

MSPM0 VREF module introduction

—— MSPM0 peripheral training series

Presented by Gary Gao

MCU level overview

MSPM0Lxx series

MSPM0L13x3/4/5/6			1.62 - 3.6V -40 to 125 C
CPU ARM Cortex-M0+ 32 MHz NVIC / 3-ch DMA	Power & Clocking	Precision Analog	
	POR / BOR / SVS	12-bit SAR ADC 1Msps (1)	
On-chip Memory	Internal LF 32kHz (5%)	ULP/HS Comparator (1)	
	Internal HF 4-32MHz (1%)	8-bit reference DAC (1)	
Data Integrity & Security		Zero-drift chopper op-amps (2)	
		General purpose amp (1)	
Programming & Debug	Communication	Internal ADC reference (2.5%)	
	UART w/ LIN (1)	Temperature sensor	
	UART (1)		
	SPI (1)	Timers	
	I2C (2) w/ FastMode+	General purpose 16-bit 2 CC (4)	
		Windowed watchdog	
	IO		
	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			

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			1.62 - 3.6V -40 to 125 C
CPU Arm Cortex-M0+ 80 MHz NVIC / MPU / 7-ch DMA	Power & Clocking	Precision Analog	
	POR / BOR / SVS	12-bit ADC 4Msps (9-ch)	
Accelerators	External LF 32kHz XTAL	12-bit ADC 4Msps (8-ch)	
	External HF 4-48MHz XTAL	Comparators w/ 8-bit DACs (3)	
On-chip Memory	Internal LF 32kHz (3%)	12-bit 1Msps buffered DAC (1)	
	Internal HF 4-32MHz (1%)	Zero-drift chopper op-amps (2)	
Data Integrity & Security	PLL (up to 80 MHz)	Internal reference (1.5%)	
		General purpose amp (1)	
Programming & Debug	Communication	Temperature sensor	
	UART w/ LIN (1)		
	UART (3)	Timers	
	SPI (2)	Advanced control 16-bit 4 CC (1)	
	I2C (2) w/ FastMode+	Advanced control 16-bit 2 CC (1)	
	CAN-FD (1)	General purpose 32-bit 2 CC (1)	
		General purpose 16-bit 2 CC (2)	
	IO	Low power 16-bit 2 CC (2)	
	Up to 60 GPIO	Windowed watchdog (2)	
		Real-time clock (1)	
Leaded packages: VSSOP-20/28, LQFP-48/64 No-lead packages: VQFN-24/32/48, nFBGA-64, WCSP-28			

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

MSPM0 VREF module introduction

Key features

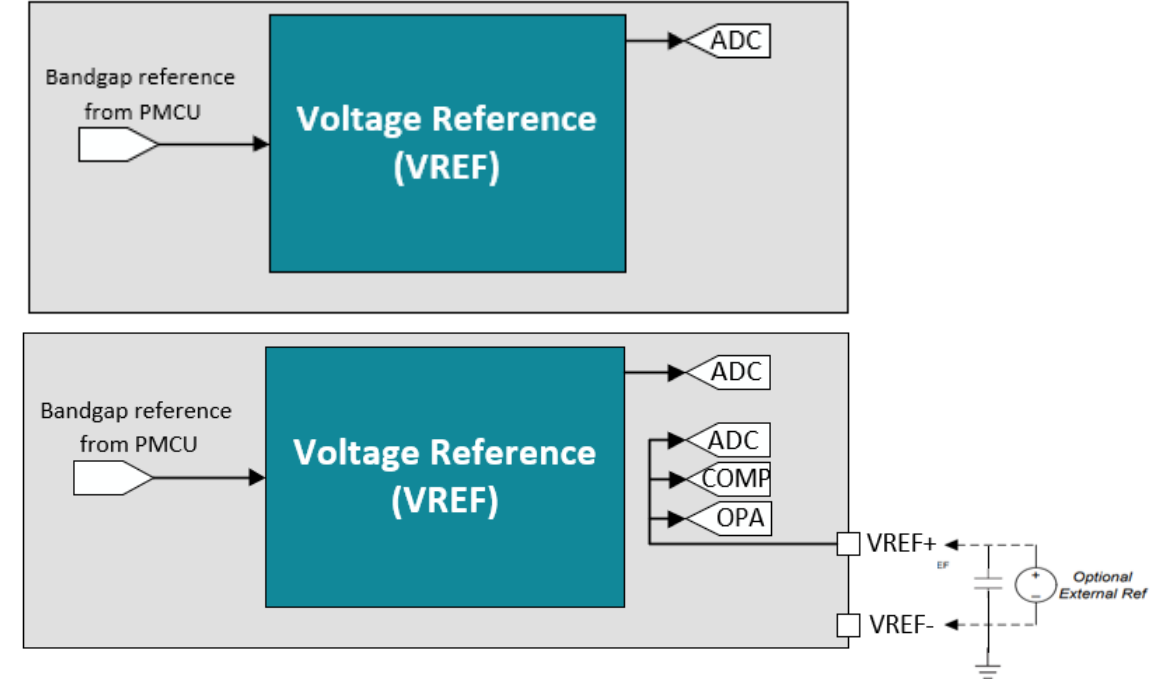
- 1.4V and 2.5V user-selectable internal references
- Support for receiving external reference on VREF+/- device pins
- Sample and hold mode supports VREF operation down to STANDBY operating mode

