



# 2206211261 EFR32FG23-ZG23 New Revision C Parts, Datasheet, Errata and SE Firmware Upd

**PRCN Issue Date:** Jun 21, 2022

**Effective Date:** Sep 27, 2022

**PCN Type:** Datasheet; Errata; Firmware - Secure Element Software Catalog OPN; Product Revision

## Description of Change

Silicon Labs is pleased to announce a new revision (rev C) of EFR32FG23 and EFR32ZG23 to resolve CUR\_E303 (Active Charge Pump Clock Causes High Current).

In addition to the new revision, the following new parts are being introduced.

New part numbers:  
EFR32FG23B021F512IM40-C  
EFR32FG23B021F512IM48-C

The datasheets are being updated to revision 1.1 to add information on the new part numbers. See the datasheet revision history for a complete list of changes.

Errata is being updated to revision 0.7 for EFR32FG23 and revision 0.6 for EFR32ZG23 to add IADC\_E306 and KEYSKAN\_E301 and to resolve CUR\_E303.

SE FW update to v2.1.7.

Note: After the effective date of the PRCN, Silicon Labs will not accept orders for the prior revision.

## Reason for Change

The new revision resolves CUR\_E303 and contains the updated SE FW v2.1.7.

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

No change to Form, Fit, Quality or Reliability. Improved Function, fixed CUR\_E303.

## Product Identification

Existing Part #	Replacement Part #	DropInCompInd.
EFR32FG23A010F256GM40-B	EFR32FG23A010F256GM40-C	Yes
EFR32FG23A010F256GM40-BR	EFR32FG23A010F256GM40-CR	Yes
EFR32FG23A010F256GM48-B	EFR32FG23A010F256GM48-C	Yes
EFR32FG23A010F256GM48-BR	EFR32FG23A010F256GM48-CR	Yes
EFR32FG23A010F512GM40-B	EFR32FG23A010F512GM40-C	Yes
EFR32FG23A010F512GM40-BR	EFR32FG23A010F512GM40-CR	Yes
EFR32FG23A010F512GM48-B	EFR32FG23A010F512GM48-C	Yes
EFR32FG23A010F512GM48-BR	EFR32FG23A010F512GM48-CR	Yes
EFR32FG23A011F512GM40-B	EFR32FG23A011F512GM40-C	Yes
EFR32FG23A011F512GM40-BR	EFR32FG23A011F512GM40-CR	Yes
EFR32FG23A020F256GM40-B	EFR32FG23A020F256GM40-C	Yes
EFR32FG23A020F256GM40-BR	EFR32FG23A020F256GM40-CR	Yes
EFR32FG23A020F256GM48-B	EFR32FG23A020F256GM48-C	Yes
EFR32FG23A020F256GM48-BR	EFR32FG23A020F256GM48-CR	Yes
EFR32FG23A020F512GM40-B	EFR32FG23A020F512GM40-C	Yes
EFR32FG23A020F512GM40-BR	EFR32FG23A020F512GM40-CR	Yes

