

PCN #: 1345  
 DATE: 10/11/13  
 PROPOSED SHIP DATE: 10/11/13



**Quality Assurance**  
 160 Rio Robles  
 San Jose, CA 95134

**PROCESS CHANGE NOTICE**

**PRODUCT CHANGE NOTICE**

**MAXIM** HEREBY ISSUES NOTIFICATION OF CHANGE  
 THAT MAY AFFECT THE FOLLOWING CATEGORIES:

<input type="checkbox"/> DESIGN	<input type="checkbox"/> WAFER FAB	<input checked="" type="checkbox"/> ASSEMBLY	<input type="checkbox"/> TEST	<input type="checkbox"/> ELEC/MECH SPECS
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**AFFECTED PRODUCT:**

**Ordering P/N:** ( See PN listing XLS in PCN Zip file)

<b>CHANGE FROM:</b> All 3x3 to 7x7mm QFN packages with S18 fab process die assembled at UTL with 1.0 mil Au bond wire.	<b>CHANGE TO:</b> All 3x3 to 7x7mm QFN packages with S18 fab process die assembled at UTL to use 1.0 mil Pd coated Cu bond wire.
<b>JUSTIFICATION:</b> Changing to copper wire for the assembly process. Please see the three attached reliability reports that qualify all of these 3x3 to 7x7 QFN packages. Reliability reports R26451CQ (3x3), R26434CQ (5x5) and R26218CQ (7x7).	
<b>TRACEABILITY:</b> MAXIM maintains full traceability by device marking.	

Maxim's Change Notification System is designed to keep our customer base apprised of major product, manufacturing, or facility improvements.

Deborah Meeker / PCN Coordinator

For further Information, please contact either of the people listed below.

**Contact your local Maxim Company Representative** or Deborah Meeker. PCN Coordinator

408-601-5618 / [pcn.coordinator@maxim-ic.com](mailto:pcn.coordinator@maxim-ic.com)

	<b>TITLE: Notification Only PCN</b>		
<b>Confidential</b>	<b>DOCUMENT I.D.</b> 18-0182	<b>REVISION</b> J	<b>PAGE 1</b>

Qualification  
 Evaluation

Report#: R26218CQ  
Date: 8/1//2013

## MAXIM RELIABILITY CONDITIONAL QUALIFICATION REPORT

### SUBJECT

UTL (Thailand) 48L (7x7x0.8 mm) TQFN, Pd Coated Cu-Wire (1.0 mil) Lead-Free Package Qualification.

### PURPOSE

Qualify assembler UTL (Thailand) to build 48L (7x7x0.8 mm) TQFN lead-free package with Sumitomo G770HCD molding compound, 100% matte tin plate finish, copper alloy leadframe, conductive die attach from vendor Ablestik (AB8200T) and 1.0 mil diameter Pd coated copper bond wire. MAX9695ETM+ in 48L (7x7x0.8 mm) TQFN package with 1 down bond was used as a test vehicle.

### CONCLUSION

All qualification lots have passed Maxim conditional qualification requirements. In addition, the package has completed moisture soak level 1 testing per JEDEC J-STD-020D, and solder reflow test at 260°C peak temperature (Tp). Therefore, assembler UTL (Thailand) is conditionally qualified to build 48L (7x7x0.8 mm) TQFN lead-free package with 1.0 mil Pd coated copper wire.

### SAMPLE DESCRIPTIONS

REL#	DEVICE	DIE TYP	PACKAGE	PROCESS	LOT#	TOP MARK	DATE CODE
R26218A	MAX9695ETM+	DV28	48L (7x7x0.8 mm) TQFN 1.0 mil Cu Wire T4877+4	S18UM3	SJ9ZHA044Q1	Q1	1217
R26218B	MAX9695ETM+	DV28	48L (7x7x0.8 mm) TQFN 1.0 mil Cu Wire T4877+4	S18UM3	SJ9ZHA044Q2	Q2	1217
R26218C	MAX9695ETM+	DV28	48L (7x7x0.8 mm) TQFN 1.0 mil Cu Wire T4877+4	S18UM3	SJ9ZHA044Q3	Q3	1217
R26218D	MAX9695ETM+	DV28	48L (7x7x0.8 mm) TQFN 1.0 mil Au Wire T4877+4	S18UM3	SJ9ZHA044C (Control Lot)	BT+	1219

### TEST RESULT

See attached spreadsheet for details.

