

# Access CPU with AndeSight





- ❖ Create a project
- ❖ Access CPU with "Reset and Hold"
- ❖ Access CPU without "Reset and Hold"
- ❖ Access CPU with "Target Monitor"

# Create Empty Project



**1. Click to create project**

**2. Select ICE**

**3. Select your chip profile**

**4. Create project**

Chip Profile Name	Chip ID	CPU
AE100		
AE210P		
ADP-AE210P-D1088	ADP-AE210P-D1088	[D1088]
ADP-AE210P-E830	ADP-AE210P-E830	[E830]
ADP-AE210P-N1068A-S	ADP-AE210P-N1068A-S	[N1068A-S]
ADP-AE210P-N705-S	ADP-AE210P-N705-S	[N705-S]
ADP-AE210P-N801-S	ADP-AE210P-N801-S	[N801-S]
ADP-AE210P-N820	ADP-AE210P-N820	[N820]
ADP-AE210P-N968A-S	ADP-AE210P-N968A-S	[N968A-S]
AE3XX		
ADP-AE3XX-D15F	ADP-AE3XX-D15F	[D15F]
ADP-AE3XX-N15F	ADP-AE3XX-N15F	[N15F]
AG101P		
ADP-AG101P-16MB-E830-32I	ADP-AG101P-16MB-E830-32I	[E830]
ADP-AG101P-16MB-N705-S-32I	ADP-AG101P-16MB-N705-S-32I	[N705-S]
ADP-AG101P-16MB-N801-S-32I	ADP-AG101P-16MB-N801-S-32I	[N801-S]
ADP-AG101P-16MB-N820-32I	ADP-AG101P-16MB-N820-32I	[N820]
ADP-AG101P-4GB-D1088-SPU-32I	ADP-AG101P-4GB-D1088-SPU-32I	[D1088-SPU]
ADP-AG101P-4GB-N1068A-S-32I	ADP-AG101P-4GB-N1068A-S-32I	[N1068A-S]
ADP-AG101P-4GB-N1068A-SPU-32I	ADP-AG101P-4GB-N1068A-SPU-32I	[N1068A-SPU]

# Enter Project Name



**C Project**

Create C project of selected type  
Chip Profile: ADP-AE210P-N820

Project name:

☒ Use default location

Location:

Choose file system:

Project type:

- Andes Executable
  - ☒ Empty Project
  - ☐ Hello World ANSI C Project
- Andes Static Library
- Makefile project

Toolchains:

