Bulletin #1606241

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Bulletin Date: 6/24/2016	**Bulletin Effective Date:** 6/24/2016
Title: EFR32MG1, EFR32BG1 & EFR32FG1 Revision C0	

Bulletin Details

Description:
Silicon Labs is pleased to announce hardware revision C of the EFR32MG1 Mighty Gecko ZigBee® & Thread, EFR32BG1 Blue Gecko Bluetooth® Smart and EFR32FG1 Flex Gecko Proprietary Wireless SoC families. After the effective date of this PCN, Silicon Labs plans to deliver Revision C for customers ordering Revision B. Datasheets and errata have been updated for these products. The new revision is a pin-compatible replacement for the previous revision devices.

Please see attached Qualification Report in the Appendix.

The datasheet are updated to version 0.951. The Rev C errata documents and updated Errata History documents are also available. Revision C eliminated the following errata in revision B:

Errata #	Designator	Title/Problem	Workaround Exists	Affected Revision	Fixed Revision
1	CUR_E202	EM2/3 Current Consumption at Cold Temperatures	No	B	B, date code 1547 (November 16, 2015)
2	GPIO_E201	GPIO Default Slew Rate	Yes	B	B, date code 1603 (January 18, 2015)
3	DCDC_E201	DCDC Stops Regulating During a Fast EM0/1 to EM2/3/4H Transition	Yes	B	C

Reason:
Revision C is the full production (FP) version of all OPNs in the EFR32MG1, EFR32BG1 and EFR32FG1 families.

Product Identification:

Affected Revision B0 OPN	**New Revision C0 OPN**
EFR32MG1P232F256GM48-B0	EFR32MG1P232F256GM48-C0
EFR32MG1P232F256GM48-B0R	EFR32MG1P232F256GM48-C0R
EFR32MG1P232F256GM32-B0	EFR32MG1P232F256GM32-C0
EFR32MG1P232F256GM32-B0R	EFR32MG1P232F256GM32-C0R
EFR32MG1P132F256GM48-B0	EFR32MG1P132F256GM48-C0
EFR32MG1P132F256GM48-B0R	EFR32MG1P132F256GM48-C0R
EFR32MG1P132F256GM32-B0	EFR32MG1P132F256GM32-C0
EFR32MG1P132F256GM32-B0R	EFR32MG1P132F256GM32-C0R
EFR32MG1B232F256GM48-B0	EFR32MG1B232F256GM48-C0
EFR32MG1B232F256GM48-B0R	EFR32MG1B232F256GM48-C0R
EFR32MG1B232F256GM32-B0	EFR32MG1B232F256GM32-C0
EFR32MG1B232F256GM32-B0R	EFR32MG1B232F256GM32-C0R