 Faisal Amin AMTS, Reliability Engineer	 Alex Arreola PMTS, Reliability Engineer	 Ping Lin Director, Reliability
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## DISCUSSION

### I. Conditional Qualification Requirements/Acceptance Criteria

The reliability test requirements and acceptance criteria are defined as follow:

Stress Test	Test Condition	Sampling Plan
Life Test	135°C junction, 500 hours	0/45
Convection Solder Reflow *1	260°(+0/-5)C, 3X	0/1000
Temperature Cycle *2	-65°C to +150°C, 500 cycles	0/77
High Temperature Storage *2	150°C, 500 hours	0/77
HAST *2	130°C/85% R.H., 100 hours, with bias	0/45
U-HAST (information only) *2	130°C/85% R.H., 500 hours, non-bias	0/77
Wire Bond Pull	5 grams minimum	0/200 wires
Bond Crater *2	Per specification	0/20

Note: \*1 – Level 1 soak (85°C/85%R.H. for 168hrs) is used as preconditioning.

\*2 – Convection solder reflow at 260°C Tp. is used as preconditioning.

### II. Conditional Qualification Test Results

The tests in item I (Conditional Qualification Requirements/Acceptance Criteria) were implemented on all qualification lots. All lots in 48L (7x7x0.8 mm) TQFN package with Pd coated copper wire have passed Maxim conditional reliability requirements as well as JEDEC J-STD-020D moisture sensitivity level 1 requirements with zero failures.

## SUMMARY

All qualification lots assembled at UTL (Thailand) have shown good reliability performance. Therefore, assembler UTL (Thailand) is conditionally qualified to build 48L (7x7x0.8 mm) TQFN lead- free package with 1.0 mil Pd coated copper wire.

**TEST RESULTS/ LOT INFORMATION:**

TEST	REL#: R26218A	REL#: R26218B	REL#: R26218C	REL#: R26218D
	DEVICE: MAX9695ETM+	DEVICE: MAX9695ETM+	DEVICE: MAX9695ETM+	DEVICE: MAX9695ETM+
	DIE: DV28Y	DIE: DV28Y	DIE: DV28Y	DIE: DV28Y
	LOT#: SJ9ZHA044Q1 (Cu Wire)	LOT#: SJ9ZHA044Q2 (Cu Wire)	LOT#: SJ9ZHA044Q3 (Cu Wire)	LOT#: SJ9ZHA044C (Au Wire- Control Lot)
	D/C: 1217	D/C:1217	D/C: 1217	D/C:1219
LIFE TEST	500 HRS – 0/45			
CONVECTION REFLOW *1	0/1000	0/1000	0/1000	0/1000
TEMP CYCLE *2	500X - 0/77 1000X-0/77	500X - 0/77 1000X-0/77	500X - 0/77 1000X-0/77	500X - 0/77 1000X-0/77
HIGH TEMP STORAGE *2	500 HRS - 0/77 1000HRS-0/77			
HAST (Biased) *2	100 HRS - 0/45			
UHAST (Un-Biased) *2	500 HRS - 0/77			
WIRE BOND PULL	0/200 wires	0/200 wires	0/200 wires	0/200 wires
BOND CRATER *2	0/20	0/20	0/20	0/20

Note: \*1 – Level 1 soak (85°C/85%R.H. for 168hrs) is used as preconditioning.

\*2 – Convection solder reflow at 260°C Tp. is used as preconditioning.

