Revision Change Notice #1411261

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PCN Date: 11/26/2014	**Effective Date:** 3/4/2015	
Title: Si7006/7/13/15/20/21/22/23 Transition from A10 to A20		
Originator: Bill Simcoe	**Phone:** 1-512-532-5810	**Dept:** APS Marketing
Customer Contact: Kathy Haggar	**Phone:** 512-532-5261	**Dept:** Sales

PCN Type:

☐ **Datasheet**

☒ **Product Revision**

PCN Details

Description of Change:
Silicon Labs is pleased to announce the successful qualification and availability of Si7006/7/13/15/20/21/22/23-A20 products, which will replace the existing A10 versions. All of the A20 products contain higher final test coverage. In addition, a condition where the Si7006/13/20/21 I2C devices do not fully enter standby mode after a user register write has been fixed.

After the effective date of this PCN, Silicon Labs reserves the right to deliver Si7006/7/13/15/20/21/22/23-A20 for customers ordering Si7006/7/13/15/20/21/22/23-A10.

Reason for Change:
The higher final test coverage reduces potential defect rates, and improves lead times resulting from better manufacturing yields. For Si7006/13/20/21 I2C devices, the current consumption following a user register write has been reduced.

Impact on Form, Fit, Function, Quality, Reliability:
Compared to the previous A10 versions, the Si7006/7/13/15/20/21/22/23-A20 devices are silicon metal revisions that are fully pin-compatible and software-compatible with the previous A10 versions. For Si7006/13/20/21 devices, the supply current after a user register write has been reduced from 20µA(typ) to the normal standby current of 0.06µA(typ). The higher test coverage reduces potential defect rates and improves manufacturing yields. There is no impact to reliability.

Product Identification:

Existing Part Number	Replacement Part Number	Drop in Compatible Indicator
Si7006-A10-IM	Si7006-A20-IM	Yes
Si7006-A10-IMR	Si7006-A20-IMR	Yes
Si7006-A10-IM1	Si7006-A20-IM1	Yes
Si7006-A10-IM1R	Si7006-A20-IM1R	Yes
Si7007-A10-IM	Si7007-A20-IM	Yes
Si7007-A10-IMR	Si7007-A20-IMR	Yes
Si7007-A10-IM1	Si7007-A20-IM1	Yes
Si7007-A10-IM1R	Si7007-A20-IM1R	Yes
Si7013-A10-GM	Si7013-A20-GM	Yes
Si7013-A10-GMR	Si7013-A20-GMR	Yes
Si7013-A10-GM1	Si7013-A20-GM1	Yes
Si7013-A10-GM1R	Si7013-A20-GM1R	Yes
Si7013-A10-IM	Si7013-A20-IM	Yes
Si7013-A10-IMR	Si7013-A20-IMR	Yes
Si7013-A10-IM1	Si7013-A20-IM1	Yes
Si7013-A10-IM1R	Si7013-A20-IM1R	Yes
Si7015-A10-FM	Si7015-A20-FM	Yes
Si7015-A10-FMR	Si7015-A20-FMR	Yes
Si7015-A10-FM1	Si7015-A20-FM1	Yes
Si7015-A10-FM1R	Si7015-A20-FM1R	Yes
Si7015-A10-GM	Si7015-A20-GM	Yes
Si7015-A10-GMR	Si7015-A20-GMR	Yes
Si7015-A10-GM1	Si7015-A20-GM1	Yes
Si7015-A10-GM1R	Si7015-A20-GM1R	Yes
Si7020-A10-GM	Si7020-A20-GM	Yes
Si7020-A10-GMR	Si7020-A20-GMR	Yes
Si7020-A10-GM1	Si7020-A20-GM1	Yes
Si7020-A10-GM1R	Si7020-A20-GM1R	Yes
Si7020-A10-IM	Si7020-A20-IM	Yes
Si7020-A10-IMR	Si7020-A20-IMR	Yes
Si7020-A10-IM1	Si7020-A20-IM1	Yes
Si7020-A10-IM1R	Si7020-A20-IM1R	Yes
Si7021-A10-GM	Si7021-A20-GM	Yes
Si7021-A10-GMR	Si7021-A20-GMR	Yes
Si7021-A10-GM1	Si7021-A20-GM1	Yes
Si7021-A10-GM1R	Si7021-A20-GM1R	Yes
Si7021-A10-IM	Si7021-A20-IM	Yes
Si7021-A10-IMR	Si7021-A20-IMR	Yes
Si7021-A10-IM1	Si7021-A20-IM1	Yes
Si7021-A10-IM1R	Si7021-A20-IM1R	Yes
Si7022-A10-IM	Si7022-A20-IM	Yes
Si7022-A10-IMR	Si7022-A20-IMR	Yes
Si7022-A10-IM1	Si7022-A20-IM1	Yes

