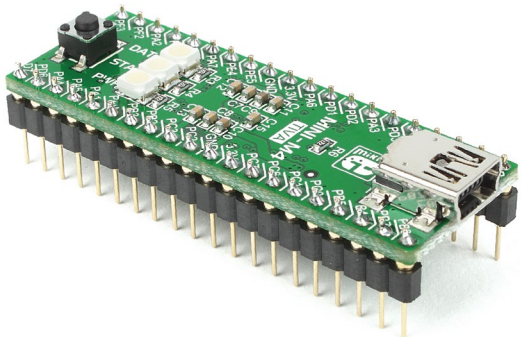

MINI-M4™

development board for Tiva™ C Series

The whole Tiva™ C Series development board fitted in DIP40 form factor, containing powerful Tiva™ C Series TM4C123GH6PM microcontroller.

MINI ARM

MikroElektronika
DEVELOPMENT TOOLS | COMPILERS | BOOKS

TO OUR VALUED CUSTOMERS

I want to express my thanks to you for being interested in our products and for having confidence in MikroElektronika.

The primary aim of our company is to design and produce high quality electronic products and to constantly improve the performance thereof in order to better suit your needs.

Nebojsa Matic
General Manager

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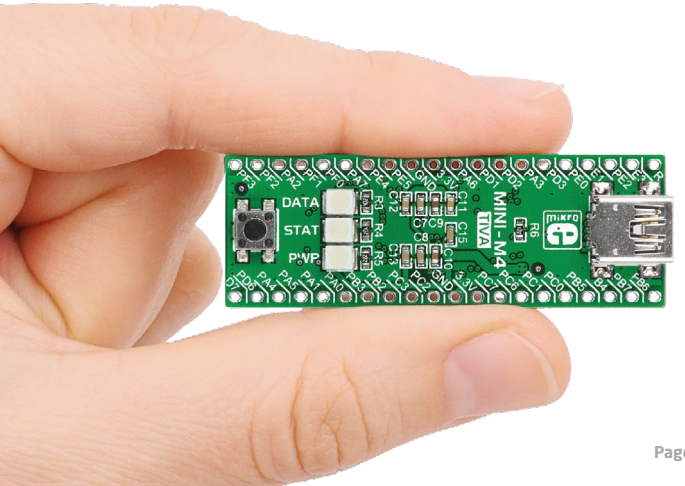
Table of Contents

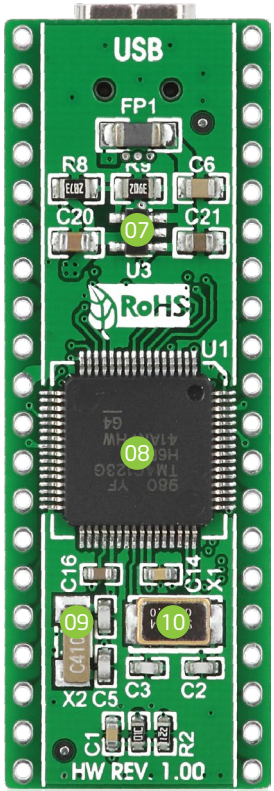
Introduction to MINI-M4 for Tiva™ C Series

Miniature and powerful development tool designed to work as a standalone device or as a MCU card in DIP40 socket. MINI-M4 for Tiva™ C Series is preprogrammed with USB HID bootloader so it is not necessary to have an external programmer. If you need to use an external programmer (like mikroProg™) attach it to MINI-M4 for Tiva™ C Series via pads marked with PC0 (TCK/SWC), PC1 (TMS/SWD), PC2 (TDI), PC3 (TDO) and RST#.



