PIC10F200 Reference

K

June 3, 2020

Contents

1	PIC	C10F200 Datasheet	3		
2	Tutorials				
	2.1	Circuit Bread	6		
		2.1.1 Part 1	6		
		2.1.2 Part 2	6		
		2.1.3 Part 3	6		
		2.1.4 Part 4	6		
		2.1.5 Part 5	6		
		2.1.6 Part 6	7		
		2.1.7 Part 7	7		
		2.1.8 Part 8	7		
		2.1.9 Part 9	7		
		2.1.10 Special	7		
		2.1.11 Part 10	7		
		2.1.12 Part 11	7		
		2.1.13 Part 12	7		
		2.1.14 Part 13	7		
		2.1.15 Part 14	8		
		2.1.16 Part 15	8		
		2.1.17 Part 16	8		
		2.1.18 Part 17	8		
		2.1.19 Part 18	8		
		2.1.20 Part 19	8		
		2.1.21 Part 20	8		
3	PIC	Ckit TM 3 Programmer/Debugger	9		
	3.1	PICkit TM 3 Programmer/Debugger Labels and Pinout	9		
	3.2	PICkit TM 3 Programmer/Debugger User's Guide	9		
	3.3	PICkit TM 3 In-Circuit Debugger/Programmer User's Guide			
		For MPLAB® X IDE	9		

4	Inte	egrated Development Environments	9
	4.1	MPLAB X® IDE	9
		4.1.1 MPLAB Archives	9
	4.2	Manuals	10

1 PIC10F200 Datasheet

Here is a link to the PIC10F200 Datasheet.

Table of Contents

- 1. General Description (Page 4)
 - 1.1 Applications (Page 4)
- 2. PIC10F200/202/204/206 Device Varieties (Page 5)
 - 2.1 Quick Turn Programming (QTP) Devices (Page 5)
 - 2.2 Serialized Quick Turn ProgrammingSM (SQTPSM) Devices (Page 5)
- 3. Architectual Overview (Page 6)
 - 3.1 Clock Scheme/Instruction Cycle (Page 10)
 - 3.2 Instruction Flow/Pipelining (Page 10)
- 4. Memory Organization (Page 11)
 - 4.1 Program Memory Organization for the PIC10F200/204 (Page 11)
 - 4.2 Program Memory Organization for the PIC10F202/206 (Page 12)
 - 4.3 Data Memory Organization (Page 12)
 - 4.3.1 GENERAL PURPOSE REGISTER FILE (Page 12)
 - 4.3.2 SPECIAL FUNCTION REGISTERS (Page 14)
 - 4.4 STATUS Register (Page 15)
 - 4.5 OPTION Register (Page 16)
 - 4.6 OSCCAL Register (Page 17)
 - 4.7 Program counter (Page 18)
 - 4.7.1 EFFECTS OF RESET (Page 18)
 - 4.8 Stack (Page 18)
 - 4.9 Indirect Data Addressing: INDF and FSR Registers
 - 4.10 Indirect Addressing
- 5. I/O Port (Page 20)
 - 5.1 GPIO (Page 20)
 - 5.2 TRIS Registers (Page 20)
 - 5.3 I/O Interfacing (Page 20)
 - 5.4 I/O Programming Considerations (Page 21)
 - 5.4.1 BIDIRECTIONAL I/O PORTS (Page 21)

