

# MSPM0 DMA module introduction

— MSPM0 peripheral training series

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# MCU level overview

## —MSPM0Lxx series

### MSPM0L13xx/110x

<b>CPU</b> <b>Arm Cortex-M0+</b> <b>32 MHz</b> NVIC / 3-ch DMA	<b>Power &amp; Clocking</b> POR / BOR / SVS Internal LF 32kHz (3%) Internal HF 4-32MHz (1%)	<b>Analog</b> 12-bit ADC 1.45Msps (10-ch) Comparator w/ 8-bit DAC Zero-drift chopper op-amps (2) General purpose amp Internal ADC reference (1.5%) Temperature sensor
<b>On-chip Memory</b> 8, 16, 32 or 64 kB flash 2 or 4 kB SRAM	<b>Communication</b> UART w/ LIN (1) UART (1) SPI (1) I2C (2) w/ FastMode+	<b>Timers</b> Low power 16-bit 2 CC (4) Windowed watchdog
<b>Data Integrity &amp; Security</b> CRC accelerator (16 and 32 bit)	<b>IO</b> Up to 28 GPIO Up to 2 low Ib OPA inputs	
<b>Programming &amp; Debug</b> ARM SWD interface UART & I2C bootloader		

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

1.62 - 3.6V  
 -40 to 125 C

*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

<b>CPU</b> <b>Arm Cortex-M0+</b> <b>80 MHz</b> NVIC / MPU / 7-ch DMA	<b>Power &amp; Clocking</b> 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)	<b>Precision Analog</b> 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
<b>Accelerators</b> Math (DIV, SQRT, TRIG, MAC)	<b>Communication</b> UART w/ LIN (1) UART (3) SPI (2) I2C (2) w/ FastMode+ CAN-FD (1)	<b>Timers</b> 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)
<b>On-chip Memory</b> 32, 64, or 128 kB flash [ECC] 16 or 32 kB SRAM [ECC]	<b>IO</b> Up to 60 GPIO	
<b>Data Integrity &amp; Security</b> CRC accelerator (16 and 32 bit) AES256 accelerator + TRNG		
<b>Programming &amp; Debug</b> ARM SWD interface UART & I2C bootloader		