- nds32le-elf-mculib-v3m
- nds32le-elf-newlib-v3m

☒ Show project types and toolchains only if they are supported on the platform

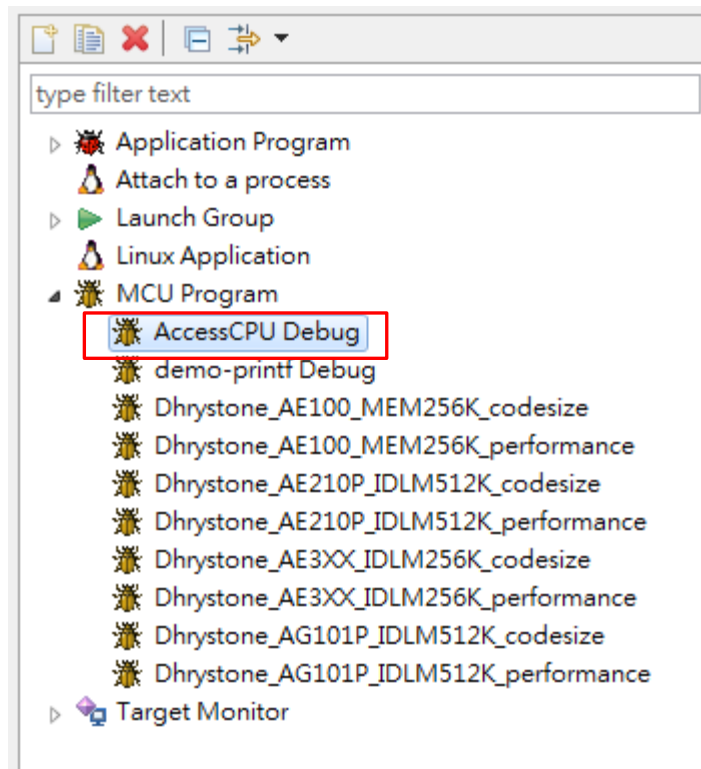
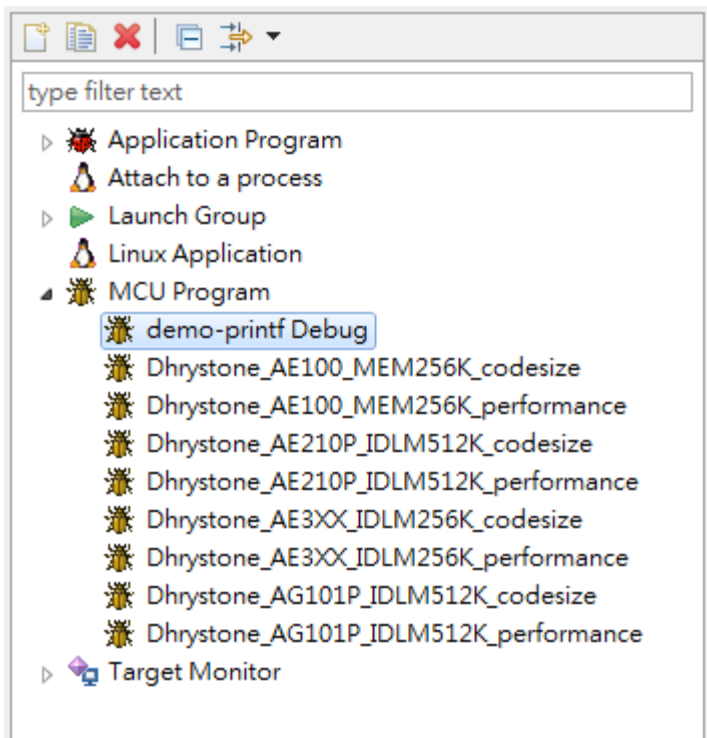
**1. Enter project name**

**2. Click Finish**

# MCU Program Settings



- ❖ Right click project > Debug As > Debug Configurations > Double click "MCU Program" if AccessCPU project is not in the list



# MCU Program Settings



The screenshot shows the 'MCU Program Settings' dialog box. On the left, a tree view lists various debug configurations, with 'AccessCPU Debug' selected and marked with a red box and the number 1. The main panel on the right has tabs for 'Main', 'Debugger', 'Startup' (marked with a red box and the number 2), 'Tracer', 'Source', and 'Common'. Under the 'Startup' tab, the '1. GDB Initialization Commands' section contains a list box with 'Reset and Hold' checked, marked with a red box and the number 3. Below this are sections for '2. Binary File Options' (with 'Load binary file' unchecked), '3. Runtime Options' (with 'Set program counter at (hex):', 'Set breakpoint at:', and 'Resume' all unchecked), and '4. GDB Run Commands'. At the bottom right, the 'Debug' button is highlighted with a red box and the number 4. Other buttons like 'Revert', 'Apply', and 'Close' are also visible.

# CPU Registers




























The screenshot shows the Andes Studio IDE interface. The 'Project Expl' pane on the left shows a 'Running Target' for 'ADP-AE210P-N820 ICE:'. The 'Debug' pane shows 'AccessCPU Debug [MCU Program]' with 'Thread #1 (Suspended : User Request)' and 'gdb(7.7.0.20140207)-78'. The 'Registers' window is open, showing a list of registers and their values. A red box highlights the 'Registers' tab, and a red callout points to it with the text 'CPU registers'. Another red callout points to the 'Running Target' in the Project Explorer with the text 'Target Running'.

