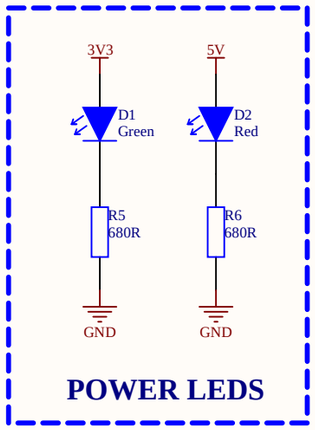


STM32F401CCU6TR

OUTPUTS

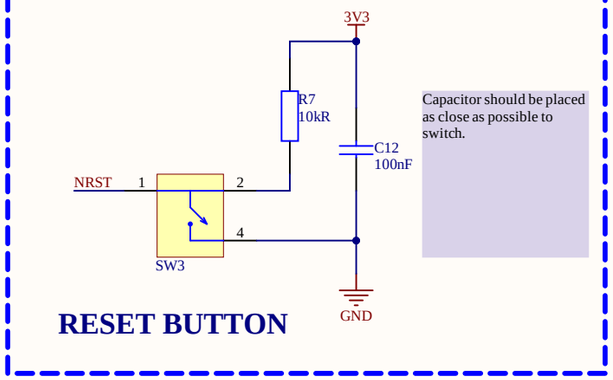


BUZZER

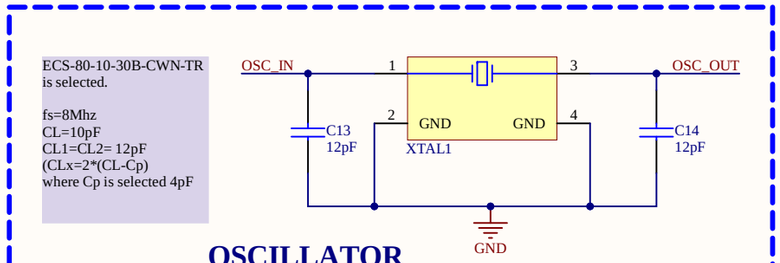


POWER LEDS

BUTTON & OSCILLATOR



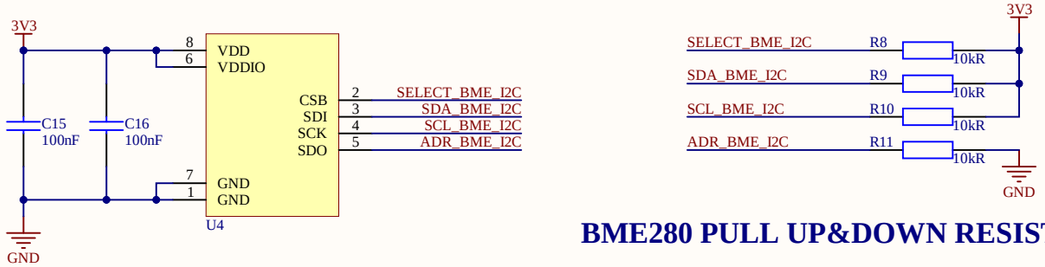
RESET BUTTON



OSCILLATOR

DOSYA ADI / FILE NAME: STM32.SchDoc	TANIM / DESCRIPTION: Uçuş Kontrol Kartı
Aslı Kurt	HAZIRLAYAN / PREPARED BY: Aslı Kurt
	YAYIN TARİHİ / REL. DATE: 20.10.2024 · BOYUT / SIZE: A3 · SAYFA / SHEET: 4 / 5