EFR32MG1B132F256GM48-B0	EFR32MG1B132F256GM48-C0
EFR32MG1B132F256GM48-B0R	EFR32MG1B132F256GM48-C0R
EFR32MG1B132F256GM32-B0	EFR32MG1B132F256GM32-C0
EFR32MG1B132F256GM32-B0R	EFR32MG1B132F256GM32-C0R
EFR32MG1V132F256GM48-B0	EFR32MG1V132F256GM48-C0
EFR32MG1V132F256GM48-B0R	EFR32MG1V132F256GM48-C0R
EFR32MG1V132F256GM32-B0	EFR32MG1V132F256GM32-C0
EFR32MG1V132F256GM32-B0R	EFR32MG1V132F256GM32-C0R
EFR32BG1P332F256GM48-B0	EFR32BG1P332F256GM48-C0
EFR32BG1P332F256GM48-B0R	EFR32BG1P332F256GM48-C0R
EFR32BG1P332F256GM32-B0	EFR32BG1P332F256GM32-C0
EFR32BG1P332F256GM32-B0R	EFR32BG1P332F256GM32-C0R
EFR32BG1P232F256GM48-B0	EFR32BG1P232F256GM48-C0
EFR32BG1P232F256GM48-B0R	EFR32BG1P232F256GM48-C0R
EFR32BG1P232F256GM32-B0	EFR32BG1P232F256GM32-C0
EFR32BG1P232F256GM32-B0R	EFR32BG1P232F256GM32-C0R
EFR32BG1B232F256GM48-B0	EFR32BG1B232F256GM48-C0
EFR32BG1B232F256GM48-B0R	EFR32BG1B232F256GM48-C0R
EFR32BG1B232F256GM32-B0	EFR32BG1B232F256GM32-C0
EFR32BG1B232F256GM32-B0R	EFR32BG1B232F256GM32-C0R
EFR32BG1B232F128GM48-B0	EFR32BG1B232F128GM48-C0
EFR32BG1B232F128GM48-B0R	EFR32BG1B232F128GM48-C0R
EFR32BG1B232F128GM32-B0	EFR32BG1B232F128GM32-C0
EFR32BG1B232F128GM32-B0R	EFR32BG1B232F128GM32-C0R
EFR32BG1B132F256GM48-B0	EFR32BG1B132F256GM48-C0
EFR32BG1B132F256GM48-B0R	EFR32BG1B132F256GM48-C0R
EFR32BG1B132F256GM32-B0	EFR32BG1B132F256GM32-C0
EFR32BG1B132F256GM32-B0R	EFR32BG1B132F256GM32-C0R
EFR32BG1B132F128GM48-B0	EFR32BG1B132F128GM48-C0
EFR32BG1B132F128GM48-B0R	EFR32BG1B132F128GM48-C0R
EFR32BG1B132F128GM32-B0	EFR32BG1B132F128GM32-C0
EFR32BG1B132F128GM32-B0R	EFR32BG1B132F128GM32-C0R
EFR32BG1V132F256GM48-B0	EFR32BG1V132F256GM48-C0
EFR32BG1V132F256GM48-B0R	EFR32BG1V132F256GM48-C0R
EFR32BG1V132F256GM32-B0	EFR32BG1V132F256GM32-C0
EFR32BG1V132F256GM32-B0R	EFR32BG1V132F256GM32-C0R
EFR32BG1V132F128GM48-B0	EFR32BG1V132F128GM48-C0
EFR32BG1V132F128GM48-B0R	EFR32BG1V132F128GM48-C0R
EFR32BG1V132F128GM32-B0	EFR32BG1V132F128GM32-C0
EFR32BG1V132F128GM32-B0R	EFR32BG1V132F128GM32-C0R
EFR32FG1P132F256GM48-B0	EFR32FG1P132F256GM48-C0
EFR32FG1P132F256GM48-B0R	EFR32FG1P132F256GM48-C0R
EFR32FG1P132F256GM32-B0	EFR32FG1P132F256GM32-C0
EFR32FG1P132F256GM32-B0R	EFR32FG1P132F256GM32-C0R
EFR32FG1V132F256GM48-B0	EFR32FG1V132F256GM48-C0
EFR32FG1V132F256GM48-B0R	EFR32FG1V132F256GM48-C0R
EFR32FG1P132F128GM48-B0	EFR32FG1P132F128GM48-C0
EFR32FG1P132F128GM48-B0R	EFR32FG1P132F128GM48-C0R
EFR32FG1V132F256GM32-B0	EFR32FG1V132F256GM32-C0
EFR32FG1V132F256GM32-B0R	EFR32FG1V132F256GM32-C0R
EFR32FG1P132F128GM32-B0	EFR32FG1P132F128GM32-C0
EFR32FG1P132F128GM32-B0R	EFR32FG1P132F128GM32-C0R

