SAM4C CPU Support Package Guide

Version: 4.0

Contents

SAM4C Support Package

This guide describes the following features of the SAM4C CPU support package:

- How to create SAM4C projects
- How to open SAM4C sample projects
- SAM4C specific project properties
- SAM4C specific project templates
- Supported SAM4C devices

Creating SAM4C Projects

Creating an SAM4C 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 Microchip SAM4C** 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 SAM4C library project

To create a new library project:

Select the **File** > **New** > **New Project** menu item.
Select the **A library for Microchip SAM4C** 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 SAM4C 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 Microchip SAM4C** 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 SAM4C 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 Microchip SAM4C** 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 SAM4C 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 Microchip SAM4C** 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 SAM4C Sample Solutions

SAM4C Samples Solution

This solution contains general sample projects that run on SAM4C devices. To open the SAM4C Samples Solution:

Select the **Tools** > **Show Installed Packages** menu item.
Select the **Microchip SAM4C CPU Support Package** link.
Select the **Samples Solutions** > **SAM4C Samples Solution** link.

SAM4C CMSIS-DSP Samples Solution

This solution contains sample projects that use the CMSIS-DSP library running on SAM4C devices. To open the SAM4C CMSIS-DSP Samples Solution:

Select the **Tools** > **Show Installed Packages** menu item.
Select the **Microchip SAM4C CPU Support Package** link.
Select the **Sample Solutions** > **SAM4C CMSIS-DSP Samples Solution** link.

SAM4C 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 SAM4C 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 accidently 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 SAM4C 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 **SAM4C Devices** section for details on the files, preprocessor definitions and macro definitions used when a device is selected.

SAM4C 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="SAM4C_EXE">
    <configuration Name="Common" package_dependencies="SAM4C" Target="ATSAM4C16C_0" />
    <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="SAM4C_EXE">
    <configuration Name="Common" package_dependencies="SAM4C" Target="ATSAM4C16C_0"
 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 SAM4C project templates

Template Name	Template Description
SAM4C_ASM_EXE	SAM4C Assembly Code Only Executable
SAM4C_CTL_EXE	SAM4C CTL Executable
SAM4C_EXE	SAM4C C/C++ Executable
SAM4C_EXT_EXE	SAM4C Externally Built Executable
SAM4C_LIB	SAM4C Library

SAM4C Devices

This package supports the following SAM4C devices:

- **SAM4C Family**
- **SAM4C32 Family**

SAM4C Family

- ATSAM4C4C_0
- ATSAM4C4C_1
- ATSAM4C8C_0
- ATSAM4C8C_1
- ATSAM4C16C_0
- ATSAM4C16C_1

ATSAM4C4C_0

Device Details	
CMSIS Header File	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C/sam4c.h
CMSIS Include Path	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C
CMSIS System File	$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_SAM4C.c
Family	SAM4C
Sub Family	SAM4C
Loader File	$(TargetsDir)/SAM4C/Loader/ATSAM4C_256_Loader.elf
Memory Map File	$(TargetsDir)/SAM4C/XML/ATSAM4C4C_0_MemoryMap.xml
Register Definition File	$(TargetsDir)/SAM4C/XML/ATSAM4C4C_0_Registers.xml
Vectors File	$(TargetsDir)/SAM4C/Source/ATSAM4C4C_0_Vectors.s

Preprocessor Definitions
ARM_MATH_CM4
__SAM4C4C_0__
__SAM4C_FAMILY
__SAM4C_SUBFAMILY

Memory Segments	
FLASH	0x01000000 - 0x0103FFFF
RAM	0x20000000 - 0x2001FFFF

Project Macros
DeviceIncludePath=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C
DeviceHeaderFile=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C/sam4c.h
DeviceLoaderFile=$(TargetsDir)/SAM4C/Loader/ATSAM4C_256_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM4C/XML/ATSAM4C4C_0_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_SAM4C.c
DeviceVectorsFile=$(TargetsDir)/SAM4C/Source/ATSAM4C4C_0_Vectors.s
DeviceFamily=SAM4C
DeviceSubFamily=SAM4C