Qualification  
 Evaluation

Report#: R26434CQ  
Date: 7/25/2013

## MAXIM RELIABILITY CONDITIONAL QUALIFICATION REPORT

### SUBJECT

UTL (Thailand) 40L (5x5x0.8 mm) TQFN-EP, Pd Coated 1.0 mil Cu-Wire, Lead-Free Package Qualification.

### PURPOSE

Qualify assembler UTL (Thailand) to build 40L (5x5x0.8 mm) TQFN-EP lead-free package with Sumitomo G770HCD molding compound, 100% matte tin plate finish, copper alloy leadframe, conductive die attach from vendor Ablestik (AB8200T) and 1.0 mil diameter Pd coated copper bond wire. MAX15511GTL+ in 40L (5x5x0.8 mm) TQFN-EP package was used as a test vehicle.

### CONCLUSION

All qualification lots have passed Maxim conditional qualification requirements. In addition, the package has completed moisture soak level 1 testing per JEDEC J-STD-020D, and solder reflow test at 260°C peak temperature (Tp). Therefore, assembler UTL (Thailand) is conditionally qualified to build 40L (5x5x0.8 mm) TQFN-EP lead-free package with 1.0 mil Pd coated copper wire.

### SAMPLE DESCRIPTIONS

REL#	DEVICE	DIE TYPE	PACKAGE	PROCESS	LOT#	TOP MARK	DATE CODE
R26434A	MAX15511GTL+	PE54Z-11Z	40L (5x5x0.8 mm) TQFN-EP 1.0 mil Cu Wire T4055+2	S18UM4	S23YHA555Q1	Q1	1245
R26434B	MAX15511GTL+	PE54Z-11Z	40L (5x5x0.8 mm) TQFN-EP 1.0 mil Cu Wire T4055+2	S18UM4	S23YHA555Q2	Q2	1245
R26434C	MAX15511GTL+	PE54Z-11Z	40L (5x5x0.8 mm) TQFN-EP 1.0 mil Cu Wire T4055+2	S18UM4	S23YHA555Q3	Q3	1245
R26434D	MAX15511GTL+	PE54Z-11Z	40L (5x5x0.8 mm) TQFN-EP 1.0 mil Au Wire T4055+2	S18UM4	S23YHA555Q4 (Control Lot)	Q4	1245

### TEST RESULT

See attached spreadsheet for details.

 Faisal Amin AMTS, Reliability Engineer	 Alex Arreola PMTS, Reliability Engineer	 Ping Lin Director, Reliability
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## DISCUSSION

### I. Conditional Qualification Requirements/Acceptance Criteria

The reliability test requirements and acceptance criteria are defined as follow:

Stress Test	Test Condition	Sampling Plan
Life Test	135°C junction, 500 hours	0/45
Convection Solder Reflow *1	260°(+0/-5)C, 3X	0/250
Temperature Cycle *2	-65°C to +150°C, 500 cycles	0/77
High Temperature Storage *2	150°C, 500 hours	0/77
HAST*2	130°C/85% R.H., 100 hours, with bias	0/45
U-HAST (information only) *2	130°C/85% R.H., 300 hours, non-bias	0/77
Wire Bond Pull	5 grams minimum	0/200 wires
Bond Crater *2	Per specification	0/20

Note: \*1 – Level 1 soak (85°C/85%R.H. for 168hrs) is used as preconditioning.

\*2 – Convection solder reflow at 260°C Tp. is used as preconditioning.

### II. Conditional Qualification Test Results

The tests in item I (Conditional Qualification Requirements/Acceptance Criteria) were implemented on all qualification lots. All lots in 40L (5x5x0.8 mm) TQFN-EP package with Pd coated copper wire have passed Maxim conditional reliability requirements as well as JEDEC J-STD-020D moisture sensitivity level 1 requirements with zero failures.