EFR32FG1P132F64GM48-B0	EFR32FG1P132F64GM48-C0
EFR32FG1P132F64GM48-B0R	EFR32FG1P132F64GM48-C0R
EFR32FG1V132F128GM48-B0	EFR32FG1V132F128GM48-C0
EFR32FG1V132F128GM48-B0R	EFR32FG1V132F128GM48-C0R
EFR32FG1P132F64GM32-B0	EFR32FG1P132F64GM32-C0
EFR32FG1P132F64GM32-B0R	EFR32FG1P132F64GM32-C0R
EFR32FG1V132F128GM32-B0	EFR32FG1V132F128GM32-C0
EFR32FG1V132F128GM32-B0R	EFR32FG1V132F128GM32-C0R
EFR32FG1V132F64GM48-B0	EFR32FG1V132F64GM48-C0
EFR32FG1V132F64GM48-B0R	EFR32FG1V132F64GM48-C0R
EFR32FG1V132F32GM48-B0	EFR32FG1V132F32GM48-C0
EFR32FG1V132F32GM48-B0R	EFR32FG1V132F32GM48-C0R
EFR32FG1V132F64GM32-B0	EFR32FG1V132F64GM32-C0
EFR32FG1V132F64GM32-B0R	EFR32FG1V132F64GM32-C0R
EFR32FG1V132F32GM32-B0	EFR32FG1V132F32GM32-C0
EFR32FG1V132F32GM32-B0R	EFR32FG1V132F32GM32-C0R

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Customer Actions Needed:
Please qualify and use Rev C0 for any future needs. Revision B0 OPNs listed above are engineering samples and should not be used for Production.

Appendix

EFR32xG1-GM Rev C0 Qualification Report

Part Rev C0, TSMC Fabrication, SPIL Assembly							
Test Name	**Test Condition**	**Qualification**	**Lot ID or Start**	**Fail/Pass or End**	**Notes**	**Summary**	**Status**
Test Group A – Accelerated Environment Stress Tests - 7x7 QFN							
HAST	JA110		Q038584	0/43	1		
	130°C, 85%RH	3 lots, N=>25	Q038040	0/28	1	3 lots	Pass
	Vcc=3.8V, 96 hours		Q037588	0/25	1	0/96	
UHAST	JA110		Q038123	0/28	1		
	130°C, 85%RH	3 lots, N=>25	Q038039	0/28	1	3 lots	Pass
	Vcc=3.8V, 96 hours		Q037724	0/27	1	0/83	
Temp Cycle	JA104		Q037586	0/25	1		
	Cond C: -65°C to 150°C	3 lots, N=>25	Q038041	0/28	1	3 lots	Pass
	500 cycles		Q038121	0/27	1	0/80	
HTSL	JA103		Q038038	0/28	1		
	150°C, 1000hr	3 lots, N=>25	Q038124	0/28	1	3 lots	Pass
			Q037590	0/25	1	0/81	
Test Group A – Accelerated Environment Stress Tests - 5x5 QFN							
HAST	JA110		Q038584	0/43	1		
	130°C, 85%RH	3 lots, N=>25	Q038040	0/28	1	3 lots	Pass
	Vcc=3.8V, 96 hours		Q037588	0/25	1	0/96	
UHAST	JA110		Q038014	0/35	1		
	130°C, 85%RH	3 lots, N=>25	Q038013	0/35	1	3 lots	Pass
	Vcc=3.8V, 96 hours		Q037772	0/27	1	0/97	
Temp Cycle	JA104		Q037776	0/27	1		
	Cond C: -65°C to 150°C	3 lots, N=>25	Q038010	0/35	1	3 lots	Pass
	500 cycles		Q038009	0/35	1	0/97	
HTSL	JA103		Q038012	0/35	1		
	150°C, 1000hr	3 lots, N=>25	Q038011	0/35	1	3 lots	Pass
			Q037774	0/27	1	0/97	
Test Group B – Accelerated Lifetime Simulation Tests							
HTOL			Q038136	0/80			
	JA108		Q038102	0/53			
	$T_J \geq 125°C$, Dynamic	3 lots, N=>77	Q037998	0/78		4 lots	Pass
	Vcc=3.8V, 1000 hours		Q037622	0/79		0/290	
LTOL	JA108						
	$T_A = -10°C$, Dynamic	1 lot, N=>32	Q037624	0/40		1 lots	Pass
	Vcc=3.8V, 1000 hours					0/40	
ELFR			Q038755	0/501			
	JA108		Q037570	0/508			
	$T_J \geq 125°C$, Dynamic	3 lots, N=>500	Q037999	0/507		4 lots	Pass
	Vcc=3.8V, 48 hours		Q038137	0/505		0/2021	