EFR32FG23A020F512GM48-B	EFR32FG23A020F512GM48-C	Yes
EFR32FG23A020F512GM48-BR	EFR32FG23A020F512GM48-CR	Yes
EFR32FG23A021F512GM40-B	EFR32FG23A021F512GM40-C	Yes
EFR32FG23A021F512GM40-BR	EFR32FG23A021F512GM40-CR	Yes
EFR32FG23B010F128GM40-B	EFR32FG23B010F128GM40-C	Yes
EFR32FG23B010F128GM40-BR	EFR32FG23B010F128GM40-CR	Yes
EFR32FG23B010F512IM40-B	EFR32FG23B010F512IM40-C	Yes
EFR32FG23B010F512IM40-BR	EFR32FG23B010F512IM40-CR	Yes
EFR32FG23B010F512IM48-B	EFR32FG23B010F512IM48-C	Yes
EFR32FG23B010F512IM48-BR	EFR32FG23B010F512IM48-CR	Yes
EFR32FG23B020F128GM40-B	EFR32FG23B020F128GM40-C	Yes
EFR32FG23B020F128GM40-BR	EFR32FG23B020F128GM40-CR	Yes
EFR32FG23B020F512IM40-B	EFR32FG23B020F512IM40-C	Yes
EFR32FG23B020F512IM40-BR	EFR32FG23B020F512IM40-CR	Yes
EFR32FG23B020F512IM48-B	EFR32FG23B020F512IM48-C	Yes
EFR32FG23B020F512IM48-BR	EFR32FG23B020F512IM48-CR	Yes
EFR32ZG23A010F512GM40-B	EFR32ZG23A010F512GM40-C	Yes
EFR32ZG23A010F512GM40-BR	EFR32ZG23A010F512GM40-CR	Yes
EFR32ZG23A010F512GM48-B	EFR32ZG23A010F512GM48-C	Yes
EFR32ZG23A010F512GM48-BR	EFR32ZG23A010F512GM48-CR	Yes
EFR32ZG23A020F512GM40-B	EFR32ZG23A020F512GM40-C	Yes
EFR32ZG23A020F512GM40-BR	EFR32ZG23A020F512GM40-CR	Yes
EFR32ZG23A020F512GM48-B	EFR32ZG23A020F512GM48-C	Yes
EFR32ZG23A020F512GM48-BR	EFR32ZG23A020F512GM48-CR	Yes
EFR32ZG23B010F512IM40-B	EFR32ZG23B010F512IM40-C	Yes
EFR32ZG23B010F512IM40-BR	EFR32ZG23B010F512IM40-CR	Yes
EFR32ZG23B010F512IM48-B	EFR32ZG23B010F512IM48-C	Yes
EFR32ZG23B010F512IM48-BR	EFR32ZG23B010F512IM48-CR	Yes
EFR32ZG23B011F512IM40-B	EFR32ZG23B011F512IM40-C	Yes
EFR32ZG23B011F512IM40-BR	EFR32ZG23B011F512IM40-CR	Yes
EFR32ZG23B020F512IM40-B	EFR32ZG23B020F512IM40-C	Yes
EFR32ZG23B020F512IM40-BR	EFR32ZG23B020F512IM40-CR	Yes
EFR32ZG23B020F512IM48-B	EFR32ZG23B020F512IM48-C	Yes
EFR32ZG23B020F512IM48-BR	EFR32ZG23B020F512IM48-CR	Yes
EFR32ZG23B021F512IM40-B	EFR32ZG23B021F512IM40-C	Yes
EFR32ZG23B021F512IM40-BR	EFR32ZG23B021F512IM40-CR	Yes

### Kit Identification

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

Existing Kit #	Replacement Kit #
NA	NA

**Last Date of Unchanged Product:** Sep 27, 2022

### 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 [PCNEarlyAcceptance@silabs.com](mailto:PCNEarlyAcceptance@silabs.com)

### User Registration

Register today to create your account on Silabs.com. Your personalized profile allows you to receive technical document updates, new product announcements, "how-to" and design documents, product change notices (PCN) and other valuable content available only to registered users. <http://www.silabs.com/profile>

## Qualification Data

See attached.

 <b>EFR32FG23 Qualification Report</b>							
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Part Rev C, TSMC Fabrication							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
<b>Test Group A – Accelerated Environment Stress Tests - 48 QFN SPIL Assembly</b>							
HAST	JA110 130°C, 85%RH Vcc=3.8V, 96 hours	3 lots, N=>25	Q047428	0/28	1	3 lots 0/84	Pass
			Q047330	0/28	1		
			Q047658	0/28	1		
UHAST	JA110 130°C, 85%RH 96 hours	3 lots, N=>25	Q047656	0/30	1	3 lots 0/90	Pass
			Q047107	0/30	1		
			Q047426	0/30	1		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q047427	0/30	1	3 lots 0/90	Pass
			Q047105	0/30	1		
			Q047657	0/30	1		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q047429	0/30	1	3 lots 0/90	Pass
			Q047655	0/30	1		
			Q047115	0/30	1		
<b>Test Group A – Accelerated Environment Stress Tests - 40 QFN SPIL Assembly</b>							
HAST	JA110 130°C, 85%RH Vcc=3.8V, 96 hours	3 lots, N=>25	Q047330	0/28	1	3 lots 0/84	Pass
			Q047428	0/28	1		
			Q047658	0/28	1		
UHAST	JA110 130°C, 85%RH 96 hours	3 lots, N=>25	Q047656	0/30	1	3 lots 0/90	Pass
			Q047426	0/30	1		
			Q047107	0/30	1		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q047657	0/30	1	3 lots 0/90	Pass
			Q047806	0/30	1		
			Q047427	0/30	1		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q047115	0/30	1	3 lots 0/90	Pass
			Q047429	0/30	1		
			Q047655	0/30	1		

