



STM32BOBBY
Reference manual

STM32BOBBY V1.0 Sunk Robotics (www.sunkrobotics.com)
STM32F405 advanced Arm MCU

STM32BOBBY Version 1.0



Overview

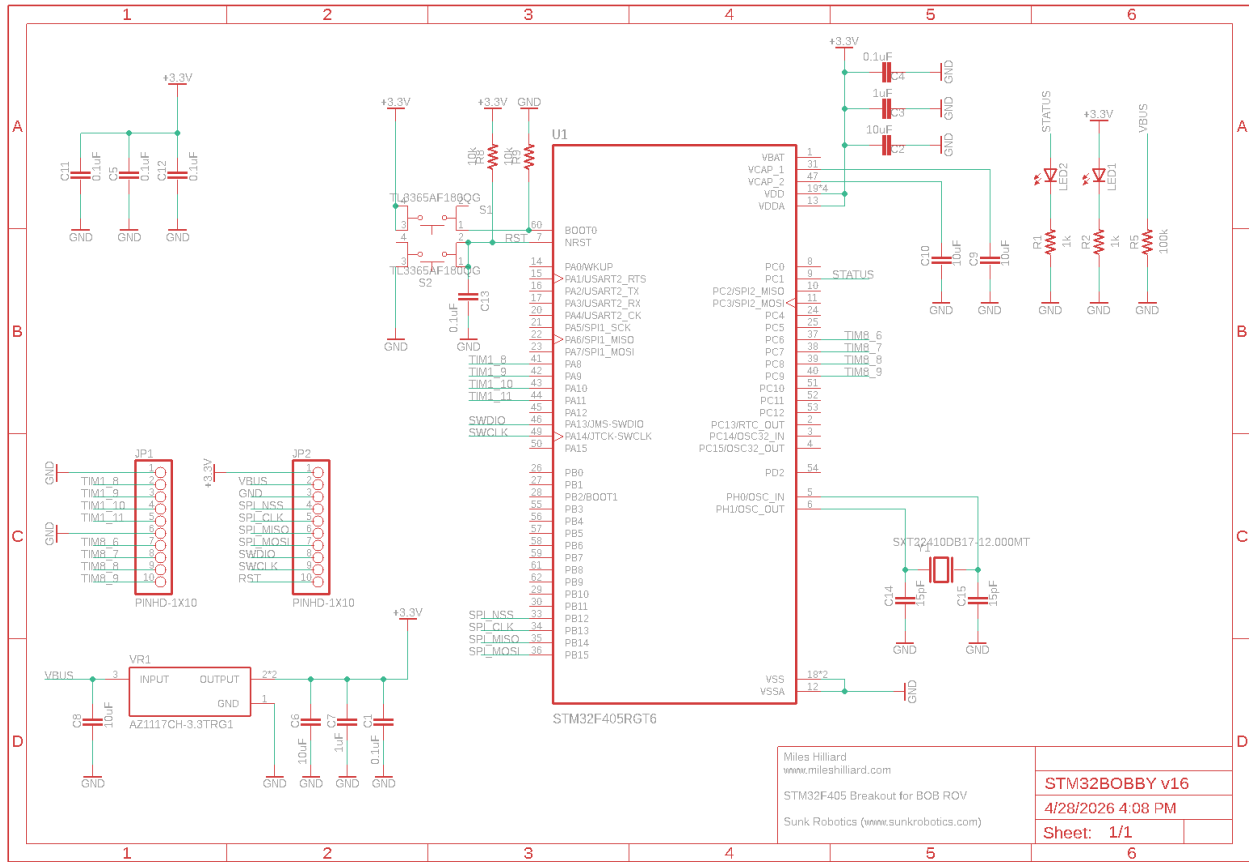
The STM32BOBBY breakout board is a small, lightweight, and highly optimized breakout board based on the STM32F405 MCU. It has functionality optimized for high-speed operations with the built-in timers. The board lacks a programming USB connector, thus firmware flashing is to be done with the broken out SWCLK and SWDIO pins.

This board was designed for BOB ROV (<https://www.sunkrobotics.com/bob>), an exploratory ROV designed for roles such as observation, sea bed sampling, infrastructure installation and repair. The STM32BOBBY plays a crucial role in the motor control, monitoring, and telemetry management for the eight onboard thrusters.