- 5.4.2 SUCCESSIVE OPERATIONS ON I/O PORTS (Page 21)
- 6. Timer Module and TMR Register (PIC10F200/202) (Page 23)
 - 6.1 Using Timer0 with an External Clock (PIC10F200/202) (Page 24)
 - 6.1.1 EXTERNAL CLOCK SYNCRONIZATION (Page 24)
 - 6.1.2 TIMERO INCREMENT DELAY (Page 25)
 - 1 Prescaler (Page 25)
 - 6.2.1 SWITCHING PRESCALER ASSIGNMENT (Page 25)
- 7. Timer Module and TMR Register (PIC10F204/206) (Page 27)
 - 7.1 Using Timer0 with an External Clock (PIC10F204/206) (Page 28)
 - 7.1.1 EXTERNAL CLOCK SYNCRONIZATION (Page 28)
 - 7.1.2 TIMERO INCREMENT DELAY (Page 29)
 - 7.2 Prescaler (Page 29)
 - 7.2.1 SWITCHING PRESCALER ASSIGNMENT (Page 29)
- 8. Comparator Module (Page 31)
 - 8.1 Comparator Configuration (Page 32)
 - 8.2 Comparator Operation (Page 33)
 - 8.3 Comparator Reference (Page 33)
 - 8.4 Comparator Response Time (Page 33)
 - 8.5 Comparator Output (Page 33)
 - 8.6 Comparator Wake-up Flag (Page 33)
 - 8.7 Comparator Operation During Sleep (Page 33)
 - 8.8 Effects of a Reset (Page 33)
 - 8.9 Analog Input Connection Considerations (Page 33)
- 9. Special Features of the CPU (Page 35)
 - 9.1 Configuration Bits (Page 35)
 - 9.2 Oscillator Configurations (Page 36)
 - 9.2.1 OSCILLATOR TYPES (Page 36)
 - 9.2.2 INTERNAL 4MHz OCILLATOR (Page 36)
 - 9.3 Reset (Page 36)
 - $9.3.1 \overline{\text{MCLR}} \text{ ENABLE (Page 37)}$
 - 9.4 Power-on-Reset (POR) (Page 37)
 - 9.5 Device Reset Timer (DRT) (Page 40)

- 9.6 Watchdog Timer (Page 40)
 - 9.6.1 WDT PERIOD
 - 9.6.2 WDT PROGRAMMING CONSIDERATIONS
- 9.7 Time-out Sequence, Power-down and Wake-up from Sleep Status Bits (TO, PD, GPWUF, CWUF) (Page 42)
- 9.8 Reset on Brown-out (Page 42)
- 9.9 Power-down Mode (Sleep) (Page 43)
 - 9.9.1 SLEEP (Page 43)
 - 9.9.2 WAKE-UP FROM SLEEP (Page 43)
- 9.10 Program Verification/Code Protection (Page 44)
- 9.11 ID Locations (Page 44)
- 9.12 In-Circuit Serial Programming TM (Page 44)
- 10. Instruction Set Summary (Page 45)
- 11. Development Support (Page 53)
 - 11.1 MPLAB X Integrated Development Environment Software (Page 53)
 - 11.2 MPLAB XC Compilers (Page 54)
 - 11.3 MPASM Assembler (Page 54)
 - 11.4 MPLINK Object Linker/MPLIB Object Librarian (Page 54)
 - 11.5 MPLAB Assembler, Linker and Librarian for Various Device Families (Page 54)
 - 11.6 MPLAB X SIM Software Simulator (Page 55)
 - 11.7 MPLAB REAL ICE In-Circuit Emulator System (Page 55)
 - 11.8 MPLAB ICD 3 In-Circuit Debugger System (Page 55)
 - 11.9 PICkit 3 In-Circuit Debugger/Programmer (Page 55)
 - 11.10 PMLAB PM3 Device Programmer (Page 55)
 - 11.11 Demonstration/Development Boards, Evaluation Kits, and Starter Kits (Page 56)
 - 11.12 Third Party Development Tools (Page 56)
- 12. Electrical Characteristics (Page 57)
 - 12.1 DC Characteristics: PIC10F200/202/204/206 (Industrial) (Page 59)
 - 12.2 DC Characteristics: PIC10F200/202/204/206 (Extended) (Page 60)
 - 12.3 DC Characteristics: PIC10F200/202/204/206 (Industrial, Extended) (Page 61)
 - 12.4 Timing Parameter Symbology and Load Conditions PIC10F200/202/204/206 (Page 63)
- 13. DC and AC Characteristics Graphs and Tables (Page 67)

14. Packaging Information (Page 75)

- 14.1 Package Marking Information (Page 75)
- 14.2 Package Details (Page 78)

APPENDIX A: REVISION HISTORY (Page 84)

REVISION C (August 2006) (Page 84)

REVISION D (April 2007) (Page 84)

REVISION E (October 2013) (Page 84)

REVISION F (September 2014) (Page 84)

The Microchip Website (Page 85)

Customer Change Notification Service (Page 85)

Customer Support (Page 85)

Product Identification System (Page 86)

2 Tutorials

2.1 Circuit Bread

2.1.1 Part 1

How to use a Simple Microcontroller Series Intro (PIC10F200) - Part 1

2.1.2 Part 2

Equiptment for our Simple Microcontroller tutorials (PIC10F200) - Part 2

2.1.3 Part 3

Microcontroller Architecture - Part 3 Simple Microcontroller (PIC10F200)

