



GD32E23x CPU Support Package Guide

Version: 4.0



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GD32E23x Support Package

This guide describes the following features of the GD32E23x CPU support package:

- [How to create GD32E23x projects](#)
- [How to open GD32E23x sample projects](#)
- [GD32E23x specific project properties](#)
- [GD32E23x specific project templates](#)
- [Supported GD32E23x devices](#)

Creating GD32E23x Projects

Creating an GD32E23x C/C++ executable project

To create a new minimal C/C++ executable project:

- Select the **File > New > New Project** menu item.
- Select the **A C/C++ executable for GigaDevice GD32E23x** project template.
- Set the required project name and location directory.
- Click **Next**.
- If required, change any of the default project settings.
- Click **Finish** to create the project.

Creating an GD32E23x library project

To create a new library project:

- Select the **File > New > New Project** menu item.
- Select the **A library for GigaDevice GD32E23x** project template.
- Set the required project name and location directory.
- Click **Next**.
- If required, change any of the default project settings.
- Click **Finish** to create the project.

Creating an GD32E23x externally built executable project

To create a new project that will allow you to debug an existing externally built executable file:

- Select the **File > New > New Project** menu item.
- Select the **An externally built executable for GigaDevice GD32E23x** project template.
- Set the required project name and location directory.
- Click **Next**.
- Set the **Load File** project property to point to the executable file you want to download and debug.
- If required, change any of the other default project settings.
- Click **Finish** to create the project.

Creating an GD32E23x CrossWorks Tasking Library executable project

To create a new C/C++ executable project configured to use the CrossWorks Tasking Library:

- Select the **File > New > New Project** menu item.
- Select the **A CrossWorks Tasking Library executable for GigaDevice GD32E23x** project template.
- Set the required project name and location directory.
- Click **Next**.

If required, change any of the other default project settings.
Click **Finish** to create the project.

Creating an GD32E23x assembly code only executable project

Please note, this template does not add any C/C++ startup code or libraries and is therefore not suitable for creating projects that include C/C++ code.

To create a new assembly code only executable project without:

Select the **File > New > New Project** menu item.

Select the **An assembly code only executable for GigaDevice GD32E23x** project template.

Set the required project name and location directory.

Click **Next**.

If required, change any of the other default project settings.

Click **Finish** to create the project.

Opening GD32E23x Sample Solutions

GD32E23x Samples Solution

This solution contains general sample projects that run on GD32E23x devices. To open the GD32E23x Samples Solution:

- Select the **Tools > Show Installed Packages** menu item.
- Select the **GigaDevice GD32E23x CPU Support Package** link.
- Select the **Samples Solutions > GD32E23x Samples Solution** link.

GD32E23x CMSIS-DSP Samples Solution

This solution contains sample projects that use the CMSIS-DSP library running on GD32E23x devices. To open the GD32E23x CMSIS-DSP Samples Solution:

- Select the **Tools > Show Installed Packages** menu item.
- Select the **GigaDevice GD32E23x CPU Support Package** link.
- Select the **Sample Solutions > GD32E23x CMSIS-DSP Samples Solution** link.

GD32E23x Project Properties

Projects creating using the project templates in this support package have the following device specific project properties:

Heap Size

The heap size is set to be 256 bytes when a project is created. The heap size can be modified using the **Heap Size** project property.

Section Placement

You can select the memory configuration you require using the **Section Placement** project property.

For GD32E23x projects, the set of placements are:

Flash - The application runs in internal Flash memory (*default*).

Flash Vectors In RAM - The application runs in internal Flash memory and exception vectors are copied to RAM memory.

Flash Copy To RAM - The application starts in internal flash and copies itself to run from internal RAM memory.

RAM - The application runs from internal RAM memory only.

Stack Sizes

The main stack size is set to be 256 bytes when a project is created.

The process stack size is set to be 0 bytes when a project is created.

The main and process stack sizes can be modified using the **Main Stack Size** and **Process Stack Size** project properties.

To change the location of the stacks, edit the section placement file and place the `.stack` and `.stack_process` sections as required.

Startup From Reset

By default, the application will only startup from power-on/reset in *Release* configuration. This acts as a safety net in case you accidentally download a program in FLASH during development that crashes and prevents the debugger from taking control of the target over the debug interface thus rendering the device unusable.

For GD32E23x projects, the **Startup From Reset** project property can be set to one of the following:

No - The application will not startup from reset.

