



SAM D5x/E5x CPU Support Package Guide

Version: 4.0



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SAM D5x/E5x Support Package

This guide describes the following features of the SAM D5x/E5x CPU support package:

- [How to create SAM D5x/E5x projects](#)
- [How to open SAM D5x/E5x sample projects](#)
- [SAM D5x/E5x specific project properties](#)
- [SAM D5x/E5x specific project templates](#)
- [Supported SAM D5x/E5x devices](#)

Creating SAM D5x/E5x Projects

Creating an SAM D5x/E5x 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 Atmel SAM D5x/E5x** 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 SAM D5x/E5x library project

To create a new library project:

- Select the **File > New > New Project** menu item.
- Select the **A library for Atmel SAM D5x/E5x** 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 SAM D5x/E5x 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 Atmel SAM D5x/E5x** 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 SAM D5x/E5x 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 Atmel SAM D5x/E5x** 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 SAM D5x/E5x 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 Atmel SAM D5x/E5x** 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 SAM D5x/E5x Sample Solutions

SAM D5x/E5x Samples Solution

This solution contains general sample projects that run on SAM D5x/E5x devices. To open the SAM D5x/E5x Samples Solution:

- Select the **Tools > Show Installed Packages** menu item.
- Select the **Atmel SAM D5x/E5x CPU Support Package** link.
- Select the **Samples Solutions > SAM D5x/E5x Samples Solution** link.

SAM D5x/E5x CMSIS-DSP Samples Solution

This solution contains sample projects that use the CMSIS-DSP library running on SAM D5x/E5x devices. To open the SAM D5x/E5x CMSIS-DSP Samples Solution:

- Select the **Tools > Show Installed Packages** menu item.
- Select the **Atmel SAM D5x/E5x CPU Support Package** link.
- Select the **Sample Solutions > SAM D5x/E5x CMSIS-DSP Samples Solution** link.

SAM D5x/E5x 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 SAM D5x/E5x 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 SAM D5x/E5x 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 [SAM D5x/E5x Devices](#) section for details on the files, preprocessor definitions and macro definitions used when a device is selected.

SAM D5x/E5x 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="SAM_D5x_E5x_EXE">
    <configuration Name="Common" package_dependencies="SAM_D5x_E5x" Target="ATSAME54P20A" />
    <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="SAM_D5x_E5x_EXE">
    <configuration Name="Common" package_dependencies="SAM_D5x_E5x" Target="ATSAME54P20A"
      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 SAM D5x/E5x project templates

Template Name	Template Description
SAM D5x/E5x_ASM_EXE	SAM D5x/E5x Assembly Code Only Executable
SAM D5x/E5x_CTL_EXE	SAM D5x/E5x CTL Executable
SAM D5x/E5x_EXE	SAM D5x/E5x C/C++ Executable
SAM D5x/E5x_EXT_EXE	SAM D5x/E5x Externally Built Executable
SAM D5x/E5x_LIB	SAM D5x/E5x Library

SAM D5x/E5x Devices

This package supports the following SAM D5x/E5x devices:

- [SAM D51 Family](#)
- [SAME51 Family](#)
- [SAME53 Family](#)
- [SAME54 Family](#)

SAMD51 Family

- [ATSAMD51J19A](#)
- [ATSAMD51J18A](#)
- [ATSAMD51J20A](#)
- [ATSAMD51P19A](#)
- [ATSAMD51G18A](#)
- [ATSAMD51P20A](#)
- [ATSAMD51G19A](#)
- [ATSAMD51N20A](#)
- [ATSAMD51N19A](#)

ATSAMD51J19A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
Family	SAM D5x/E5x
Sub Family	SAMD51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51J19A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51J19A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51J19A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAMD51J19A__
__SAMD51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x0007FFFF
RAM	0x20000000 - 0x2002FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51J19A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51J19A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAMD51
```

ATSAMD51J18A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
Family	SAM D5x/E5x
Sub Family	SAMD51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51J18A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51J18A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51J18A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAMD51J18A__
__SAMD51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x0003FFFF
RAM	0x20000000 - 0x2001FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51J18A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51J18A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAMD51
```