Name	Value
All Registers	
General Purpose Registers	
Configuration System Registers	
Interrupt System Registers	
MMU System Registers	
mr0 (MMU_CTL)	{0x0, NTC0 = 0x0, NTC1 = 0x0}
mr6 (ILMB)	{IEN = 0x1, ILSMZ = 0x8, (raw
IBPA	0x0
ILSMZ	0x8 - 1024 kB
IEN	0x1 - Enabled
mr7 (DLMB)	{DEN = 0x0, DLMSZ = 0x7, Df
EDM System Registers	
Performance Monitoring	
Implementation-Dependent Regis	



Monit   

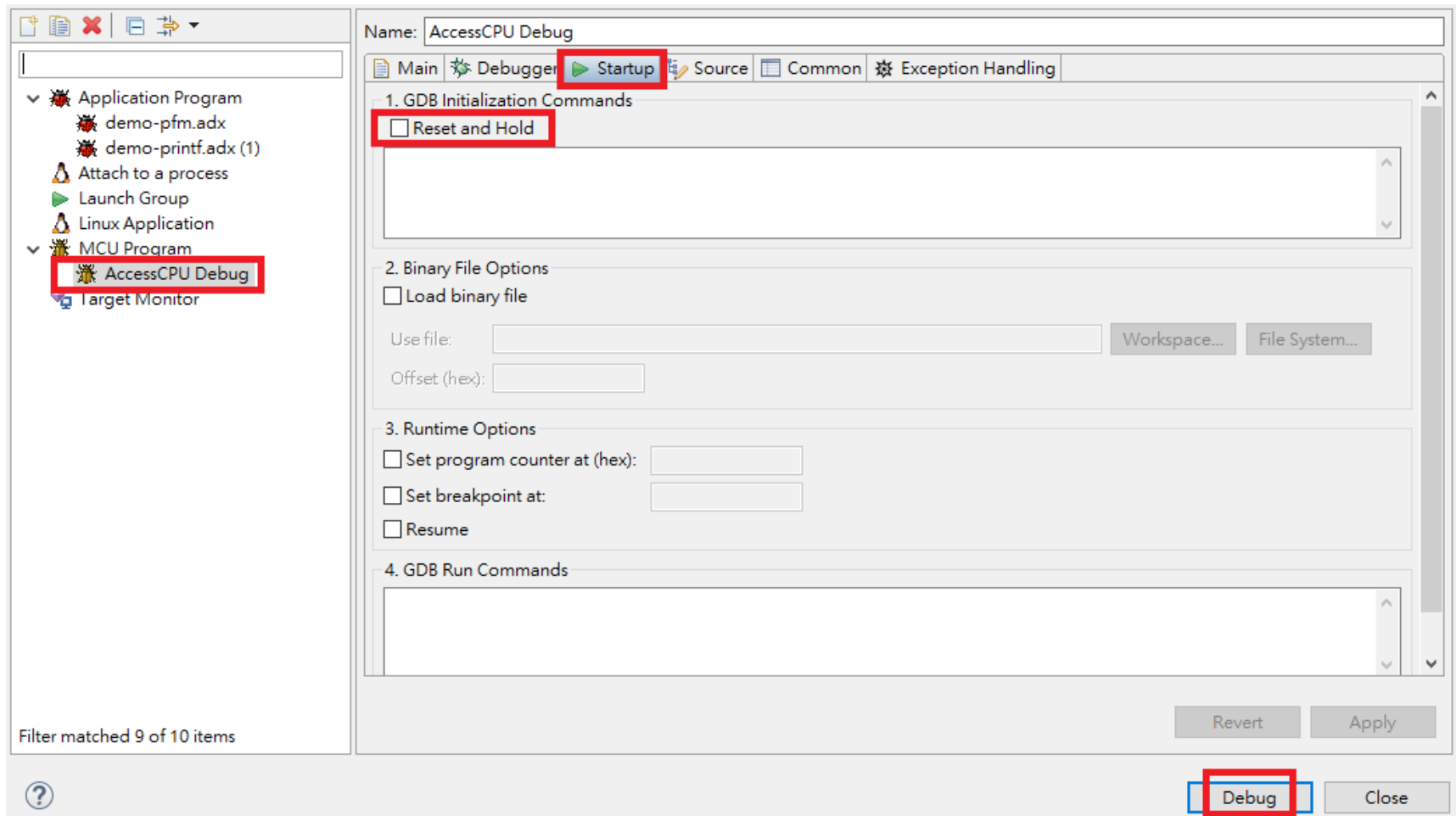
Name	Value	Address
▶  APBBRG		
▶  SMU		
▲  UART1		
 SYSVER	0x02011000	 0xf02000
 HWCFCGR	0x00000000	 0xf02010
 OSCR	0x00000010	 0xf02014
▶  Receiver Buffer/Transm	0x00000000	 0xf02020
▶  Interrupt Enable/Divisor	0x00000000	 0xf02024
▶  Interrupt Identification /	0x00000001	 0xf02028
▶  Line Control	0x00000000	 0xf0202c
▶  Modem Control	0x00000000	 0xf02030
▶  Line Status	0x00000061	 0xf02034
▶  Modem Status	0x00000000	 0xf02038
▶  Scratch Register	0x00000000	 0xf0203c