SENSORS



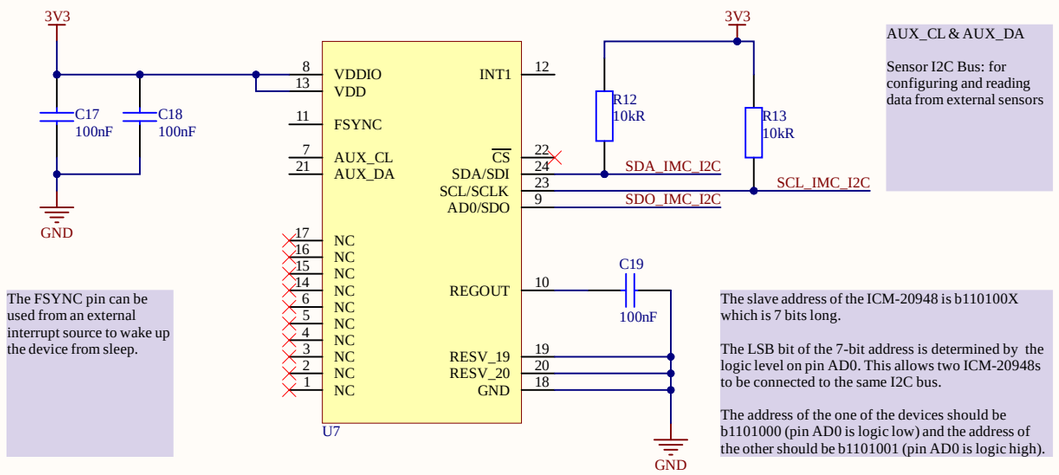
BME280

BME280 PULL UP&DOWN RESISTORS

CSB must be connected to VDDIO to select I²C interface.

SDI is bi directional with open drain to GND; it must be externally connected to VDDIO via a pull-up resistor.

The SDO pin cannot be left floating; if left floating, the I²C address will be undefined.



AUX_CL & AUX_DA

Sensor I2C Bus: for configuring and reading data from external sensors

The FSYNC pin can be used from an external interrupt source to wake up the device from sleep.

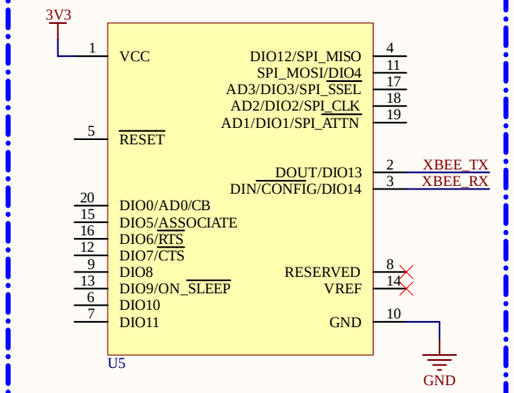
The slave address of the ICM-20948 is b110100X which is 7 bits long.

The LSB bit of the 7-bit address is determined by the logic level on pin AD0. This allows two ICM-20948s to be connected to the same I2C bus.

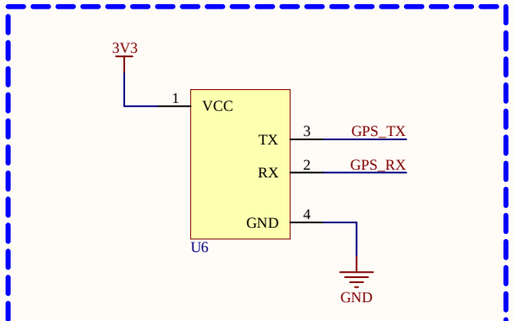
The address of the one of the devices should be b1101000 (pin AD0 is logic low) and the address of the other should be b1101001 (pin AD0 is logic high).

