MSPM0 WWDT module introduction

—— MSPM0 peripheral training series

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TEXAS INSTRUMENTS

MCU level overview

——MSPM0Lxx series

MSPM0L13x3/4/5/6

1.62 - 3.6V
-40 to 125 C

CPU
ARM Cortex-M0+
32 MHz

NVIC / 3-ch DMA

On-chip Memory
8, 16, 32 or 64 kB flash
2 or 4 kB SRAM

Data Integrity & Security
CRC accelerator (16 and 32 bit)

Programming & Debug
ARM SWD interface
ROM UART & I2C BSL

Power & Clocking
POR / BOR / SVS
Internal LF 32kHz (5%)
Internal HF 4-32MHz (1%)

Communication
UART w/ LIN (1)
UART (1)
SPI (1)
I2C (2) w/ FastMode+

IO
Up to 28 GPIO
Up to 2 low Ib OPA inputs

Precision Analog
12-bit SAR ADC 1Msps (1)
ULP/HS Comparator (1)
8-bit reference DAC (1)
Zero-drift chopper op-amps (2)
General purpose amp (1)
Internal ADC reference (2.5%)
Temperature sensor

Timers
General purpose 16-bit 2 CC (4)
Windowed watchdog

Leaded packages: SOT-16, VSSOP-20/28
No-lead packages: WQFN-16, VQFN-24/32

32 MHz MCU with up to 64kB flash, 32 pins, 12-bit ADC, dual zero-drift OPA/PGA, COMP

——MSPM0Gxx series

MSPM0G350x/310x/150x/110x

1.62 - 3.6V
-40 to 125 C

CPU
Arm Cortex-M0+
80 MHz

NVIC / MPU / 7-ch DMA

Accelerators
Math (DIV, SQRT, TRIG, MAC)

On-chip Memory
32, 64, or 128 kB flash [ECC]
16 or 32 kB SRAM [ECC]

Data Integrity & Security
CRC accelerator (16 and 32 bit)
AES256 accelerator + TRNG

Programming & Debug
ARM SWD interface
UART & I2C bootloader

Power & Clocking
POR / BOR / SVS
External LF 32kHz XTAL
External HF 4-48MHz XTAL
Internal LF 32kHz (3%)
Internal HF 4-32MHz (1%)
PLL (up to 80 MHz)

Communication
UART w/ LIN (1)
UART (3)
SPI (2)
I2C (2) w/ FastMode+
CAN-FD (1)

IO
Up to 60 GPIO

Precision Analog
12-bit ADC 4Msps (9-ch)
12-bit ADC 4Msps (8-ch)
Comparators w/ 8-bit DACs (3)
12-bit 1Msps buffered DAC (1)
Zero-drift chopper op-amps (2)
Internal reference (1.5%)
General purpose amp (1)
Temperature sensor

Timers
Advanced control 16-bit 4 CC (1)
Advanced control 16-bit 2 CC (1)
General purpose 32-bit 2 CC (1)
General purpose 16-bit 2 CC (2)
Low power 16-bit 2 CC (2)
Windowed watchdog (2)
Real-time clock (1)

Leaded packages: VSSOP-20/28, LQFP-48/64
No-lead packages: VQFN-24/32/48, nFBGA-64, WCSP-28

80 MHz MCU with up to 128kB flash, 64 pins, advanced analog, AES/TRNG, CAN-FD

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MSPM0 WWDT module introduction