ATSAMD51J20A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
Family	SAM D5x/E5x
Sub Family	SAMD51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51J20A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51J20A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51J20A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAMD51J20A__
__SAMD51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x000FFFFFF
RAM	0x20000000 - 0x2003FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51J20A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51J20A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAMD51
```


ATSAMD51P19A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
Family	SAM D5x/E5x
Sub Family	SAMD51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51P19A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51P19A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51P19A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAMD51P19A__
__SAMD51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x0007FFFF
RAM	0x20000000 - 0x2002FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51P19A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51P19A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAMD51
```

ATSAMD51G18A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
Family	SAM D5x/E5x
Sub Family	SAMD51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51G18A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51G18A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51G18A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAMD51G18A__
__SAMD51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x0003FFFF
RAM	0x20000000 - 0x2001FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51G18A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51G18A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAMD51
```

ATSAMD51P20A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
Family	SAM D5x/E5x
Sub Family	SAMD51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51P20A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51P20A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51P20A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAMD51P20A__
__SAMD51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x000FFFFFF
RAM	0x20000000 - 0x2003FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51P20A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51P20A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAMD51
```

ATSAMD51G19A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
Family	SAM D5x/E5x
Sub Family	SAMD51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51G19A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51G19A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51G19A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAMD51G19A__
__SAMD51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x0007FFFF
RAM	0x20000000 - 0x2002FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51G19A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51G19A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAMD51
```

ATSAMD51N20A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
Family	SAM D5x/E5x
Sub Family	SAMD51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51N20A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51N20A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51N20A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAMD51N20A__
__SAMD51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x000FFFFFF
RAM	0x20000000 - 0x2003FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51N20A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51N20A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAMD51
```

ATSAMD51N19A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
Family	SAM D5x/E5x
Sub Family	SAMD51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51N19A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51N19A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51N19A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAMD51N19A__
__SAMD51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x0007FFFF
RAM	0x20000000 - 0x2002FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAMD51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAMD51N19A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAMD51/gcc/system_samd51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAMD51N19A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAMD51
```

SAME51 Family

- [ATSAME51N19A](#)
- [ATSAME51J20A](#)
- [ATSAME51N20A](#)
- [ATSAME51J18A](#)
- [ATSAME51J19A](#)

ATSAME51N19A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/gcc/system_same51.c
Family	SAM D5x/E5x
Sub Family	SAME51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51N19A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51N19A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME51N19A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAME51N19A__
__SAME51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x0007FFFF
RAM	0x20000000 - 0x2002FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAME51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51N19A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/gcc/system_same51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME51N19A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAME51
```


ATSAME51J20A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/gcc/system_same51.c
Family	SAM D5x/E5x
Sub Family	SAME51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51J20A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51J20A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME51J20A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAME51J20A__
__SAME51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x000FFFFFF
RAM	0x20000000 - 0x2003FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAME51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51J20A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/gcc/system_same51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME51J20A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAME51
```

ATSAME51N20A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/gcc/system_same51.c
Family	SAM D5x/E5x
Sub Family	SAME51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51N20A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51N20A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME51N20A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAME51N20A__
__SAME51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x000FFFFFF
RAM	0x20000000 - 0x2003FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAME51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51N20A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/gcc/system_same51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME51N20A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAME51
```

ATSAME51J18A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/gcc/system_same51.c
Family	SAM D5x/E5x
Sub Family	SAME51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51J18A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51J18A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME51J18A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAME51J18A__
__SAME51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x0003FFFF
RAM	0x20000000 - 0x2001FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAME51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51J18A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/gcc/system_same51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME51J18A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAME51
```

ATSAME51J19A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/gcc/system_same51.c
Family	SAM D5x/E5x
Sub Family	SAME51
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME51_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51J19A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51J19A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME51J19A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAME51J19A__
__SAME51_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x0007FFFF
RAM	0x20000000 - 0x2002FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAME51_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME51J19A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME51/gcc/system_same51.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME51J19A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAME51
```

SAME53 Family

- [ATSAME53J19A](#)
- [ATSAME53N19A](#)
- [ATSAME53J20A](#)
- [ATSAME53N20A](#)
- [ATSAME53J18A](#)

ATSAME53J19A

Device Details	
CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/gcc/system_same53.c
Family	SAM D5x/E5x
Sub Family	SAME53
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME53_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53J19A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53J19A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME53J19A_Vectors.s

