GODIYMODULES TINY85-20PU

ATtiny85 Development Board and TINY85-20PU IC

Model: TINY85-20PU | Brand: GODIYMODULES

1. Introduction

This manual provides detailed instructions for the GODIYMODULES ATtiny85 Development Board and the included TINY85-20PU IC. This product is designed to facilitate programming and development with ATtiny series microcontrollers, specifically supporting ATtiny13A, ATtiny25, ATtiny45, and ATtiny85. It serves as a convenient platform for hobbyists and professionals to experiment with these compact and versatile microcontrollers.

2. Package Contents

Please verify that all items listed below are present in your package:

- 1 x Pluggable Development Board for ATtiny13A/ATtiny25/ATtiny45/ATtiny85
- 1 x TINY85-20PU DIP IC (8-bit, 8KB Flash)

3. Product Overview

The GODIYMODULES ATtiny85 Development Board is a compact platform featuring a DIP socket for easy insertion and removal of ATtiny microcontrollers. It includes a Micro USB port for power supply and communication with an external programmer. The board is designed for straightforward integration into various development workflows.

The included TINY85-20PU is an 8-bit AVR microcontroller from Microchip Technology. It features 8KB of in-system programmable Flash memory, 512 bytes of EEPROM, and 512 bytes of SRAM. This IC supports SPI and TWI (I2C-compatible) communication protocols and operates efficiently within a voltage range of 1.8V to 5.5V, making it suitable for a wide array of embedded applications.