Release Only - The application will only startup from reset when built in *Release* configuration (*default*).

Yes - The application will always startup from reset.

Target Processor

Once a project has been created you can target different devices by modifying the **Target Processor** project property. See the [GD32E23x Devices](#) section for details on the files, preprocessor definitions and macro definitions used when a device is selected.

GD32E23x Project Templates

The project template system simplifies the creation of new projects with the IDE, it also system makes it easy to create new projects with a text editor or script. All that needs to be specified is the project name, the support packages that the project is dependent on, the target processor and the source files you want to add to the project. For example, create a file called *example.hzp* with the following contents:

```
<!DOCTYPE CrossStudio_Project_File>
<solution Name="Example Solution">
  <project Name="Example Project" template_name="GD32E23x_EXE">
    <configuration Name="Common" package_dependencies="GD32E23x" Target="GD32E230C8" />
    <folder Name="Source Files">
      <file file_name="file1.c" />
      <file file_name="file2.c" />
    </folder>
  </project>
</solution>
```

You can also add any other property settings that the project requires such as preprocessor definitions or include paths using the property save name, for example:

```
<!DOCTYPE CrossStudio_Project_File>
<solution Name="Example Solution">
  <project Name="Example Project" template_name="GD32E23x_EXE">
    <configuration Name="Common" package_dependencies="GD32E23x" Target="GD32E230C8"
      c_preprocessor_definitions="MYDEF1=1;MYDEF2=TWO" c_user_include_directories="$(ProjectDir)/
include1;$(ProjectDir)/include2" />
    <folder Name="Source Files">
      <file file_name="file1.c" />
      <file file_name="file2.c" />
    </folder>
  </project>
</solution>
```

Available GD32E23x project templates

Template Name	Template Description
GD32E23x_ASM_EXE	GD32E23x Assembly Code Only Executable
GD32E23x_CTL_EXE	GD32E23x CTL Executable
GD32E23x_EXE	GD32E23x C/C++ Executable
GD32E23x_EXT_EXE	GD32E23x Externally Built Executable
GD32E23x_LIB	GD32E23x Library

GD32E23x Devices

This package supports the following GD32E23x devices:

[GD32E230 Family](#)

[GD32E231 Family](#)

GD32E230 Family

[GD32E230C8](#)

[GD32E230C6](#)

[GD32E230C4](#)

[GD32E230K8](#)

[GD32E230K6](#)

[GD32E230K4](#)

[GD32E230G8](#)

[GD32E230G6](#)

[GD32E230G4](#)

[GD32E230F8](#)

[GD32E230F6](#)

[GD32E230F4](#)

GD32E230C8

Device Details	
CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E230
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E230C8_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

Preprocessor Definitions	
ARM_MATH_ARMV8MBL	
GD32E230	
__GD32E230_SUBFAMILY	
__GD32E23x_FAMILY	

Memory Segments	
FLASH	0x08000000 - 0x0800FFFF
RAM	0x20000000 - 0x20001FFF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
DeviceHeaderFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
DeviceLoaderFile	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
DeviceSystemFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
DeviceVectorsFile	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s
DeviceFamily	GD32E23x
DeviceSubFamily	GD32E230

GD32E230C6

Device Details	
CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E230
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E230C6_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

Preprocessor Definitions	
ARM_MATH_ARMV8MBL	
GD32E230	
__GD32E230_SUBFAMILY	
__GD32E23x_FAMILY	

Memory Segments	
FLASH	0x08000000 - 0x08007FFF
RAM	0x20000000 - 0x200017FF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
DeviceHeaderFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
DeviceLoaderFile	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
DeviceSystemFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
DeviceVectorsFile	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s
DeviceFamily	GD32E23x
DeviceSubFamily	GD32E230

GD32E230C4

Device Details	
CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E230
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E230C4_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

Preprocessor Definitions
ARM_MATH_ARMV8MBL
GD32E230
__GD32E230_SUBFAMILY
__GD32E23x_FAMILY

Memory Segments	
FLASH	0x08000000 - 0x08003FFF
RAM	0x20000000 - 0x20000FFF

Project Macros
DeviceIncludePath=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
DeviceHeaderFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
DeviceLoaderFile=\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
DeviceRegisterDefinitionFile=\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
DeviceSystemFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
DeviceVectorsFile=\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s
DeviceFamily=GD32E23x
DeviceSubFamily=GD32E230

