



Process Change Notice #1608081

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PCN Date: 8/8/2016	Effective Date: 11/14/2016	
Title: New Metal Lid Surface Finish for Si5xx XO/VCXO CLCC Packages		
PCN Type:		
<input type="checkbox"/> Datasheet	<input type="checkbox"/> Foundry	<input type="checkbox"/> Packing
<input type="checkbox"/> Product Revision	<input checked="" type="checkbox"/> Assembly	<input type="checkbox"/> Labeling
<input type="checkbox"/> Discontinuance	<input type="checkbox"/> Test	<input type="checkbox"/> Other
Last Order Date: Not Applicable		
PCN Details		
Description of Change:		
Silicon Labs is pleased to announce the successful qualification of a new metal lid that enhances the quality of the seam welding process used on all Si5xx XO/VCXO products.		
Upon the effective date of this PCN, Silicon Labs will begin shipping the new lid. The older lid will be phased out as the supply chain transitions to the new lid.		
Reason for Change:		
Supplier-recommended process improvement to enhance quality of seam welding process.		
Impact on Form, Fit, Function, Quality, Reliability:		
The new metal lid uses electroplated Nickel which enhances the quality of the seam welding process. There is a slight impact to form, with the lid surface finish changing from bright surface to matte surface. There is no impact on Fit or Function. Please refer to Appendix A, B and C for a metal lid comparison and qualification report.		



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Product Identification:

Impacted part numbers are listed below where 'x' represents a customizable part number:

PKG	Silicon Labs OPN
CLCC 5X3.2	51xxxxxxxxxBAG
	51xxxxxxxxxBAGR
	51xxxxxxxxxBAG
	51xxxxxxxxxBAGR
CLCC 5X7	51xxxxxxxxxAAG
	51xxxxxxxxxAAGR
	51xxxxxxxxxAAG
	51xxxxxxxxxAAGR
	53xxxxxxxxxDG
	53xxxxxxxxxDGR
	53xxxxxxxxxDG
	53xxxxxxxxxDGR
	55xxxxxxxxxDG
	55xxxxxxxxxDGR
	55xxxxxxxxxDG
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	57xxxxxxxxxDG
	57xxxxxxxxxDGR
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Last Date of Unchanged Product: 11/14/2016

Qualification Samples:

Samples available upon request. Please see your Silicon Labs sales representative to order samples.

Appendix A (Qualification Report)

510-516 5x7 mm Qualification Report



W7101F1 Product Qualification Plan and Report Rev. D

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Part Si5306 Rev A, TSMC Fab 6 Fabrication							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
Test Group A - Accelerated Environment Stress Tests							
Temp Cycle	JA104	3 lots, N=>25	Q39310	0/27	1	3 lots	Pass
	Cond B: -55°C to 125°C		Q39311	0/26	1		
	700 cycles		Q39312	0/27	1		
UHASt	JA110	3 lots, N=>25	Q39335	0/27	1	3 lots	Pass
	130°C, 85%RH		Q39334	0/25	1		
	96 hours		Q39333	0/26	1		
HTSL	JA103	3 lots, N=>25	Q29744	0/25	2	3 lots	Pass
	125°C, 1000hr		Q30293	0/25	2		
			Q31405	0/25	2		
Test Group B - Accelerated Lifetime Simulation Tests							
HTOL	JA108	3 lots, N=>77	Q31047	0/80	3	3 lots	Pass
	125°C, Dynamic		Q31553	0/80	3		
	Vcc=3.6V, 1000 hours		Q30295	0/80	3		
ELFR	JA108	3 lots, N=>500	Q29726	0/510	3	3 lots	Pass
	125°C, Dynamic		Q31048	0/510	3		
	Vcc=3.6V, 48 hours		Q31554	0/510	3		
Test Group C - Package Assembly Integrity Tests							
Wire Bond Shear	JB116	5 units, N=>30	515710.1	0/5	2	3 lots	Pass
			515706.1	0/5	2		
			497808.1	0/5	2		
Wire Bond Pull	W2011	5 units, N=>30	515710.1	0/5	2	3 lots	Pass
			515706.1	0/5	2		
			497808.1	0/5	2		
Mechanical Shock	JESD22-B104, Cond. B	3 lots, N=>45	Q29746	0/39	2	3 lots	Pass
			Q30285	0/45	2		
			Q31404	0/45	2		
Mechanical Vibration	JESD22-B103, Cond. 1	3 lots, N=>45	Q29988	0/45	2	3 lots	Pass
			Q30388	0/45	2		
			Q31537	0/45	2		
Internal Water Vapor	Residual Gas Analysis	3 lots, N=1	Q29927	0/3	2	3 lots	Pass
			Q31046	0/3	2		
			Q31552	0/3	2		
Damp Heat	IEC 68-2-3	1 lot, N=>35	Q29926	0/35	2		Pass