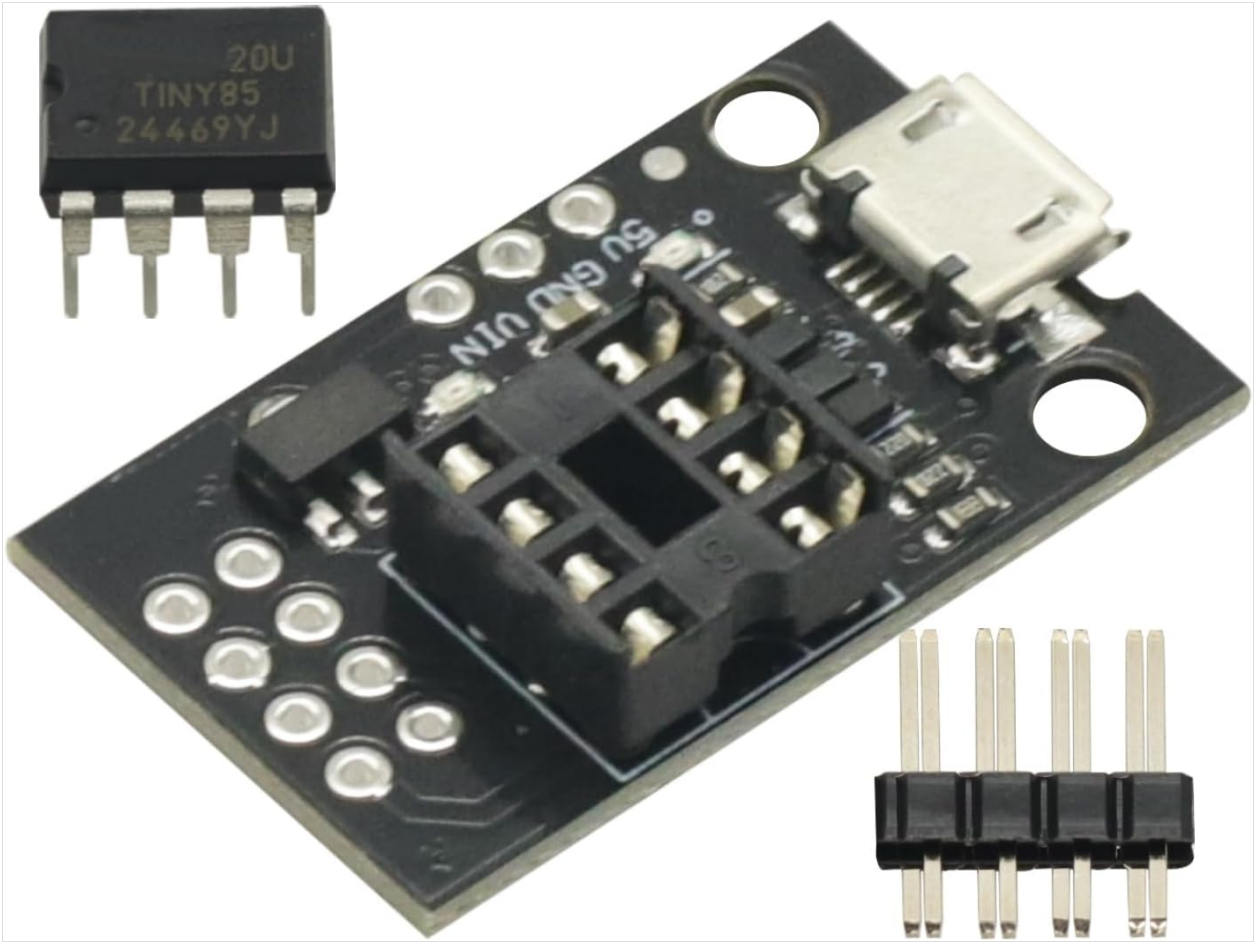

Figure 3.1: The TINY85-20PU DIP IC. This 8-pin integrated circuit is the core microcontroller for the development board.

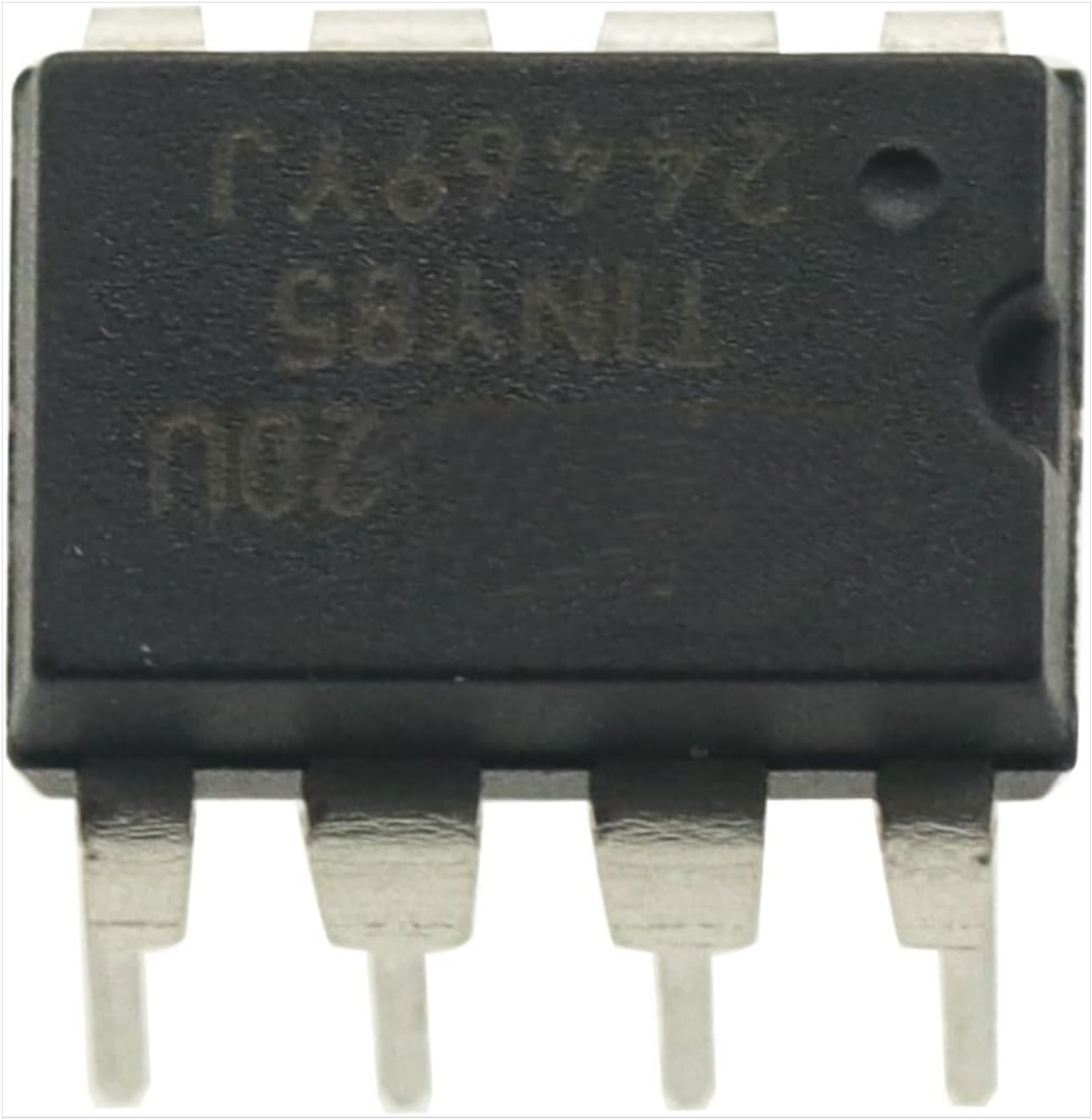

Figure 3.2: The ATtiny85 Development Board with the TINY85-20PU IC inserted and pin headers included. This image shows the complete assembly ready for connection.