Key features

01 Connection pads
02 USB MINI-B connector
03 DATA LED
04 STAT LED
05 POWER supply LED
06 Reset button
07 Power supply regulator
08 Microcontroller Tiva™ C Series TM4C123GH6PM
09 32.768kHz Crystal oscillator
10 16 MHz Crystal oscillator



System specifications

power supply

3.3V via pads or 5V via USB

power consumption

depends on MCU state (max current into 3.3V pad is 300mA)

board dimensions

50.8 x 17.78mm (2 x 0.7")

weight

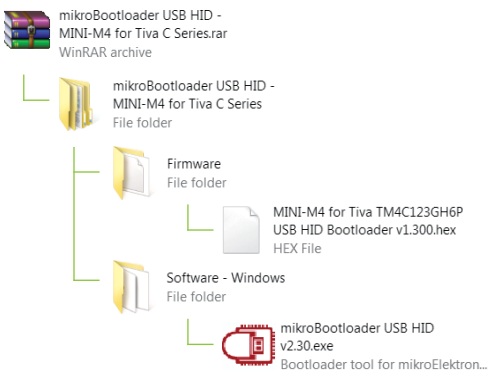
~6g (0.013 lbs)

1. Programming with mikroBootloader

You can program the microcontroller with the bootloader that is preprogrammed into the device by default. To transfer .hex file from a PC to the MCU you need the bootloader software (**mikroBootloader USB HID**) which can be downloaded from:

www.mikroe.com/downloads/get/2108/mikrobootloader_mini_m4_tiva_v230.zip

After the software is downloaded unzip it to the desired location and start mikroBootloader USB HID software.



step 1 - Connecting MINI-M4

Figure 1-1: USB HID mikroBootloader window

01 To start, connect the USB cable, or if already connected press the **Reset** button on your MINI-M4 board. Click the **Connect** button within 5s to enter the bootloader mode, otherwise existing microcontroller program will execute.

step 2 - Browsing for .HEX file

Figure 1-2: Browse for HEX

01 Click the **"Browse for HEX"** button and from a pop-up window (**Figure 1-3**) choose the .HEX file which will be uploaded to MCU memory.

step 3 - Selecting .HEX file

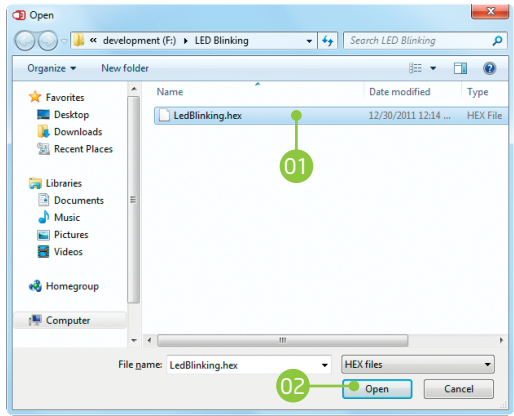


Figure 1-3: Selecting HEX

01 Select .HEX file using open dialog window.

02 Click **Open**.

step 4 - Uploading .HEX file

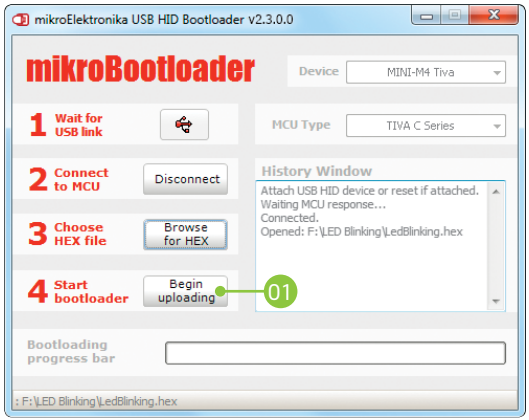


Figure 1-4: Begin uploading

01 To start .HEX file bootloading click the **Begin uploading** button.

Figure 1-5: Progress bar

01 You can monitor .HEX file uploading via progress bar

step 5 - Finish upload

Figure 1-6: Restarting MCU

01 Click **OK** after uploading is finished and wait for 5 seconds. Board will automatically reset and your new program will execute.