Approved by: Noel Arguello

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Prepared on: 03-Jun-16



510-516 5x7 mm Qualification Report



W7101F1 Product Qualification Plan and Report Rev. D

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Part Si5306 Rev A, TSMC Fab 6 Fabrication							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
Test Group E - Electrical Verification							
ESD-HBM	JA114	1 lot, N=>3	Q29444		3		2.5 kV
ESD-AWM	JA115	1 lot, N=>3	Q29443		3		250 V
ESD-CDM	JC101	1 lot, N=>3	Q29923		3		1500 V
Latch Up	JESD78 ±200m A Overvoltage = 5.445V	1 lot, N=>6	Q29924 Q29925	85 C 25 C	3 3		Pass

Notes:

1. Parts are Pre-conditioned at MSL1/260°C
2. Leveraged package family qualification data
3. Leveraged die family qualification data

Qualification Family Part Numbers				
Si510	Si511	Si512	Si513	Si514
Si515	Si516			

Approved by: Noel Arguello

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Prepared on: 03-Jun-16

510-516 3.2x5 mm Qualification Report



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Part Si5306 Rev A, TSMC Fab 6 Fabrication								
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status	
Test Group A - Accelerated Environment Stress Tests								
Temp Cycle	JA104	3 lots, N=>25	Q39313	0/27	1	3 lots	Pass	
	Cond C: -55°C to 125°C		Q39314	0/27	1			
	700 cycles		Q39315	0/27	1			0/81
UHAST	JA110	3 lots, N=>25	Q39332	0/32	1	3 lots	Pass	
	130°C, 85%RH		Q39331	0/27	1			0/86
	96 hours		Q39330	0/27	1			
HTSL	JA103	3 lots, N=>25	Q31731	0/25	2	3 lots	Pass	
	125°C, 1000hr		Q30500	0/25	2			0/75
			Q31257	0/25	2			
Test Group B - Accelerated Lifetime Simulation Tests								
HTOL	JA108	3 lots, N=>77	Q31047	0/80	3	3 lots	Pass	
	125°C, Dynamic		Q31553	0/80	3			0/240
	Vcc=3.6V, 1000 hours		Q30295	0/80	3			
ELFR	JA108	3 lots, N=>500	Q29726	0/510	3	3 lots	Pass	
	125°C, Dynamic		Q31048	0/510	3			0/1530
	Vcc=3.6V, 48 hours		Q31554	0/510	3			
Test Group C - Package Assembly Integrity Tests								
Wire Bond Shear	JB116	5 units, N=>30	515710.1	0/5	2	3 lots	Pass	
			515706.1	0/5	2			0/15
			497808.1	0/5	2			
Wire Bond Pull	W2011	5 units, N=>30	515710.1	0/5	2	3 lots	Pass	
			515706.1	0/5	2			0/15
			497808.1	0/5	2			
Mechanical Shock	JESD22-B104, Cond. B	3 lots, N=>45	Q31729	0/45	2	3 lots	Pass	
			Q30499	0/45	2			0/135
			Q31256	0/45	2			
Mechanical Vibration	JESD22-B103, Cond. 1	3 lots, N=>45	Q31879	0/45	2	3 lots	Pass	
			Q30544	0/45	2			0/135
			Q31324	0/45	2			
Internal Water Vapor	Residual Gas Analysis	3 lots, N=1	Q31723	0/3	2	3 lots	Pass	
			Q31801	0/3	2			0/9
			Q31800	0/3	2			
Damp Heat	IEC 68-2-3	1 lot, N=>35	Q31733	0/35	2		Pass	

Approved by: Noel Arguello

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Prepared on: 03-Jun-16

510-516 3.2x5 mm Qualification Report



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Part Si5306 Rev A, TSMC Fab 6 Fabrication							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
Test Group E - Electrical Verification							
ESD-HBM	JA114	1 lot, N=>3	Q29444		3		2.5 kV
ESD-MM	JA115	1 lot, N=>3	Q29443		3		250 V
ESD-CDM	JC101	1 lot, N=>3	Q31732		3		1000 V
Latch Up	JESD78 ±200 mA Overvoltage = 5.445V	1 lot, N=>6	Q29924	85 C	3		Pass
			Q29925	25 C	3		