# MCU Program without Reset and Hold



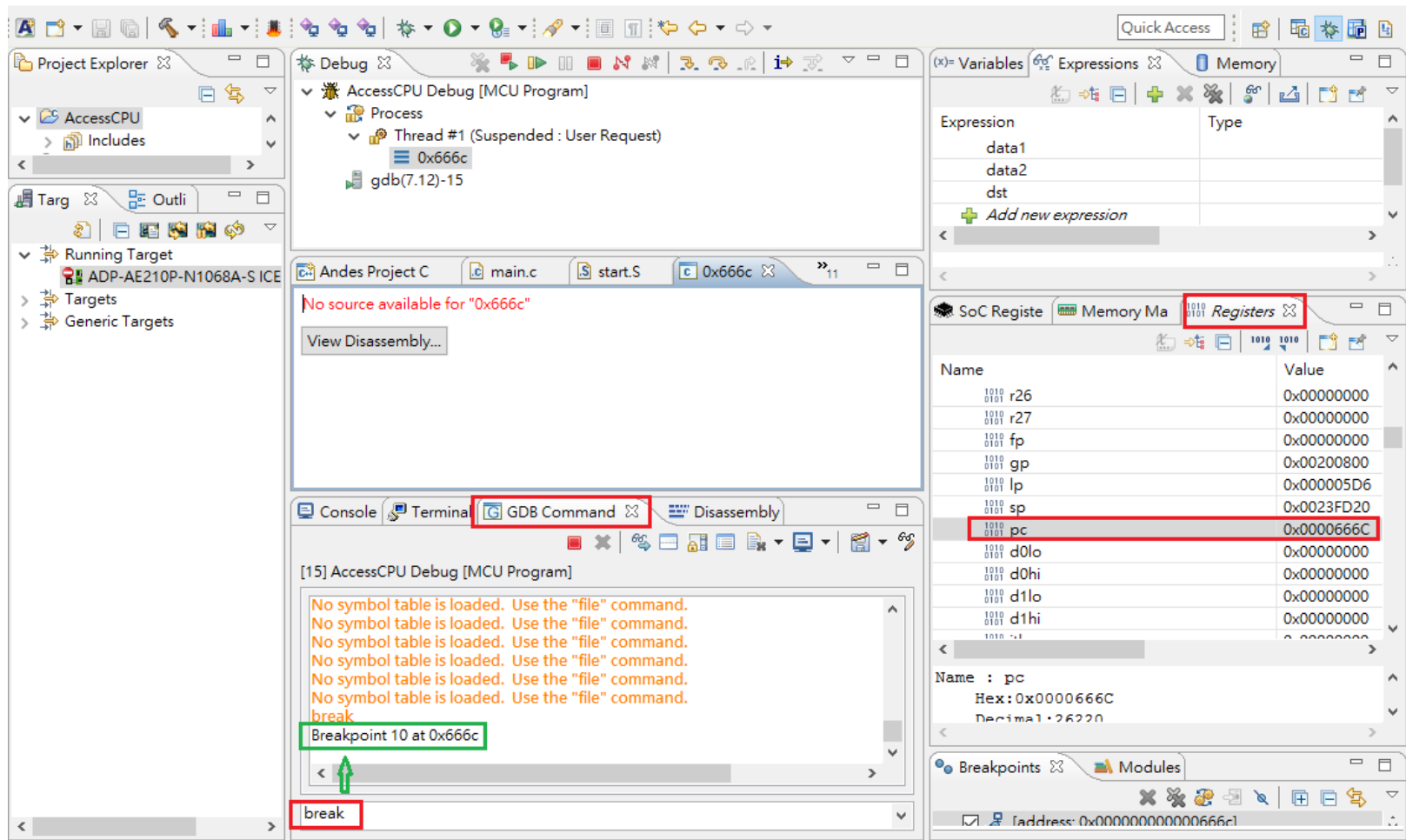
- ❖ Without “Reset and Hold” to reset the PC to 0