4. Setup

Follow these steps to prepare your development board for use:

1. **Insert the ATtiny85 IC:** Carefully align the TINY85-20PU DIP IC with the 8-pin socket on the development board. Ensure the notch or dot on the IC aligns with the corresponding marking on the socket to ensure correct orientation. Gently press the IC into place until it is fully seated.
2. **Connect Power:** Connect the development board to a computer's USB port or a 5V USB power adapter using a Micro USB cable. The board will draw power through this connection.
3. **Connect to Programming Environment:** The board requires an external programmer to upload code to the ATtiny IC. Connect your preferred external programmer (e.g., USBasp, Arduino as ISP) to the appropriate programming pins on the development board. Refer to the pinout diagram for your specific programmer and the ATtiny85 for correct connections (typically using SPI pins: MOSI, MISO, SCK, RESET, VCC, GND).
4. **Install Drivers (if necessary):** Ensure that any required drivers for your external programmer are

installed on your computer.

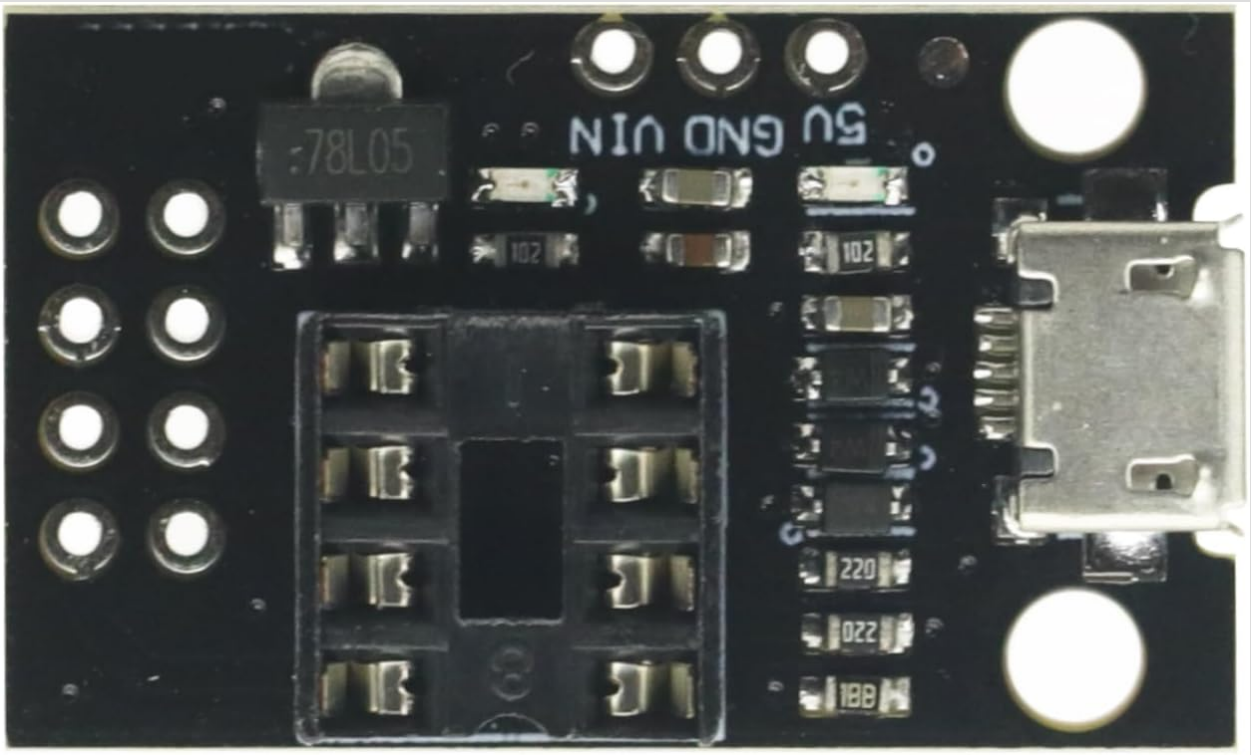

Figure 4.1: Top view of the ATtiny85 Development Board, showing the Micro USB port, DIP socket, and pin headers for connections.

