MSPM0 MCAN module introduction

— MSPM0 peripheral training series

Presented by Yuhao Zhao
## MCU level overview

### MSPM0Lxxx series

<table>
<thead>
<tr>
<th>MSPM0L13x3/4/5/6</th>
<th>Precision Analog</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power &amp; Clocking</td>
<td>12-bit SAR ADC (1Msps (1))</td>
</tr>
<tr>
<td></td>
<td>ULP/HS Comparator (1)</td>
</tr>
<tr>
<td></td>
<td>8-bit reference DAC (1)</td>
</tr>
<tr>
<td>Communication</td>
<td>Zero-drift chopper op-amps (2)</td>
</tr>
<tr>
<td>UART w/ LIN (1)</td>
<td>General purpose amp (1)</td>
</tr>
<tr>
<td>UART (1)</td>
<td>Internal ADC reference (2.5%)</td>
</tr>
<tr>
<td>SPI (1)</td>
<td>Temperature sensor</td>
</tr>
<tr>
<td>IO</td>
<td>General purpose 16-bit 2 CC (4)</td>
</tr>
<tr>
<td>IO</td>
<td>Windowed watchdog</td>
</tr>
</tbody>
</table>

**CPU**
- ARM Cortex-M0+
- 32 MHz

**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
- UART & I2C BSL

**IO**
- Up to 28 GPIO
- Up to 2 low pin OPA inputs

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

### MSPM0Gxxx series

<table>
<thead>
<tr>
<th>MSPM0G350x/310x/150x/110x</th>
<th>Power &amp; Clocking</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>12-bit ADC 4Msps (9-ch)</td>
</tr>
<tr>
<td>Arm Cortex-M0+</td>
<td>12-bit ADC 4Msps (8-ch)</td>
</tr>
<tr>
<td>80 MHz</td>
<td>Comparators w/ 8-bit DACs (3)</td>
</tr>
<tr>
<td></td>
<td>12-bit 1Msps buffered DAC (1)</td>
</tr>
<tr>
<td></td>
<td>Zero-drift chopper op-amps (2)</td>
</tr>
<tr>
<td></td>
<td>Internal reference (1.5%)</td>
</tr>
<tr>
<td></td>
<td>General purpose amp (1)</td>
</tr>
<tr>
<td></td>
<td>Temperature sensor</td>
</tr>
</tbody>
</table>

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

**Data Integrity & Security**
- SPI (2)
- CRC accelerator (16 and 32 bit)
- AES256 accelerator + TRNG
- CAN-FD (1)

**Programming & Debug**
- ARM SWD interface
- UART & I2C bootloader

**IO**
- Up to 60 GPIO

**80 MHz MCU with up to 128kB flash, 64 pins, advanced analog, AES/TRNG, CAN-FD**
MSPM0 MCAN module introduction

Key Features
- Conforms with CAN Protocol 2.0 A, B and ISO 11898-1:2015
- Full CAN FD support (up to 64 data bytes and up to 5Mbit/s rate)
- AUTOSAR and SAE J1939 support
- Clock stop and wakeup support
- Up to 128 filter elements
- ECC check for Message RAM
- Up to 32 dedicated transmit buffers
- Up to 64 dedicated receive buffers

Key Differences between G and L MCUs
- MSPM0G350x series have 1x MCAN
MSPM0 MCAN module introduction

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MCAN module quick start

Academy
- CANFD introduction lab

Driverlib Examples
- MSPM0G350x:
  - mcan_loopback
  - mcan_message_rx
  - mcan_message_rx_tcan114x
  - mcan_multi_message_rx
  - mcan_multi_message_rx_tcan114x
  - mcan_single_message_rx
- MSPM0L13xx:
  - NA

Related Links
- MSPM0 online resource
- MSPM0 quick start guide
- MSPM0 Sysconfig user’s guide
- MSPM0G350x datasheet
- MSPM0Gxx technical reference manual

Launchpad
- LP-MSPM0G3507

Sysconfig Entrance for CAN Setting

Step 1: [Image of Sysconfig interface]
- MCAN (1 of 1 Added)
- MCAN Clock Frequency
- MCAN Basic Configuration

Step 2: [Image of Sysconfig interface]
To find more MSPM0 training series, please visit:

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