

STM32G030C8T6 FK-G030M1-C8T6

STM32G030C8T6 FK-G030M1-C8T6 Core System Learning Board User Manual

Model: STM32G030C8T6 FK-G030M1-C8T6

1. INTRODUCTION

This manual provides essential information for the setup, operation, maintenance, and troubleshooting of the STM32G030C8T6 FK-G030M1-C8T6 Core System Learning Board. This development board is designed for learning and prototyping with the STM32G030 microcontroller, offering interfaces for SPI, LCD, and other peripherals.

2. PRODUCT OVERVIEW

The STM32G030C8T6 FK-G030M1-C8T6 is a compact development board featuring the STM32G030 microcontroller. It is suitable for various embedded system projects, providing access to the microcontroller's pins and integrated peripherals. The board is designed for ease of use in educational and hobbyist environments.



Figure 2.1: Close-up view of the STM32G030C8T6 microcontroller chip, showing its pin configuration and markings.

ISOMETRIC SEMICONDUCTOR ELECTRONIC COMPONENTS

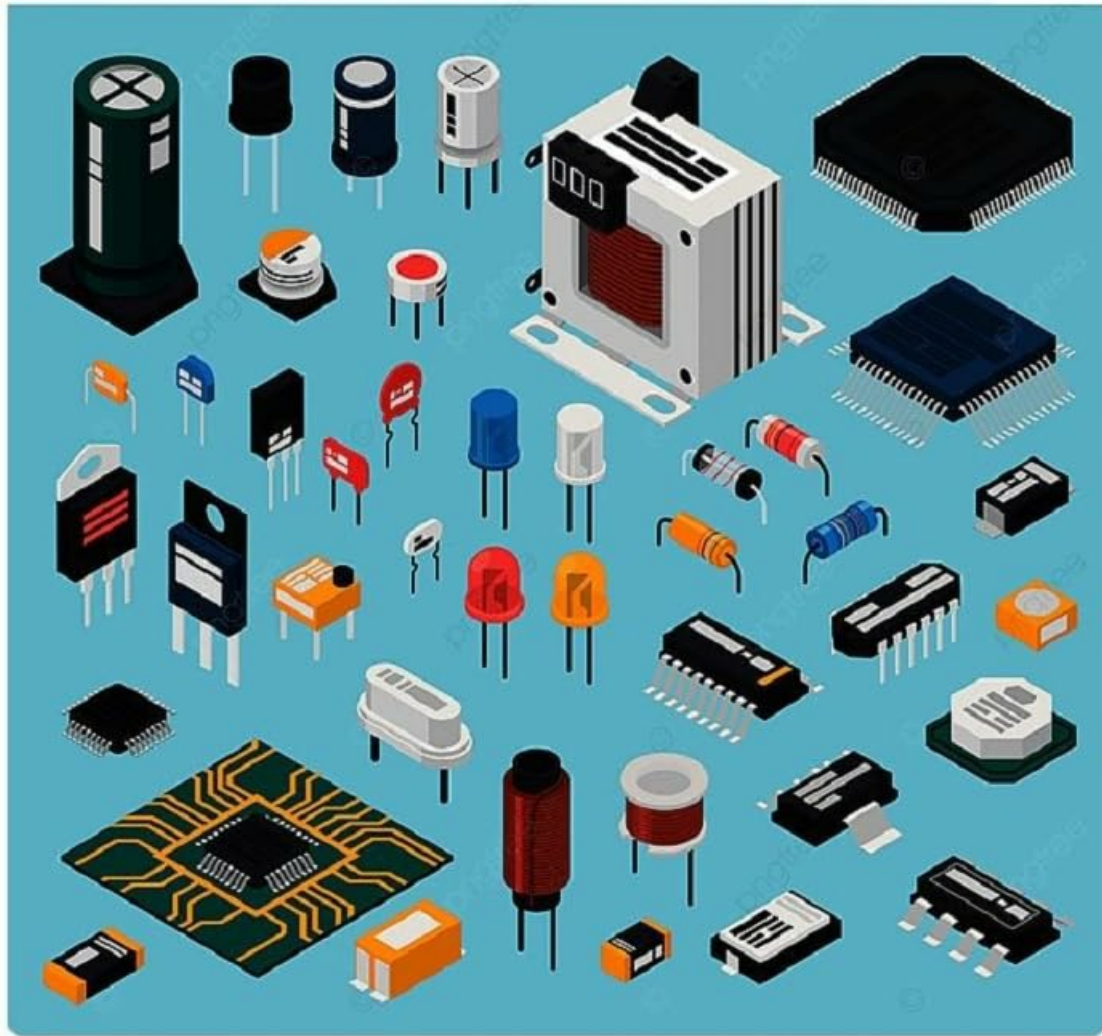


Figure 2.2: An isometric illustration depicting various semiconductor electronic components, including integrated circuits, resistors, capacitors, and LEDs, which are commonly used with development boards.