Key Features

- A 25-bit counter sourced from LFCLK
- **Eight** selectable watchdog timer periods
- **Closed and open** window
- SYSRST reset
- Optional automatic suspension of counter when operating in low power modes
- Support for standard window watchdog mode or **interval timer** (non-watchdog) mode
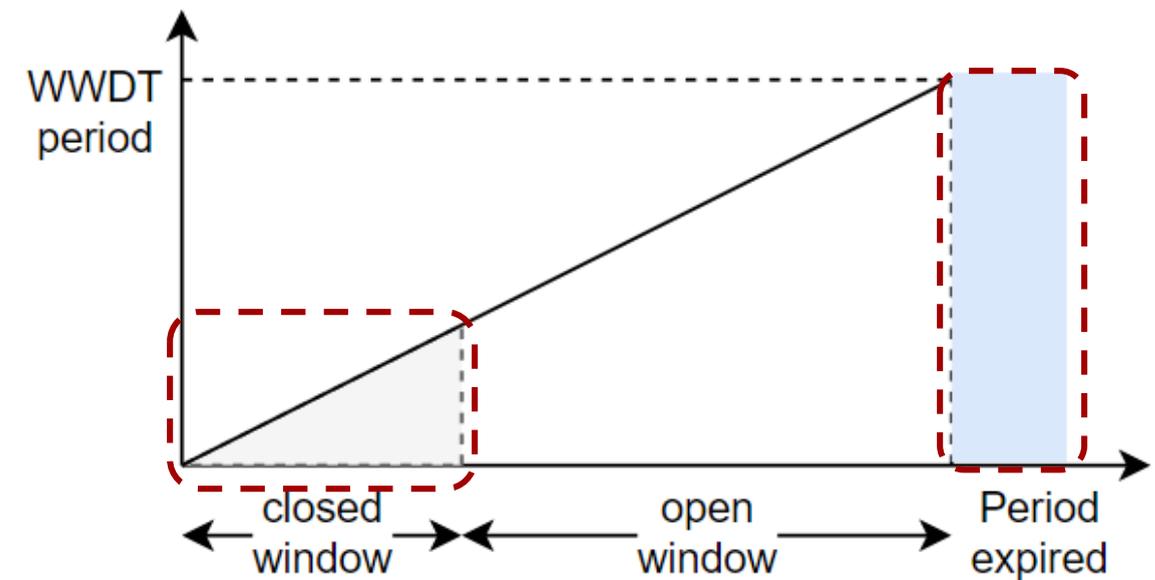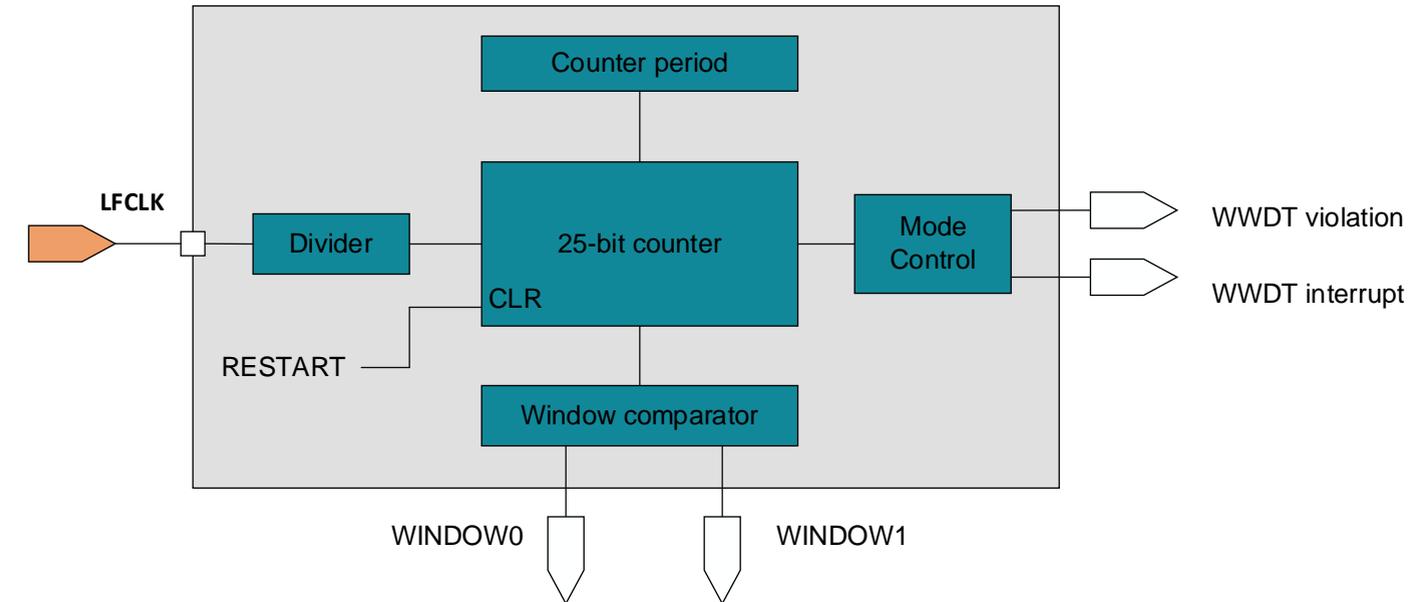
WWDT module quick start

Academy

Watch dog introduction lab

Driverlib Examples

MSPM0G350x:
- wwdt_interval_timer_lfosc_standby
- wwdt_interval_timer_lfxt_standby
- wwdt_window_mode_periodic_reset

MSPM0L13xx:
- wwdt_interval_timer_lfosc_standby
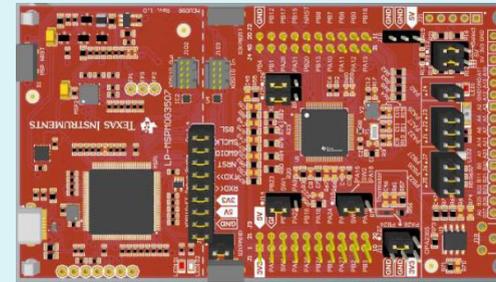- wwdt_window_mode_periodic_reset

Related Links

MSPM0 online resource
MSPM0 Quick start guide
MSPM0 Sysconfig user's guide

MSPM0G350x datasheet
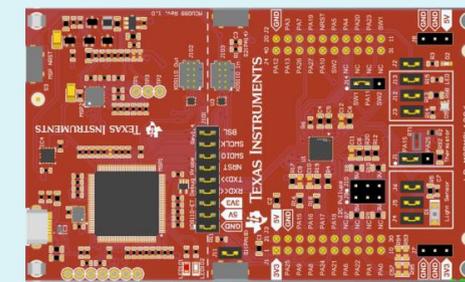MSPM0L13xx datasheet
MSPM0Gxx technical reference manual
MSPM0Lxx technical reference manual

Launchpad

LP-MSPM0G3507   LP-MSPM0L1306

Sysconfig Entrance for WWDT Setting

Step1:   Step2:

WWDT	
Quick Profiles	
WWDT Profiles	Custom
Configuration	
WWDT Source Clock	LFCLK
WWDT Clock Divider	Divide by 4
Calculated WWDT Source Clock Frequency	8.19 kHz
WWDT Mode	Watchdog Mode
WWDT Period Count	2^12 timer period count
Calculated WWDT Period	500.00 ms
Active Window	Window 0 is active
Window 0 Closed Period	0% closed, 100% open (Window 0 disabled)
Calculated Window 0 Period	0.00 s
Window 1 Closed Period	0% closed, 100% open (Window 1 disabled)
Calculated Window 1 Period	0.00 s
Enable WWDT running during sleep	☐
Interrupt Configuration	
Enable WWDT Interval Timer Interrupt	☐

To find more MSPM0 training series, please visit:

- TI.com.cn
- WeChat (德州仪器公众号)
- Bilibili
- 21IC

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