MSPM0 Flash module introduction
— MSPM0 peripheral training series

Presented by Xiaodong Li
MCU level overview

**MSPM0Lxxx series**

<table>
<thead>
<tr>
<th>Part number</th>
<th>Flash size</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSPM0L13x3</td>
<td>8 KB</td>
</tr>
<tr>
<td>MSPM0L13x4</td>
<td>16 KB</td>
</tr>
<tr>
<td>MSPM0L13x5</td>
<td>32 KB</td>
</tr>
<tr>
<td>MSPM0L13x6</td>
<td>64 KB</td>
</tr>
</tbody>
</table>

**MSPM0Gxxx series**

<table>
<thead>
<tr>
<th>Part number</th>
<th>Flash size</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSPM0G35x5</td>
<td>32 KB</td>
</tr>
<tr>
<td>MSPM0G35x6</td>
<td>64 KB</td>
</tr>
<tr>
<td>MSPM0G35x7</td>
<td>128 KB</td>
</tr>
</tbody>
</table>
### MSPM0 flash module introduction

#### Key Features
- 72-bit wide **word** read (64 bits plus 8 ECC bits)
- 72-bit wide **word** write (64 bits 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

<table>
<thead>
<tr>
<th>MSPM0G350x:</th>
<th>MSPM0L13xx:</th>
</tr>
</thead>
<tbody>
<tr>
<td>flashctl_blank_verify</td>
<td>flashctl_blank_verify</td>
</tr>
<tr>
<td>flashctl_dynamic_memory_protection</td>
<td>flashctl_dynamic_memory_protection</td>
</tr>
<tr>
<td>flashctl_ecc_error_injection</td>
<td>flashctl_ecc_error_injection</td>
</tr>
<tr>
<td>flashctl_multiple_size_read_verify</td>
<td>flashctl_multiple_size_read_verify</td>
</tr>
<tr>
<td>flashctl_multiple_size_write</td>
<td>flashctl_multiple_size_write</td>
</tr>
<tr>
<td>flashctl_nonmain_memory_write</td>
<td>flashctl_nonmain_memory_write</td>
</tr>
</tbody>
</table>

## 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

## Launchpad

- LP-MSPM0G3507
- LP-MSPM0L1306
To find more MSPM0 training series, please visit:

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