EFR32FG23 Qualification Report page 1/4



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Part Rev C, TSMC Fabrication							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
<b>Test Group A – Accelerated Environment Stress Tests - 48 QFN ASECL Assembly</b>							
HAST	JA110 130°C, 85%RH Vcc=3.8V, 96 hours	3 lots, N=>25	Q047586	0/28	1	3 lots 0/83	Pass
			Q047623	0/27	1		
			Q047362	0/28	1		
UHAST	JA110 130°C, 85%RH 96 hours	3 lots, N=>25	Q047584	0/30	1	3 lots 0/90	Pass
			Q047621	0/30	1		
			Q047108	0/30	1		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 Cycles	3 lots, N=>25	Q047106	0/30	1	4 lots 1/120	Pass
			Q047699	0/30	1		
			Q047585	1/30	1, 5		
			Q047622	0/30	1		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q047583	0/30	1	3 lots 0/90	Pass
			Q047620	0/30	1		
			Q047116	0/30	1		
<b>Test Group A – Accelerated Environment Stress Tests - 40 QFN ASECL</b>							
HAST	JA110 130°C, 85%RH Vcc=3.8V, 96 hours	3 lots, N=>25	Q047330	0/28	1	3 lots 0/84	Pass
			Q047658	0/28	1		
			Q047428	0/28	1		
UHAST	JA110 130°C, 85%RH 96 hours	3 lots, N=>25	Q047656	0/30	1	3 lots 0/90	Pass
			Q047426	0/30	1		
			Q047107	0/30	1		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q047657	0/30	1	3 lots 0/90	Pass
			Q047667	0/30	1		
			Q047427	0/30	1		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q047655	0/30	1	3 lots 0/90	Pass
			Q047429	0/30	1		
			Q047115	0/30	1		



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Part Rev C, TSMC Fabrication							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
<b>Test Group B – Accelerated Lifetime Simulation Tests - 48 QFN SPIL Assembly</b>							
HTOL	JA108 T <sub>J</sub> ≥ 125°C, Dynamic V <sub>cc</sub> =3.8V, 1000 hours	3 lots, N=>77	Q047506	0/79		3 lots 0/236	Pass
			Q047202	0/79			
			Q047998	0/78			
HTOL	JA108 T <sub>J</sub> ≥ 125°C, Dynamic V <sub>cc</sub> =3.8V, 100 hours	3 lots, N=>77	Q048111	0/85	2	3 lots 0/255	Pass
			Q048609	0/85	2		
			Q048608	0/85	2		
LTOL	JA108 T <sub>A</sub> = -10°C, Dynamic V <sub>cc</sub> =3.8V, 1000 hours	1 lot, N=>32	Q042871	0/59		1 lot 0/59	Pass
ELFR	JA108 T <sub>J</sub> ≥ 125°C, Dynamic V <sub>cc</sub> =3.8V, 48 hours	3 lots, N=>500	Q047229	0/505		5 lots 0/2504	Pass
			Q048681	0/502			
			Q048537	0/493			
			Q048592	0/501			
			Q047859	0/503			
NVM Endurance and Retention	JESD22-A117 25°C 500 hours	3 lots, N=>39	Q047329	0/40	3	3 lots 0/120	Pass
			Q047522	0/40	3		
			Q047673	0/40	3		
NVM Endurance and Retention	JESD22-A117 + JESD22-A103 150°C, 1000 hours	3 lots, N=>39	Q047787	0/40	4	3 lots 0/120	Pass
			Q047499	0/40	4		
			Q047314	0/40	4		
<b>Test Group E – Electrical Verification</b>							
ESD-HBM	JS-001	1 lot, N=>3	Q047861		6, 8	3000 kV	Class 2
			Q048207		7, 8	2500 kV	Class 2
ESD-CDM	JS-002	1 lot, N=>3	Q048153		8	TC 500	Class C2a
			Q048155		9	TC 500	Class C2a
			Q048523		10	TC 500	Class C2a
			Q048524		11	TC 500	Class C2a
Latch Up	JESD78 ±100mA	1 lot, N=>3	Q047862	25 °C	8		Pass
			Q048206	125 °C	8		