# MCU Program without Reset and Hold



- ❖ At "GDB command" view, type break to stop CPU
- ❖ The PC register at Registers view shows where the CPU stops



The screenshot displays the Andes Studio IDE interface during a debug session. The 'GDB Command' view is active, showing the command 'break' entered in the console. The 'Registers' view is also visible, showing the PC register at address 0x0000666C. The 'Console' view shows the output of the GDB command, indicating that a breakpoint has been set at address 0x0000666C.

**GDB Command View:**

```
[15] AccessCPU Debug [MCU Program]
No symbol table is loaded. Use the "file" command.
No symbol table is loaded. Use the "file" command.
No symbol table is loaded. Use the "file" command.
No symbol table is loaded. Use the "file" command.
No symbol table is loaded. Use the "file" command.
break
Breakpoint 10 at 0x666c
break
```

**Registers View:**

Name	Value
r26	0x00000000
r27	0x00000000
fp	0x00000000
gp	0x00200800
lp	0x000005D6
sp	0x0023FD20
pc	0x0000666C
d0lo	0x00000000
d0hi	0x00000000
d1lo	0x00000000
d1hi	0x00000000

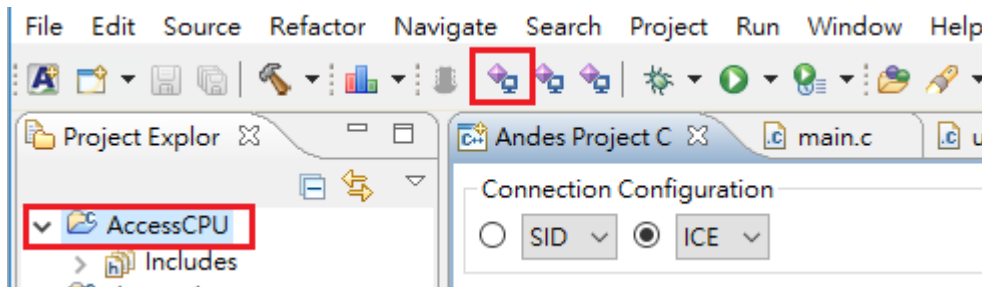
**PC Register Details:**

Name : pc  
Hex : 0x0000666C  
Decimal : 26220

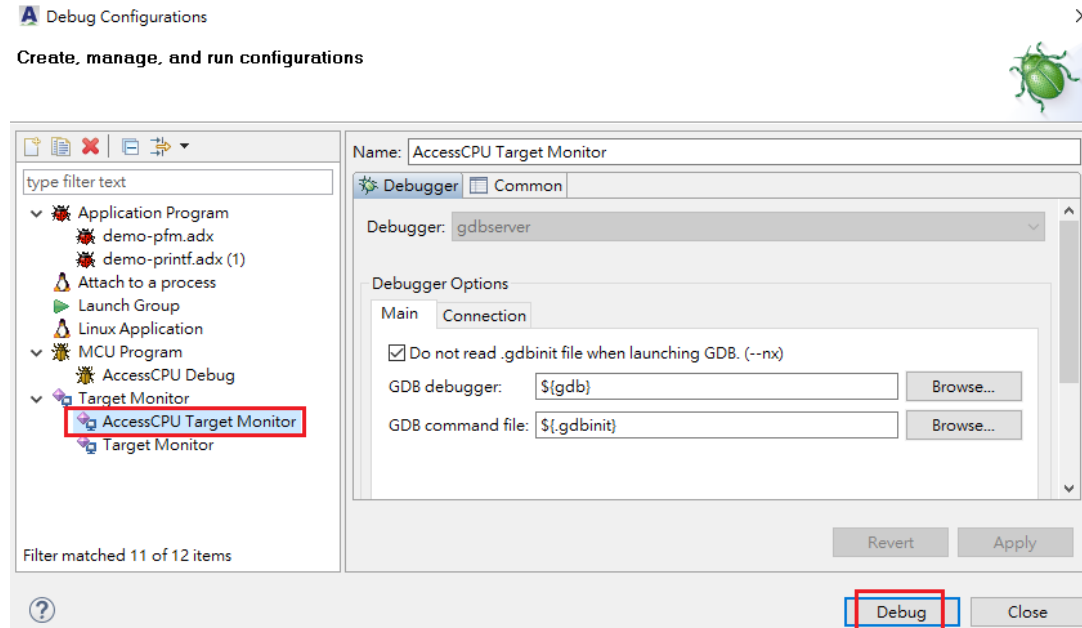
