



# 2406121553 Addendum to 2405011529 Additional Source for EFR32xG21 SoCs

**PCN Issue Date:** Jun 12, 2024

**Effective Date:** Aug 07, 2024

**PCN Type:** Datasheet; Errata; Foundry

## Description of Change

This addendum is issued to clarify the change description of PCN 2405011529 issued on May 1st 2024:

As of the effective date of this PCN, Silicon Labs will start shipping EFR32BG21 and EFR32MG21 SoCs from both TSMC and SMIC. All existing OPNs will be available in both revisions "B" and "D" to identify the SoC revision "B" (TSMC) and "D" (SMIC) respectively. To further clarify, this notification is not a discontinuation notice of revision "B".

The original PCN Effective Date remains unchanged at August 7th 2024.

Original Change Description:

Silicon Labs is pleased to announce an additional source for EFR32BG21 and EFR32MG21 SoCs (jointly referred to as xG21) at Semiconductor Manufacturing International Corporation (SMIC). This change is needed to increase capacity to ensure supply continuity due to increased demand for our Wireless SoCs and MCUs.

As of the effective date of this PCN, Silicon Labs will start porting xG21 from TSMC to SMIC. All existing OPNs will be updated by replacing the revision character with "D" to identify the ICs from SMIC foundry.

Updated datasheets:

EFR32BG21 v1.2: <https://www.silabs.com/documents/public/data-sheets/efr32bg21-datasheet.pdf>

EFR32MG21 v1.2: <https://www.silabs.com/documents/public/data-sheets/efr32mg21-datasheet.pdf>

The main changes:

- Added all Revision D OPNs.
  - Capacitive Sense feature of ACMP has been noted as deprecated.
  - Merged xG21 (Secure Vault Mid) & xG21B (Secure Vault High) datasheets
- Please refer to the datasheet revision history for a complete list of changes.

Updated errata (adds the latest available revision D):

EFR32BG21 v1.0: <https://www.silabs.com/documents/public/errata/efr32bg21-errata.pdf>

EFR32MG21 v1.1: <https://www.silabs.com/documents/public/errata/efr32mg21-errata.pdf>

## Reason for Change

Clarify original change description.

Original Change Reason:

Alternate foundry for capacity expansion.

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

No impact on form, fit, quality or reliability. Impact on function will be explained in errata and an update to the new software that will need to be ported which is explained in the application note "AN1377: EFR32xG21 Revision B to Revision C+ Compatibility and Migration Guide" available at: <https://www.silabs.com/documents/public/application-notes/an1377-xg21-revb-to-revc-migration.pdf>

## Product Identification

Revision B (TSMC) and D (SMIC) will both be available for order.