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**Notes:**

1. Parts are Pre-conditioned at MSL2/260°C
2. 20dBm PA HTOL 100% duty cycle; use case duty cycle <10%
3. Preconditioned with 10K write/erase cycles at 25°C
4. Preconditioned with 10K write/erase cycles at 125°C
5. An additional 30 units were stressed from the same assembly lot (Q047699) to reduce the LTPD% below the requirement.
6. HBM ESD results excluding 20dBm pins
7. HBM ESD results for 20dBm pins
8. SPIL 48 QFN 6x6
9. ASECL 40 QFN 5x5
10. ASECL 48 QFN 6x6
11. SPIL 40 QFN 5x5

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

EFR32FG23B020F512IM48-C	EFR32FG23B010F512IM40-C	EFR32FG23A020F512GM40-C
EFR32FG23B020F512IM40-C	EFR32FG23B010F128GM40-C	EFR32FG23A020F256GM48-C
EFR32FG23B020F128GM40-C	EFR32FG23A021F512GM40-C	EFR32FG23A020F256GM40-C
EFR32FG23B010F512IM48-C	EFR32FG23A020F512GM48-C	EFR32FG23A011F512GM40-C
EFR32FG23A010F512GM48-C	EFR32FG23A010F512GM40-C	EFR32FG23A010F256GM48-C
EFR32FG23A010F256GM40-C	EFR32FG23B021F512IM40-C	EFR32FG23B021F512IM48-C



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Part Rev C, TSMC Fabrication							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
<b>Test Group A – Accelerated Environment Stress Tests - 48 QFN SPIL Assembly</b>							
HAST	JA110 130°C, 85%RH Vcc=3.8V, 96 hours	3 lots, N=>25	Q047428	0/28	1	3 lots 0/84	Pass
			Q047330	0/28	1		
			Q047658	0/28	1		
UHAST	JA110 130°C, 85%RH 96 hours	3 lots, N=>25	Q047656	0/30	1	3 lots 0/90	Pass
			Q047107	0/30	1		
			Q047426	0/30	1		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q047427	0/30	1	3 lots 0/90	Pass
			Q047105	0/30	1		
			Q047657	0/30	1		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q047429	0/30	1	3 lots 0/90	Pass
			Q047655	0/30	1		
			Q047115	0/30	1		
<b>Test Group A – Accelerated Environment Stress Tests - 40 QFN SPIL Assembly</b>							
HAST	JA110 130°C, 85%RH Vcc=3.8V, 96 hours	3 lots, N=>25	Q047330	0/28	1	3 lots 0/84	Pass
			Q047428	0/28	1		
			Q047658	0/28	1		
UHAST	JA110 130°C, 85%RH 96 hours	3 lots, N=>25	Q047656	0/30	1	3 lots 0/90	Pass
			Q047426	0/30	1		
			Q047107	0/30	1		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q047657	0/30	1	3 lots 0/90	Pass
			Q047806	0/30	1		
			Q047427	0/30	1		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q047115	0/30	1	3 lots 0/90	Pass
			Q047429	0/30	1		
			Q047655	0/30	1		



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Part Rev C, TSMC Fabrication							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
<b>Test Group A – Accelerated Environment Stress Tests - 48 QFN ASECL Assembly</b>							
HAST	JA110 130°C, 85%RH Vcc=3.8V, 96 hours	3 lots, N=>25	Q047586	0/28	1	3 lots 0/83	Pass
			Q047623	0/27	1		
			Q047362	0/28	1		
UHAST	JA110 130°C, 85%RH 96 hours	3 lots, N=>25	Q047584	0/30	1	3 lots 0/90	Pass
			Q047621	0/30	1		
			Q047108	0/30	1		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 Cycles	3 lots, N=>25	Q047106	0/30	1	4 lots 1/120	Pass
			Q047699	0/30	1		
			Q047585	1/30	1, 5		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q047583	0/30	1	3 lots 0/90	Pass
			Q047620	0/30	1		
			Q047116	0/30	1		
<b>Test Group A – Accelerated Environment Stress Tests - 40 QFN ASECL</b>							
HAST	JA110 130°C, 85%RH Vcc=3.8V, 96 hours	3 lots, N=>25	Q047330	0/28	1	3 lots 0/84	Pass
			Q047658	0/28	1		
			Q047428	0/28	1		
UHAST	JA110 130°C, 85%RH 96 hours	3 lots, N=>25	Q047656	0/30	1	3 lots 0/90	Pass
			Q047426	0/30	1		
			Q047107	0/30	1		
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q047657	0/30	1	3 lots 0/90	Pass
			Q047667	0/30	1		
			Q047427	0/30	1		
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q047655	0/30	1	3 lots 0/90	Pass
			Q047429	0/30	1		
			Q047115	0/30	1		