# Target Monitor



❖ Use “Target Monitor” icon



❖ Use “Debug as” > Debug Configurations > Target Monitor





File Edit Navigate Search Project Run Window Help

Project Explorer

- AccessCPU
  - Includes

Target

- Running Target
  - ADP-AE210P-N1068A-S ICE
    - Targets
    - Generic Targets

Debug

- AccessCPU Target Monitor (Target Monitor)
  - Process
    - Thread #1 (Suspended : User Request)
      - 0x666a
      - gdb(7.12)-22

Andes Project C

- main.c
- start.S
- 0x666a

No source available for "0x666a"

View Disassembly...

Console

Enter location here

```
0000666a: bmski33 $r1, #0x0
0000666c: beqz38 $r1, 0x6666
0000666e: lwi $r0, [$r0+#0x20]
00006672: seb33 $r0, $r0
00006674: ret5 $lp
00006676: lwi $r2, [$r0+#0x34]
0000667a: bmski33 $r2, #0x5
0000667c: beqz38 $r2, 0x6676
0000667e: swi $r1, [$r0+#0x20]
00006682: ret5 $lp
00006684: push25 $r6, #0 ! {$r6, $fp, $gp, $lp}
00006686: mov55 $r6, $r0
```

Variables

Expression	Type	Value
data1		
data2		
dst		
Add new expr		

SoC Register

Name	Value
r23	0x00000000
r24	0x00000000
r25	0x00000000
r26	0x00000000
r27	0x00000000
fp	0x00000000
gp	0x00200800
lp	0x000005D6
sp	0x0023FD20
pc	0x0000666A
d0lo	0x00000000

Breakpoints

Modules

Address: 0x000000000000666c