Bulletin #1406251

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Bulletin Date: 6/25/2014	**Bulletin Effective Date:** 6/25/2014	
Title: EFM32WG Datasheet Revision Notification		
Originator: Ted Batey	**Phone:** 512-532-5279	**Dept:** Marketing
Customer Contact: Kathy Haggar	**Phone:** 512-532-5261	**Dept:** Sales

Bulletin Details

Description:
Silicon Labs is pleased to announce that version 1.40 of the EFM32WGxxx (Wonder Gecko family) datasheets are now available. The affected datasheets are: EFM32WG230, EFM32WG232, EFM32WG280, EFM32WG290, EFM32WG295, EFM32WG330, EFM32WG332, EFM32WG380, EFM32WG390, EFM32WG395, EFM32WG840, EFM32WG842, EFM32WG880, EFM32WG890, EFM32WG895, EFM32WG940, EFM32WG942, EFM32WG980, EFM32WG990, EFM32WG995.

The revision includes a number of key changes to existing min/max/typ values that more accurately reflect the performance of the part. These changes are summarized in Table 1 at the end of this document. In addition, Table 3.12 HFRCO has a new Footnote 3, ensuring frequency bands above 7MHz will always have some overlap across supply voltage and temperature.

In addition, new min/max data has been added and other minor updates have been made as follows:

- Removed "preliminary" markings throughout
- Updated Current Consumption information
- Updated Power Management information
- Updated GPIO information
- Updated HFXO information
- Updated LFRCO information
- Updated HFRCO information and figures
- Updated ULFRCO information
- Added AUXHFRCO chapter
- Updated ADC information
- Updated DAC information
- Updated OPAMP information
- Updated ACMP information
- Updated VCMP information
- Added EBI chapter

See Table 1 at the end of this document for additional details.

Reason:
Updated specifications based on the results of additional silicon characterization. There are no changes to the devices delivered to the customer.

Product Identification:
The following orderable part numbers are affected:
EFM32WG230F64-QFN64
EFM32WG230F128-QFN64

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EFM32WG230F256-QFN64
EFM32WG232F64-QFP64
EFM32WG232F128-QFP64
EFM32WG232F256-QFP64
EFM32WG280F64-QFP100
EFM32WG280F128-QFP100
EFM32WG280F256-QFP100
EFM32WG290F64-BGA112
EFM32WG290F128-BGA112
EFM32WG290F256-BGA112
EFM32WG295F64-BGA120
EFM32WG295F128-BGA120
EFM32WG295F256-BGA120
EFM32WG330F64-QFN64
EFM32WG330F128-QFN64
EFM32WG330F256-QFN64
EFM32WG332F64-QFP64
EFM32WG332F128-QFP64
EFM32WG332F256-QFP64
EFM32WG380F64-QFP100
EFM32WG380F128-QFP100
EFM32WG380F256-QFP100
EFM32WG390F64-BGA112
EFM32WG390F128-BGA112
EFM32WG390F256-BGA112
EFM32WG395F64-BGA120
EFM32WG395F128-BGA120
EFM32WG395F256-BGA120
EFM32WG840F64-QFN64
EFM32WG840F128-QFN64
EFM32WG840F256-QFN64
EFM32WG842F64-QFP64
EFM32WG842F128-QFP64
EFM32WG842F256-QFP64
EFM32WG880F64-QFP100
EFM32WG880F128-QFP100
EFM32WG880F256-QFP100
EFM32WG890F64-BGA112
EFM32WG890F128-BGA112
EFM32WG890F256-BGA112
EFM32WG895F64-BGA120
EFM32WG895F128-BGA120
EFM32WG895F256-BGA120
EFM32WG940F64-QFN64
EFM32WG940F128-QFN64
EFM32WG940F256-QFN64
EFM32WG942F64-QFP64
EFM32WG942F128-QFP64
EFM32WG942F256-QFP64
EFM32WG980F64-QFP100
EFM32WG980F128-QFP100
EFM32WG980F256-QFP100
EFM32WG990F64-BGA112
EFM32WG990F128-BGA112
EFM32WG990F256-BGA112
EFM32WG995F64-BGA120

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EFM32WG995F128-BGA120 EFM32WG995F256-BGA120
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Table 1: EFM32WGxxx Datasheet Rev 1.40 - Summary of Key Changes