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Part Rev C, TSMC Fabrication							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
<b>Test Group B – Accelerated Lifetime Simulation Tests - 48 QFN SPIL Assembly</b>							
HTOL	JA108 T <sub>J</sub> ≥ 125°C, Dynamic V <sub>cc</sub> =3.8V, 1000 hours	3 lots, N=>77	Q047506	0/79		3 lots 0/236	Pass
			Q047202	0/79			
			Q047998	0/78			
HTOL	JA108 T <sub>J</sub> ≥ 125°C, Dynamic V <sub>cc</sub> =3.8V, 100 hours	3 lots, N=>77	Q048111	0/85	2	3 lots 0/255	Pass
			Q048609	0/85	2		
			Q048608	0/85	2		
LTOL	JA108 T <sub>A</sub> = -10°C, Dynamic V <sub>cc</sub> =3.8V, 1000 hours	1 lot, N=>32	Q042871	0/59		1 lot 0/59	Pass
ELFR	JA108 T <sub>J</sub> ≥ 125°C, Dynamic V <sub>cc</sub> =3.8V, 48 hours	3 lots, N=>500	Q047229	0/505		5 lots 0/2504	Pass
			Q048681	0/502			
			Q048537	0/493			
			Q048592	0/501			
			Q047859	0/503			
NVM Endurance and Retention	JESD22-A117 25°C 500 hours	3 lots, N=>39	Q047329	0/40	3	3 lots 0/120	Pass
			Q047522	0/40	3		
			Q047673	0/40	3		
NVM Endurance and Retention	JESD22-A117 + JESD22-A103 150°C, 1000 hours	3 lots, N=>39	Q047787	0/40	4	3 lots 0/120	Pass
			Q047499	0/40	4		
			Q047314	0/40	4		
<b>Test Group E – Electrical Verification</b>							
ESD-HBM	JS-001	1 lot, N=>3	Q047861		6, 8	3000 kV 2500 kV	Class 2 Class 2
			Q048207		7, 8		
ESD-CDM	JS-002	1 lot, N=>3	Q048153		8	TC 500 TC 500 TC 500 TC 500	Class C2a Class C2a Class C2a Class C2a
			Q048155		9		
			Q048523		10		
			Q048524		11		
Latch Up	JESD78 ±100mA	1 lot, N=>3	Q047862 Q048206	25 °C 125 °C	8 8		Pass



## EFR32ZG23 Qualification Report

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**Part Rev C, TSMC Fabrication**

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

1. Parts are Pre-conditioned at MSL2/260°C
2. 20dBm PA HTOL 100% duty cycle; use case duty cycle <10%
3. Preconditioned with 10K write/erase cycles at 25°C
4. Preconditioned with 10K write/erase cycles at 125°C
5. An additional 30 units were stressed from the same assembly lot (Q047699) to reduce the LTPD% below the requirement.
6. HBM ESD results excluding 20dBm pins
7. HBM ESD results for 20dBm pins
8. SPIL 48 QFN 6x6
9. ASECL 40 QFN 5x5
10. ASECL 48 QFN 6x6
11. SPIL 40 QFN 5x5

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

EFR32ZG23B021F512IM40-C	EFR32ZG23B010F512IM48-C	EFR32ZG23A010F512GM48-C
EFR32ZG23B020F512IM48-C	EFR32ZG23B010F512IM40-C	EFR32ZG23A010F512GM40-C
EFR32ZG23B020F512IM40-C	EFR32ZG23A020F512GM48-C	
EFR32ZG23B011F512IM40-C	EFR32ZG23A020F512GM40-C	



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