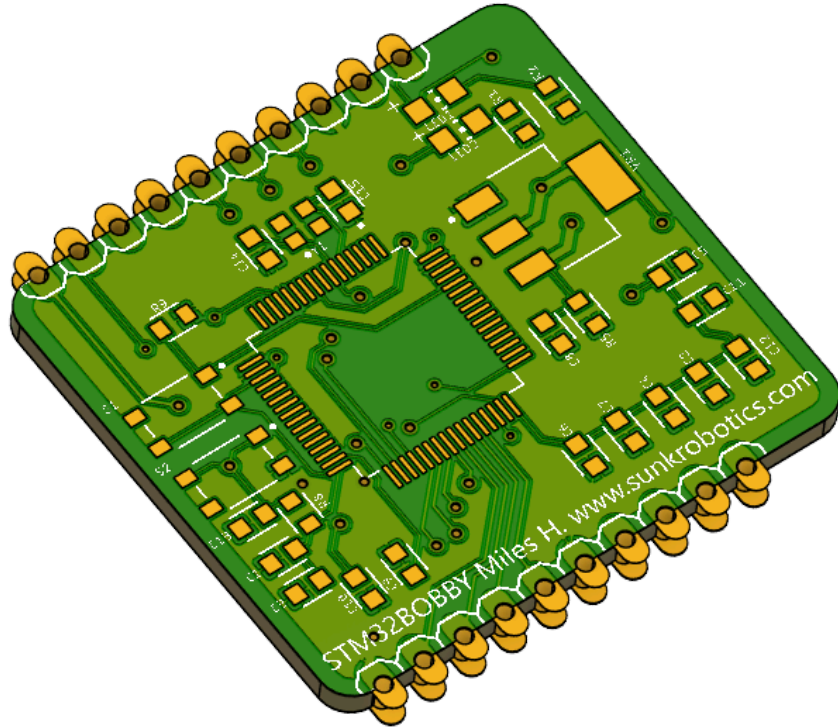
Specifications

Microcontroller (MCU):	STM32F405RGT6 (STMicroelectronics)
MCU Operating Voltage:	3.3 V (1.8 V to 3.6 V)
Supply Voltage/VBUS (Recommended):	5.0-12.0 V
Supply Voltage/VBUS (Abs. Limits):	4.6-15.0 V
Onboard Flash & Memory:	Up to 1MB
Extra protocols:	SPI
Digital I/O Pins:	8 (Timer support. 4x Timer 1, 4x Timer 8)
Clock Speed:	12.000 MHz
Dimensions:	29.21 x 31.75 mm

Schematic



Parts List (BOM)



Reference Desig	Quantity	Description	Package	Value	Manufacturer	Manufacturer Pa	Vendor	Vendor Part Num	Top/Bottom
C1, C4, C5, C11,	6	Capacitor - Generic	CAPC1608X85	0.1uF					Top
C2, C6, C8, C9, I	5	Capacitor - Generic	CAPC1608X85	10uF					Top
C3, C7	2	Capacitor - Generic	CAPC1608X85	1uF					Top
C14, C15	2	Capacitor - Generic	CAPC1608X85	15pF					Top
JP1, JP2	2	PIN HEADER	1X10	PINHD-1X10	Generic	Generic			Top
LED1, LED2	2	LED	CHIP-LEDD0805						Top
R1	1	Resistor Fixed - ANSI	RESC1608X80	1kI					Top
R2	1	Resistor Fixed - ANSI	RESC1608X80	1k					Top
R5	1	Resistor Fixed - ANSI	RESC1608X80	100k					Top
R8, R9	2	Resistor Fixed - ANSI	RESC1608X80	10k					Top
S1, S2	2		SW_TL3365AF180QG	TL3365AF180QG					Top
U1	1	Check availability	QFP50P1200X1200X180-64N	STM32F405RGT6					Top
VR1	1		VREG_AZ1117CH-3.3TRG1	AZ1117CH-3.3TRG1	Diodes Inc.				Top
Y1	1	Check availability	XTAL_SXT22410DB17-12.000MT	SXT22410DB17-12.000MT					Top

Board Pinout & Layout

Top-Down (Buttons Facing Upward)	
PIN (LEFT)	PIN (RIGHT)
GND	RST
TIM1_8	SWCLK
TIM1_9	SWDIO
TIM1_10	SPI_MOSI
TIM1_11	SPI_MISO
GND	SPI_CLK
TIM8_6	SPI_NSS
TIM8_7	GND
TIM8_8	VBUS
TIM8_9	3.3V