Existing Part #

EFR32BG21A010F1024IM32-D

EFR32BG21A010F1024IM32-DR  
EFR32BG21A010F512IM32-D  
EFR32BG21A010F512IM32-DR  
EFR32BG21A010F768IM32-D  
EFR32BG21A010F768IM32-DR  
EFR32BG21A020F1024IM32-D  
EFR32BG21A020F1024IM32-DR  
EFR32BG21A020F512IM32-D  
EFR32BG21A020F512IM32-DR  
EFR32BG21A020F768IM32-D  
EFR32BG21A020F768IM32-DR  
EFR32BG21B010F1024IM32-D  
EFR32BG21B010F1024IM32-DR  
EFR32BG21B010F512IM32-D  
EFR32BG21B010F512IM32-DR  
EFR32BG21B010F768IM32-D  
EFR32BG21B010F768IM32-DR  
EFR32BG21B020F1024IM32-D  
EFR32BG21B020F1024IM32-DR  
EFR32BG21B020F512IM32-D  
EFR32BG21B020F512IM32-DR  
EFR32BG21B020F768IM32-D  
EFR32BG21B020F768IM32-DR  
EFR32MG21A010F1024IM32-D  
EFR32MG21A010F1024IM32-DR  
EFR32MG21A010F512IM32-D  
EFR32MG21A010F512IM32-DR  
EFR32MG21A010F768IM32-D  
EFR32MG21A010F768IM32-DR  
EFR32MG21A020F1024IM32-D  
EFR32MG21A020F1024IM32-DR  
EFR32MG21A020F512IM32-D  
EFR32MG21A020F512IM32-DR  
EFR32MG21A020F768IM32-D  
EFR32MG21A020F768IM32-DR  
EFR32MG21B010F1024IM32-D  
EFR32MG21B010F1024IM32-DR  
EFR32MG21B010F512IM32-D  
EFR32MG21B010F512IM32-DR  
EFR32MG21B010F768IM32-D  
EFR32MG21B010F768IM32-DR  
EFR32MG21B020F1024IM32-D  
EFR32MG21B020F1024IM32-DR  
EFR32MG21B020F512IM32-D  
EFR32MG21B020F512IM32-DR  
EFR32MG21B020F768IM32-D  
EFR32MG21B020F768IM32-DR  
EFR32BG21A010F1024IM32-B  
EFR32BG21A010F1024IM32-BR  
EFR32BG21A010F512IM32-B  
EFR32BG21A010F512IM32-BR  
EFR32BG21A010F768IM32-B  
EFR32BG21A010F768IM32-BR  
EFR32BG21A010X1652IM32-B  
EFR32BG21A010X1652IM32-BR  
EFR32BG21A020F1024IM32-B  
EFR32BG21A020F1024IM32-BR  
EFR32BG21A020F512IM32-B  
EFR32BG21A020F512IM32-BR  
EFR32BG21A020F768IM32-B  
EFR32BG21A020F768IM32-BR  
EFR32BG21B010F1024IM32-B  
EFR32BG21B010F1024IM32-BR  
EFR32BG21B010F512IM32-B  
EFR32BG21B010F512IM32-BR  
EFR32BG21B010F768IM32-B  
EFR32BG21B010F768IM32-BR

EFR32BG21B010X1653IM32-B  
EFR32BG21B010X1653IM32-BR  
EFR32BG21B020F1024IM32-B  
EFR32BG21B020F1024IM32-BR  
EFR32BG21B020F512IM32-B  
EFR32BG21B020F512IM32-BR  
EFR32BG21B020F768IM32-B  
EFR32BG21B020F768IM32-BR  
EFR32BG21B020P1689IM32-B  
EFR32BG21B020P1689IM32-BR  
EFR32BG21B020P1693IM32-B  
EFR32BG21B020P1693IM32-BR  
EFR32BG21B020P1697IM32-B  
EFR32BG21B020P1697IM32-BR  
EFR32BG21B020P1712IM32-B  
EFR32BG21B020P1712IM32-BR  
EFR32MG21A010F1024IM32-B  
EFR32MG21A010F1024IM32-BR  
EFR32MG21A010F512IM32-B  
EFR32MG21A010F512IM32-BR  
EFR32MG21A010F768IM32-B  
EFR32MG21A010F768IM32-BR  
EFR32MG21A010M1475IM32-B  
EFR32MG21A010M1475IM32-BR  
EFR32MG21A020F1024IM32-B  
EFR32MG21A020F1024IM32-BR  
EFR32MG21A020F512IM32-B  
EFR32MG21A020F512IM32-BR  
EFR32MG21A020F768IM32-B  
EFR32MG21A020F768IM32-BR  
EFR32MG21A020PZ013IM32-B  
EFR32MG21A020PZ013IM32-BR  
EFR32MG21A020PZ024IM32-B  
EFR32MG21A020PZ024IM32-BR  
EFR32MG21B010F1024IM32-B  
EFR32MG21B010F1024IM32-BR  
EFR32MG21B010F512IM32-B  
EFR32MG21B010F512IM32-BR  
EFR32MG21B010F768IM32-B  
EFR32MG21B010F768IM32-BR  
EFR32MG21B010PZ045IM32-B  
EFR32MG21B010PZ045IM32-BR  
EFR32MG21B020F1024IM32-B  
EFR32MG21B020F1024IM32-BR  
EFR32MG21B020F512IM32-B  
EFR32MG21B020F512IM32-BR  
EFR32MG21B020F768IM32-B  
EFR32MG21B020F768IM32-BR

**Last Date of Unchanged Product:** Aug 07, 2024

### Qualification 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 [PCN@silabs.com](mailto:PCN@silabs.com)

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## Qualification Data

See attached.