ATSAM4C4C_1

Device Details	
CMSIS Header File	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C/sam4c.h
CMSIS Include Path	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C
CMSIS System File	$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_SAM4C.c
Family	SAM4C
Sub Family	SAM4C
Loader File	$(TargetsDir)/SAM4C/Loader/
Memory Map File	$(TargetsDir)/SAM4C/XML/ATSAM4C4C_1_MemoryMap.xml
Register Definition File	$(TargetsDir)/SAM4C/XML/ATSAM4C4C_1_Registers.xml
Vectors File	$(TargetsDir)/SAM4C/Source/ATSAM4C4C_1_Vectors.s

Preprocessor Definitions
ARM_MATH_CM4
__SAM4C4C_1__
__SAM4C_FAMILY
__SAM4C_SUBFAMILY

Memory Segments	
FLASH	0x00000000 - 0x00003FFF
RAM	0x20100000 - 0x20101FFF

Project Macros
DeviceIncludePath=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C
DeviceHeaderFile=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C/sam4c.h
DeviceLoaderFile=
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM4C/XML/ATSAM4C4C_1_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_SAM4C.c
DeviceVectorsFile=$(TargetsDir)/SAM4C/Source/ATSAM4C4C_1_Vectors.s
DeviceFamily=SAM4C
DeviceSubFamily=SAM4C

ATSAM4C8C_0

Device Details	
CMSIS Header File	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C/sam4c.h
CMSIS Include Path	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C
CMSIS System File	$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_SAM4C.c
Family	SAM4C
Sub Family	SAM4C
Loader File	$(TargetsDir)/SAM4C/Loader/ATSAM4C_512_Loader.elf
Memory Map File	$(TargetsDir)/SAM4C/XML/ATSAM4C8C_0_MemoryMap.xml
Register Definition File	$(TargetsDir)/SAM4C/XML/ATSAM4C8C_0_Registers.xml
Vectors File	$(TargetsDir)/SAM4C/Source/ATSAM4C8C_0_Vectors.s

Preprocessor Definitions
ARM_MATH_CM4
__SAM4C8C_0__
__SAM4C_FAMILY
__SAM4C_SUBFAMILY

Memory Segments	
FLASH	0x01000000 - 0x0107FFFF
RAM	0x20000000 - 0x2001FFFF

Project Macros
DeviceIncludePath=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C
DeviceHeaderFile=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C/sam4c.h
DeviceLoaderFile=$(TargetsDir)/SAM4C/Loader/ATSAM4C_512_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM4C/XML/ATSAM4C8C_0_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_SAM4C.c
DeviceVectorsFile=$(TargetsDir)/SAM4C/Source/ATSAM4C8C_0_Vectors.s
DeviceFamily=SAM4C
DeviceSubFamily=SAM4C

ATSAM4C8C_1

Device Details	
CMSIS Header File	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C/sam4c.h
CMSIS Include Path	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C
CMSIS System File	$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_SAM4C.c
Family	SAM4C
Sub Family	SAM4C
Loader File	$(TargetsDir)/SAM4C/Loader/
Memory Map File	$(TargetsDir)/SAM4C/XML/ATSAM4C8C_1_MemoryMap.xml
Register Definition File	$(TargetsDir)/SAM4C/XML/ATSAM4C8C_1_Registers.xml
Vectors File	$(TargetsDir)/SAM4C/Source/ATSAM4C8C_1_Vectors.s

Preprocessor Definitions
ARM_MATH_CM4
__SAM4C8C_1__
__SAM4C_FAMILY
__SAM4C_SUBFAMILY

Memory Segments	
FLASH	0x00000000 - 0x00003FFF
RAM	0x20100000 - 0x20101FFF

Project Macros
DeviceIncludePath=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C
DeviceHeaderFile=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C/sam4c.h
DeviceLoaderFile=
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM4C/XML/ATSAM4C8C_1_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_SAM4C.c
DeviceVectorsFile=$(TargetsDir)/SAM4C/Source/ATSAM4C8C_1_Vectors.s
DeviceFamily=SAM4C
DeviceSubFamily=SAM4C