2.1.4 Part 4

Circuit Setup / MPLAB X IDE - Part 4 Simple Microcontroller (PIC10F200)

2.1.5 Part 5

The First Assembly Program - Part 5 Simple Microcontroller (PIC10F200)

2.1.6 Part 6

How to Blick an LED - Part 6 Microcontroller Basics (PIC10F200)

2.1.7 Part 7

Creating a PWM in Assembly - Part 7 Microcontroller Basics (PIC10F200)

2.1.8 Part 8

Musical Microcontroller - Part 8 Microcontroller Baics (PIC10F200)

2.1.9 Part 9

Button Inputs - Part 9 Microcontroller Basics (PIC10F200)

2.1.10 Special

Christmas Lights Special - Microcontroller Basics (PIC10F200)

2.1.11 Part 10

Servo motor, indirect addressing, and electric lock - Part 10 Microcontroller Basics (PIC10F200)

2.1.12 Part 11

Communicating with a PC using UART - Part 11 Microcontroller Basics (PIC10F200)

2.1.13 Part 12

Bluetooth Controlled Robot - Part 12 Microcontroller Basics (PIC10F200)

2.1.14 Part 13

Line Following Car - Part 13 Microcontroller Basics (PIC10F200)

2.1.15 Part 14

Obstacle Avoidance Robot - Part 14 Microcontroller Basics (PIC10F200)

2.1.16 Part 15

I2C FM Radio - Part 15 Microcontroller Basics (PIC10F200)

2.1.17 Part 16

Digital Thermometer - Part 16 Microcontroller Basics (PIC10F200)

2.1.18 Part 17

Sine Wave Generator - Part 17 Microcontroller Basics (PIC10F200)

2.1.19 Part 18

Digital Voltmeter - Part 18 Microcontroller Basics (PIC10F200)

2.1.20 Part 19

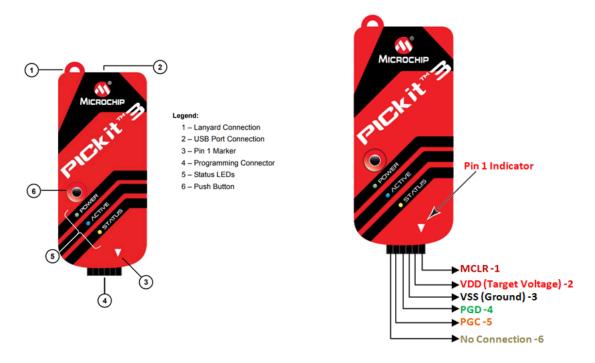
Infrared RGB LED controller - Part 19 Microcontroller Basics (PIC10F200)

2.1.21 Part 20

1602 Character LCD - Part 20 Microcontroller Basics (PIC10F200)

3 PICkitTM 3 Programmer/Debugger

3.1 PICkitTM 3 Programmer/Debugger Labels and Pinout



3.2 PICkitTM 3 Programmer/Debugger User's Guide

https://ww1.microchip.com/downloads/en/DeviceDoc/51795B.pdf

3.3 PICkit $^{\text{TM}}$ 3 In-Circuit Debugger/Programmer User's Guide For MPLAB $^{\circledR}$ X IDE

http://ww1.microchip.com/downloads/en/devicedoc/52116a.pdf

4 Integrated Development Environments

4.1 MPLAB X® IDE

MPLAB X® Integrated Development Environment

https://www.microchip.com/en-us/development-tools-tools-and-software/mplab-x-ide https://www.microchip.com/en-us/development-tools-tools-and-software/mplab-x-ide

4.1.1 MPLAB Archives

This includes archives for:

• MPLAB X IDE

- MPLAB IDE
- Language Tools
- MPLAB C Compiler for PIC18 MCUs
- MPLAB C Compiler for PIC24 MCUs and dsPIC® DSCs
- MPLAB C Compiler for PIC32 MCUs
- HI-TECH C Compilers
- Source Code
- $\bullet \ \mathrm{PICkit^{TM}} \ \mathrm{Programmer/Debugger}$
- Funcitional Saftey Compilers

https://www.microchip.com/en-us/development-tools-tools-and-software/mplab-ecosystem-do

4.2 Manuals

MPASMTM Assembler, MPLINKTM Object Linker, MPLIBTM Object Librarian User's Guide http://ww1.microchip.com/downloads/en/DeviceDoc/33014K.pdf