Preprocessor Definitions	
ARM_MATH_CM4	
__SAME53J19A__	
__SAME53_SUBFAMILY	
__SAM_D5x_E5x_FAMILY	

Memory Segments	
FLASH	0x00000000 - 0x0007FFFF
RAM	0x20000000 - 0x2002FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include
DeviceHeaderFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include/sam.h
DeviceLoaderFile	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME53_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53J19A_Registers.xml
DeviceSystemFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/gcc/system_same53.c
DeviceVectorsFile	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME53J19A_Vectors.s
DeviceFamily	SAM D5x/E5x
DeviceSubFamily	SAME53

ATSAME53N19A

Device Details	
CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/gcc/system_same53.c
Family	SAM D5x/E5x
Sub Family	SAME53
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME53_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53N19A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53N19A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME53N19A_Vectors.s

Preprocessor Definitions	
ARM_MATH_CM4	
__SAME53N19A__	
__SAME53_SUBFAMILY	
__SAM_D5x_E5x_FAMILY	

Memory Segments	
FLASH	0x00000000 - 0x0007FFFF
RAM	0x20000000 - 0x2002FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include
DeviceHeaderFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include/sam.h
DeviceLoaderFile	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME53_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53N19A_Registers.xml
DeviceSystemFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/gcc/system_same53.c
DeviceVectorsFile	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME53N19A_Vectors.s
DeviceFamily	SAM D5x/E5x
DeviceSubFamily	SAME53

ATSAME53J20A

Device Details	
CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/gcc/system_same53.c
Family	SAM D5x/E5x
Sub Family	SAME53
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME53_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53J20A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53J20A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME53J20A_Vectors.s

Preprocessor Definitions	
ARM_MATH_CM4	
__SAME53J20A__	
__SAME53_SUBFAMILY	
__SAM_D5x_E5x_FAMILY	

Memory Segments	
FLASH	0x00000000 - 0x000FFFFF
RAM	0x20000000 - 0x2003FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include
DeviceHeaderFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include/sam.h
DeviceLoaderFile	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME53_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53J20A_Registers.xml
DeviceSystemFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/gcc/system_same53.c
DeviceVectorsFile	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME53J20A_Vectors.s
DeviceFamily	SAM D5x/E5x
DeviceSubFamily	SAME53

ATSAME53N20A

Device Details	
CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/gcc/system_same53.c
Family	SAM D5x/E5x
Sub Family	SAME53
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME53_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53N20A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53N20A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME53N20A_Vectors.s

Preprocessor Definitions	
ARM_MATH_CM4	
__SAME53N20A__	
__SAME53_SUBFAMILY	
__SAM_D5x_E5x_FAMILY	

Memory Segments	
FLASH	0x00000000 - 0x000FFFFFF
RAM	0x20000000 - 0x2003FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include
DeviceHeaderFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include/sam.h
DeviceLoaderFile	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME53_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53N20A_Registers.xml
DeviceSystemFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/gcc/system_same53.c
DeviceVectorsFile	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME53N20A_Vectors.s
DeviceFamily	SAM D5x/E5x
DeviceSubFamily	SAME53

ATSAME53J18A

Device Details	
CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/gcc/system_same53.c
Family	SAM D5x/E5x
Sub Family	SAME53
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME53_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53J18A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53J18A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME53J18A_Vectors.s

Preprocessor Definitions	
ARM_MATH_CM4	
__SAME53J18A__	
__SAME53_SUBFAMILY	
__SAM_D5x_E5x_FAMILY	

Memory Segments	
FLASH	0x00000000 - 0x0003FFFF
RAM	0x20000000 - 0x2001FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include
DeviceHeaderFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/include/sam.h
DeviceLoaderFile	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME53_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME53J18A_Registers.xml
DeviceSystemFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME53/gcc/system_same53.c
DeviceVectorsFile	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME53J18A_Vectors.s
DeviceFamily	SAM D5x/E5x
DeviceSubFamily	SAME53

SAME54 Family

- [ATSAME54P20A](#)
- [ATSAME54P19A](#)
- [ATSAME54N20A](#)
- [ATSAME54N19A](#)

ATSAME54P20A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/gcc/system_same54.c
Family	SAM D5x/E5x
Sub Family	SAME54
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME54_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME54P20A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME54P20A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME54P20A_Vectors.s