ATSAM4C16C_0

Device Details	
CMSIS Header File	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C/sam4c.h
CMSIS Include Path	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C
CMSIS System File	$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_SAM4C.c
Family	SAM4C
Sub Family	SAM4C
Loader File	$(TargetsDir)/SAM4C/Loader/ATSAM4C_1024_Loader.elf
Memory Map File	$(TargetsDir)/SAM4C/XML/ATSAM4C16C_0_MemoryMap.xml
Register Definition File	$(TargetsDir)/SAM4C/XML/ATSAM4C16C_0_Registers.xml
Vectors File	$(TargetsDir)/SAM4C/Source/ATSAM4C16C_0_Vectors.s

Preprocessor Definitions
ARM_MATH_CM4
__SAM4C16C_0__
__SAM4C_FAMILY
__SAM4C_SUBFAMILY

Memory Segments	
FLASH	0x01000000 - 0x010FFFFF
RAM	0x20000000 - 0x2001FFFF

Project Macros
DeviceIncludePath=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C
DeviceHeaderFile=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C/sam4c.h
DeviceLoaderFile=$(TargetsDir)/SAM4C/Loader/ATSAM4C_1024_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM4C/XML/ATSAM4C16C_0_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_SAM4C.c
DeviceVectorsFile=$(TargetsDir)/SAM4C/Source/ATSAM4C16C_0_Vectors.s
DeviceFamily=SAM4C
DeviceSubFamily=SAM4C

ATSAM4C16C_1

Device Details	
CMSIS Header File	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C/sam4c.h
CMSIS Include Path	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C
CMSIS System File	$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_SAM4C.c
Family	SAM4C
Sub Family	SAM4C
Loader File	$(TargetsDir)/SAM4C/Loader/
Memory Map File	$(TargetsDir)/SAM4C/XML/ATSAM4C16C_1_MemoryMap.xml
Register Definition File	$(TargetsDir)/SAM4C/XML/ATSAM4C16C_1_Registers.xml
Vectors File	$(TargetsDir)/SAM4C/Source/ATSAM4C16C_1_Vectors.s

Preprocessor Definitions
ARM_MATH_CM4
__SAM4C16C_1__
__SAM4C_FAMILY
__SAM4C_SUBFAMILY

Memory Segments	
FLASH	0x00000000 - 0x00003FFF
RAM	0x20100000 - 0x20101FFF

Project Macros
DeviceIncludePath=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C
DeviceHeaderFile=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C/sam4c.h
DeviceLoaderFile=
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM4C/XML/ATSAM4C16C_1_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_SAM4C.c
DeviceVectorsFile=$(TargetsDir)/SAM4C/Source/ATSAM4C16C_1_Vectors.s
DeviceFamily=SAM4C
DeviceSubFamily=SAM4C

SAM4C32 Family

- ATSAM4C32C_0
- ATSAM4C32C_1
- ATSAM4C32E_0
- ATSAM4C32E_1

ATSAM4C32C_0

Device Details	
CMSIS Header File	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32/sam4c32.h
CMSIS Include Path	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32
CMSIS System File	$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_sam4c32.c
Family	SAM4C
Sub Family	SAM4C32
Loader File	$(TargetsDir)/SAM4C/Loader/ATSAM4C32_2048_Loader.elf
Memory Map File	$(TargetsDir)/SAM4C/XML/ATSAM4C32C_0_MemoryMap.xml
Register Definition File	$(TargetsDir)/SAM4C/XML/ATSAM4C32C_0_Registers.xml
Vectors File	$(TargetsDir)/SAM4C/Source/ATSAM4C32C_0_Vectors.s

Preprocessor Definitions
ARM_MATH_CM4
__SAM4C32C_0__
__SAM4C32_SUBFAMILY
__SAM4C_FAMILY

Memory Segments	
FLASH	0x01000000 - 0x010FFFFF
RAM	0x20000000 - 0x2003FFFF

Project Macros
DeviceIncludePath=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32
DeviceHeaderFile=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32/sam4c32.h
DeviceLoaderFile=$(TargetsDir)/SAM4C/Loader/ATSAM4C32_2048_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM4C/XML/ATSAM4C32C_0_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_sam4c32.c
DeviceVectorsFile=$(TargetsDir)/SAM4C/Source/ATSAM4C32C_0_Vectors.s
DeviceFamily=SAM4C
DeviceSubFamily=SAM4C32