Si7022-A10-IM1R	Si7022-A20-IM1R	Yes
Si7023-A10-IM	Si7023-A20-IM	Yes
Si7023-A10-IMR	Si7023-A20-IMR	Yes
Si7023-A10-IM1	Si7023-A20-IM1	Yes
Si7023-A10-IM1R	Si7023-A20-IM1R	Yes

Note: The part numbers above include tape and reel variants which are denoted with an "R" at the end of the orderable part number.

Last Date of Unchanged Product: 3/4/2015

Qualification Samples:

Samples are available now.

Specific conditions of acceptance of this change will be considered on a case by case basis if written notice is submitted within 30 days of this notice. To request further data or inquire about this notification, please contact your local Silicon Labs sales representative. A list of Silicon Labs sales representatives is available at www.silabs.com.

In some cases rejection of a change notice may impact Silicon Labs product pricing, delivery, quality, or reliability.

Customer Early Acceptance Sign Off:

Customers may approve early PCN acceptance by completing the information below:

Early Acceptance: **Date:** _____

Name: _____

Company: _____

Email your early Acceptance approval to: katherine.haggar@silabs.com

Qualification Data:

See Appendix for Qualification

Appendix, ASECL Qualification

Si700x/Si701x/Si702x AEC-Q100 Qualification Report

W7101F1 Product Qualification Plan and Report Rev. E

Part Rev A, TSMC Fabrication, ASECL Assembly except as noted							
Test Name	**Test Condition**	**Qualification**	**Lot ID or Start**	**Fail/Pass or End**	**Notes**	**Summary**	**Status**
Test Group A - Accelerated Environment Stress Tests							
HAST	JA110		Q35916	0/80	1, 2		
	130°C, 85%RH	3 lots, N=>77	Q35917	0/80	1, 2	3 lots	
	Vcc=3.6V, 96 hours		Q35918	0/80	1, 2	0/240	Pass
UHAST	JA110		Q35897	0/79	1, 2		
	130°C, 85%RH	3 lots, N=>77	Q35896	0/80	1, 2	3 lots	
	Vcc=3.6V, 96 hours		Q35894	0/80	1, 2	0/239	Pass
Temp Cycle	JA104		Q35903	0/79	1, 2		
	Cond C: -65°C to 150°C	3 lots, N=>77	Q35900	0/80	1, 2	3 lots	Pass
	500 cycles, Wire pull	Cpk > 1.33	Q35901	0/80	1, 2	0/239	Cpk > 1.33
HTSL	JA103		Q35902	0/50	1, 2		
	150°C, 1000hr	1 lot, N=>45	Q35898	0/49	1, 2	3 lots	
			Q35899	0/50	1, 2	0/149	Pass
Test Group B - Accelerated Lifetime Simulation Tests							
HTOL	JA108		Q34929	0/90	3		
	125°C, Dynamic	3 lots, N=>77	Q34928	0/90	3	3 lots	
	Vcc=3.6V, 1000 hours		Q34007	0/85	3	0/265	Pass
ELFR	AEC-Q100-008		Q35034	0/900	3		
	125°C, Dynamic	3 lots, N=>800	Q34180	0/800	3		
	Vcc=3.6V, 48 hours		Q33873	0/800	3	4 lots	
			Q36470	0/806		0/3306	Pass
Test Group C - Package Assembly Integrity Tests							
Wire Bond Shear	AEC-Q100-001		P3520C570E	0/6	2		
		5 units, N=>30	P3520C560E	0/6	2	3 lots	Pass
		Cpk > 1.33	P3520C550E	0/6	2	0/18	Cpk > 1.33
Wire Bond Pull	MIL-STD-883		P3520C570E	0/6	2		
		5 units, N=>30	P3520C560E	0/6	2	3 lots	Pass
		Cpk > 1.33	P3520C550E	0/6	2	0/18	Cpk > 1.33
Physical Dimensions	JB100		P3520C570E	0/30	2		
		3 lots, N=>10	P3520C560E	0/30	2	3 lots	Pass
		Cpk > 1.33	P3520C550E	0/30	2	0/90	Cpk > 1.33
Solderability	JB102		P3520C570E	0/10	2		
		1 lot, N=>15	P3520C560E	0/10	2	3 lots	
			P3520C550E	0/10	2	0/30	Pass
Test Group E - Electrical Verification							
ESD-HBM	AEC-Q100-002						
		1 lot, N=>3	Q33875		2kV		Pass

