

SCU_Reset_Detection_1

for KIT_AURIX_TC297_TFT

Detection of reset type

AURIX™ TC2xx Microcontroller Training
V1.0.0



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Scope of work

This example shows how to detect the source of the last reset (power-on reset, watchdog reset, etc.)

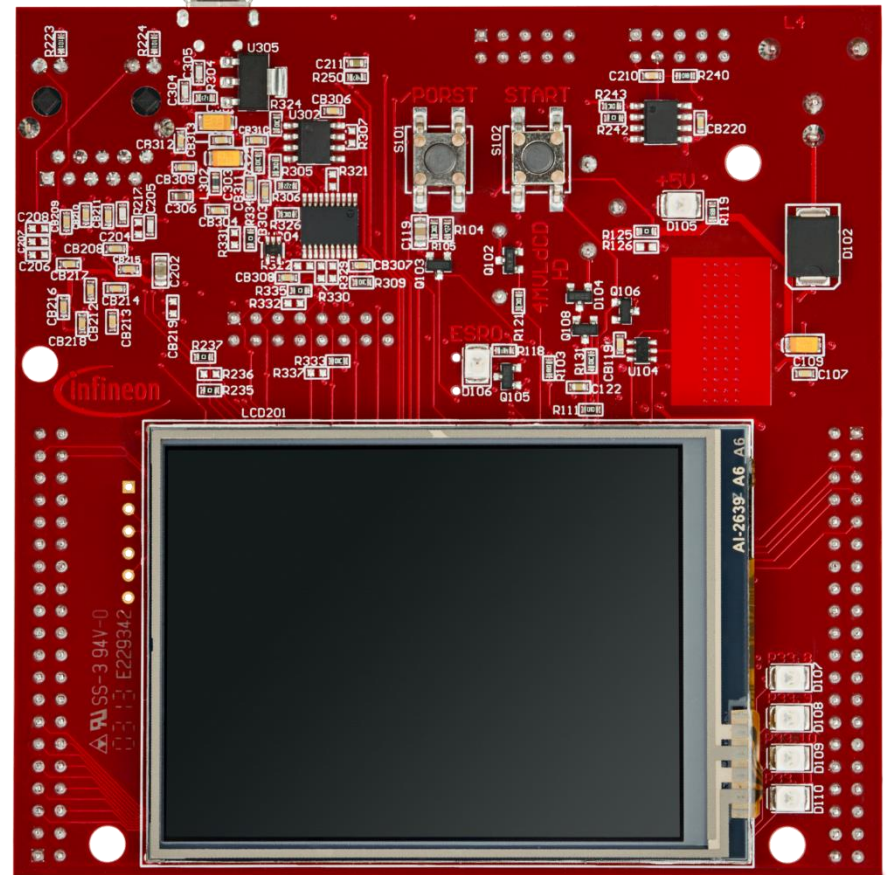
The AURIX™ TC2xx devices can be reset by various reset sources. The application software is able to determine the source of the last reset based on a routine that evaluates the related reset special function register.

Introduction

- › Resets can be configured and determined in the Reset Control Unit (RCU), belonging to the System Control Unit (SCU).
- › There are various reset triggers such as SupplyMonitor, EVRs, PORST, ESRx, JTAG.
- › Consequently, different reset types can be derived, such as Cold-/Warm-Power-On Reset, System Reset, Application Reset, Debug Reset, Module Reset.

Hardware setup

This code example has been developed for the board
KIT_AURIX_TC297_TFT_BC-Step.



Implementation

startScuResetDetection()

- › This function executes the ***evaluateReset()*** function, which provides information about the last occurred reset. The returned value is a data structure comprising elements such as ***resetType*** and ***resetTrigger***.
- › The ***resetType*** specifies the type of the last reset (e.g. a Cold Power-On Reset, System Reset, Application Reset or Warm Power-On Reset).
- › The ***resetTrigger*** specifies the source of the last reset. For instance, the source can be a Power-On Reset (pressing PORST-Button), a SW triggered reset or a reset triggered by debugger or any voltage supervision monitor.
- › Furthermore, the function ***evaluateReset()*** clears the Cold Power-On sticky bits using the function ***clearColdPowerOnResetBits()***. Those bits are not cleared automatically and must be explicitly cleared by the application.
- › The local variable ***swReset*** can be used to specify the type of SW-Reset initiated by the function ***triggerSWReset()***.

Implementation

evaluateReset()

- › The function **evaluateReset()** evaluates both the **SCU.RCU.RSTSTAT** and **SCU.RCU.RSTCON** registers.
- › The **SCU.RCU.RSTSTAT** register is evaluated with regard to which reset bits are set, respectively, cleared. Firstly, the warm reset status bits comprising **ESRx**, **SMU**, **SW**, **STMx** and **CBx** are evaluated. Secondly, the cold reset status bits comprising **EVR13**, **EVR33**, **SWD** and **STBYR** are evaluated if none of the warm reset status bits are set. Finally, the **PORST** bit is evaluated.
- › The **SCU.RCU.RSTCON** is evaluated to determine the type of reset, specified for the warm reset status bits, except debugger related reset sources.

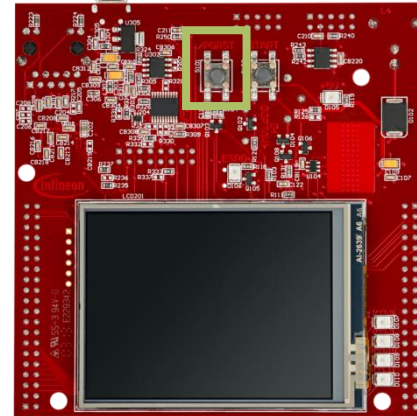
triggerSWReset()

- › This function was developed only for testing purposes. Based on the local variable **swReset**, it triggers either a SW Application Reset or a SW System Reset.

Run and Test

After code compilation and flashing the device, perform the following steps:

1. Run the code
2. Suspend the code execution
3. Watch the local structure variable ***lastReset*** (the elements ***lastReset.resetType*** and ***lastReset.resetTrigger***)
4. Check whether the ***lastReset.resetType*** is set to 'application' reset and whether the ***lastReset.resetTrigger*** is set to 'cb3'.
5. Press button 'PORST'



6. Perform steps 1. through 3.
7. Check whether the ***lastReset.resetType*** is set to 'warmpoweron' reset and whether the ***lastReset.resetTrigger*** is set to 'porst'.

Run and Test

8. Set the local variable **swReset** to '1'
9. Perform steps 1. through 3.
10. Check whether the **lastReset.resetType** is set to 'application' reset and whether the **lastReset.resetTrigger** is set to 'sw'.
11. Set the local variable **swReset** to '2'
12. Perform steps 1. through 3.
13. Check whether the **lastReset.resetType** is set to 'system' reset and whether the **lastReset.resetTrigger** is set to 'sw'.

References



- > AURIX™ Development Studio is available online:
- > <https://www.infineon.com/aurixdevelopmentstudio>
- > Use the „*Import...*“ function to get access to more code examples.



- > More code examples can be found on the GIT repository:
- > https://github.com/Infineon/AURIX_code_examples



- > For additional trainings, visit our webpage:
- > <https://www.infineon.com/aurix-expert-training>



- > For questions and support, use the AURIX™ Forum:
- > <https://www.infineonforums.com/forums/13-Aurix-Forum>

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Email: erratum@infineon.com

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