IMC20948 - 9DOF

COMMUNICATION

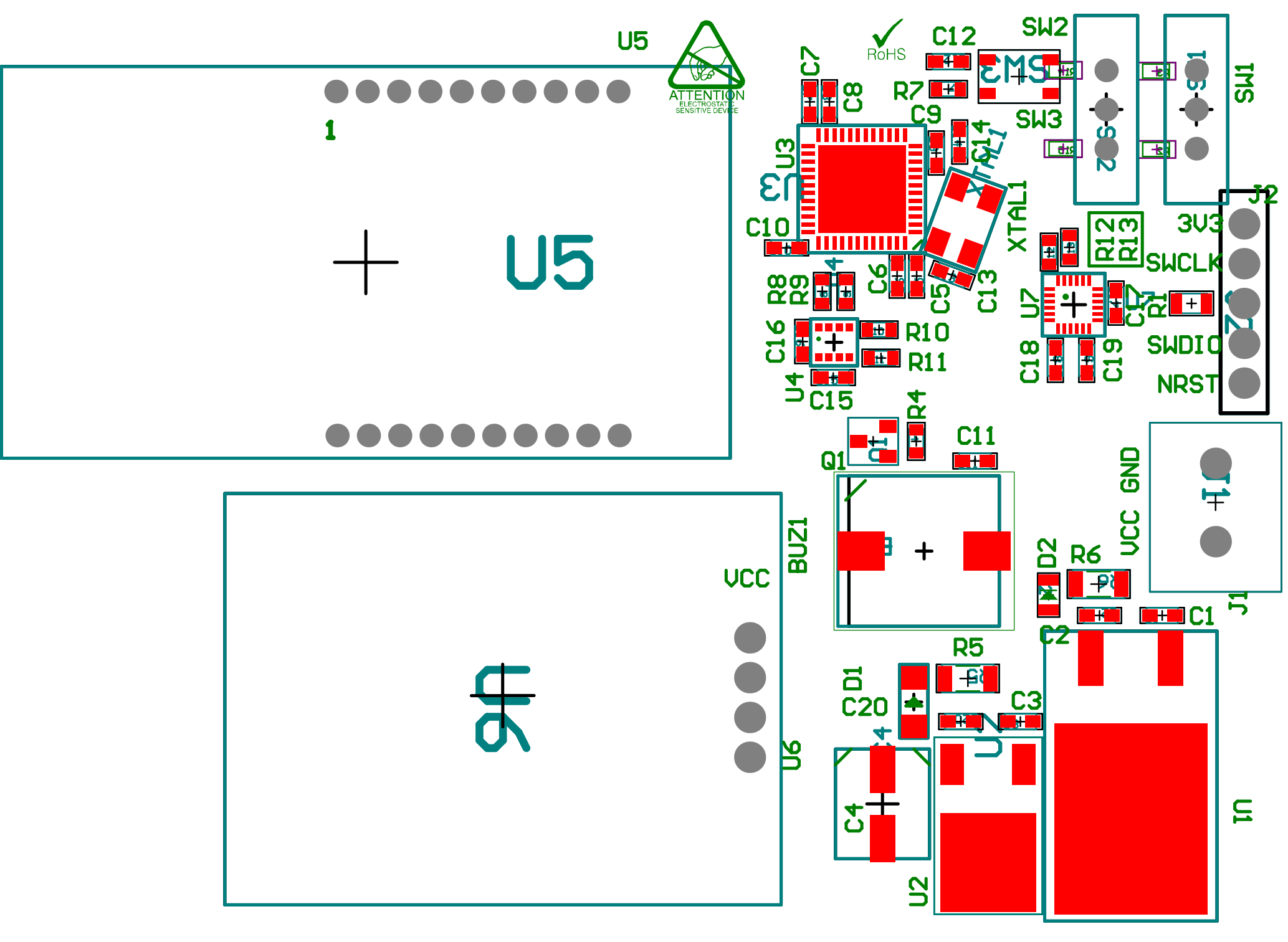


XBEE S2C PRO



GPS

DOSYA ADI / FILE NAME: EnviromentalElements.SchDoc	TANIM / DESCRIPTION: Uçuş Kontrol Kartı
Aslı Kurt	HAZIRLAYAN / PREPARED BY: Aslı Kurt
	YAYIN TARİHİ / REL. DATE: 20.10.2024 · BOYUT / SIZE: A3 · SAYFA / SHEET: 5 / 5