Notes:

1. Parts are Pre-conditioned at MSL1/260°C
2. Leveraged package family qualification data
3. Leveraged die family qualification data

Qualification Family Part Numbers				
Si510	Si511	Si512	Si513	Si514
Si515	Si516			

Approved by: Noel Arguello

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Prepared on: 03-Jun-16

5XX Hybrid Oscillator Qualification Report



W7101F1 - Product Qualification Report Record Rev. H

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Part Rev D, TSMC Fabrication, Siward 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							
Temp Cycle	JA104 Cond B: -55°C to 125°C 700 cycles	3 lots, N=>77	Q039310	0/27	2	3 lots 0/80	Pass
			Q039311	0/26	2		
			Q039312	0/27	2		
UHAST	JA110 130°C, 85%RH 96 hours	3 lots, N=>25	Q039335	0/27	2	3 lots 0/78	Pass
			Q039334	0/25	2		
			Q039333	0/26	2		
HTSL	JA103 125°C, 1000hr	1 lot, N=>45	Q027809	0/25		3 lots 0/80	Pass
			Q027810	0/30			
			Q027811	0/25			
Test Group B – Accelerated Lifetime Simulation Tests							
HTOL	JA108 T _J ≥ 125°C, Dynamic V _{CC} =3.6V, 1000 hours	3 lots, N=>77	Q024624	0/80	1	3 lots 0/240	Pass
			Q024672	0/80	1		
			Q026037	0/80	1		
ELFR	JA108 T _J ≥ 125°C, Dynamic V _{CC} =3.6V, 48 hours	3 lots, N=>500	Q024520	0/402	1	3 lots 0/1419	Pass
			Q024548	0/512	1		
			Q025680	0/505	1		
Test Group C – Package Assembly Integrity Tests							
Mechanical Shock	JESD22-B104, Cond. B (1500g)	3 lots, N=>45	Q027817	0/45		3 lots 0/135	Pass
			Q028024	0/45			
			Q028026	0/45			
Mechanical Vibration	JESD22-B103, Cond. 1	3 lots, N=>45	Q027817	0/45		3 lots 0/135	Pass
			Q028025	0/45			
			Q028024	0/45			
Internal Water Vapor	Residual Gas Analysis	3 lots, N=1	Q027819	0/1		3 lots 0/3	Pass
			Q027819	0/1			
			Q027819	0/1			
Damp Heat	IEC 68-2-3	1 lot, N=>35	Q027814	0/35		1 lots 0/35	Pass
Resistance to Solder Heat	MIL-STD-883, Method 2036, Cond B	1 lot, N=>35	Q027980	0/35		1 lots 0/35	Pass
Solderability	JB102	1 lot, N=>15	Q027849	0/15		1 lots 0/15	Pass

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5XX Hybrid Oscillator Qualification Report



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Part Rev D, TSMC Fabrication, Siward 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	JA114	1 lot, N=>3	Q024784		1		Class 2
ESD-CDM	JC101	1 lot, N=>3	Q027896				Class C2
Latch Up	JESD78 ±200mA Overvoltage = 5.4V	1 lot, N=>6	Q024740	70 °C	1		Pass

Notes:

1. Leveraged die qualification family
2. Leveraged package qualification family

This report applies to the following part numbers:				
Si520	Si530	Si531	Si532	Si533
Si534	Si535	Si536	Si550	Si552
Si554	Si570	Si571	Si590	Si591
Si595	Si596	Si597	Si598	Si599

Appendix B (Metal Lid Comparison for 5x3.2)



Process Change Notice #1608081

Item	Current lid	New lid	Comparison remark
Vendor	Wanotec	Kostec	Qualified supplier
Length	4.40+/-0.03 mm	4.40+/-0.03 mm	No change to POD
Width	2.60+/-0.03 mm	2.60+/-0.03 mm	No change to POD
Lid thickness	0.07+/-0.015 mm	0.07+/-0.02 mm	No change to POD
Surface finishing	Bright	Matte	Form changed

Appendix C (Metal Lid Comparison for 7x5)

Item	Current lid	New lid	Comparison remark
Vendor	Kostec	Wanotec	Qualified supplier
Length	6.20+/-0.03 mm	6.20+/-0.05 mm	No change to POD
Width	4.40+/-0.03 mm	4.40+/-0.05 mm	No change to POD
Lid thickness	0.10+/-0.02 mm	0.10+/-0.03 mm	No change to POD
Surface finishing	Bright	Matte	Form changed