ATSAM4C32C_1

Device Details	
CMSIS Header File	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32/sam4c32.h
CMSIS Include Path	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32
CMSIS System File	$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_sam4c32.c
Family	SAM4C
Sub Family	SAM4C32
Loader File	$(TargetsDir)/SAM4C/Loader/
Memory Map File	$(TargetsDir)/SAM4C/XML/ATSAM4C32C_1_MemoryMap.xml
Register Definition File	$(TargetsDir)/SAM4C/XML/ATSAM4C32C_1_Registers.xml
Vectors File	$(TargetsDir)/SAM4C/Source/ATSAM4C32C_1_Vectors.s

Preprocessor Definitions
ARM_MATH_CM4
__SAM4C32C_1__
__SAM4C32_SUBFAMILY
__SAM4C_FAMILY

Memory Segments	
FLASH	0x00000000 - 0x00007FFF
RAM	0x20100000 - 0x20103FFF

Project Macros
DeviceIncludePath=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32
DeviceHeaderFile=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32/sam4c32.h
DeviceLoaderFile=
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM4C/XML/ATSAM4C32C_1_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_sam4c32.c
DeviceVectorsFile=$(TargetsDir)/SAM4C/Source/ATSAM4C32C_1_Vectors.s
DeviceFamily=SAM4C
DeviceSubFamily=SAM4C32

ATSAM4C32E_0

Device Details	
CMSIS Header File	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32/sam4c32.h
CMSIS Include Path	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32
CMSIS System File	$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_sam4c32.c
Family	SAM4C
Sub Family	SAM4C32
Loader File	$(TargetsDir)/SAM4C/Loader/ATSAM4C32_2048_Loader.elf
Memory Map File	$(TargetsDir)/SAM4C/XML/ATSAM4C32E_0_MemoryMap.xml
Register Definition File	$(TargetsDir)/SAM4C/XML/ATSAM4C32E_0_Registers.xml
Vectors File	$(TargetsDir)/SAM4C/Source/ATSAM4C32E_0_Vectors.s

Preprocessor Definitions
ARM_MATH_CM4
__SAM4C32E_0__
__SAM4C32_SUBFAMILY
__SAM4C_FAMILY

Memory Segments	
FLASH	0x01000000 - 0x010FFFFF
RAM	0x20000000 - 0x2003FFFF

Project Macros
DeviceIncludePath=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32
DeviceHeaderFile=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32/sam4c32.h
DeviceLoaderFile=$(TargetsDir)/SAM4C/Loader/ATSAM4C32_2048_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM4C/XML/ATSAM4C32E_0_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_sam4c32.c
DeviceVectorsFile=$(TargetsDir)/SAM4C/Source/ATSAM4C32E_0_Vectors.s
DeviceFamily=SAM4C
DeviceSubFamily=SAM4C32

ATSAM4C32E_1

Device Details	
CMSIS Header File	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32/sam4c32.h
CMSIS Include Path	$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32
CMSIS System File	$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_sam4c32.c
Family	SAM4C
Sub Family	SAM4C32
Loader File	$(TargetsDir)/SAM4C/Loader/
Memory Map File	$(TargetsDir)/SAM4C/XML/ATSAM4C32E_1_MemoryMap.xml
Register Definition File	$(TargetsDir)/SAM4C/XML/ATSAM4C32E_1_Registers.xml
Vectors File	$(TargetsDir)/SAM4C/Source/ATSAM4C32E_1_Vectors.s

Preprocessor Definitions
ARM_MATH_CM4
__SAM4C32E_1__
__SAM4C32_SUBFAMILY
__SAM4C_FAMILY

Memory Segments	
FLASH	0x00000000 - 0x00007FFF
RAM	0x20100000 - 0x20103FFF

Project Macros
DeviceIncludePath=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32
DeviceHeaderFile=$(TargetsDir)/SAM4C/CMSIS/Device/Include/SAM4C32/sam4c32.h
DeviceLoaderFile=
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM4C/XML/ATSAM4C32E_1_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM4C/CMSIS/Device/Source/system_sam4c32.c
DeviceVectorsFile=$(TargetsDir)/SAM4C/Source/ATSAM4C32E_1_Vectors.s
DeviceFamily=SAM4C
DeviceSubFamily=SAM4C32