 <b>EFR32xG21x010 Revision D Qualification Report</b>							
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Part Rev D, SMIC 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 A – Accelerated Environment Stress Tests</b>							
HAST	JA110 130°C, 85%RH Vcc=3.8V, 96 hours	3 lots, N=>25	Q048960	0/80	1	3 lots 0/239	Pass
			Q048971	0/79	1		
			Q048975	0/80	1		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q048962	0/80	1	3 lots 0/239	Pass
			Q048973	0/79	1		
			Q048977	0/80	1		
UHAST	JA110 130°C, 85%RH 96 hours	3 lots, N=>25	Q048961	0/79	1	3 lots 0/239	Pass
			Q048972	0/80	1		
			Q048976	0/80	1		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q048963	0/33	1	3 lots 0/113	Pass
			Q048974	0/40	1		
			Q048978	0/40	1		
<b>Test Group A – Accelerated Environment Stress Tests - ASECL Assembly</b>							
HAST	JA110 130°C, 85%RH Vcc=3.8V, 96 hours	3 lots, N=>25	Q049957	0/80	1	3 lots 0/239	Pass
			Q048979	0/80	1		
			Q048964	0/79	1		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q049959	0/80	1	3 lots 0/240	Pass
			Q048966	0/80	1		
			Q048981	0/80	1		
UHAST	JA110 130°C, 85%RH 96 hours	3 lots, N=>25	Q049958	0/80	1	3 lots 0/240	Pass
			Q048965	0/80	1		
			Q048980	0/80	1		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q049960	0/40	1	3 lots 0/120	Pass
			Q048967	0/40	1		
			Q048982	0/40	1		
<b>Test Group B – Accelerated Lifetime Simulation Tests</b>							
HTOL	JA108 T <sub>j</sub> ≥ 135°C, Dynamic Vcc=3.8V, 1000 hours	3 lots, N=>77	Q050234	0/83	7	3 lots 0/323	Pass
			Q050020	0/102			
			Q050021	0/138			



## EFR32xG21x010 Revision D Qualification Report

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Part Rev D, SMIC Fabrication, SPIL Assembly except as noted							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
LTOL	JA108 T <sub>A</sub> = -10°C, Dynamic Vcc=3.8V, 1000 hours	1 lot, N=>32	Q049691	0/61		1 lots 0/61	Pass
ELFR	JA108 T <sub>J</sub> ≥ 125°C, Dynamic Vcc=3.8V, 48 hours	3 lots, N=>500	Q049731 Q050185 Q050302	0/541 0/577 0/561		3 lots 0/1679	Pass
NVM Endurance, Retention and Operating Life	JESD22-A117 25°C 500 hours	3 lots, N=>39	Q049719	0/40	2	3 lots 0/120	Pass
			Q049993	0/40	2		
			Q049992	0/40	2		
NVM Endurance, Retention and Operating Life	JESD22-A117 + JESD22-A103 150°C, 1000 hours	3 lots, N=>39	Q049718	0/40	3	3 lots 0/120	Pass
			Q049899	0/40	3		
			Q049900	0/40	3		
Test Group E – Electrical Verification							
ESD-HBM	JS-001	1 lot, N=>3	Q050115			3 kV	Class 2
ESD-CDM	JS-002	1 lot, N=>3	Q050191		4	TC 1000	Class 3
			Q050116		5	TC 1000	Class 3
Latch Up	JESD78 ±100mA	1 lot, N=>3	Q050117 Q050118	25 °C 135 °C	6 6		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. ASECL Assembly
5. SPIL Assembly
6. Passes ±200mA
7. An additional 700 hrs HTOL on 92 units completed successfully to evaluate extended lifetime

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

EFR32BG21A010F512IM32-D	EFR32BG21B010F512IM32-D
EFR32BG21A010F768IM32-D	EFR32BG21B010F768IM32-D
EFR32BG21A010F1024IM32-D	EFR32BG21B010F1024IM32-D
EFR32MG21A010F512IM32-D	EFR32MG21B010F512IM32-D
EFR32MG21A010F768IM32-D	EFR32MG21B010F768IM32-D
EFR32MG21A010F1024IM32-D	EFR32MG21B010F1024IM32-D