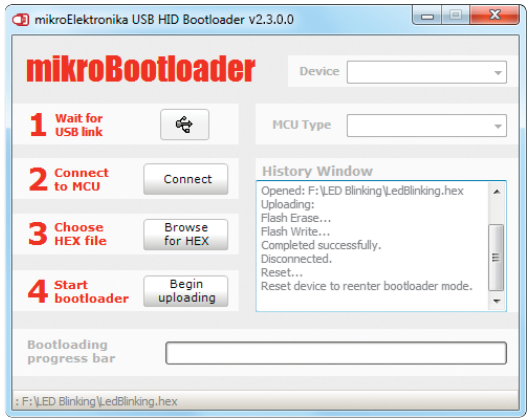
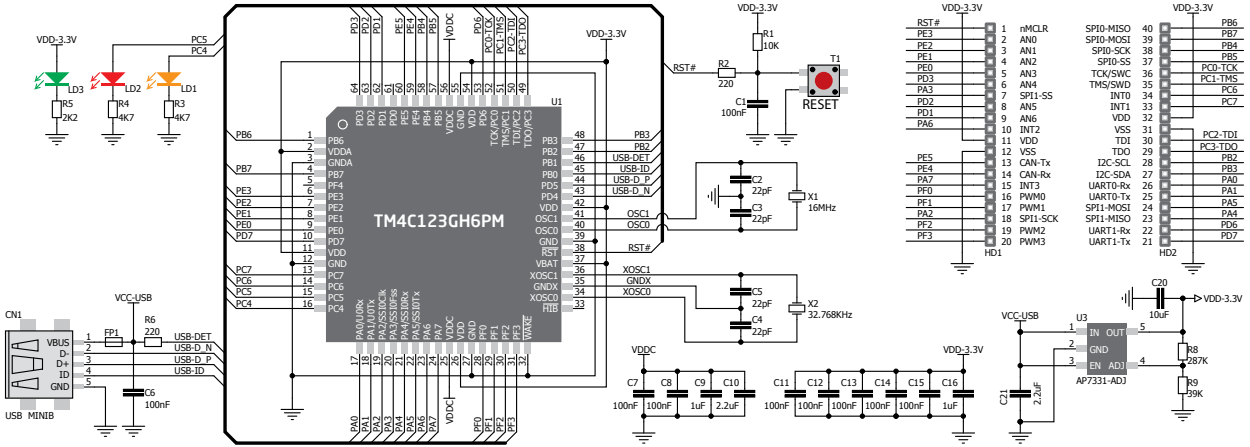
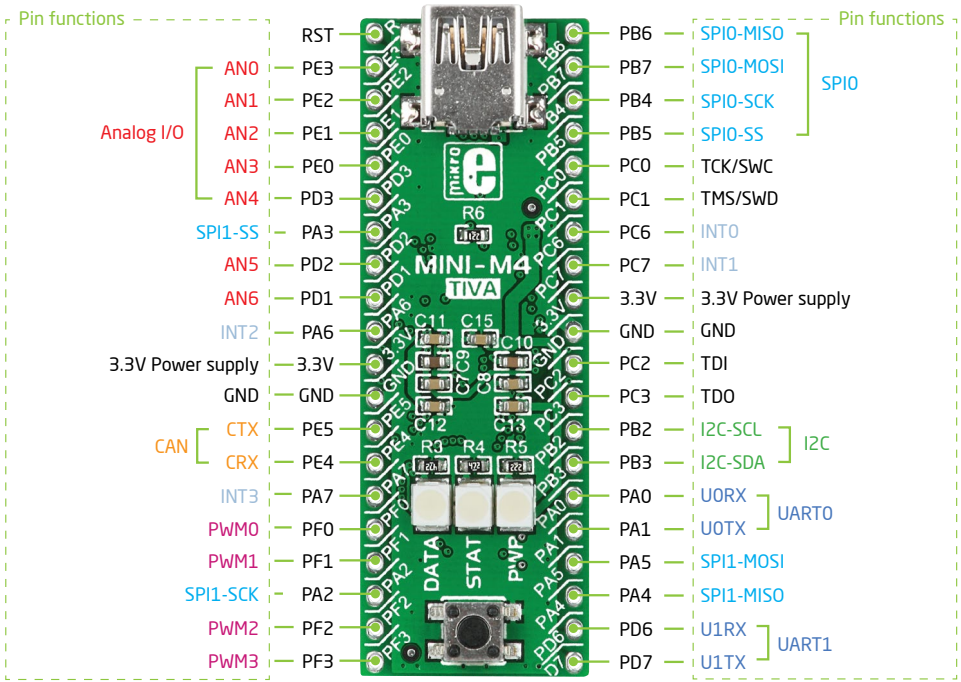