U5
1
U5
ATTENTION
ELECTROSTATIC
SENSITIVE DEVICE
RoHS
C12
C7
C8
R7
C9
U3
C14
XTAL1
C10
C6
C5
C13
R8
R9
C16
R10
R11
U4
C15
SW2
SW3
SW1
R12
R13
3V3
SWCLK
SWDIO
NRST
J2
U7
C17
R1
C18
C19
R4
C11
Q1
BUZ1
VCC
GND
J1
D2
R6
C1
C2
R5
D1
C20
C3
C4
U2
U1
U6

U5
BOOT1 BOOT0
X 0 Main Flash Memory
0 1 System Memory
1 X Embedded SRAM
U3
XTAL1
S2
S1
BOOT0
BOOT1
U7
BUZ1
Q1
T1
U2
C4
D2
R4
R3
R13
C3
C2
C1
J6
open source hardware
UÇUŞ KONTROL KARTI
FLIGHT CONTROL BOARD
ASELSAN

U5
BOOT1 BOOT0
X 0 Main Flash Memory
0 1 System Memory
1 X Embedded SRAM
U3
XTAL1
S2
S1
BOOT0
BOOT1
U7
BUZ1
Q1
T1
U2
C4
D2
R4
R3
R13
C3
C2
C1
J6
open source hardware
UÇUŞ KONTROL KARTI
FLIGHT CONTROL BOARD
ASELSAN

U5
J6
BOOT1
BOOT0
U3
U7
U2
BUZ1
Q1
J1
J2
J3
J4
J5
S1
S2
LED1
LED2
LED3
LED4
XTAL1
R13
C4
FLIGHT CONTROL BOARD
UÇUŞ KONTROL KARTI

Comment	Description	Designator	Footprint	LibRef	Quantity
SMI-1027-TW-5V-R	Audio Indicator 5V 30mA 80dBA 2.7KHz Resonant Frequency SMD	BUZ1	BUZZER_SMD	BUZZER_5V_SMD	1
CGA3E3X7R1H334K080AB	Multilayer Ceramic Capacitor, 0.33 uF, 50 V, ± 10%, X7R, 0603 [1608 Metric]	C1, C3	CAP_0603	CAP CER 330nF 0603	2
C0603C104K5RACTU	CAP CER 100nF %10 0603 SMD	C2, C5, C6, C7, C8, C9, C10, C11, C12, C15, C16, C17, C18, C19, C20	CAP_0603	CAP CER 100nF 0603	15
865080642006	CAP ALUM 10UF 20% 50V SMD	C4	CAP_RADIAL_D5_P5.5_SMD	CAP ALU ELEC 10uF 50V	1
CC0603FRNPO9BN120	Multilayer Ceramic Capacitor, 12 pF, 50 V, ï¿½1%, C0G (NP0), 0603 [1608 Metric]	C13, C14	CAP_0603	CAP CER 12pF 0603	2
150120GS75000	WL-SMCW SMT Mono-Color Chip LED Waterclear	D1	LED_GREEN_1206	LED GREEN 1206	1
LH R974-LP-1	LED Uni-Color Hyper Red 660nm 2-Pin Chip 0805(2012Metric) T/R	D2	LED_RED_0805	LED RED 0805	1
282836-2	Connector, Terminal Block; Wire Receptacle; 2 Pos.; 16-30 AWG; 0.197 in. CL; Sld	J1	TERMINAL	2x1 TERMINAL 5mm	1
61300511121		J2	5x1 Male Header 2.54mm	5x1 Male Header 2.54mm	1
MMBT3904-7-F	Transistor General Purpose BJT NPN 40 Volt 0.2A Automotive 3-Pin SOT-23	Q1	SOT-23F	MMBT3904-7-F	1
RC0805JR-0710KL	RES 10K OHM 5% 1/8W 0805	R1	RES_0805	RES 10K OHM 0805	1
RC0603JR-07100RL	RES 100 %5 OHM 0603 SMD	R2, R3, R4, R14, R15	RES_0603	RES 100 OHM 0603	5
RC1206FR-07680RL	SMD Chip Resistor, 680 Ohm, ï¿½1%, 250 mW, 1206 [3216 Metric], Thick Film, General Purpose	R5, R6	RES_1206	RES 680 OHM 1206	2
RC0603FR-0710KL	RES 10K %1 OHM 0603 SMD	R7, R8, R9, R10, R11, R12, R13	RES_0603	RES 10K OHM 0603	7
EG1218	Slide Switch, SPDT, ON-ON, 200 mA, 30V DC, TH, PC Pin, EG Series | E-Switch EG1218	SW1, SW2	SWITCHSLIDE_1POS_DIP	EG1218	2
PTS815 SJK 250 SMTR LFS	Microminiature Top Actuated Tactile Switch Momentary SPST-NO 50mA 12VDC Surface Mount T/R	SW3	BUTTON SMD	4.2mm x 3.2mm BUTTON	1
L7805CD2T-TR	Standard Regulator Pos 5V 1.5A 3-Pin(2+Tab) D2PAK T/R / IC REG LDO 5V 1.5A D2PAK	U1	D2PAK-TO-263-3	L7805CD2T-TR	1
LD29150DT33R	LD29150 Series 3.3 V 1.5 A Fixed Output SMT LDO Voltage Regulator - TO-252	U2	DPAK-TO252	LD29150DT33R	1
IC MCU 32BIT 256KB FLSH 48UFQFPN	MCU 32-bit STM32 ARM Cortex M4 RISC 256KB Flash 1.8V/2.5V/3.3V 48-Pin UFQFPN EP Tray	U3	48-UFQFPN (7x7)	STM32F401CCU6	1
BME280	Pressure, Temperature and Humidity Sensor Digital Output 1.8V 8-Pin LGA T/R	U4	8-VFLGA	BME280	1
XBEE S2C PRO	XBee S2C 802.15.4, 2.4GHz TH (RPSMA)	U5	XBEE_S2C_PRO	XB24CASIT-001	1
GY-NEO6MV2	GY-NEO6MV2 GPS Modülü - Uçuş Kontrol Sistem GPSi	U6	GY-NEO6MV2	GY-NEO6MV2	1
ICM-20948	Accelerometer and Gyroscope Compass 9-Axis Digital 24-Pin QFN T/R	U7	24-TFQFN Module Exposed Pad	ICM-20948	1
ECS-80-10-30B-CWN-TR	Crystal 8MHz ±10ppm (Tol) ±15ppm (Stability) 10pF FUND 100Ohm 4-Pin Mini-SMD T/R	XTAL1	4-SMD, No Lead	ECS-80-10-30B-CWN-TR	1

Design Rules Verification Report

Filename : C:\Users\asli\Desktop\Hardware Design\Project Files\InProgress\UcusKarti\Ucu

Warnings 0
Rule Violations 0

Warnings	
Total	0

Rule Violations	
Clearance Constraint (Gap=0.1mm) (All),(All)	0
Short-Circuit Constraint (Allowed=No) (All),(All)	0
Un-Routed Net Constraint ((All))	0
Un-Routed Net Constraint ((All))	0
Modified Polygon (Allow modified: No), (Allow shelved: No)	0
Width Constraint (Min=0.16mm) (Max=30mm) (Preferred=4mm) (All)	0
Power Plane Connect Rule(Direct Connect)(Expansion=0.508mm) (Conductor Width=0.254mm) (Air Gap=0.254mm)	0
Hole Size Constraint (Min=0.3mm) (Max=6.3mm) (All)	0
Hole To Hole Clearance (Gap=0.2mm) (All),(All)	0
Minimum Solder Mask Sliver (Gap=0.02mm) (All),(All)	0
Silk To Solder Mask (Clearance=0.2mm) (IsPad),(All)	0
Silk to Silk (Clearance=0.15mm) (All),(All)	0
Net Antennae (Tolerance=0mm) (All)	0
Board Clearance Constraint (Gap=0mm) (All)	0
Height Constraint (Min=0mm) (Max=25.4mm) (Prefered=12.7mm) (All)	0
Total	0