



# 201027917 EFR32MG12 Package Type BGA125 Revision C

**PRCN Issue Date:** 10/27/2020

**Effective Date:** 2/2/2021

**PCN Type:** Product Revision

## Description of Change

Silicon Labs is pleased to announce hardware revision C for the EFR32MG12 Package Type BGA125 devices. The new revision is a pin-compatible replacement for the previous revision B devices.

Note: After the effective date of the PRCN, Silicon Labs reserves the right not to accept orders for the old revision.

## Reason for Change

IC revision to fix errata.

## Impact on Form, Fit, Function, Quality, Reliability

The new revision is a pin compatible replacement for the previous revision B devices. There have been no changes to device pin-out (fit), quality or reliability.

## Product Identification

Existing Part #	Replacement Part #	DropInCompInd.
EFR32MG12P332F1024GL125-B	EFR32MG12P332F1024GL125-C	Yes
EFR32MG12P332F1024GL125-BR	EFR32MG12P332F1024GL125-CR	Yes
EFR32MG12P432F1024GL125-B	EFR32MG12P432F1024GL125-C	Yes
EFR32MG12P432F1024GL125-BR	EFR32MG12P432F1024GL125-CR	Yes
EFR32MG12P433F1024GL125-B	EFR32MG12P433F1024GL125-C	Yes
EFR32MG12P433F1024GL125-BR	EFR32MG12P433F1024GL125-CR	Yes

## Kit Identification

Kits impacted by the above product are listed below.  
Orders for the following obsolete kits will no longer be accepted.

**Last Date of Unchanged Product:** 2/2/2021

## Qualification Samples

Samples available upon request.

## Customer Response

Lack of acknowledgment of the PCN within 30 days constitutes acceptance of the change, Ref. JEDEC-J-STD-046.

To request further data or inquire about this notification, please contact your Silicon Labs sales representative. A list of Silicon Labs sales representatives is available at <http://www.silabs.com>.

Customers may approve early PCN acceptance by emailing approval, along with PCN # to [PCNEarlyAcceptance@silabs.com](mailto:PCNEarlyAcceptance@silabs.com)

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**Qualification Data**

Please see attached Qualification Report in the Appendix.

<b>EFR32xG12 Qualification Report</b>							
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<b>Part Rev C, TSMC Fabrication, SPIL Assembly except as noted</b>							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
<b>Test Group A – Accelerated Environment Stress Tests - BGA</b>							
HAST	JA110 110°C, 85%RH Vcc=3.8V, 264 hours	3 lots, N=>25	Q039924	0/28	1	3 lots 0/84	Pass
			Q039925	0/28	1		
			Q039926	0/28	1		
UFAST	JA118 130°C, 85%RH 96 hours	3 lots, N=>25	Q039915	0/28	1	3 lots 0/84	Pass
			Q039916	0/28	1		
			Q039917	0/28	1		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q039918	0/27	1	3 lots 0/83	Pass
			Q039919	0/28	1		
			Q039920	0/28	1		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q039921	0/27	1	3 lots 0/83	Pass
			Q039922	0/28	1		
			Q039923	0/28	1		
<b>Test Group A – Accelerated Environment Stress Tests - QFN</b>							
HAST	JA110 130°C, 85%RH Vcc=3.8V, 96 hours	3 lots, N=>25	Q039879	1/30	2, 5	4 lots 1/120	Pass
			Q040220	0/30	2		
			Q039877	0/30	2		
			Q039878	0/30	2		
UFAST	JA118 130°C, 85%RH 96 hours	3 lots, N=>25	Q039876	0/30	2	3 lots 0/90	Pass
			Q039875	0/30	2		
			Q039874	0/30	2		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q039882	0/30	2	3 lots 0/90	Pass
			Q039881	0/30	2		
			Q039880	0/30	2		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q038038	0/28	2	3 lots 0/81	Pass
			Q038124	0/28	2		
			Q037590	0/25	2		

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## Part Rev C, TSMC Fabrication, SPIL Assembly except as noted

Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
<b>Test Group B – Accelerated Lifetime Simulation Tests</b>							
HTOL	JA108 T <sub>j</sub> ≥ 125°C, Dynamic V <sub>cc</sub> =3.8V, 1000 hours	3 lots, N=>77	Q039946	0/77		3 lots	Pass
			Q040071	0/77			
			Q040505	0/80			
LTOL	JA108 T <sub>A</sub> = -10°C, Dynamic V <sub>cc</sub> =3.8V, 1000 hours	1 lot, N=>32	Q040261	0/35		1 lots	Pass
ELFR	JA108 T <sub>j</sub> ≥ 125°C, Dynamic V <sub>cc</sub> =3.8V, 48 hours	3 lots, N=>500	Q039943	0/500		3 lots	Pass
			Q040035	0/502			
			Q040504	0/500			
NVM Endurance, Retention and Operating Life	JESD22-A117 25°C 500 hours	3 lots, N=>39	Q040213	0/40	3	3 lots	Pass
			Q040274	0/40	3		
			Q040278	0/40	3		
NVM Endurance, Retention and Operating Life	JESD22-A117 125°C 1000 hours	3 lots, N=>39	Q040279	0/40	4	3 lots	Pass
			Q040275	0/40	4		
			Q040214	0/40	4		
<b>Test Group E – Electrical Verification</b>							
ESD-HBM	JS-001	1 lot, N=>3	Q039756			2 kV	Class 2
ESD-CDM	JS-002	1 lot, N=>3	Q042050		6	500 V	Class C2A
			Q042047		7	650 V	Class C2A
			Q042046		8	1000 V	Class C3
			Q042048		9	500 V	Class C2A
Latch Up	JESD78 ±100mA	1 lot, N=>3	Q039757	25 °C			Pass
Latch Up	JESD78 ±100mA	1 lot, N=>3	Q039764	125 °C			Pass

## Notes:

- Parts are Pre-conditioned at MSL3/260°C
- Parts are Pre-conditioned at MSL2/260°C
- Preconditioned with 10K write/erase cycles at 25°C
- Preconditioned with 10K write/erase cycles at 125°C
- Failure analysis on the failure was inconclusive. An additional 30 units were stressed from the same assembly lot (Q040220) to reduce the LTPD% below the requirement. JEDEC sample size requirement of 25 units per lot has LTPD% = 9.21 at 90% confidence with 0 fails. With larger sample size = 60, LTPD% = 6.48 at 90% confidence with 1 failure.