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

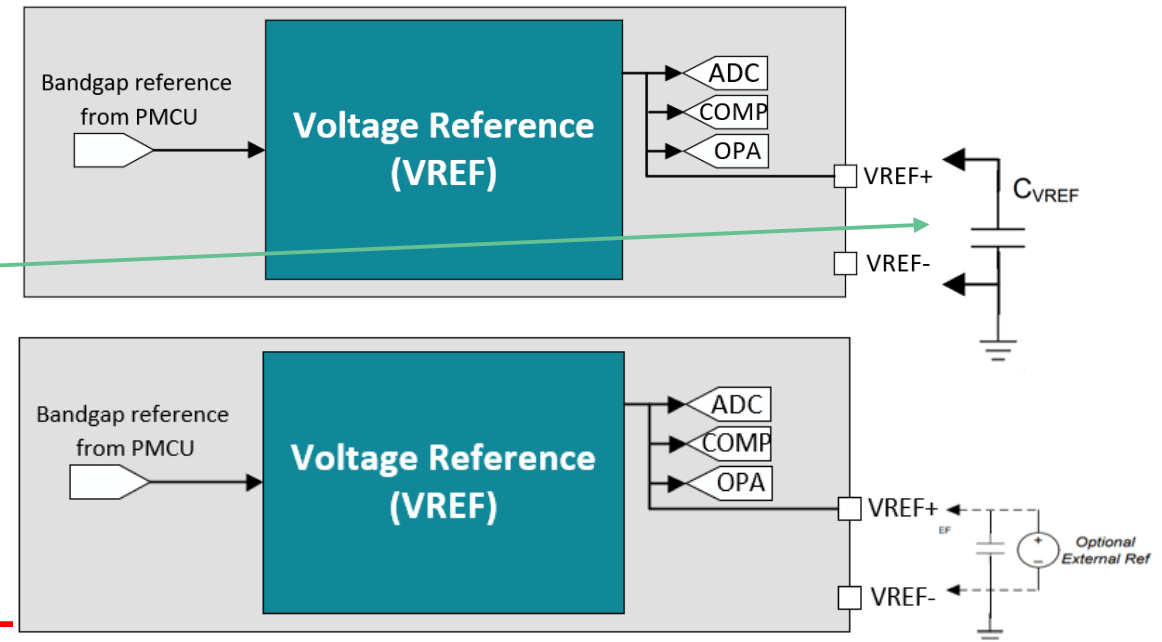
MSPM0G application Note:

- 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](#)

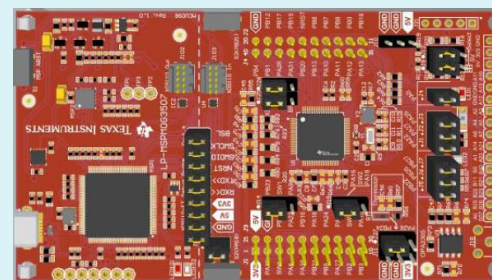
[MSPM0L13xx datasheet](#)

[MSPM0Gxx technical reference manual](#)

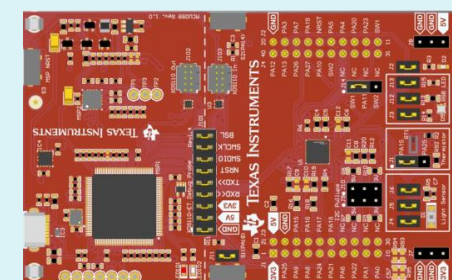
[MSPM0Lxx technical reference manual](#)

Launchpad

[LP-MSPM0G3507](#)

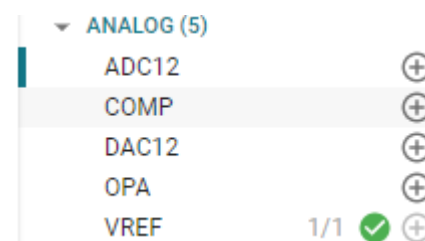


[LP-MSPM0L1306](#)

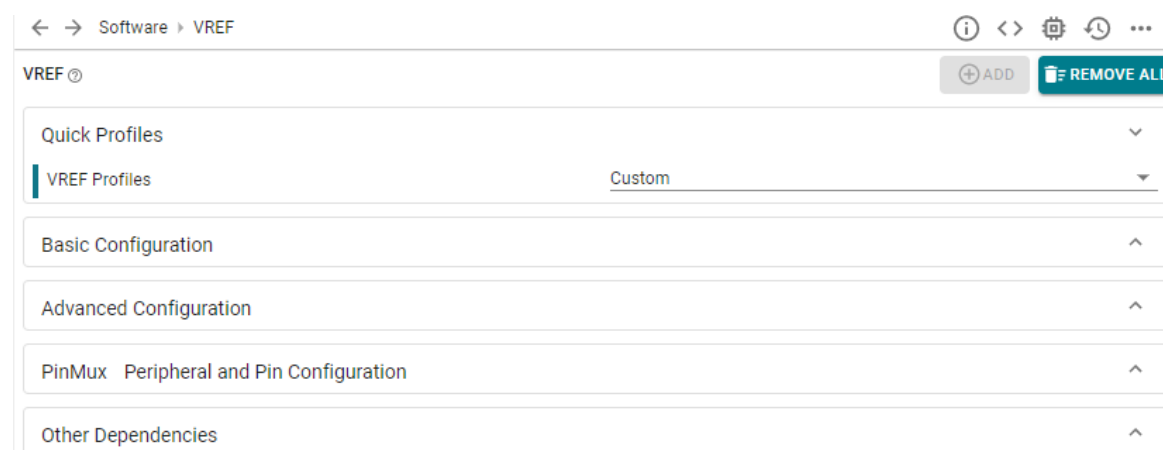


[Sysconfig](#) entrance for VREF setting

Step1:



Step2:



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- [WeChat \(德州仪器公众号\)](#)
- [Bilibili](#)
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