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

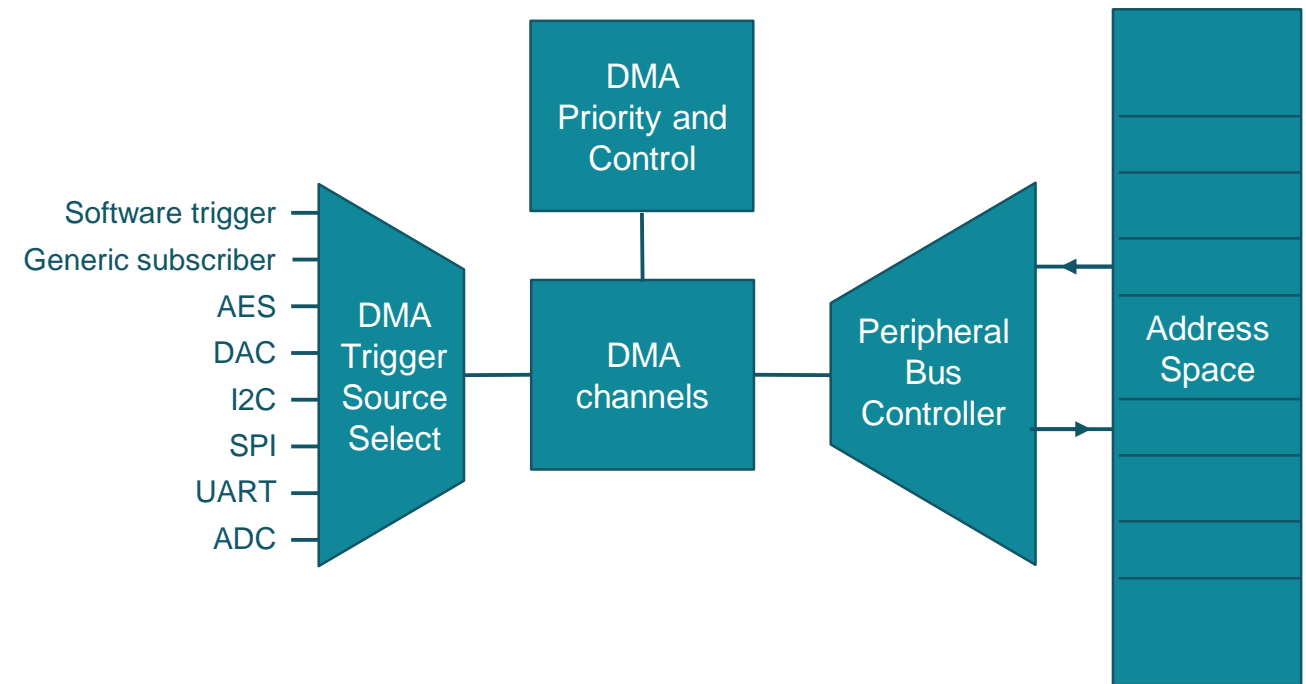
1.62 - 3.6V  
 -40 to 125 C

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

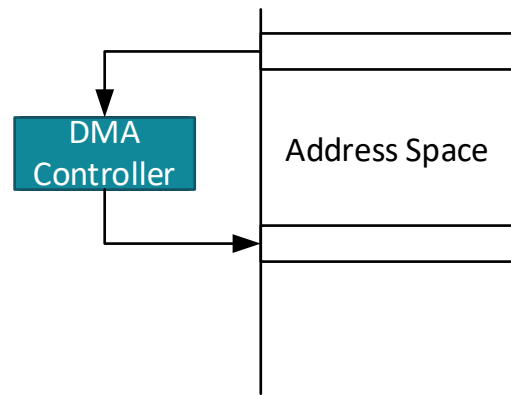
# MSPM0 DMA module introduction

## Key features

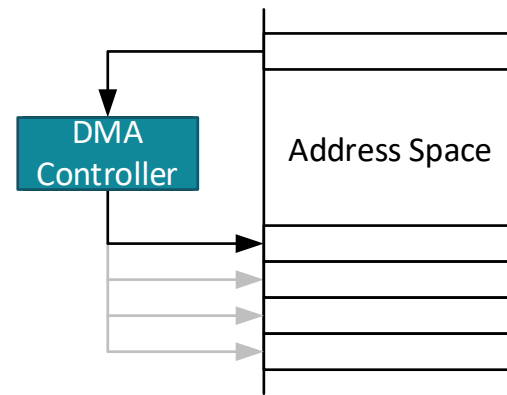
- Up to **sixteen** independent transfer channels
- MSPM0G350x MCUs have 7 DMA channels and MSPM0Lxx MCUs have 3 DMA channels
- Configurable DMA **channel priorities**
- Byte, short word, word and long word or mixed byte and word transfer capability
- Transfer counter block size supports up to **64k transfers of any data type**
- Configurable DMA transfer **trigger selection**
- **Six flexible addressing modes**
  1. Fixed address to fixed address
  2. Fixed address to block of addresser
  3. Block of addresser to fixed address
  4. Block of address to block of addresser
  5. Fill data to block of address
  6. Data table to specific address
- Single or block transfer modes
- Repeated transfer modes