5. Operating Instructions

Once the board is set up, you can proceed with programming the ATtiny85 IC:

1. **Prepare Your Development Environment:** Install the Arduino IDE or your preferred AVR development environment (e.g., Atmel Studio, PlatformIO) on your computer.
2. **Install ATtiny Core (for Arduino IDE):** If using the Arduino IDE, you will need to install the ATtiny board core. Navigate to File > Preferences, add the ATtiny board manager URL (e.g., http://drazzy.com/package_drazzy.com_index.json or similar for your preferred core) to the 'Additional Boards Manager URLs' field. Then, go to Tools > Board > Boards Manager, search for 'attiny', and install the appropriate core.
3. **Select Board and Programmer:** In your IDE, select the correct ATtiny board (e.g., 'ATtiny85' with 'Internal 8 MHz clock' or 'External 20 MHz clock' depending on your setup) and your external programmer (e.g., 'USBasp', 'Arduino as ISP').
4. **Write or Load Code:** Write your program or load an existing sketch/firmware designed for the ATtiny85.
5. **Upload Code:** Use the 'Upload' or 'Upload Using Programmer' function in your IDE to transfer the compiled code to the ATtiny85 IC on the development board. Ensure the external programmer is correctly connected and powered throughout this process.
6. **Testing:** After a successful code upload, you can disconnect the external programmer and observe the behavior of your programmed ATtiny85.

6. Maintenance

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

- Keep the development board and IC clean and free from dust, dirt, and moisture. Use a soft, dry brush or

compressed air for cleaning.

- Store components in an anti-static bag or container when not in use to prevent electrostatic discharge (ESD) damage.
- Avoid applying excessive force when inserting or removing the IC from the socket to prevent bending pins or damaging the socket.
- Do not expose the board to extreme temperatures or direct sunlight for extended periods.

7. Troubleshooting

If you encounter issues, refer to the following troubleshooting guide:

- **IC not recognized by programmer:**
  - Ensure the IC is correctly seated in the DIP socket and oriented properly (check the notch/dot).
  - Verify all connections between the development board and the external programmer are secure and correct.
  - Confirm the external programmer is powered and functioning correctly.
- **Upload errors (e.g., "programmer not responding", "signature mismatch"):**
  - Confirm the correct ATtiny board and programmer are selected in your IDE.
  - Verify that the external programmer's drivers are installed and up-to-date.
  - Check for short circuits or incorrect wiring on the programming lines.
  - Ensure the ATtiny85 IC is not damaged.
- **Board not powering on (no indicator lights, if present):**
  - Ensure the Micro USB cable is securely connected to both the board and the power source.
  - Try a different Micro USB cable or a different USB port/power adapter.
  - Verify the power source is active and providing 5V.
- **Program not running as expected after upload:**
  - Double-check your code for logical errors or incorrect pin assignments.
  - Verify the fuse settings for the ATtiny85 (e.g., clock source, brown-out detection) are correctly configured for your application.

Note: This development board does not include a pre-installed bootloader. An external programmer is required for initial programming and uploading code to the ATtiny IC.

8. Specifications

Brand	GODIYMODULES
Model Name	TINY85-20PU
Compatible Devices	ATtiny13A, ATtiny25, ATtiny45, ATtiny85
CPU Model	ATtiny85 (8-bit AVR Microcontroller)
Flash Memory (IC)	8 KB
SRAM (IC)	512 Bytes
EEPROM (IC)	512 Bytes

Connectivity Technology	USB (for power/programmer communication)
Operating Voltage	1.8V to 5.5V
Total USB Ports	1 (Micro USB)
Package Includes	1x Development Board, 1x TINY85-20PU DIP IC

9. Warranty and Support

This product is manufactured by GODIYMODULES. For specific warranty details, please refer to the warranty information provided at the time of purchase or contact GODIYMODULES directly.
For technical assistance, troubleshooting, or any other support inquiries, please reach out to GODIYMODULES through their official customer service channels or the retailer from whom you purchased the product. Please have your product model (TINY85-20PU) and purchase information ready when contacting support.