Approved by: Noel Arguello 1 of 2 Prepared on: 20-Nov-14

Si700x/Si701x/Si702x AEC-Q100 Qualification Report

W7101F1 Product Qualification Plan and Report Rev. E

Part Rev A, TSMC Fabrication, ASECL Assembly except as noted

Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
ESD-MM	AEC-Q100-003	1 lot, N=>3	Q33876		250V		Pass
ESD-CDM	AEC-Q100-011	1 lot, N=>3	Q36478		1.25kV		Pass
Latch Up	AEC-Q100-004 ±200mA Overvoltage = 5.4V	1 lot, N=>6	Q34161 Q34160	93 C 25 C	2 2		Pass
Gate Leakage	AEC-Q100-006	1 lot, N=>6	Q35092		2		Pass

Notes:
1. Parts are Pre-conditioned at MSL2/260°C
2. Leveraged package family qualification data
3. Leveraged die family qualification data

This report applies to the following part numbers:

Si7006-A20-IM	Si7013-A20-GM	Si7020-A20-GM	Si7021-A20-GM	Si7022-A20-IM
Si7006-A20-IMR	Si7013-A20-GMR	Si7020-A20-GMR	Si7021-A20-GMR	Si7022-A20-IMR
Si7006-A20-IM1	Si7013-A20-GM1	Si7020-A20-GM1	Si7021-A20-GM1	Si7022-A20-IM1
Si7006-A20-IM1R	Si7013-A20-GM1R	Si7020-A20-GM1R	Si7021-A20-GM1R	Si7022-A20-IM1R
Si7007-A20-IM	Si7013-A20-IM	Si7020-A20-IM	Si7021-A20-IM	Si7023-A20-IM
Si7007-A20-IMR	Si7013-A20-IMR	Si7020-A20-IMR	Si7021-A20-IMR	Si7023-A20-IMR
Si7007-A20-IM1	Si7013-A20-IM1	Si7020-A20-IM1	Si7021-A20-IM1	Si7023-A20-IM1
Si7007-A20-IM1R	Si7013-A20-IM1R	Si7020-A20-IM1R	Si7021-A20-IM1R	Si7023-A20-IM1R