## SUMMARY

All qualification lots assembled at UTL (Thailand) have shown good reliability performance. Therefore, assembler UTL (Thailand) is conditionally qualified to build 40L (5x5x0.8 mm) TQFN-EP lead- free package with 1.0 mil Pd coated copper wire.

**TEST RESULTS/ LOT INFORMATION:**

TEST	REL#: R26434A	REL#: R26434B	REL#: R26434C	REL#: R26434D
	DEVICE: MAX15511GTL+	DEVICE: MAX15511GTL+	DEVICE: MAX15511GTL+	DEVICE: MAX15511GTL+
	DIE: PE54Z-11Z	DIE: PE54Z-11Z	DIE: PE54Z-11Z	DIE: PE54Z-11Z
	LOT#: S23YHA555Q1 (Cu Wire )	LOT#: S23YHA555Q2 (Cu Wire )	LOT#: S23YHA555Q3 (Cu Wire )	LOT#: S23YHA555Q4 (Au Wire- Control Lot)
	D/C: 1245	D/C:1245	D/C: 1245	D/C:1245
LIFE TEST	500 HRS – 0/45			
CONVECTION REFLOW *1	0/400	0/400	0/400	0/400
TEMP CYCLE *2	500X - 0/77 1000X-0/77	500X - 0/77 1000X-0/77	500X - 0/77 1000X-0/77	500X - 0/77 1000X-0/77
HIGH TEMP STORAGE *2	500 HRS - 0/77 1000HRS-0/77			
HAST (Biased) *2	100 HRS - 0/45	100 HRS - 0/45	100 HRS - 0/45	-
UHAST (Un-Biased) *2	500 HRS - 0/77			
WIRE BOND PULL	0/200 wires	0/200 wires	0/200 wires	0/200 wires
BOND CRATER *2	0/20	0/20	0/20	0/20

Note: \*1 – Level 1 soak (85°C/85%R.H. for 168hrs) is used as preconditioning.  
 \*2 – Convection solder reflow at 260°C Tp. is used as preconditioning.

Qualification  
 Evaluation

Report#: R26451CQ  
Date: 7/26/2013

## MAXIM RELIABILITY CONDITIONAL QUALIFICATION REPORT

### SUBJECT

UTL (Thailand) 8L (3x3x0.8 mm) TQFN, Pd Coated 1.0 mil Cu-Wire, Lead-Free Package Qualification.

### PURPOSE

Qualify assembler UTL (Thailand) to build 8L (3x3x0.8 mm) TQFN lead-free package with Sumitomo G770HCD molding compound, 100% matte tin plate finish, copper alloy leadframe, conductive die attach from vendor Ablestik (AB8200T) and 1.0 mil diameter Pd coated copper bond wire. MAX17491GTA+T in 8L (3x3x0.8 mm) TQFN package was used as a test vehicle.

### CONCLUSION

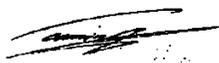
All qualification lots have passed Maxim conditional qualification requirements. In addition, the package has completed moisture soak level 1 testing per JEDEC J-STD-020D, and solder reflow test at 260°C peak temperature (Tp). Therefore, assembler UTL (Thailand) is conditionally qualified to build 8L (3x3x0.8 mm) TQFN lead-free package with 1.0 mil Pd coated copper wire.

### SAMPLE DESCRIPTIONS

REL#	DEVICE	DIE TYP	PACKAGE	PROCESS	LOT#	TOP MARK	DATE CODE
R26451A	MAX17491GTA+T	PE53Y	8L (3x3x0.8 mm) TQFN 1.0 mil Cu Wire TQ833+1	S18UM3	SZGZKA026SA	Q1	1248
R26451B	MAX17491GTA+T	PE53Y	8L (3x3x0.8 mm) TQFN 1.0 mil Cu Wire TQ833+1	S18UM3	SZGZKA026SB	Q2	1248
R26451C	MAX17491GTA+T	PE53Y	8L (3x3x0.8 mm) TQFN 1.0 mil Cu Wire TQ833+1	S18UM3	SZGZKA026SC	Q3	1248
R26451D	MAX17491GTA+T	PE53Y	8L (3x3x0.8 mm) TQFN 1.0 mil Au Wire TQ833+1	S18UM3	SZGZKA026SD (Control Lot)	Q4	1248

### TEST RESULT

See attached spreadsheet for details.