Approved by: K. Torres 1 of 3 Prepared on: 21 June 2016

EFR32xG1-GM Rev C0 Qualification Report

Part Rev C0, TSMC Fabrication, SPIL Assembly							
Test Name	**Test Condition**	**Qualification**	**Lot ID or Start**	**Fail/Pass or End**	**Notes**	**Summary**	**Status**
NVM Endurance, Retention and Operating Life	JESD22-A117 25°C 500 hours	3 lots, N=>39	Q038148 Q038147 Q037725	0/40 0/40 0/40	2 2 2	3 lots 0/120	Pass
NVM Endurance, Retention and Operating Life	JESD22-A117 125°C 1000 hours	3 lots, N=>39	Q038066 Q038028 Q038024 Q037652	0/40 0/40 1/39 0/40	3 3 3, 4 3	4 lots 1/159	Pass
Test Group E – Electrical Verification							
ESD-HBM	JA114	1 lot, N=>3	Q038744 Q038770				Class 2 Class 2
ESD-CDM	JC101	1 lot, N=>3	Q038750 Q038849		5 6		Class C2 Class C2
Latch Up	JESD78 ±100mA	1 lot, N=>3	Q038754 Q038741	25 °C 25 °C			Pass
Latch Up	JESD78 ±100mA	1 lot, N=>3	Q038753 Q038742	125 °C 125 °C			Pass

Notes:
1. Parts are Pre-conditioned at MSL2/260°C
2. Preconditioned with 10K write/erase cycles at 25°C
3. Preconditioned with 10K write/erase cycles at 125°C
4. Failure analysis on the failure was inconclusive. An additional 40 units were stressed from the same wafer lot (Q038028) to reduce the LTPD% below the requirment. LTPD% = 5.76 at 90% confidence with 0 fails and a sample size =40. LTPD% = 4.80 at 90% confidence with 1 failure and a sample size = 80.
5. Results for 7x7 QFN package, 2.4 GHz bond out
6. Results for 5x5 QFN package, 2.4 GHz

Approved by: K. Torres

Prepared on: 21 June 2016

EFR32xG1-GM Rev C0 Qualification Report

Part Rev C0, TSMC Fabrication, SPIL Assembly							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status

This report applies to the following part numbers:	
EFR32MG1P232F256GM48-C0	EFR32BG1B132F128GM48-C0
EFR32MG1P232F256GM32-C0	EFR32BG1B132F128GM32-C0
EFR32MG1P132F256GM48-C0	EFR32BG1V132F256GM48-C0
EFR32MG1P132F256GM32-C0	EFR32BG1V132F256GM32-C0
EFR32MG1B232F256GM48-C0	EFR32BG1V132F128GM48-C0
EFR32MG1B232F256GM32-C0	EFR32BG1V132F128GM32-C0
EFR32MG1B132F256GM48-C0	EFR32FG1P132F256GM48-C0
EFR32MG1B132F256GM32-C0	EFR32FG1P132F256GM32-C0
EFR32MG1V132F256GM48-C0	EFR32FG1V132F256GM48-C0
EFR32MG1V132F256GM32-C0	EFR32FG1P132F128GM48-C0
EFR32BG1P332F256GM48-C0	EFR32FG1V132F256GM32-C0
EFR32BG1P332F256GM32-C0	EFR32FG1P132F128GM32-C0
EFR32BG1P232F256GM48-C0	EFR32FG1P132F64GM48-C0
EFR32BG1P232F256GM32-C0	EFR32FG1V132F128GM48-C0
EFR32BG1B232F256GM48-C0	EFR32FG1P132F64GM32-C0
EFR32BG1B232F256GM32-C0	EFR32FG1V132F128GM32-C0
EFR32BG1B232F128GM48-C0	EFR32FG1V132F64GM48-C0
EFR32BG1B232F128GM32-C0	EFR32FG1V132F32GM48-C0
EFR32BG1B132F256GM48-C0	EFR32FG1V132F64GM32-C0
EFR32BG1B132F256GM32-C0	EFR32FG1V132F32GM32-C0

Approved by: K Torres

Prepared on: 21 June 2016