GD32E230K8

Device Details	
CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E230
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E230K8_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

Preprocessor Definitions	
ARM_MATH_ARMV8MBL	
GD32E230	
__GD32E230_SUBFAMILY	
__GD32E23x_FAMILY	

Memory Segments	
FLASH	0x08000000 - 0x0800FFFF
RAM	0x20000000 - 0x20001FFF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
DeviceHeaderFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
DeviceLoaderFile	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
DeviceSystemFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
DeviceVectorsFile	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s
DeviceFamily	GD32E23x
DeviceSubFamily	GD32E230

GD32E230K6

Device Details

CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E230
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E230K6_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

Preprocessor Definitions

ARM_MATH_ARMV8MBL

GD32E230

__GD32E230_SUBFAMILY

__GD32E23x_FAMILY

Memory Segments

FLASH	0x08000000 - 0x08007FFF
RAM	0x20000000 - 0x200017FF

Project Macros

DeviceIncludePath=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include

DeviceHeaderFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h

DeviceLoaderFile=\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf

DeviceRegisterDefinitionFile=\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml

DeviceSystemFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c

DeviceVectorsFile=\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

DeviceFamily=GD32E23x

DeviceSubFamily=GD32E230

GD32E230K4

Device Details	
CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E230
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E230K4_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

Preprocessor Definitions	
ARM_MATH_ARMV8MBL	
GD32E230	
__GD32E230_SUBFAMILY	
__GD32E23x_FAMILY	

Memory Segments	
FLASH	0x08000000 - 0x08003FFF
RAM	0x20000000 - 0x20000FFF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
DeviceHeaderFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
DeviceLoaderFile	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
DeviceSystemFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
DeviceVectorsFile	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s
DeviceFamily	GD32E23x
DeviceSubFamily	GD32E230

GD32E230G8

Device Details	
CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E230
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E230G8_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

Preprocessor Definitions	
ARM_MATH_ARMV8MBL	
GD32E230	
__GD32E230_SUBFAMILY	
__GD32E23x_FAMILY	

Memory Segments	
FLASH	0x08000000 - 0x0800FFFF
RAM	0x20000000 - 0x20001FFF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
DeviceHeaderFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
DeviceLoaderFile	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
DeviceSystemFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
DeviceVectorsFile	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s
DeviceFamily	GD32E23x
DeviceSubFamily	GD32E230

GD32E230G6

Device Details	
CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E230
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E230G6_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

Preprocessor Definitions	
ARM_MATH_ARMV8MBL	
GD32E230	
__GD32E230_SUBFAMILY	
__GD32E23x_FAMILY	

Memory Segments	
FLASH	0x08000000 - 0x08007FFF
RAM	0x20000000 - 0x200017FF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
DeviceHeaderFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
DeviceLoaderFile	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
DeviceSystemFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
DeviceVectorsFile	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s
DeviceFamily	GD32E23x
DeviceSubFamily	GD32E230

GD32E230G4

Device Details	
CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E230
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E230G4_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

Preprocessor Definitions	
ARM_MATH_ARMV8MBL	
GD32E230	
__GD32E230_SUBFAMILY	
__GD32E23x_FAMILY	

Memory Segments	
FLASH	0x08000000 - 0x08003FFF
RAM	0x20000000 - 0x20000FFF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
DeviceHeaderFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
DeviceLoaderFile	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
DeviceSystemFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
DeviceVectorsFile	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s
DeviceFamily	GD32E23x
DeviceSubFamily	GD32E230

GD32E230F8

Device Details

CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E230
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E230F8_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

Preprocessor Definitions

ARM_MATH_ARMV8MBL

GD32E230

__GD32E230_SUBFAMILY

__GD32E23x_FAMILY

Memory Segments

FLASH	0x08000000 - 0x0800FFFF
RAM	0x20000000 - 0x20001FFF

Project Macros

DeviceIncludePath=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include

DeviceHeaderFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h

DeviceLoaderFile=\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf

DeviceRegisterDefinitionFile=\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml

DeviceSystemFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c

DeviceVectorsFile=\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

DeviceFamily=GD32E23x

DeviceSubFamily=GD32E230

GD32E230F6

Device Details

CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E230
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E230F6_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