Approved by: Noel Arguello 2 of 2 Prepared on: 20-Nov-14

Appendix, Amkor Qualification
Si701x/Si702x AEC-Q100 Qualification Report

W7101F1 Product Qualification Plan and Report Rev. E

Part Rev A, TSMC Fabrication, Amkor Assembly except as noted							
Test Name	**Test Condition**	**Qualification**	**Lot ID or Start**	**Fail/Pass or End**	**Notes**	**Summary**	**Status**
Test Group A - Accelerated Environment Stress Tests							
HAST	JA110		Q35039	0/79	1, 2		
	130°C, 85%RH	3 lots, N=>77	Q34963	0/78	1, 2	3 lots	
	Vcc=3.6V, 96 hours		Q34440	0/79	1, 2	0/236	Pass
UHAST	JA110		Q34430	0/78	1, 2		
	130°C, 85%RH	3 lots, N=>77	Q34964	0/77	1, 2	3 lots	
	Vcc=3.6V, 96 hours		Q35040	0/78	1, 2	0/233	Pass
Temp Cycle	JA104		Q35038	0/80	1, 2		
	Cond C: -65°C to 150°C	3 lots, N=>77	Q34917	0/80	1, 2	3 lots	Pass
	500 cycles, Wire pull	Cpk > 1.33	Q34431	0/80	1, 2	0/240	Cpk > 1.33
HTSL	JA103		Q34843	0/50	1, 2		
	150°C, 1000hr	1 lot, N=>45	Q34842	0/49	1, 2	3 lots	
			Q34080	0/46	1, 2	0/145	Pass
Test Group B - Accelerated Lifetime Simulation Tests							
HTOL	JA108		Q34929	0/90	3		
	125°C, Dynamic	3 lots, N=>77	Q34928	0/90	3	3 lots	
	Vcc=3.6V, 1000 hours		Q34007	0/85	3	0/265	Pass
ELFR	AEC-Q100-008		Q35034	0/900	3		
	125°C, Dynamic	3 lots, N=>800	Q34180	0/800	3		
	Vcc=3.6V, 48 hours		Q33873	0/800	3	4 lots	
			Q36470	0/806		0/3306	Pass
Test Group C - Package Assembly Integrity Tests							
Wire Bond Shear	AEC-Q100-001		405B0209	0/6	2		
		5 units, N=>30	405B0215	0/6	2	3 lots	Pass
		Cpk > 1.33	405B0223	0/6	2	0/18	Cpk > 1.33
Wire Bond Pull	MIL-STD-883		405B0209	0/6	2		
		5 units, N=>30	405B0215	0/6	2	3 lots	Pass
		Cpk > 1.33	405B0223	0/6	2	0/18	Cpk > 1.33
Physical Dimensions	JB100		405B0209	0/30	2		
		3 lots, N=>10	405B0215	0/30	2	3 lots	Pass
		Cpk > 1.33	405B0223	0/30	2	0/90	Cpk > 1.33
Solderability	JB102		405B0209	0/10	2		
		1 lot, N=>15	405B0215	0/10	2	3 lots	
			405B0223	0/10	2	0/30	Pass

Approved by: Noel Arguello 1 of 2 Prepared on: 20-Nov-14

Si701x/Si702x AEC-Q100 Qualification Report

W7101F1 Product Qualification Plan and Report Rev. E

Part Rev A, TSMC Fabrication, Amkor Assembly except as noted

Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
Test Group E - Electrical Verification							
ESD-HBM	AEC-Q100-002	1 lot, N=>3	Q33875		2kV		Pass
ESD-MM	AEC-Q100-003	1 lot, N=>3	Q33876		250V		Pass
ESD-CDM	AEC-Q100-011	1 lot, N=>3	Q36479		1.25kV		Pass
Latch Up	AEC-Q100-004 ±200mA Overvoltage = 5.4V	1 lot, N=>6	Q34161 Q34160	93 C 25 C			Pass
Gate Leakage	AEC-Q100-006	1 lot, N=>6	Q35092				Pass

Notes:
1. Parts are Pre-conditioned at MSL2/260°C
2. Leveraged package family qualification data
3. Leveraged die family qualification data

This report applies to the following part numbers:

SI7013-A20-GM	SI7013-A20-YMD	SI7015-A20-GM1	SI7020-A20-YM	SI7021-A20-IM
SI7013-A20-GM1	SI7013-A20-YM1	SI7020-A20-GM	SI7020-A20-YMD	SI7021-A20-IM1
SI7013-A20-IM	SI7015-A20-FM	SI7020-A20-GM1	SI7020-A20-YM1	SI7021-A20-YM
SI7013-A20-IM1	SI7015-A20-FM1	SI7020-A20-IM	SI7021-A20-GM	SI7021-A20-YMD
SI7013-A20-YM	SI7015-A20-GM	SI7020-A20-IM1	SI7021-A20-GM1	SI7021-A20-YM1
Si7006-A20-IM	Si7006-A20-IM1	Si7007-A20-IM	Si7007-A20-IM1	Si7022-A20-IM
Si7022-A20-IM1	Si7022-A20-YMD	Si7022-A20-YM1	Si7023-A20-IM	Si7023-A20-IM1
Si7023-A20-YMD	Si7023-A20-YM1			

Approved by: Noel Arguello

Prepared on: 20-Nov-14

