

GTM_TOM_Interrupt_1

GTM TOM interrupt

AURIX™ TC2xx Microcontroller Training
V1.0.0



[Please read the Important Notice and Warnings at the end of this document](#)

Scope of work

The GTM TOM is configured to trigger an interrupt every 500 ms. The interrupt toggles an LED.

The Generic Timer Module triggers an interrupt every 500 ms. The state of the port pin, where the LED is connected, is toggled inside the Interrupt Service Routine (ISR).

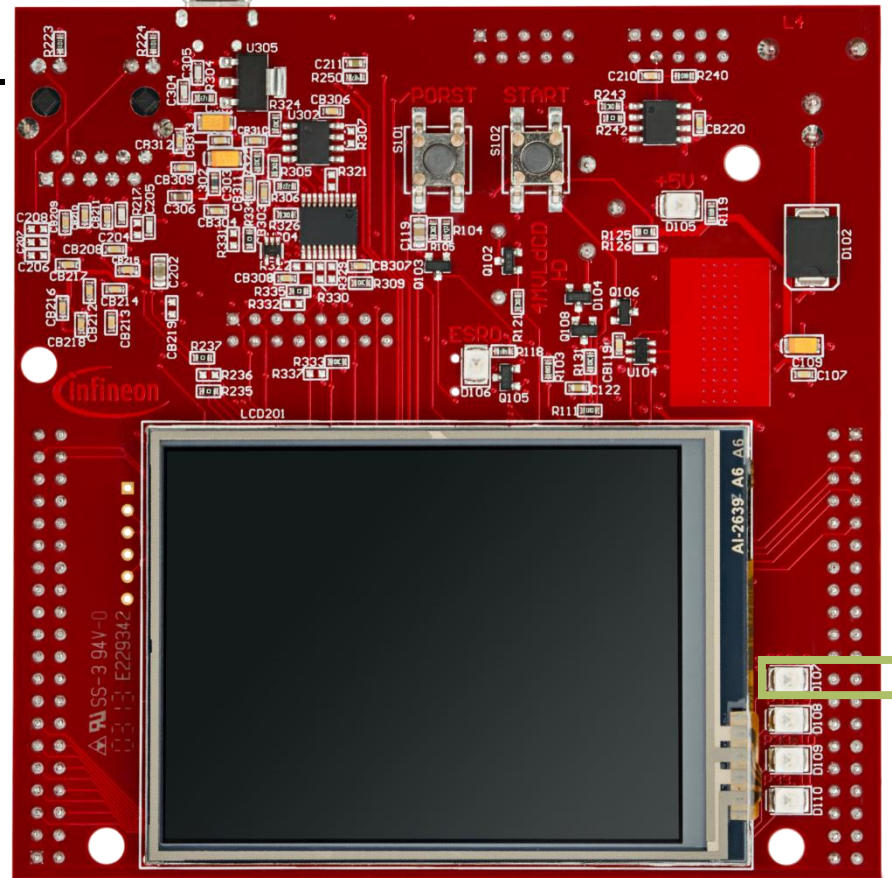
Introduction

- › The Generic Timer Module (GTM) is a modular timer unit designed to accommodate many timer applications.
- › It has an in-built Timer Output Module (TOM) that can offers 16 independent channels to generate output signals.
- › The Clock Management Unit (CMU) is responsible for clock generation of the GTM. The Fixed Clock Generation (FXU) is one of its subunits and it provides five predefined non-configurable clocks for GTM modules, including the TOM.

Hardware setup

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

LED D107 (1) is used for this example.



Implementation

Configuring the TOM

The configuration of the TOM is done once in the setup phase by calling the initialization function *initGtmTom()* with the following steps:

- › Enable the GTM by calling the function *IfxGtm_enable()*.
- › The function *IfxGtm_Tom_Timer_initConfig()* initializes an instance of the structure *IfxGtm_Tom_Timer_Config* with its default values.
- › The *IfxGtm_Tom_Timer_Config* structure allows to set the following parameters to initialize the module:
 - *tom* – Set TOM 1
 - *timerChannel* – Set channel 0 of TOM 1
 - *clock* – Select CMU clock 0
 - *base.frequency* – Set timer frequency to 2 Hz (Interrupt every 500 ms)
 - *base.isrPriority* – Interrupt Service Routine priority
 - *base.isrProvider* – Interrupt Service Routine provider

Implementation

Configuring the TOM

- › Select the FXU clock 3 to divide the clock source by 4096 (***timerConfig.clock = IfxGtm_Tom_Ch_ClkSrc_cmuFxclk3***).
- › Enable the FXU clocks by calling the function ***IfxGtm_Cmu_enableClocks()***.
- › The function ***IfxGtm_Tom_Timer_init()*** initializes and activates the TOM with the given configuration.

