

MSPM0 VREF module introduction

— MSPM0 peripheral training series

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MCU level overview

—MSPM0Lxx series

MSPM0L13x3/4/5/6

CPU ARM Cortex-M0+ 32 MHz NVIC / 3-ch DMA	Power & Clocking POR / BOR / SVS Internal LF 32kHz (5%) Internal HF 4-32MHz (1%)	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
On-chip Memory 8, 16, 32 or 64 kB flash 2 or 4 kB SRAM	Communication UART w/ LIN (1) UART (1) SPI (1) I2C (2) w/ FastMode+	Timers General purpose 16-bit 2 CC (4) Windowed watchdog
Data Integrity & Security CRC accelerator (16 and 32 bit)	IO Up to 28 GPIO Up to 2 low Ib OPA inputs	
Programming & Debug ARM SWD interface ROM UART & I2C BSL		

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

CPU Arm Cortex-M0+ 80 MHz NVIC / MPU / 7-ch DMA	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)	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
Accelerators Math (DIV, SQRT, TRIG, MAC)	Communication UART w/ LIN (1) UART (3) SPI (2) I2C (2) w/ FastMode+ CAN-FD (1)	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)
On-chip Memory 32, 64, or 128 kB flash [ECC] 16 or 32 kB SRAM [ECC]	IO Up to 60 GPIO	
Data Integrity & Security CRC accelerator (16 and 32 bit) AES256 accelerator + TRNG		
Programming & Debug 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 VREF module introduction

Key features

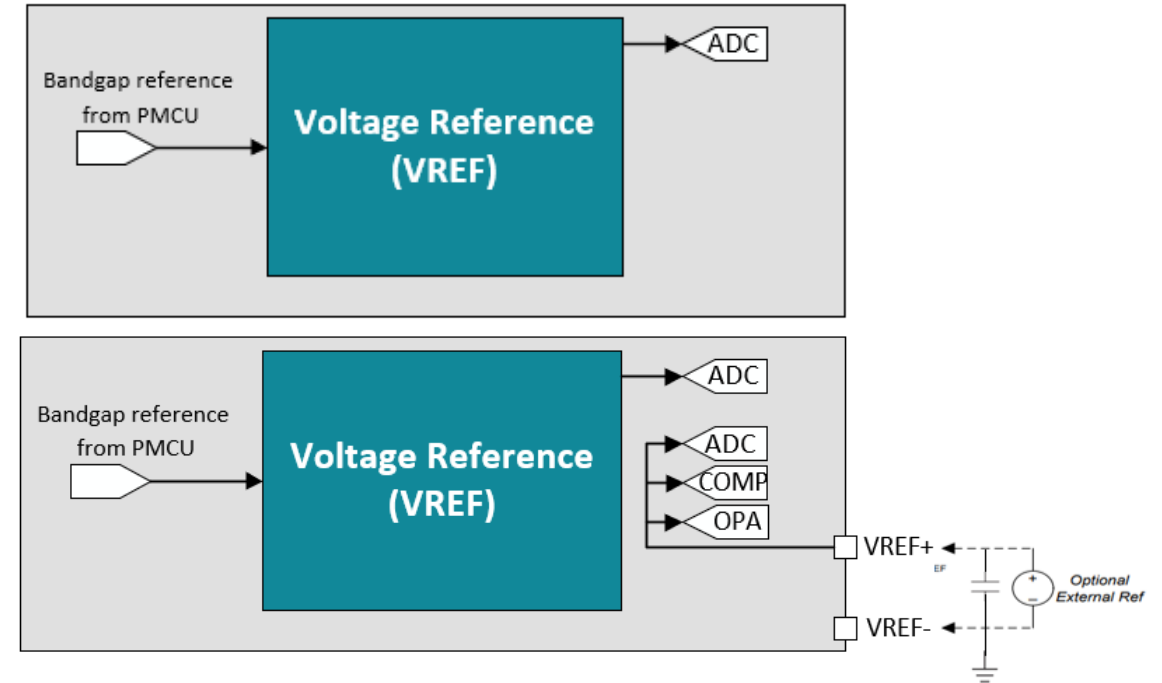
- 1.4V and 2.5V user-selectable internal references
- Support for receiving external reference on VREF+/- device pins
- Sample and hold mode supports VREF operation down to STANDBY operating mode

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
VREF	BUFCONFIG = 0	1.365	1.4	1.435	V
	BUFCONFIG = 1	2.4375	2.5	2.5625	V
TCVRBUF (Temperature coefficient)	BUFCONFIG = {0, 1}		30	50	ppm/°C