Preprocessor Definitions

ARM_MATH_ARMV8MBL

GD32E230

__GD32E230_SUBFAMILY

__GD32E23x_FAMILY

Memory Segments

FLASH	0x08000000 - 0x08007FFF
RAM	0x20000000 - 0x200017FF

Project Macros

DeviceIncludePath=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include

DeviceHeaderFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h

DeviceLoaderFile=\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf

DeviceRegisterDefinitionFile=\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml

DeviceSystemFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c

DeviceVectorsFile=\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

DeviceFamily=GD32E23x

DeviceSubFamily=GD32E230

GD32E230F4

Device Details	
CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E230
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E230F4_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s

Preprocessor Definitions	
ARM_MATH_ARMV8MBL	
GD32E230	
__GD32E230_SUBFAMILY	
__GD32E23x_FAMILY	

Memory Segments	
FLASH	0x08000000 - 0x08003FFF
RAM	0x20000000 - 0x20000FFF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
DeviceHeaderFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
DeviceLoaderFile	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/GD32E23x/XML/GD32E230_Registers.xml
DeviceSystemFile	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
DeviceVectorsFile	\$(TargetsDir)/GD32E23x/Source/GD32E230_Vectors.s
DeviceFamily	GD32E23x
DeviceSubFamily	GD32E230

GD32E231 Family

[GD32E231C4](#)

[GD32E231C6](#)

[GD32E231C8](#)

GD32E231C4

Device Details

CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E231
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E231C4_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E231_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E231_Vectors.s

Preprocessor Definitions

ARM_MATH_ARMV8MBL

GD32E231

__GD32E231_SUBFAMILY

__GD32E23x_FAMILY

Memory Segments

FLASH	0x08000000 - 0x08003FFF
RAM	0x20000000 - 0x20000FFF

Project Macros

DeviceIncludePath=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include

DeviceHeaderFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h

DeviceLoaderFile=\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf

DeviceRegisterDefinitionFile=\$(TargetsDir)/GD32E23x/XML/GD32E231_Registers.xml

DeviceSystemFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c

DeviceVectorsFile=\$(TargetsDir)/GD32E23x/Source/GD32E231_Vectors.s

DeviceFamily=GD32E23x

DeviceSubFamily=GD32E231

GD32E231C6

Device Details	
CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E231
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E231C6_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E231_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E231_Vectors.s

Preprocessor Definitions

ARM_MATH_ARMV8MBL

GD32E231

__GD32E231_SUBFAMILY

__GD32E23x_FAMILY

Memory Segments

FLASH	0x08000000 - 0x08007FFF
RAM	0x20000000 - 0x200017FF

Project Macros

DeviceIncludePath=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include

DeviceHeaderFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h

DeviceLoaderFile=\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf

DeviceRegisterDefinitionFile=\$(TargetsDir)/GD32E23x/XML/GD32E231_Registers.xml

DeviceSystemFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c

DeviceVectorsFile=\$(TargetsDir)/GD32E23x/Source/GD32E231_Vectors.s

DeviceFamily=GD32E23x

DeviceSubFamily=GD32E231

GD32E231C8

Device Details	
CMSIS Header File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h
CMSIS Include Path	\$(TargetsDir)/GD32E23x/CMSIS/Device/Include
CMSIS System File	\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c
Family	GD32E23x
Sub Family	GD32E231
Loader File	\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf
Memory Map File	\$(TargetsDir)/GD32E23x/XML/GD32E231C8_MemoryMap.xml
Register Definition File	\$(TargetsDir)/GD32E23x/XML/GD32E231_Registers.xml
Vectors File	\$(TargetsDir)/GD32E23x/Source/GD32E231_Vectors.s

Preprocessor Definitions

ARM_MATH_ARMV8MBL

GD32E231

__GD32E231_SUBFAMILY

__GD32E23x_FAMILY

Memory Segments

FLASH 0x08000000 - 0x0800FFFF

RAM 0x20000000 - 0x20001FFF

Project Macros

DeviceIncludePath=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include

DeviceHeaderFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Include/gd32e23x.h

DeviceLoaderFile=\$(TargetsDir)/GD32E23x/Loader/GD32E23x_Loader.elf

DeviceRegisterDefinitionFile=\$(TargetsDir)/GD32E23x/XML/GD32E231_Registers.xml

DeviceSystemFile=\$(TargetsDir)/GD32E23x/CMSIS/Device/Source/system_gd32e23x.c

DeviceVectorsFile=\$(TargetsDir)/GD32E23x/Source/GD32E231_Vectors.s

DeviceFamily=GD32E23x

DeviceSubFamily=GD32E231