All the functions used for the configuration of the TOM are provided by the iLLD header ***IfxGtm_Tom_Timer.h***.

Implementation

Configuring the LED

The LED configuration is done once in the function ***initGtmTom()*** by setting the port pin mode to output and push-pull by calling the function ***lfxPort_setPinModeOutput()***, provided by iLLD header ***lfxPort.h***.

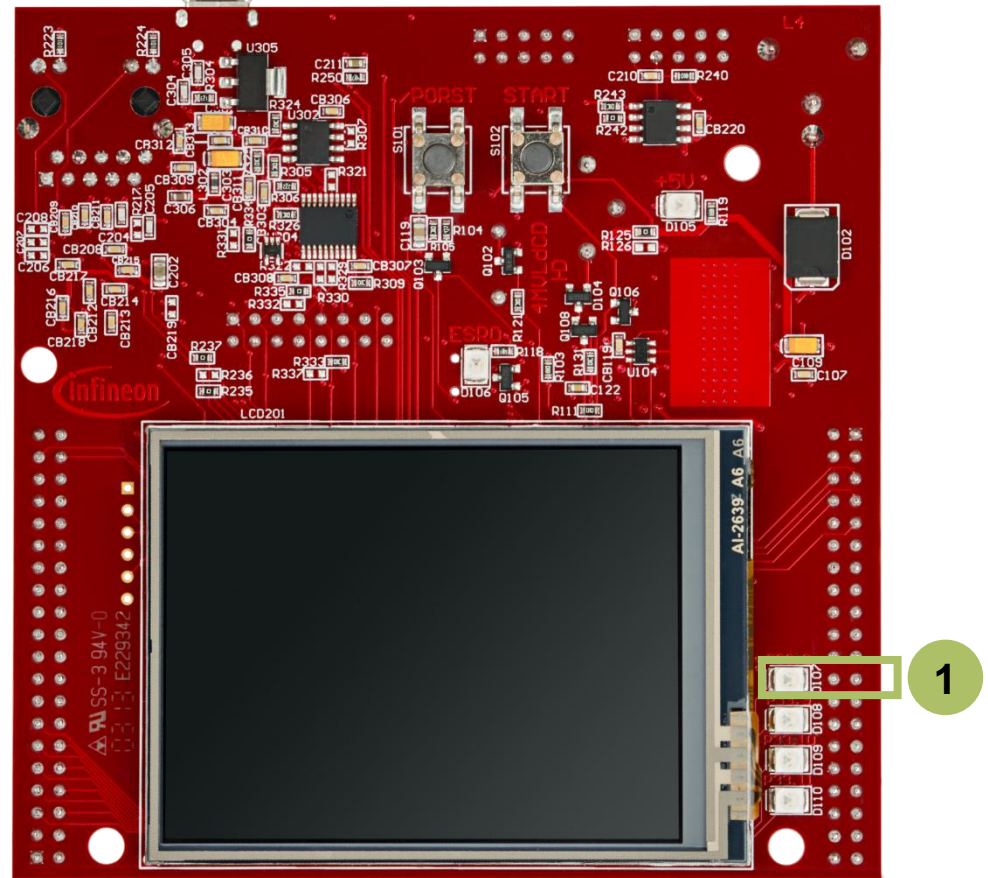
Interrupt Service Routine (ISR)

The ISR implemented in this example contains the following steps:

- › Clear the timer event with the function ***lfxGtm_Tom_Timer_acknowledgeTimerIrq()*** (iLLD header ***lfxGtm_Tom_Timer.h***).
- › Change the LED state by calling the function ***lfxPort_togglePin()*** (iLLD header ***lfxPort.h***).

Run and Test

After code compilation and flashing the device, observe the **LED D107** (1), which should be blinking.



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>

Trademarks

All referenced product or service names and trademarks are the property of their respective owners.

Edition 2019-10

Published by

Infineon Technologies AG
81726 Munich, Germany

© 2019 Infineon Technologies AG.
All Rights Reserved.

Do you have a question about this document?

Email: erratum@infineon.com

Document reference

GTM_TOM_Interrupt_1

IMPORTANT NOTICE

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics (“Beschaffenheitsgarantie”).

With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

In addition, any information given in this document is subject to customer’s compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer’s products and any use of the product of Infineon Technologies in customer’s applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer’s technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

For further information on the product, technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies office (www.infineon.com).

WARNINGS

Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies’ products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.