				Datasheet Rev 1.31			Datasheet Rev 1.40			
Table*	**Symbol**	**Parameter**	**Condition**	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**Unit**
3.2 General Operating Conditions	V_{DDOP}	Operating Supply Voltage		1.85		3.8	1.98		3.8	V
3.4 Current Consumption	I_{EM0}	EM0 Current T_{AMB} = 25 °C	48 MHz		224.8			225	236	µA/MHz
			28 MHz		226.1			226	238	µA/MHz
			21 MHz		228.0			228	240	µA/MHz
			14 MHz		230.4			230	243	µA/MHz
			11 MHz		232.3			232	245	µA/MHz
			6.6 MHz		237.5			238	250	µA/MHz
			1.2 MHz		270.6			271	286	µA/MHz
	I_{EM1}	EM1 Current T_{AMB} = 25 °C	48 MHz		63.3			63	75	µA/MHz
			28 MHz		63.6			64	75	µA/MHz
			21 MHz		64.7			65	76	µA/MHz
			14 MHz		66.7			67	79	µA/MHz
			11 MHz		68.4			68	81	µA/MHz
			6.6 MHz		73.7			74	87	µA/MHz
			1.2 MHz		106.0			106	120	µA/MHz
	I_{EM2}	EM2 Current	T_{AMB} = 25 °C		0.95			0.95	1.7	µA
			T_{AMB} = 85 °C		3.0			3.0	4.0	µA
	I_{EM3}	EM3 Current	T_{AMB} = 25 °C		0.65			0.65	1.3	µA
			T_{AMB} = 85 °C		2.65			2.65	4.0	µA
	I_{EM4}	EM4 Current	T_{AMB} = 25 °C		0.02			0.02	0.055	µA
			T_{AMB} = 85 °C		0.44			0.44	0.9	µA
3.6 Power Management	$V_{BODextthr-}$	BOD threshold, falling external supply		1.82		1.85	1.74		1.96	V
	$V_{BODextthr+}$	BOD threshold, rising external supply			1.85			1.85	1.98	V
3.7 Flash	V_{FLASH}	Flash erase/write supply voltage		1.8		3.8	1.98		3.8	V
3.8 GPIO	V_{IOOH}	Output high voltage	Sourcing 6 mA, V_{DD} = 1.98V	$0.75V_{DD}$			$0.75V_{DD}$			V
			Sourcing 6 mA, V_{DD} = 3.0V	$0.95V_{DD}$			$0.85V_{DD}$			V
			Sourcing 20 mA, V_{DD} = 1.98V	$0.7V_{DD}$			$0.6V_{DD}$			V
			Sourcing 20 mA, V_{DD} = 3.0V	$0.9V_{DD}$			$0.8V_{DD}$			V
	V_{IOOL}	Output low voltage	Sinking 6 mA, V_{DD} = 1.98V			$0.25V_{DD}$			$0.3V_{DD}$	V
			Sinking 6 mA, V_{DD} = 3.0V			$0.05V_{DD}$			$0.2V_{DD}$	V
			Sinking 20 mA, V_{DD} = 1.98V			$0.3V_{DD}$			$0.35V_{DD}$	V
			Sinking 20 mA, V_{DD} = 3.0V			$0.1V_{DD}$			$0.25V_{DD}$	V
	I_{IOLEAK}	Input leakage current				±25		±0.1	±100	nA
3.11 LFRCO	I_{LFRCO}	Current consumption			190			300		nA
3.12 HFRCO	I_{HFRCO}	Current consumption	28 MHz		106			165	215	µA
			21 MHz		93			134	175	µA
			14 MHz		77			106	140	µA
			11 MHz		72			94	125	µA
			6.6 MHz		63			77	105	µA
			1.2 MHz		22			25	40	µA
3.13 ULFRCO	f_{ULFRCO}	Oscillation frequency		0.8		1.5	0.7		1.75	kHz
3.15 DAC	I_{DAC}	Active current	1 ksps, 12 bit NORMAL		38			17		µA
3.16 OPAMP	I_{OPAMP}	Active current	BIASPROG=0xF, HALFBIAS=0x0		400			370	460	µA
			BIASPROG=0x7, HALFBIAS=0x1		100			95	135	µA
			BIASPROG=0x0, HALFBIAS=0x1		13			13	25	µA
	V_{OFFSET}	Input offset voltage	Unity Gain, V_{SS}<V_{in}<V_{DD}, OPAxHCMDIS=0		6		-13	0	11	mV
3.17 ACMP	$V_{ACMPOFFSET}$	Offset voltage			10		-12	0	12	mV
3.18 VCMP	I_{VCMP}	Active current	BIASPROG=0b0000, HALFBIAS=1		0.1			0.3	0.6	µA
			BIASPROG=0b1111, HALFBIAS=0		14.7			22	35	µA
	$V_{VCMPHYST}$	VCMP hysteresis			17			61	210	mV
3.19 LCD	V_{BOOST}	Boost voltage	LEVEL0		3.0			3.02		V
			LEVEL1		3.08			3.15		V
			LEVEL2		3.17			3.28		V
			LEVEL3		3.26			3.41		V
			LEVEL4		3.34			3.54		V
			LEVEL5		3.43			3.67		V
			LEVEL6		3.52			3.73		V
			LEVEL7		3.6			3.74		V
3.27 Digital Peripherals	I_{USART}	USART current			7.5			4.0		µA/MHz
	I_{UART}	UART current			5.63			3.8		µA/MHz
	I_{LEUART}	LEUART current			150			194		nA
	I_{I2C}	I2C current			6.25			7.6		µA/MHz
	I_{TIMER}	TIMER current			8.75			6.5		µA/MHz
	$I_{LETIMER}$	LETIMER current			150			85.8		nA
	I_{PCNT}	PCNT current			100			91.4		nA
	I_{RTC}	RTC current			100			54.6		nA
	I_{LCD}	LCD current			100			72.7		nA
	I_{AES}	AES current			2.5			1.8		µA/MHz
	I_{GPIO}	GPIO current			5.31			3.4		µA/MHz
	I_{EBI}	EBI current			1.56			6.5		µA/MHz
	I_{PRS}	PRS current			2.81			3.9		µA/MHz
	I_{DMA}	DMA current			8.12			10.9		µA/MHz

* Note: Table numbers may vary by datasheet. Numbers listed refer to EFM32WG995.

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