## EFR32xG21x020 Revision D Qualification Report

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Part Rev D, SMIC 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 A – Accelerated Environment Stress Tests</b>							
HAST	JA110 130°C, 85%RH Vcc=3.8V, 96 hours	3 lots, N=>25	Q048960	0/80	1	3 lots 0/239	Pass
			Q048971	0/79	1		
			Q048975	0/80	1		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q048962	0/80	1	3 lots 0/239	Pass
			Q048973	0/79	1		
			Q048977	0/80	1		
UHAST	JA110 130°C, 85%RH 96 hours	3 lots, N=>25	Q048961	0/79	1	3 lots 0/239	Pass
			Q048972	0/80	1		
			Q048976	0/80	1		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q048963	0/33	1	3 lots 0/113	Pass
			Q048974	0/40	1		
			Q048978	0/40	1		
<b>Test Group A – Accelerated Environment Stress Tests - ASECL Assembly</b>							
HAST	JA110 130°C, 85%RH Vcc=3.8V, 96 hours	3 lots, N=>25	Q049957	0/80	1	3 lots 0/239	Pass
			Q048979	0/80	1		
			Q048964	0/79	1		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q049959	0/80	1	3 lots 0/240	Pass
			Q048966	0/80	1		
			Q048981	0/80	1		
UHAST	JA110 130°C, 85%RH 96 hours	3 lots, N=>25	Q049958	0/80	1	3 lots 0/240	Pass
			Q048965	0/80	1		
			Q048980	0/80	1		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q049960	0/40	1	3 lots 0/120	Pass
			Q048967	0/40	1		
			Q048982	0/40	1		
<b>Test Group B – Accelerated Lifetime Simulation Tests</b>							
HTOL	JA108 T <sub>J</sub> ≥ 135°C, Dynamic Vcc=3.8V, 1000 hours	3 lots, N=>77	Q050234	0/83	7	3 lots 0/323	Pass
			Q050020	0/102			
			Q050021	0/138			
HTOL	JA108 T <sub>J</sub> ≥ 135°C, Dynamic Vcc=3.8V, 100 hours	3 lots, N=>77	Q050251	0/83	8	3 lots 0/250	Pass
			Q050139	0/83	8		
			Q050141	0/84	8		



## EFR32xG21x020 Revision D Qualification Report

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### Part Rev D, SMIC Fabrication, SPIL Assembly except as noted

Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
LTOL	JA108 T <sub>A</sub> = -10°C, Dynamic V <sub>cc</sub> =3.8V, 1000 hours	1 lot, N=>32	Q049691	0/61		1 lots 0/61	Pass
ELFR	JA108 T <sub>J</sub> ≥ 125°C, Dynamic V <sub>cc</sub> =3.8V, 48 hours	3 lots, N=>500	Q049731 Q050185 Q050302	0/541 0/577 0/561		3 lots 0/1679	Pass
NVM Endurance, Retention and Operating Life	JESD22-A117 25°C 500 hours	3 lots, N=>39	Q049719 Q049993 Q049992	0/40 0/40 0/40	2 2 2	3 lots 0/120	Pass
NVM Endurance, Retention and Operating Life	JESD22-A117 + JESD22-A103 150°C, 1000 hours	3 lots, N=>39	Q049718 Q049899 Q049900	0/40 0/40 0/40	3 3 3	3 lots 0/120	Pass

