

# MSPM0 Flash module introduction

— MSPM0 peripheral training series

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# MCU level overview

## MSPM0Lxx series

**MSPM0L13xx/110x** 1.62 - 3.6V  
-40 to 125 C

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

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

Part number	Flash size
MSPM0L13x3	8 KB
MSPM0L13x4	16 KB
MSPM0L13x5	32 KB
MSPM0L13x6	64 KB

## MSPM0Gxx series

**MSPM0G350x/310x/150x/110x** 1.62 - 3.6V  
-40 to 125 C

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

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

Part number	Flash size
MSPM0G35x5	32 KB
MSPM0G35x6	64 KB
MSPM0G35x7	128 KB

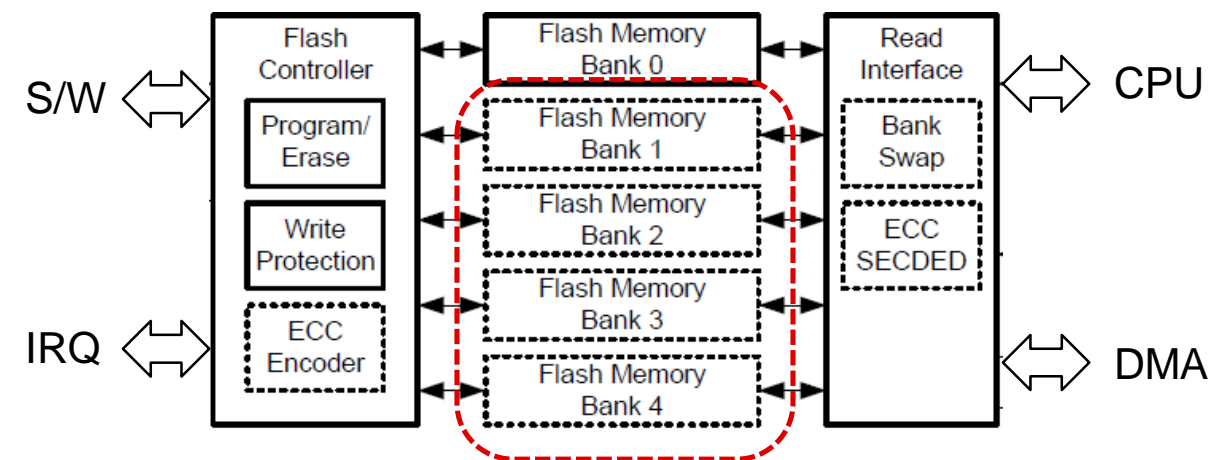
# MSPM0 flash module introduction

## Key Features

- 72-bit wide **word** read (64bits plus 8 ECC bits)
- 72-bit wide **word** write (64bits plus 8 ECC bits)
- Small **1k bytes sector** sizes (minimum erase resolution of 1kB) for EEPROM emulation application
- Mass erase operation on **bank**
- Erase/program cycle endurance (lower 32kB flash) is 100k cycles for EEPROM emulation application
- Erase/program cycle endurance (remaining flash) is 10k cycles
- **Hardware ECC** protection (encode and decode) with single bit error correction and double-bit error detection
- On MSPM0Gxx MCUs, **Hardware ECC** protection is supported
- Program time for flash word is typically 40uS
- Program time for 1kB sector is typically 5.1mS
- Sector erase time is typically 20mS
- Bank erase time is typically 22mS

Term	Definition	Size
Word	Basic data size for program and read operations on the flash memory (also the read bus width to the system)	64 data bits (72 bits with ECC)
Sector	Group of word lines which are erased together (minimum erase resolution of the flash memory)	8 word lines(1024 data bytes, opt. 128 ECC bytes)
Bank	Group of sectors which may be mass erased in one operation. Only one read, program, erase, or verify operation may run concurrently on ONE bank.	Variable

Single-bank flash is used on MSPM0G110x, 150x, 350x and MSPM0L110x and 13xx devices



# Flash module quick start

## Academy

[Flash introduction lab](#)

## [Driverlib](#) Examples

### MSPM0G350x:

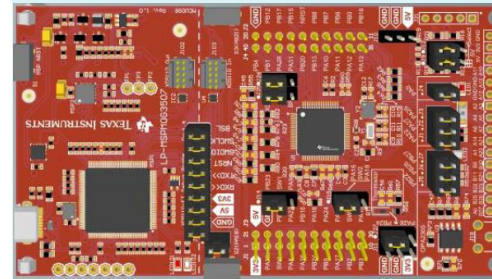
- flashctl\_blank\_verify
- flashctl\_dynamic\_memory\_protection
- flashctl\_ecc\_error\_injection
- flashctl\_multiple\_size\_read\_verify
- flashctl\_multiple\_size\_write
- flashctl\_nonmain\_memory\_write
- flashctl\_program\_with\_ecc

### MSPM0L13xx:

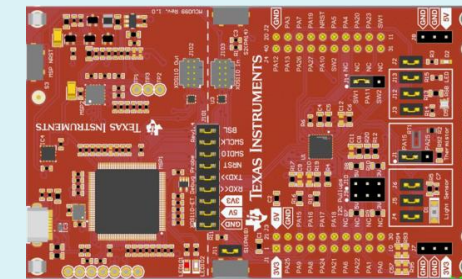
- flashctl\_blank\_verify
- flashctl\_dynamic\_memory\_protection
- flashctl\_multiple\_size\_read\_verify
- flashctl\_multiple\_size\_write
- flashctl\_nonmain\_memory\_write

## Launchpad

### [LP-MSPM0G3507](#)



### [LP-MSPM0L1306](#)



## 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](#)

[MSPM0G35x EEPROM Emulation user's guide](#)

[MSPM0L13xx EEPROM emulation user's guide](#)

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