Figure 1-7: mikroBootloader ready for next job

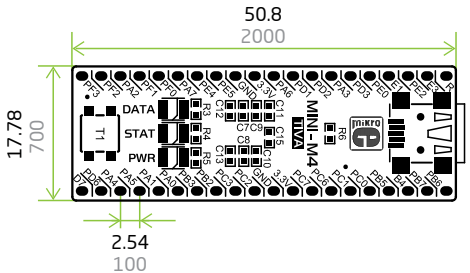
2. Schematic


TM4C123GH6PM
U1
VDD-3.3V
VCC-USB
VDDC
RESET
T1
R1
10K
R2
220
C1
100nF
LD1
LD2
LD3
R3
4K7
R4
4K7
R5
2K2
PC5
PC4
RST#
C2
22pF
C3
22pF
X1
16MHz
C4
22pF
C5
22pF
X2
32.768KHz
XOSC1
GNDX
XOSC0
OSC1
OSC0
PB3
PB2
USB-DET
USB-ID
USB-D_P
USB-D_N
PB6
PB7
PE3
PE2
PE1
PE0
PD7
PC7
PC6
PC5
PC4
CN1
USB MINIB
VBUS
D-
D+
ID
GND
FP1
R6
220
C6
100nF
USB-DET
USB-D_N
USB-D_P
USB-ID
HD1
HD2
nMCLR
AN0
AN1
AN2
AN3
AN4
SPI1-SS
AN5
AN6
INT2
VDD
VSS
CAN-Tx
CAN-Rx
INT3
PWM0
PWM1
SPI1-SCK
PWM2
PWM3
SPI0-MISO
SPI0-MOSI
SPI0-SCK
SPI0-SS
TCK/SWC
TMS/SWD
INT0
INT1
VDD
VSS
TDI
TDO
I2C-SCL
I2C-SDA
UART0-Rx
UART0-Tx
SPI1-MOSI
SPI1-MISO
UART1-Rx
UART1-Tx
PB6
PB7
PB4
PB5
PC0-TCK
PC1-TMS
PC6
PC7
PC2-TDI
PC3-TDO
PB2
PB3
PA0
PA1
PA5
PA4
PD6
PD7
U3
AP7331-ADJ
IN
OUT
GND
EN
ADJ
C20
10uF
R8
287K
R9
39K
C21
2.2uF
C7
100nF
C8
100nF
C9
1uF
C10
2.2uF
C11
100nF
C12
100nF
C13
100nF
C14
100nF
C15
100nF
C16
1uF

3. Pinout


Pin functions
Pin functions
Analog I/O
AN0
AN1
AN2
AN3
AN4
SPI1-SS
AN5
AN6
INT2
3.3V Power supply
GND
CAN
CTX
CRX
INT3
PWM0
PWM1
SPI1-SCK
PWM2
PWM3
RST
PE3
PE2
PE1
PE0
PD3
PA3
PD2
PD1
PA6
3.3V
GND
PE5
PE4
PA7
PF0
PF1
PA2
PF2
PF3
PB6
PB7
PB4
PB5
PC0
PC1
PC6
PC7
3.3V
GND
PC2
PC3
PB2
PB3
PA0
PA1
PA5
PA4
PD6
PD7
SPI0-MISO
SPI0-MOSI
SPI0-SCK
SPI0-SS
SPI0
TCK/SWC
TMS/SWD
INT0
INT1
3.3V Power supply
GND
TDI
TDO
I2C-SCL
I2C-SDA
I2C
U0RX
U0TX
UART0
SPI1-MOSI
SPI1-MISO
U1RX
U1TX
UART1
MINI-M4
TIVA
DATA
STAT
PWR
Analog Lines
Interrupt Lines
SPI Lines
I2C Lines
UART lines
CAN lines
PWM lines

4. Dimensions



Notes:

Notes:

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