### Test Group E – Electrical Verification

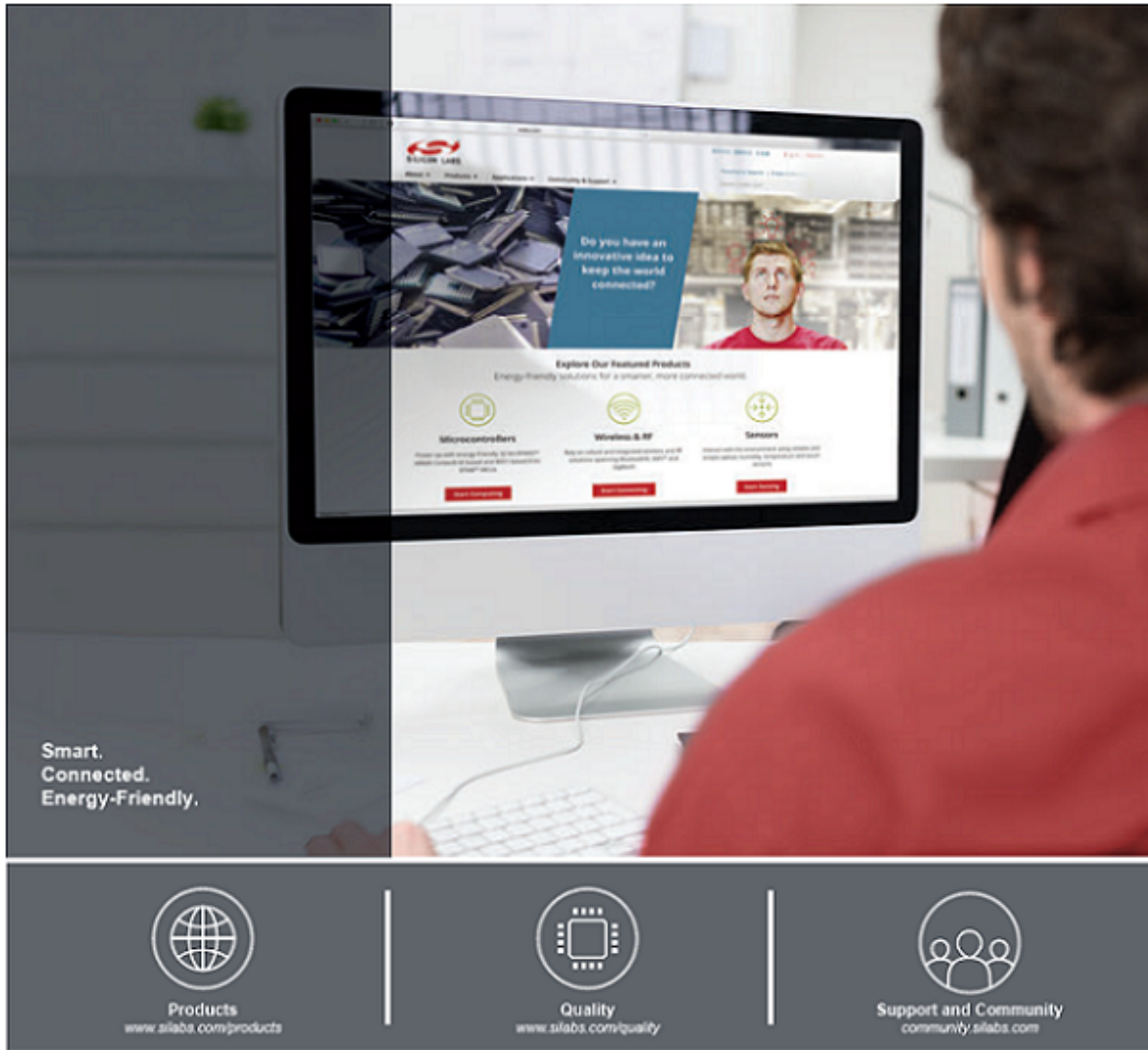
ESD-HBM	JS-001	1 lot, N=>3	Q050115			3 kV	Class 2
ESD-CDM	JS-002	1 lot, N=>3	Q050191 Q050116		4 5	TC 1000 TC 1000	Class 3 Class 3
Latch Up	JESD78 ±100mA	1 lot, N=>3	Q050117 Q050118	25 °C 135 °C	6 6		Pass

**Notes:**

- 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
- ASECL Assembly
- SPIL Assembly
- Passes ±200mA
- An additional 700 hrs HTOL on 92 units completed successfully to evaluate extended lifetime
- HTOL for 20dBm PA. Actual duty cycle of 20dBm PA is <10% of the device duty cycle, therefore HTOL time is 100 hrs

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

EFR32BG21A020F512IM32-D	EFR32BG21B020F512IM32-D
EFR32BG21A020F768IM32-D	EFR32BG21B020F768IM32-D
EFR32BG21A020F1024IM32-D	EFR32BG21B020F1024IM32-D
EFR32MG21A020F512IM32-D	EFR32MG21B020F512IM32-D
EFR32MG21A020F768IM32-D	EFR32MG21B020F768IM32-D
EFR32MG21A020F1024IM32-D	EFR32MG21B020F1024IM32-D



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