Preprocessor Definitions

```
ARM_MATH_CM4
__SAME54P20A__
__SAME54_SUBFAMILY
__SAM_D5x_E5x_FAMILY
```

Memory Segments

FLASH	0x00000000 - 0x000FFFFFF
RAM	0x20000000 - 0x2003FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

```
DeviceIncludePath=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include
DeviceHeaderFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include/sam.h
DeviceLoaderFile=$(TargetsDir)/SAM_D5x_E5x/Loader/SAME54_Loader.elf
DeviceRegisterDefinitionFile=$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME54P20A_Registers.xml
DeviceSystemFile=$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/gcc/system_same54.c
DeviceVectorsFile=$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME54P20A_Vectors.s
DeviceFamily=SAM D5x/E5x
DeviceSubFamily=SAME54
```

ATSAME54P19A

Device Details

CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/gcc/system_same54.c
Family	SAM D5x/E5x
Sub Family	SAME54
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME54_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME54P19A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME54P19A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME54P19A_Vectors.s

Preprocessor Definitions

ARM_MATH_CM4

__SAME54P19A__

__SAME54_SUBFAMILY

__SAM_D5x_E5x_FAMILY

Memory Segments

FLASH	0x00000000 - 0x0007FFFF
RAM	0x20000000 - 0x2002FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros

DeviceIncludePath=\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include

DeviceHeaderFile=\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include/sam.h

DeviceLoaderFile=\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME54_Loader.elf

DeviceRegisterDefinitionFile=\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME54P19A_Registers.xml

DeviceSystemFile=\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/gcc/system_same54.c

DeviceVectorsFile=\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME54P19A_Vectors.s

DeviceFamily=SAM D5x/E5x

DeviceSubFamily=SAME54

ATSAME54N20A

Device Details	
CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/gcc/system_same54.c
Family	SAM D5x/E5x
Sub Family	SAME54
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME54_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME54N20A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME54N20A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME54N20A_Vectors.s

Preprocessor Definitions	
ARM_MATH_CM4	
__SAME54N20A__	
__SAME54_SUBFAMILY	
__SAM_D5x_E5x_FAMILY	

Memory Segments	
FLASH	0x00000000 - 0x000FFFFFF
RAM	0x20000000 - 0x2003FFFF
RAM2	0x47000000 - 0x47001FFF

Project Macros	
DeviceIncludePath	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include
DeviceHeaderFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include/sam.h
DeviceLoaderFile	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME54_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME54N20A_Registers.xml
DeviceSystemFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/gcc/system_same54.c
DeviceVectorsFile	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME54N20A_Vectors.s
DeviceFamily	SAM D5x/E5x
DeviceSubFamily	SAME54

ATSAME54N19A

Device Details	
CMSIS Header File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include/sam.h
CMSIS Include Path	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include
CMSIS System File	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/gcc/system_same54.c
Family	SAM D5x/E5x
Sub Family	SAME54
Loader File	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME54_Loader.elf
Memory Map File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME54N19A_MemoryMap.xml
Register Definition File	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME54N19A_Registers.xml
Vectors File	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME54N19A_Vectors.s
Preprocessor Definitions	
ARM_MATH_CM4	
__SAME54N19A__	
__SAME54_SUBFAMILY	
__SAM_D5x_E5x_FAMILY	
Memory Segments	
FLASH	0x00000000 - 0x0007FFFF
RAM	0x20000000 - 0x2002FFFF
RAM2	0x47000000 - 0x47001FFF
Project Macros	
DeviceIncludePath	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include
DeviceHeaderFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/include/sam.h
DeviceLoaderFile	\$(TargetsDir)/SAM_D5x_E5x/Loader/SAME54_Loader.elf
DeviceRegisterDefinitionFile	\$(TargetsDir)/SAM_D5x_E5x/XML/ATSAME54N19A_Registers.xml
DeviceSystemFile	\$(TargetsDir)/SAM_D5x_E5x/CMSIS/SAME54/gcc/system_same54.c
DeviceVectorsFile	\$(TargetsDir)/SAM_D5x_E5x/Source/ATSAME54N19A_Vectors.s
DeviceFamily	SAM D5x/E5x
DeviceSubFamily	SAME54