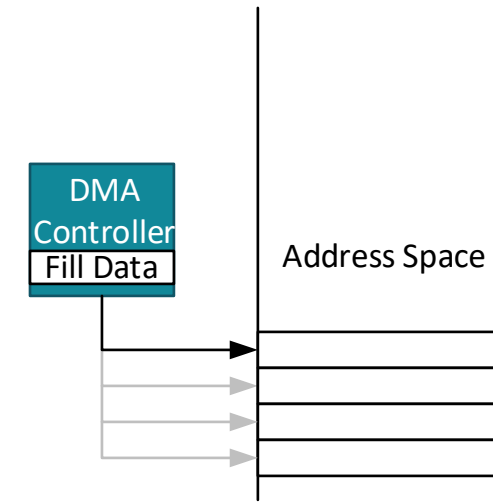
# DMA addressing modes



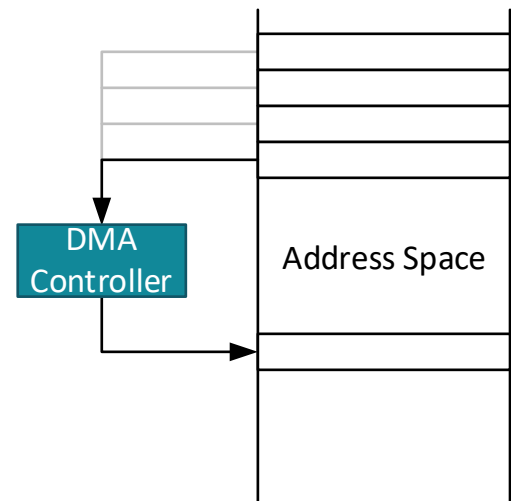
Fixed Address To Fixed Address



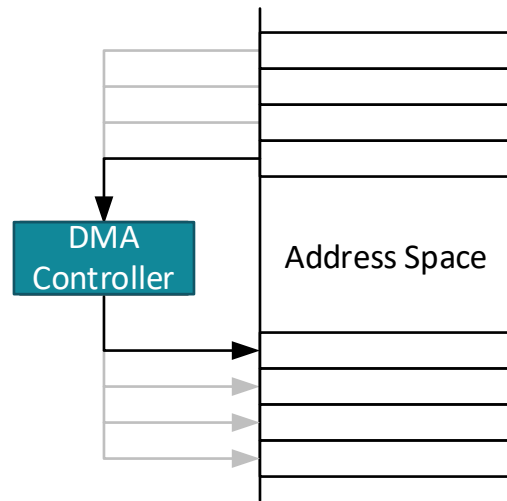
Fixed Addresses To Block Of Addresses



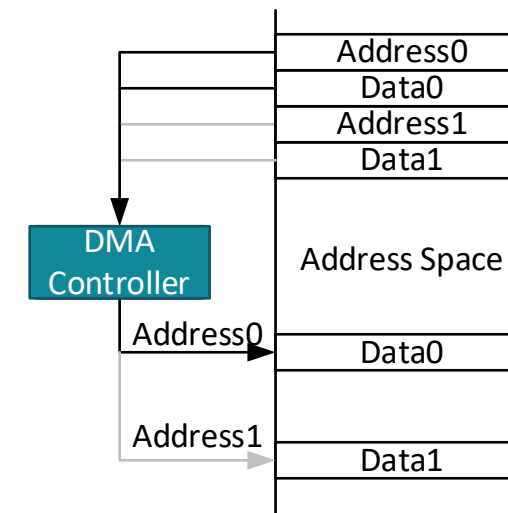
Fill Data To Block Of Addresses



Block Of Addresses To Fixed Address



Block Of Addresses To Block Of Addresses



Data Table To Specific Address

# DMA module quick start

## Academy

[DMA introduction lab](#)

## Driverlib Examples

### MSPM0G350x:

- dma\_block\_transfer
- dma\_fill\_data
- dma\_table\_transfer

### MSPM0L13xx:

- dma\_block\_transfer
- dma\_fill\_data
- dma\_table\_transfer

## Related Links

[MSPM0 online resource](#)

[MSPM0 quick start guide](#)

[MSPM0 Sysconfig user's guide](#)

[MSPM0G350x datasheet](#)

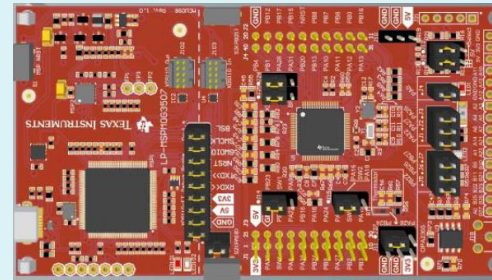
[MSPM0L13xx datasheet](#)

[MSPM0Gxx technical reference manual](#)

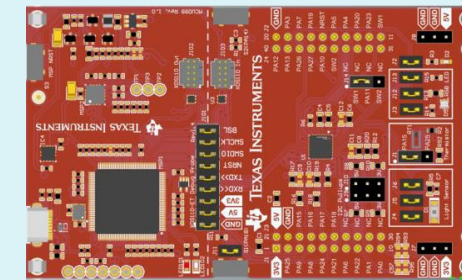
[MSPM0Lxx technical reference manual](#)

## Launchpad

[LP-MSPM0G3507](#)



[LP-MSPM0L1306](#)



## Sysconfig Entrance for DMA Setting

Type Filter Text... X << < > Software > DMA

▼ MSPM0 DRIVER LIBRARY ...

- ▼ SYSTEM (8)
  - Board 1/1 ✓ (+)
  - DMA 1/7 ✓ (+)
  - GPIO (+)
  - MATHACL (+)
  - RTC (+)
  - SYSTCTL 1/1 ✓ (+)
  - SYSTICK (+)
  - WWDT (+)
- ▼ ANALOG (5)
  - ADC12 (+)
  - COMP (+)
  - DAC12 (+)
  - OPA (+)
  - VREF (+)

DMA (1 of 7 Added) ?

✓ DMA\_CH0

+ ADD REMOVE ALL

Name	DMA_CH0
Channel ID	0
Trigger Select	SW
Trigger Number	DMA_SOFTWARE_TRIG
Address Mode	Fixed addr. to Fixed addr.
Source Length	Word (4 Bytes)
Destination Length	Word (4 Bytes)
Transfer Size	1
Transfer Mode	Single
Enable Channel Interrupt	<input type="checkbox"/>

# To find more MSPM0 training series, please visit:

- [Ti.com.cn](http://ti.com.cn)
- [WeChat \(德州仪器公众号\)](#)
- [Bilibili](#)
- [21IC](#)