## EFR32xG12 Qualification Report



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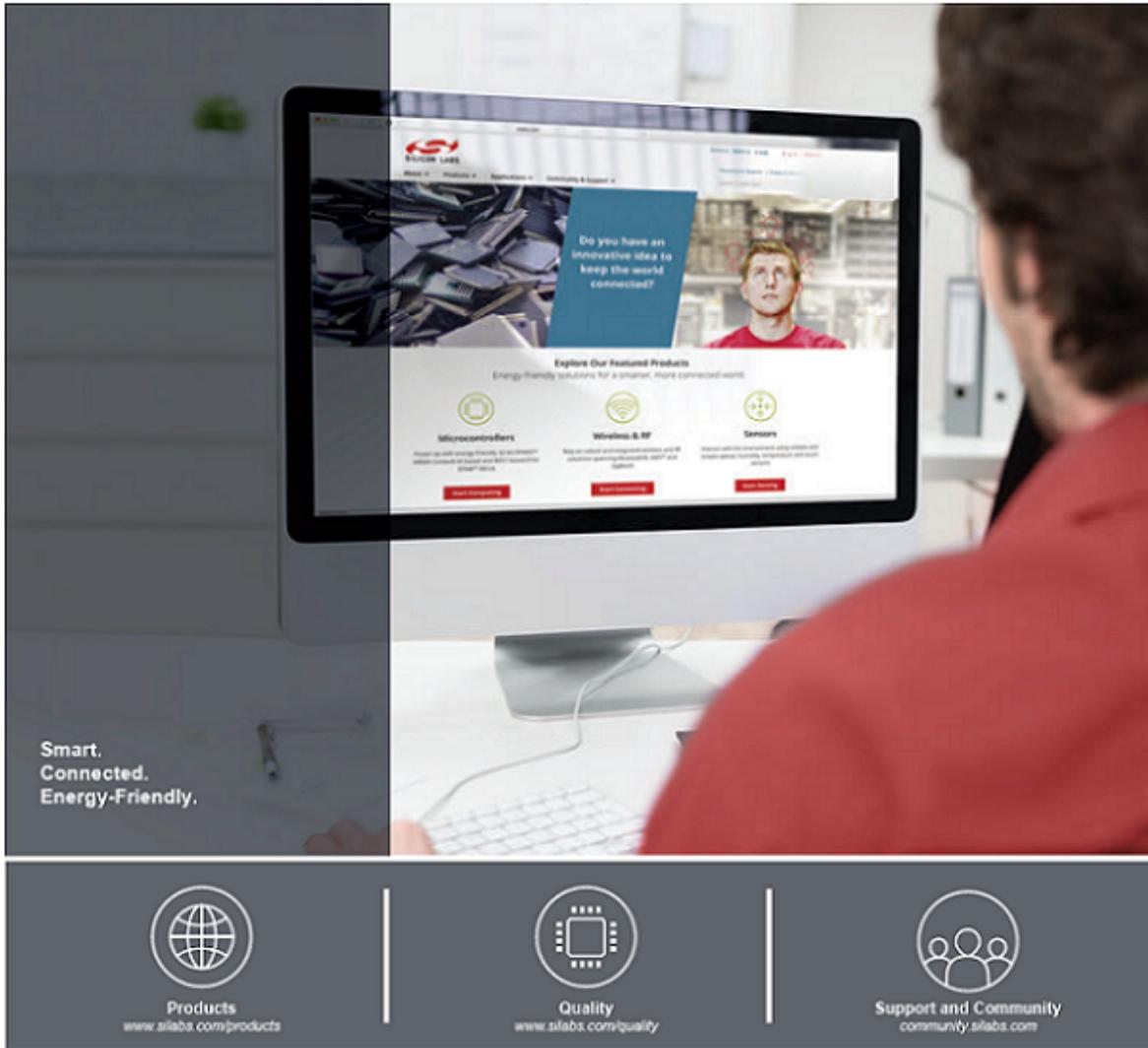
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
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Notes (Continued):

- 6. BGA Package, dual band
- 7. QFN package, dual band
- 8. QFN Package, sub GHz
- 9. QFN Package, 2.4 GHz

**This report applies to the following part numbers:**

EFR32BG12P132F1024GL125-C	EFR32FG12P232F1024GL125-C	EFR32MG12P132F1024GL125-C
EFR32BG12P132F1024GM48-C	EFR32FG12P232F1024GM48-C	EFR32MG12P132F1024GM48-C
EFR32BG12P232F1024GL125-C	EFR32FG12P231F1024GL125-C	EFR32MG12P232F1024GL125-C
EFR32BG12P232F1024GM48-C	EFR32FG12P231F1024GM48-C	EFR32MG12P232F1024GM48-C
EFR32BG12P332F1024GL125-C	EFR32FG12P433F1024GL125-C	EFR32MG12P332F1024GL125-C
EFR32BG12P332F1024GM48-C	EFR32FG12P433F1024GM48-C	EFR32MG12P332F1024GM48-C
EFR32BG12P433F1024GL125-C	EFR32FG12P432F1024GL125-C	EFR32MG12P433F1024GL125-C
EFR32BG12P433F1024GM48-C	EFR32FG12P432F1024GM48-C	EFR32MG12P433F1024GM48-C
EFR32BG12P432F1024GL125-C	EFR32FG12P431F1024GL125-C	EFR32MG12P432F1024GL125-C
EFR32BG12P432F1024GM48-C	EFR32FG12P431F1024GM48-C	EFR32MG12P432F1024GM48-C
EFR32BG12P332F1024IM48-C	EFR32FG12P431F1024IM48-C	EFR32MG12P332F1024IM48-C
EFR32MG12P433F1024IL125-C	EFR32MG12P433F1024IM48-C	EFR32MG12P432F1024IM48-C



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