 Faisal Amin AMTS, Reliability Engineer	 Alex Arreola PMTS, Reliability Engineer	 Ping Lin Director, Reliability
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## DISCUSSION

### I. Conditional Qualification Requirements/Acceptance Criteria

The reliability test requirements and acceptance criteria are defined as follow:

Stress Test	Test Condition	Sampling Plan
Life Test	135°C junction, 500 hours	0/45
Convection Solder Reflow *1	260°(+0/-5)C, 3X	0/250
Temperature Cycle *2	-65°C to +150°C, 500 cycles	0/77
High Temperature Storage *2	150°C, 500 hours	0/77
HAST *2	130°C/85% R.H., 100 hours, with bias	0/45
U-HAST (information only) *2	130°C/85% R.H., 300 hours, non-bias	0/77
Wire Bond Pull	5 grams minimum	0/200 wires
Bond Crater *2	Per specification	0/20

Note: \*1 – Level 1 soak (85°C/85%R.H. for 168hrs) is used as preconditioning.

\*2 – Convection solder reflow at 260°C Tp. is used as preconditioning.

### II. Conditional Qualification Test Results

The tests in item I (Conditional Qualification Requirements/Acceptance Criteria) were implemented on all qualification lots. All lots in 8L (3x3x0.8 mm) TQFN package with Pd coated copper wire have passed Maxim conditional reliability requirements as well as JEDEC J-STD-020D moisture sensitivity level 1 requirements with zero failures.

## SUMMARY

All qualification lots assembled at UTL (Thailand) have shown good reliability performance. Therefore, assembler UTL (Thailand) is conditionally qualified to build 8L (3x3x0.8 mm) TQFN lead- free package with 1.0 mil Pd coated copper wire.

**TEST RESULTS/ LOT INFORMATION:**

TEST	REL#: R26451A	REL#: R26451B	REL#: R26451C	REL#: R26451D
	DEVICE: MAX17491GTA+T	DEVICE: MAX17491GTA+T	DEVICE: MAX17491GTA+T	DEVICE: MAX17491GTA+T
	DIE: PE53Y	DIE: PE53Y	DIE: PE53Y	DIE: PE53Y
	LOT#: SZGZKA026SA (Cu Wire)	LOT#: SZGZKA026SB (Cu Wire)	LOT#: SZGZKA026SC (Cu Wire)	LOT#: SZGZKA026SD (Au Wire- Control Lot)
	D/C: 1245	D/C:1245	D/C: 1245	D/C:1245
LIFE TEST	500 HRS – 0/45			
CONVECTION REFLOW *1	0/1000	0/1000	0/400	0/400
TEMP CYCLE *2	500X - 0/77 1000X-0/77	500X - 0/77 1000X-0/77	500X - 0/77 1000X-0/77	500X - 0/77 1000X-0/77
HIGH TEMP STORAGE *2	500 HRS - 0/77 1000HRS-0/77			
HAST (Biased) *2	100 HRS - 0/45	100 HRS - 0/45	100 HRS - 0/45	-
UHAST (Un-Biased) *2	300 HRS - 0/77			
WIRE BOND PULL	0/200 wires	0/200 wires	0/200 wires	0/200 wires
BOND CRATER *2	0/20	0/20	0/20	0/20

Note: \*1 – Level 1 soak (85°C/85%R.H. for 168hrs) is used as preconditioning.

\*2 – Convection solder reflow at 260°C Tp. is used as preconditioning.