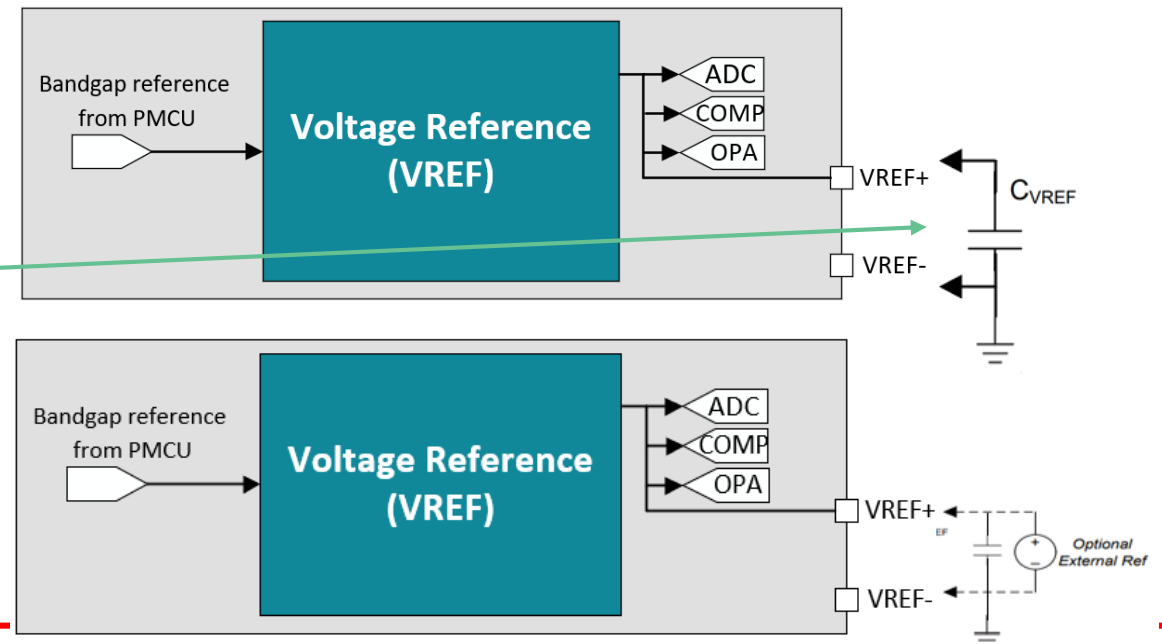
MSPM0G application Note:

- Internal reference output available on VREF+ device pin
- Decoupling capacitor (CVREF) is required when using the internal voltage reference VREF and should be connected from the VREF+ pin to VREF-/GND

MSPM0L VREF
Block Diagram :



MSPM0G VREF
Block Diagram :



VREF module quick start

Academy

[VREF introduction lab](#)

Driverlib Examples

[adc12_single_conversion_vref_external](#)

[adc12_single_conversion_vref_internal](#)

[comp_hs_dac_vref_external](#)

[comp_lp_dac_vref_internal](#)

[dac12_fixed_voltage_vref_internal](#)

Related links

[MSPM0 online resource](#)

[MSPM0 quick start guide](#)

[MSPM0 Sysconfig user's guide](#)

[MSPM0G350x datasheet](#)

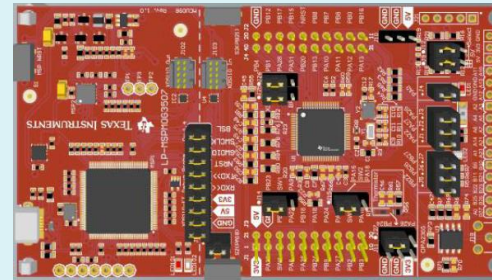
[MSPM0L13xx datasheet](#)

[MSPM0Gxx technical reference manual](#)

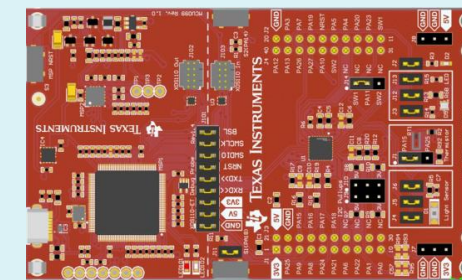
[MSPM0Lxx technical reference manual](#)

Launchpad

[LP-MSPM0G3507](#)



[LP-MSPM0L1306](#)

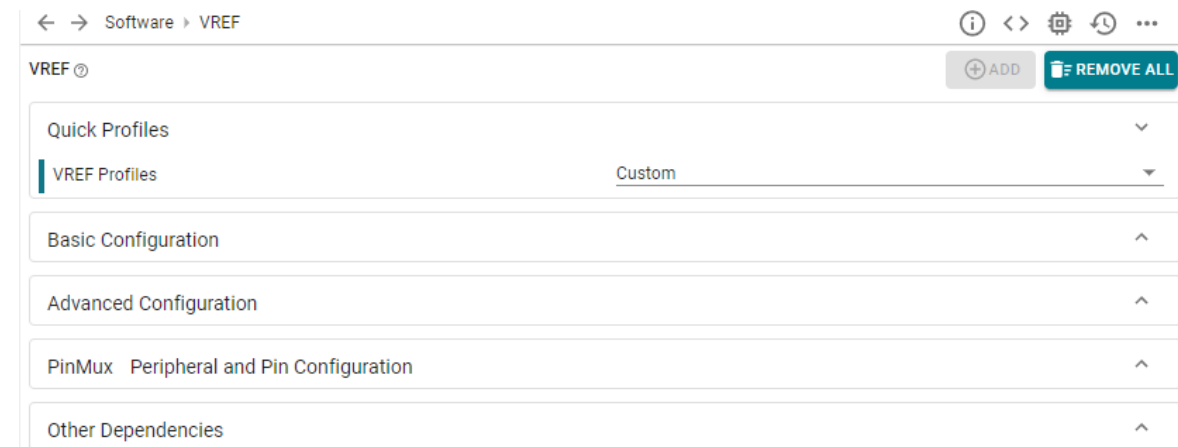


Sysconfig entrance for VREF setting

Step1:



Step2:



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