3. SPECIFICATIONS

- **Model Number:** STM32G030C8T6 FK-G030M1-C8T6
- **Microcontroller:** STM32G030C8T6
- **Interfaces:** SPI, LCD Interface (specific type may vary, refer to board schematics)
- **Material:** Electronic components (IC, Module, Voltage Regulator, LED, etc.)
- **Operating Temperature:** Standard
- **Heat Dissipation Capacity:** Standard

4. SETUP

Follow these steps to set up your STM32G030 Core System Learning Board:

1. **Unpacking:** Carefully remove the development board from its packaging. Inspect for any visible damage.
2. **Power Supply:** Connect a compatible 5V DC power supply to the board's power input. Ensure the voltage and current ratings are appropriate for the board and any connected peripherals.
3. **USB Connection:** Connect the board to your computer using a standard USB cable. This connection typically provides power and enables communication for programming and debugging.

4. **Driver Installation:** Install the necessary USB drivers for the STM32 microcontroller on your computer. These drivers are usually available from the STMicroelectronics website or your development environment's installation package.
5. **Development Environment:** Set up your preferred Integrated Development Environment (IDE), such as STM32CubeIDE or Keil MDK, and ensure it recognizes the connected board.
6. **Peripheral Connections:** If using external peripherals (e.g., SPI LCD, sensors), connect them to the appropriate headers on the development board according to the board's pinout diagram.

5. OPERATING INSTRUCTIONS

Operating the STM32G030 Core System Learning Board involves programming the microcontroller and interacting with its peripherals.

5.1. Programming the Microcontroller

1. **Project Creation:** Create a new project in your IDE, selecting the STM32G030C8T6 microcontroller.
2. **Code Development:** Write your application code using C/C++ or assembly language. Utilize the STM32 HAL (Hardware Abstraction Layer) or Low-Layer (LL) libraries for easier peripheral configuration.
3. **Compilation:** Compile your code within the IDE. Resolve any compilation errors.
4. **Flashing:** Use the IDE's integrated debugger/programmer to flash the compiled firmware onto the STM32G030C8T6 microcontroller via the USB or SWD (Serial Wire Debug) interface.
5. **Debugging:** Utilize the debugger to step through your code, set breakpoints, and monitor variables to ensure correct operation.

5.2. Using Peripherals (e.g., SPI LCD)

To use an SPI LCD with the board:

- **Connection:** Connect the SPI LCD module to the board's SPI pins (SCK, MISO, MOSI, CS) and power supply pins (VCC, GND). Ensure correct pin mapping.
- **Initialization:** In your code, initialize the SPI peripheral with the correct mode, baud rate, and data format.
- **LCD Driver:** Implement or integrate an LCD driver library that communicates with the specific LCD module via SPI commands.
- **Display Content:** Use the LCD driver functions to send data and commands to the LCD to display text, graphics, or other information.

6. MAINTENANCE

Proper maintenance ensures the longevity and reliable operation of your development board:

- **Storage:** Store the board in an anti-static bag when not in use to protect it from electrostatic discharge (ESD). Keep it in a dry, dust-free environment.
- **Cleaning:** If necessary, gently clean the board with a soft, dry brush or compressed air to remove dust. Avoid using liquids or abrasive materials.
- **Handling:** Always handle the board by its edges to minimize contact with components and prevent ESD damage.
- **Power Off:** Disconnect the power supply before making any physical connections or disconnections to the board or its peripherals.
- **Firmware Updates:** Regularly check for updated firmware or driver releases from STMicroelectronics for

improved performance and bug fixes.

7. TROUBLESHOOTING

Here are some common issues and their potential solutions:

- **Board Not Recognized by PC:**
 - Ensure USB cable is securely connected.
 - Verify that the correct USB drivers are installed.
 - Try a different USB port or cable.
 - Check if the board is receiving power (e.g., power LED is on).
- **Firmware Flashing Fails:**
 - Confirm that the correct target device (STM32G030C8T6) is selected in your IDE.
 - Check for proper connection of the programming interface (USB/SWD).
 - Ensure the microcontroller is not in a low-power mode that prevents flashing.
 - Verify power supply stability.
- **Peripheral (e.g., LCD) Not Working:**
 - Double-check all wiring connections to the peripheral.
 - Verify that the peripheral is receiving adequate power.
 - Review your code for correct initialization and configuration of the relevant communication protocol (e.g., SPI).
 - Consult the peripheral's datasheet for specific requirements.
- **Unexpected Behavior/Crashes:**
 - Use the debugger to step through your code and identify the point of failure.
 - Check for stack overflows or memory access violations.
 - Ensure all necessary clocks and peripherals are enabled and configured correctly.

8. WARRANTY AND SUPPORT

This product comes with a money-back guarantee, reflecting confidence in its quality and performance. For any questions, concerns, or technical assistance, please contact our customer support team. Our knowledgeable team is available to provide exceptional support and clarify any uncertainties you may have before or after your purchase. Please refer to your purchase documentation for specific warranty terms and contact information.