SWD 下载说明

- 安装 CH32F103 器件库,点击示例程序目录下的 Keil.WCH32F1xx_DFP.1.0.0.pack 文件(或者去 官网下载:<u>http://www.wch.cn/downloads/CH32F103EVT_ZIP.html</u>),如果之前已经安装好了, 此步骤可以省略。
- 2. 使用跳帽将 BT0 和 BT1 分别接到 GND 上, 如下图所示:



3. 找到 CH32F103C8T6 开发板 SWD 接口,如下图所示:



将仿真器(理论上只要支持 SWD 协议的仿真器都支持,这里以 ST-LINK 为例)的 3.3V、DIO、CLK、
 GND 引脚和 SWD 接口引脚——对应连接起来,如下图所示:



5. 打开 KEIL 工具软件 , 点击如下图所示按钮 :



6. 在弹出的界面里点击 Debug 按钮,然后在 Use 里选择 ST-LINK Debugger,如下图所示:

Options for Target 'TEMPLET'			X	
Device Target Output Listing User C/C++ Asm	Linker Deb	ug Utilities		
C Use Simulator with restrictions Settings ☐ Limit Speed to Real-Time		nk Debugger m Systems JTAGjet	✓ Settings	
Load Application at Startup Initialization File:	J-LINK / J-TRACE Cortex ULINK Pro Cortex Debugger ULINK Pro Cortex Debugger NULink Debugger SiLabs UDA Debugger CMSIS-DAP Debugger Models Cortex:M Debugger Models Cortex:M Debugger PEMicro Debugger INK Processor INULINK Debugger Models Cortex:M Debugger PEMicro Debugger IVINK plus Debugger IVINK Plus Debugger IVINK Plus Debugger IVINK Watch Windows IV Memory Display IV System Viewer		main()	
Restore Debug Session Settings Image: Construction of the sector of the secto			▼ Viewer	
CPU DLL: Parameter:	Driver DLL:	Parameter:		
SARMCM3.DLL -REMAP	SARMCM3.DLL			
Dialog DLL: Parameter:	, Dialog DLL:	Parameter:		
DCM.DLL -pCM3	TCM.DLL	-pCM3		
Warn if outdated Executable is loaded Wanage Component Viewer Description Files				
OK Can	cel Det	faults	Help	

7. 将 CH32F103C8T6 最小系统板上电,然后点击 Use 旁边的 Settings 按钮 (如上图所示),弹出如下

界面,则说明 ST-LINK 下载器连接成功:

Debug Adapter Unit: ST-LINK/V2	SW Device IDCODE Device Name SWDIO 0x1BA0 ARM CoreSight SW-DP	Move Up
Serial 53FF71067766485259261681 Version: V2 FW: V2J31S7 ✓ Check version on sta Target Com Port SW ✓ Clock Req: 4 MHz Selectec 4 MHz	▲utomatic Dete <mark>连接成功</mark> : Manual Configurati Device Name: Add Delete Update IR len:	AP: 0
Debug Connect & Reset Options Connect: Normal Veset: Autode Reset after Conn	Cache Options Tect Cache Code Res Cache Memory Download Options Verify Code Do Download to Fl	wnlo: ash

 点击 Flash Download 按钮,进入 flash 设置界面,如下图所示(如果 flash 已经选择好,则第 8、 9 步骤可以省略):

Cortex-M Target Driver Setup	
Debug Trace Flash Downlo Download Function C Erase Full Erase Secto C Do not Eras Programming Algorithm	ad Z V Program r: V Verify e V Reset and Run RAM for Algorithm :art: 0x20000000 ize: 0x1000
Description	Device Size Device Type Address Range
	art: ize: Add Remove
	确定

9. 点击 Add 按钮(如上图所示)选择 flash , 一般都是选择第一个 (算法已经处理好了), 选择好了 , 点击

下方的 Add 按钮退出,如下如所示:

Add Flash Programming	Algorithm			×
Description	Flash Size	Device Type	Origin	
CH32F1xx_64 Flash	64k	On-chip Flash	Device Family Package	
STM32F10x Flash Options	16B	On-chip Flash	Device Family Package	-
AM29x128 Flash	16M	Ext. Flash 16-bit	MDK Core	
K8P5615UQA Dual Flash	64M	Ext. Flash 32-bit	MDK Core	
LPC18xx/43xx MX25V803	8M	Ext. Flash SPI	MDK Core	
LPC18xx/43xx S25FL032	4M	Ext. Flash SPI	MDK Core	
LPC18xx/43xx S25FL064	8M	Ext. Flash SPI	MDK Core	
LPC407x/8x S25FL032 SP	4M	Ext. Flash SPI	MDK Core	
LPC5460x MT25QL128 S	16M	Ext. Flash SPI	MDK Core	
M29W640FB Flash	8M	Ext. Flash 16-bit	MDK Core	
MIMXRT105x EcoXiP Flash	4M	Ext. Flash SPI	MDK Core	
RC28F640J3x Dual Flash	16M	Ext. Flash 32-bit	MDK Core	
S29GL064N Dual Flash	16M	Ext. Flash 32-bit	MDK Core	
S29JL032H_BOT Flash	4M	Ext. Flash 16-bit	MDK Core	
S29JL032H_TOP Flash	4M	Ext. Flash 16-bit	MDK Core	
Selected Flash Algorithm File:				
C:\Keil_v5\ARM\PACK\Keil\WCH32F1xx_DFP\1.0.0\Flash\CH32F1xx_64.FLM				
		Add	Cancel	

10. 点击确定按钮和 OK 按钮,退出设置界面,如下图所示:

Cort	tex-M Target Driver Setup	X
De	ebug Trace Flash Download Download Function C Erase Full Cl V Program E Erase Sector: V Verify C Do not Erase V Reset and Run	
	Programming Algorithm Description Device Size Device Type Address Range CH32F1xx_64 Flash 64k On-chip Flash 08000000H - 0800FFFFH	
	art: ize: Add Remove	
_	确定 取消 应用(4 OK Cancel Defaults Help	

11. 点击编译按钮进行程序编译,成功后,就可以进行下载,如下图所示(如果已经编译,则该步骤可以

省略):

🔢 G:\STM32核心板资料\QD开发板\CH32F103C8T6核心板\CH32F103C8T6最小系统板资料包\程序示例\Demo_CH32F103C8T6_工程模板\P
File Edit View Project Flash Debug Peripherals Tools SVCS Window Help
□ 22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Project 编译 📲
Project: TEMPLET
e 📮 CORE
e-📮 FWLib
E Service
EProject Books {} Functions 0, Templates
Build Output
*** Using Compiler 'V5.06 update 6 (build 750)', folder: 'D:\Keil_v5\ARM\ARMCC\Bin'
"\OBJ\TEMPLET.axf" - 0 Error(s), 0 Warning(s).
Build Time Elapsed: 00:00:01
编译成功
Build Output
ST-Link Debugger

	2
rie tait view Project Flash Debug Peripherals Tools SVCS Window Heip	
Project 🕨 🖬	
🕫 🗀 CORE	
e 📮 FWLib	
e 🧧 System	
- CMSIS	
B-♥ Device	
EProject Sooks O Functions O+Templates	
Build Output	L 🖂
*** Using Compiler 'V5.06 update 6 (build 750)', folder: 'D:\Keil_v5\ARM\ARMCC\Bin'	
Build target 'TEMPLET' "\OBJ\TEMPLET.akT' - 0 Error(s), 0 Warning(s).	
Build Time Elapsed: 00:00:01	
Erase Done.	
Programming Jone. Verify 0K.	
Application running Flash Load finished at 16:31:56	
	-
()	
E Build Output 🙀 Find In Files	
ST-Link Debugger	

12. 点击下载按钮进行程序下载,出现如下提示,则说明下载成功,如下图所示: