PRODUCT INFORMATION LETTER

PIL IPG-IPC/14/8668
Dated 27 Aug 2014

HITACHI EN490 epoxy glue discontinuation

Sales Type/product family label	see attached list
Type of change	Package assembly material change
Reason for change	Discontinuation of EN490 epoxy glue
Description	Due to supplier HITACHI EN490 epoxy glue discontinuation, the glue HENKEL 8601S has been qualified, as second source, for the assembly of products housed in SO 14/16 package in our ST Shenzhen plant.
Forecasted date of implementation	20-Aug-2014
Forecasted date of samples for customer	22-Sep-2014
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	20-Aug-2014
Involved ST facilities	ST Shenzhen (China)

DOCUMENT APPROVAL

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ATTACHMENT TO PIL IPG-IPC/14/8667

WHAT*:*
Due to supplier HITACHI EN490 epoxy glue discontinuation, the glue HENKEL 8601S has been qualified, as second source, for the assembly of products housed in SO 14/16 package in our ST Shenzhen plant.

WHY*:*
Discontinuation of EN490 EPOXY GLUE.

HOW*:*
As per the attached report.

WHEN*:*
The implementation of the glue HENKEL 8601S is effective immediately.

RELIABILITY EVALUATION

QUALIFICATION OF SECOND SOURCE
HENKEL 8601S EXPOXY GLUE
SOIC14/16L SHD ST-SHENZHEN (CHINA)

DOCUMENT INFORMATION

Version	Date	Pages	Prepared by	Approved by	Comment
1.0	12-AUG-2014	17	F.VENTURA I&PC QA&R / B/E	A.PLATINI I&PC QA&R MNG.	

Note: This report is a summary of the reliability trials performed in good faith by STMicroelectronics in order to evaluate the potential reliability risks during the product life using a set of defined test methods.
This report does not imply for STMicroelectronics expressly or implicitly any contractual obligations other than as set forth in STMicroelectronics general terms and conditions of Sale. This report and its contents shall not be disclosed to a third party without previous written agreement of STMicroelectronics.

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Document reference	Short description
AEC-Q100	Stress test qualification for automotive grade integrated circuits
JESD47	Stress-Test-Driven Qualification of Integrated Circuits
ADCS:8161393	General specification for product development

1 GLOSSARY

DUT	Device Under Test
SS	Sample Size

General Information	
Product Line	PZQ7*L203AAW
P/N	*ULQ2003D1013TR*
Product Group	*IPG*
Product division	*Industrial & Power Conversion*
Package	*SOIC14/16L*
Silicon Process technology	*C4 BIP*
Maturity level step	*29*

Locations	
Wafer fab	*AMJ9 6" (ANG MO KIO S'PORE)*
Assembly plant	*STS- CHINA*
Reliability Assessment	*PASSED*
Reliability Lab	*ST-SHENZHEN*

General Information	
Product Line	*ACQ7*U338AA6*
P/N	*L6599AD*
Product Group	*IPG*
Product division	*Industrial & Power Conversion*
Package	*SOIC14/16L*
Silicon Process technology	*A5 BCD OFF LINE*
Maturity level step	*29*

Locations	
Wafer fab	*AMJ6" (ANG MO KIO S'PORE)*
Assembly plant	*STS -CHINA*
Reliability Assessment	*PASSED*
Reliability Lab	*ST-SHENZHEN*

General Information	
Product Line	*KKQ7*L752TOX*
P/N	*SG3525AP*
Product Group	*IPG*
Product division	*Industrial & Power Conversion*
Package	*SOIC14/16L*
Silicon Process technology	*C4 BIP (,6um)*
Maturity level step	*29*

Locations	
Wafer fab	*AMJ9 6" (ANG MO KIO S'PORE)*
Assembly plant	*STS- CHINA*
Reliability Assessment	*PASSED*
Reliability Lab	*ST-SHENZHEN*

2 RELIABILITY EVALUATION OVERVIEW

2.1 Objectives

DUE TO SUPPLIER HITACHI EN490 EXPOXY GLUE DISCONTINUATION WE QUALIFIED AS 2ND SOURCE HENKEL 86012S IN SOIC16L SHD ST-SHENZHEN ASSEMBLY PLANT

NOTE : HENKEL 8601S IS ALREADY QUALIFIED IN DIFFERENT STM FAMILIY PKG/PRODUCTS

2.2 Conclusion

Qualification Plan requirements (WORKABILITY/ TESTING) have been fulfilled without exception. It is stressed that reliability tests have shown that the devices behave correctly against environmental tests (no failure). Moreover, the stability of electrical parameters during the accelerated tests demonstrates the ruggedness of the products and safe operation, which is consequently expected during their lifetime.

2.3 Construction note

	*L203AAW *_ **P/N:** *ULQ2003D1013TR*
Wafer/Die fab. information	*AMKF-AMJ9 5"*
Wafer fab manufacturing location	*ANG MO KIO S'PORE*
Technology	BIP
Process family	C4
Die finishing back side	Cr/Ni/Au
Die size	2340 x 1300 mm
Bond pad metallization layers	Al/Si
Passivation type	NITRIDE (SiN)
Wafer Testing (EWS) information	*AMJ9 5"*
Electrical testing manufacturing location	STS
Assembly information	
Assembly site	ST-SHENZHEN (CHINA)
Package description	SOIC16L SHDLF .15
Molding compound	EME G630 AY
Frame material	SHDLF 16L Ni/Thin/Pd/Ag/Au OPT.C
Die attach process	EPOXY GLUE
Die attach material	GLUE HITACHI 8601S-25
Die pad size	94 X 150MILS
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1mils Cu
Lead finishing process	Pre- plated
Package code	Q7
Final testing information	
Testing location	ST-SHENZHEN (CHINA)

	U338AA6*_* **P/N: *L6599AD*
Wafer/Die fab. information	*AMKF-AMJ9 5"*
Wafer fab manufacturing location	*ANG MO KIO S'PORE*
Technology	BCD OFF LINE
Process family	A5
Die finishing back side	Cr/Ni
Die size	3200 x 1930 mm
Bond pad metallization layers	Al/Si/Cu
Passivation type	NITRIDE (SiN)
Wafer Testing (EWS) information	*AMJ9 5"*
Electrical testing manufacturing location	STS
Assembly information	
Assembly site	ST-SHENZHEN (CHINA)
Package description	SOIC16L SHDLF .15
Molding compound	EME G630 AY
Frame material	SHDLF 16L Ni/Thin/Pd/Ag/Au OPT.A
Die attach process	EPOXY GLUE
Die attach material	GLUE HITACHI 8601S-25
Die pad size	94 X 150MILS
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1mils Cu
Lead finishing process	Pre- plated
Package code	Q7
Final testing information	
Testing location	ST-SHENZHEN (CHINA)

	L752TOX *_* **P/N: *SG3525AP*
Wafer/Die fab. information	*AMKF-AMJ9 6”*
Wafer fab manufacturing location	*ANG MO KIO S’PORE*
Technology	BIP
Process family	C4
Die finishing back side	Cr/Ni/Au
Die size	2133 x 3048 mm
Bond pad metallization layers	Al
Passivation type	NITRIDE (SiN)
Wafer Testing (EWS) information	*AMJ9 6”*
Electrical testing manufacturing location	STS
Assembly information	
Assembly site	ST-SHENZHEN (CHINA)
Package description	SOIC16L SHDLF .15
Molding compound	EME G630 AY
Frame material	SHDLF 16L Ni/Thin/Pd/Ag/Au OPT.A
Die attach process	EPOXY GLUE
Die attach material	GLUE HITACHI 8601S-25
Die pad size	94 X 150MILS
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1mils Cu
Lead finishing process	Pre- plated
Package code	Q7
Final testing information	
Testing location	ST-SHENZHEN (CHINA)

3 TESTS RESULTS SUMMARY

3.1 Test vehicle **L203AAW

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	VW324Y36	GK33308PRL	GK4170H6	SOIC 16L SHDL	PZQ7*L203AAW	

Detailed results in below chapter will refer to P/N and Lot #.

3.2 Test plan and results summary

P/N L6387ED-CHF/L6387ED13TR-CHF/L6387EDR-CHF/

Test	PC	Std ref.	Conditions	Steps	Note
PC	Y	JESD22 A020-D	MSL_1 Bake 125ºC @24hrs+85ºC / 85%RH @168hrs+reflow 260ºC @3times	0/100	NO DELAMINATION TOP/BOTTOM AFTER PRECOND
TC	Y	JESD22 A-104	Ta = -65°C to 150°C	500Cy	0/80
					NO DELAMINATION AFTER TC.

3.3 Test vehicle **U338AA6*

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	V63214H3	GK3330A201	GK4170H6	SOIC 16L SHDL	*ACQ7*U338AA6*	

Detailed results in below chapter will refer to P/N and Lot #.

3.4 Test plan and results summary

P/N L6387ED-CHF/L6387ED13TR-CHF/L6387EDR-CHF/

Test	PC	Std ref.	Conditions	Steps	Note
PC	Y	JESD22 A020-D	MSL_3 Bake 125ºC @24hrs+85ºC / (192H 30°C/60%H.R) 260ºC @3times	0/100	NO DELAMINATION TOP/BOTTOM AFTER PRECOND
TC	Y	JESD22 A-104	Ta = -65°C to 150°C	500Cy	0/80
					NO DELAMINATION AFTER TC.

3.5 Test vehicle ***L752TOX*

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	**VW3118VT**	**GK3330A301**	**GK4170H6**	**SOIC 16L SHDL**	***KKQ7*L752TOX***	

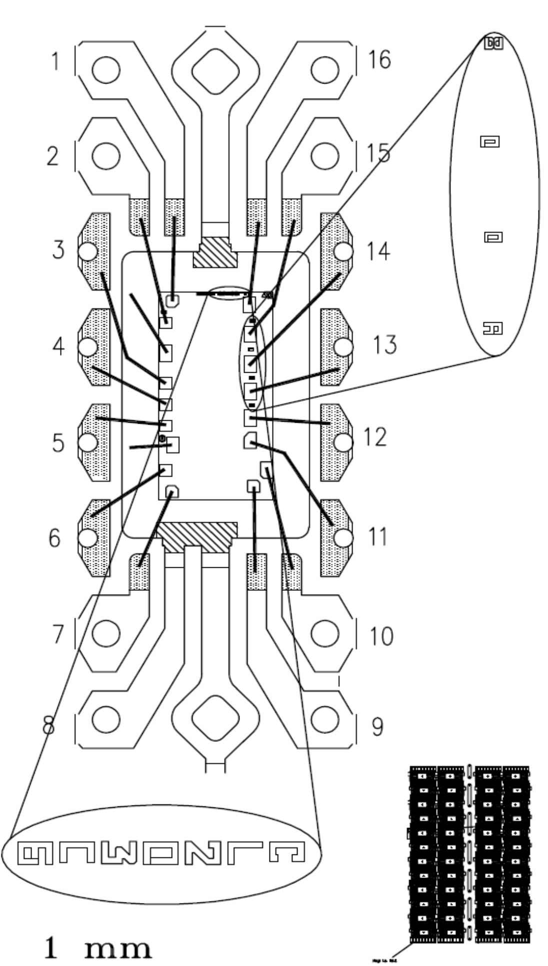
Detailed results in below chapter will refer to P/N and Lot #.

3.6 Test plan and results summary

P/N L6387ED-CHF/L6387ED13TR-CHF/L6387EDR-CHF/

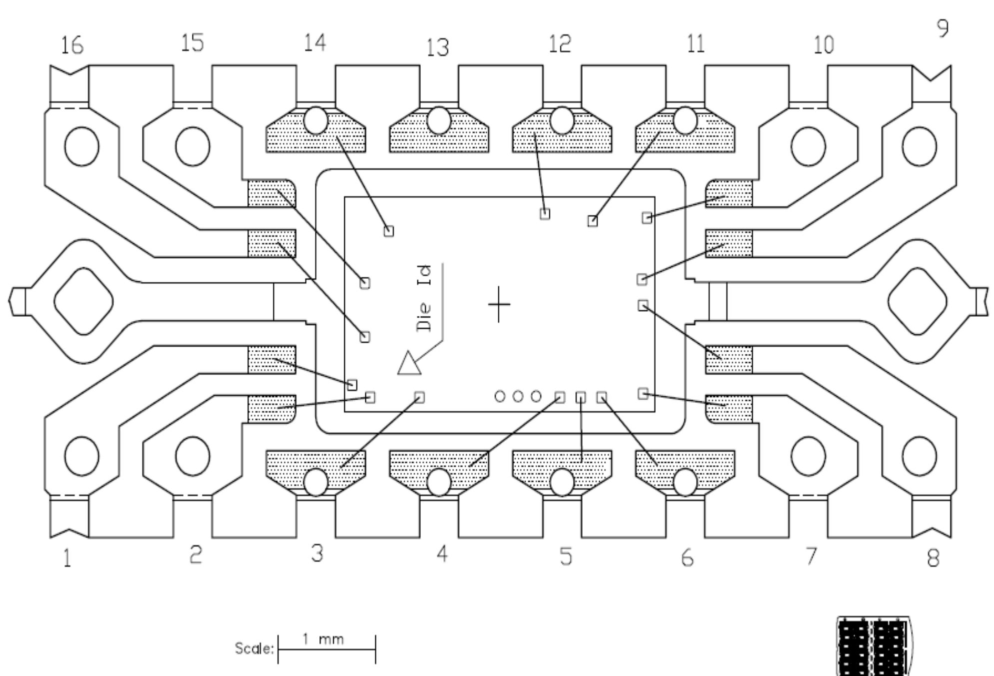
Test	PC	Std ref.	Conditions	Steps	Note
PC	Y	JESD22 A020-D	MSL_3 Bake 125ºC @24hrs+85ºC / (192H 30°C/60%H.R) 260ºC @3times	0/100	NO DELAMINATION TOP/BOTTOM AFTER PRECOND.
TC	Y	JESD22 A-104	Ta = -65°C to 150°C	500Cy	0/80
					NO DELAMINATION AFTER TC.

3.7 MBD (MOUNT & BOND DIAGRAM



MBD FOR Line:U338 (SO16L SHENZHEN)

FRAME PAD : 94 x 150 mls / 2,387 x 3,810 mm



Scale: 1 mm

E.S.D. PROGRAM IS MANDATORY

Pin 1

MBD for L752 prod line (SO16) – Shenzhen

FRAME PAD : 94 x 150 mils / 2,387 x 3,810 mm

1 2 3 4 5 6 7 8

16 15 14 13 12 11 10 9

Die ID

Take note: no-glue fillet process in Die Attaching process

Scale: 1 mm

E.S.D. PROGRAM IS MANDATORY

Pin 1

3.5.0 ANNEX 3 : POA PACKAGE OUTLINE ASSEMBLY

PACKAGE OUTLINE ASSEMBLY

TITLE: PLASTIC SMALL OUTLINE PACKAGE 16L NARROW

PACKAGE CODE: Q7

JEDEC/EIAJ REFERENCE NUMBER: JEDEC MS-012-AC

	DIMENSIONS						
	DATABOOK (mm)			DRAWING (mm)			
REF.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	NOTES
A			1.75	1.43	1.55	1.68	
A1	0.10		0.25	0.12	0.15	0.18	
A2	1.25			1.48	1.52	1.56	
b	0.31		0.51	0.375	0.40	0.425	
c	0.17		0.25			0.238	
D	9.80	9.90	10.00	9.82	9.85	9.88	(1) (3)
E	5.80	6.00	6.20	5.90	6.00	6.10	
E1	3.80	3.90	4.00	3.87	3.90	3.93	(2) (3)
e		1.27			1.27		
h	0.25		0.50	0.425		0.50	
L	0.40		1.27	0.585	0.635	0.685	
k	0		8	2	4	8	DEGREES
ccc			0.10			0.04	

NOTES:

(1) – Dimension "D" does not include mold flash, protrusions or gate burrs.
Mold flash, protrusions or gate burrs shall not exceed 0.15mm in total (both side).

(2) – Dimension "E1" does not include interlead flash or protrusions.
Interlead flash or protrusions shall not exceed 0.25mm per side.

(3) – Dimensions referred to the bottom side of the package

FIGURE : 1 DOC. NUMBER : 0016020

TITLE : PLASTIC SMALL OUTLINE PACKAGE 16L NARROW

SEATING PLANE C

0,25 mm GAGE PLANE

c, hx45°, L, k, A, A2, A1, E, E1, D, b, e, ccc C, 9, 8, 16, 1

NATIVE SCALE

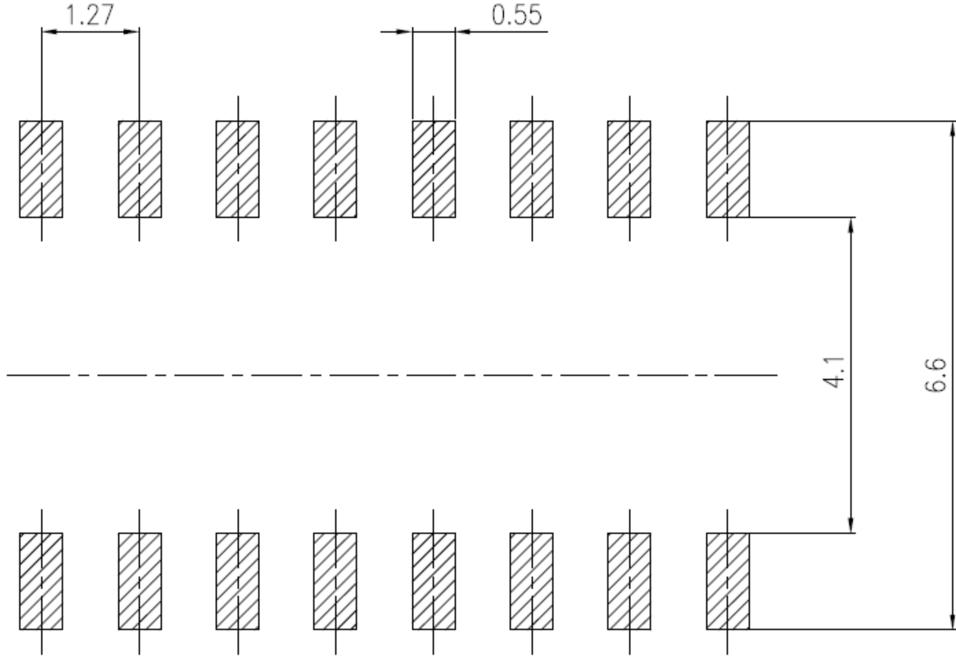
MATERIAL

PROJECTION

DIM are in mm — Unspecified tolerance

Precision rate	0 mm 6 mm	6,01 mm 30 mm	30,01mm 120 mm	120,01mm 315 mm	over 315 mm	Angular
Coarse	±0.2	±0.5	±0.8	±1.2	±2	±1°
Medium	±0.1	±0.2	±0.3	±0.5	±0.8	±0°30'
Fine	±0.05	±0.1	±0.15	±0.2	±0.3	±0°20'

RECOMMENDED FOOTPRINT



ST®	NATIVE SCALE	DIM are in mm — Unspecified tolerance						
		Precision rate	0 mm 6 mm	6,01 mm 30 mm	30,01mm 120 mm	120,01mm 315 mm	over 315 mm	Angular
MATERIAL ______		Coarse	±0.2	±0.5	±0.8	±1.2	±2	±1°
	PROJECTION	Medium	±0.1	±0.2	±0.3	±0.5	±0.8	±0°30'
		Fine	±0.05	±0.1	±0.15	±0.2	±0.3	±0°20'

PC Preconditioning	The device is submitted to a typical temperature profile used for surface mounting devices, after a controlled moisture absorption.	As stand-alone test: to investigate the moisture sensitivity level. As preconditioning before other reliability tests: to verify that the surface mounting stress does not impact on the subsequent reliability performance. The typical failure modes are "pop corn" effect and delamination.
AC Auto Clave (Pressure Pot)	The device is stored in saturated steam, at fixed and controlled conditions of pressure and temperature.	To investigate corrosion phenomena affecting die or package materials, related to chemical contamination and package hermeticity.
TC Temperature Cycling	The device is submitted to cycled temperature excursions, between a hot and a cold chamber in air atmosphere.	To investigate failure modes related to the thermo-mechanical stress induced by the different thermal expansion of the materials interacting in the die-package system. Typical failure modes are linked to metal displacement, dielectric cracking, molding compound delamination, wire-bonds failure, die-attach layer degradation.
HTSL High Temperature Storage Life	The device is stored in unbiased condition at the max. temperature allowed by the package materials, sometimes higher than the max. operative temperature.	To investigate the failure mechanisms activated by high temperature, typically wire-bonds solder joint ageing, data retention faults, metal stress-voiding.
THSL Thermal Humidity Storage Life	The THS is performed for the purpose of evaluating the reliability of non-hermetic packaged solid state devices in humidity environments. Test employs temperature and humidity under non –condensed conditions to accelerate the penetration of moisture trough the external protective material and the metallic conductor which pass through it.	This test is used to identify failure mechanism internal to the package and is desctructive.

RELIABILITY EVALUATION

QUALIFICATION OF 2ND SOURCE ABLEBOND 8601S-25(HENKEL) EPOXY GLUE SOIC14/16L SHD ST-SHENZHEN (CHINA)

DOCUMENT INFORMATION

Version	Date	Pages	Prepared by	Approved by	Comment
1.0	12-Aug-2014	17	F.VENTURA I&PC QA&R / B/E	A.PLATINI I&PC QA&R MNG.	Final report

Note: This report is a summary of the reliability trials performed in good faith by STMicroelectronics in order to evaluate the potential reliability risks during the product life using a set of defined test methods.
This report does not imply for STMicroelectronics expressly or implicitly any contractual obligations other than as set forth in STMicroelectronics general terms and conditions of Sale. This report and its contents shall not be disclosed to a third party without previous written agreement of STMicroelectronics.

General Information	
Product Line	PZQ7*L203AAW
P/N	*ULQ2003D1013TR*
Product Group	*IPG*
Product division	*Industrial & Power Discrete*
Package	*SOIC14/16L*
Silicon Process technology	*C4 BIP*
Maturity level step	*29*

Locations	
Wafer fab	*AMJ9 6" (ANG MO KIO S'PORE)*
Assembly plant	*ST-SHENZHEN- CHINA*
Final Reliability Assessment	*PASSED*
Reliability Lab	*ST-ITALY*

General Information	
Product Line	*ACQ7*U338AA6*
P/N	*L6599AD*
Product Group	*IPG*
Product division	*Industrial & Power Discrete*
Package	*SOIC14/16L*
Silicon Process technology	*A5 BCD OFF LINE*
Maturity level step	*29*

Locations	
Wafer fab	*AMJ9 6" (ANG MO KIO S'PORE)*
Assembly plant	*ST-SHENZHEN- CHINA*
Final Reliability Assessment	*PASSED*
Reliability Lab	*ST-ITALY*

General Information	
Product Line	*KKQ7*L752TOX*
P/N	*SG3525AP*
Product Group	*IPG*
Product division	*Industrial & Power Discrete*
Package	*SOIC14/16L*
Silicon Process technology	*C4 BIP (6um)*
Maturity level step	*29*

Locations	
Wafer fab	*AMJ9 6" (ANG MO KIO S'PORE)*
Assembly plant	*ST-SHENZHEN- CHINA*
Final Reliability Assessment	*PASSED*
Reliability Lab	*ST-SHENZHEN*

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5.3 TESTS DESCRIPTION 6

Document reference	Short description
AEC-Q100	Stress test qualification for automotive grade integrated circuits
JESD47	Stress-Test-Driven Qualification of Integrated Circuits
ADCS:8161393	General specification for product development

1 GLOSSARY

DUT	Device Under Test
SS	Sample Size

2 RELIABILITY EVALUATION OVERVIEW

2.1 Objectives

DUE TO SUPPLIER HITACHI EN490 EPOXY GLUE DISCONTINUATION WE (I&PC DIV). QUALIFIED AS 2ND SOURCE ABLEBOND HENKEL 8601S-25 IN SOIC14/16L ST- SHENZHEN (CHINA) ASSEMBLY PLANT

2.2 Conclusion

Qualification Plan requirements (WORKABILITY/ TESTING / CONSTRUCTION ANALISYS) have been fulfilled without exception. It is stressed that reliability tests have shown that the devices behave correctly against environmental tests (no failure). Moreover, the stability of electrical parameters during the accelerated tests demonstrates the ruggedness of the products and safe operation, which is consequently expected during their lifetime.

2.3 Construction note

	***L203AAW_ P/N:** ULQ2003D1013TR
Wafer/Die fab. information	*AMKF-AMJ9 5"*
Wafer fab manufacturing location	*ANG MO KIO S'PORE*
Technology	*BIP*
Process family	C4
Die finishing back side	Cr/Ni/Au
Die size	2340 x 1300 mm
Bond pad metallization layers	Al/Si
Passivation type	SIN NITRIDE
Wafer Testing (EWS) information	
Electrical testing manufacturing location	AMJ9 5"
Assembly information	
Assembly site	ST-SHENZHEN (CHINA)
Package description	SOIC16L SHDLF .15
Molding compound	EME G630 AY
Frame material	SHDLF 16L Ni/Thin/Pd/Ag/Au OPT.C
Die attach process	EPOXY GLUE
Die attach material	GLUE ABLEBOND 8601S-25
Die pad size	94 X 150 mil
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1mils Cu
Lead finishing process	Pre- plated
Package code	Q7
Final testing information	
Testing location	ST-SHENZHEN (CHINA)

Construction note

	***U338_ P/N**:L6599AD*
Wafer/Die fab. information	*AMKF-AMJ9 5"*
Wafer fab manufacturing location	*ANG MO KIO S'PORE*
Technology	BCD OFF LINE
Process family	A5
Die finishing back side	Cr/Ni
Die size	3200 x 1930 mm
Bond pad metallization layers	Al/Si/Cu
Passivation type	NITRIDE (SiN)
Wafer Testing (EWS) information	
Electrical testing manufacturing location	AMJ9 5"
Assembly information	
Assembly site	ST-SHENZHEN (CHINA)
Package description	SOIC16L SHDLF .15
Molding compound	EME G630 AY
Frame material	SHDLF 16L Ni/Thin/Pd/Ag/Au OPT.A
Die attach process	EPOXY GLUE
Die attach material	GLUE ABLEBOND 8601S-25
Die pad size	94 X 150 mil
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1mils Cu
Lead finishing process	Pre- plated
Package code	Q7
Final testing information	
Testing location	ST-SHENZHEN (CHINA)

Construction note

	***L752TOX _P/N**:SG3525AP*
Wafer/Die fab. information	*AMKF-AMJ9 6"*
Wafer fab manufacturing location	*ANG MO KIO S'PORE*
Technology	BIP
Process family	C4
Die finishing back side	Cr/Ni/Au
Die size	2133 x 3048 mm
Bond pad metallization layers	Al/Si
Passivation type	NITRIDE (SiN)
Wafer Testing (EWS) information	
Electrical testing manufacturing location	AMJ9 6"
Assembly information	ST-SHENZHEN (CHINA)
Assembly site	SOIC16L SHDLF .15
Package description	EME G630 AY
Molding compound	SHDLF 16L Ni/Thin/Pd/Ag/Au OPT.A
Frame material	EPOXY GLUE
Die attach process	GLUE ABLEBOND 8601S-25
Die attach material	94 X 150 mil
Die pad size	THERMOSONIC
Wire bonding process	1mils Cu
Wires bonding materials/diameters	Pre- plated
Lead finishing process	Q7
Package code	
Final testing information	
Testing location	ST-SHENZHEN (CHINA)

3 TESTS RESULTS SUMMARY

3.1 Test vehicle *L203AAW

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	VW324Y36	GK33308PRL	GK4170H6	SOIC 16L SHDL	CAO7*U324AE6	

Detailed results in below chapter will refer to P/N and Lot #.

3.2 Test plan and results summary

P/N :ULQ2003D1013TR

Test	PC	Std ref.	Conditions	Steps	Note
PC	Y	JESD22 A020-D	MSL_1 BAKE 125C@24hrs+85C/85%RH@168 hrs+REFLOW 260C@3TIMES	0/100	NO DELAMINATION TOP/BOTTOM AFTER PRECOND
TC	Y	JESD22 A-104	Ta = -65°C to 150°C	500CY	0/80 NO DELAMINATION AFTER PRECOND.

3.3 Test vehicle *U338

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	V63214H3	GK3330A201	GK4170H6	SOIC 16L SHDL	ACQ7*U338AA6	

Detailed results in below chapter will refer to P/N and Lot #.

3.4 Test plan and results summary

P/N:L6599AD

Test	PC	Std ref.	Conditions	Steps	Note
PC	Y	JESD22 A020-D	MSL_3 BAKE 125C@24hrs+85C 192hrs30C/60%RH+REFLOW 260C@3TIMES	0/100	NO DELAMINATION TOP/BOTTOM AFTER PRECOND
TC	Y	JESD22 A-104	Ta = -65°C to 150°C	500CY	0/80 NO DELAMINATION AFTER PRECOND.

In case of Automotive customer insert here the family data.
In case of rejects include a short description of the failure analysis and corrective actions.

TESTS RESULTS SUMMARY

Test vehicle * L752TOX

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	VW3118VT	GK3330A301	GK4170H6	SOIC 16 SHDL	KKQ7*L752TOX	

Detailed results in below chapter will refer to P/N and Lot #.

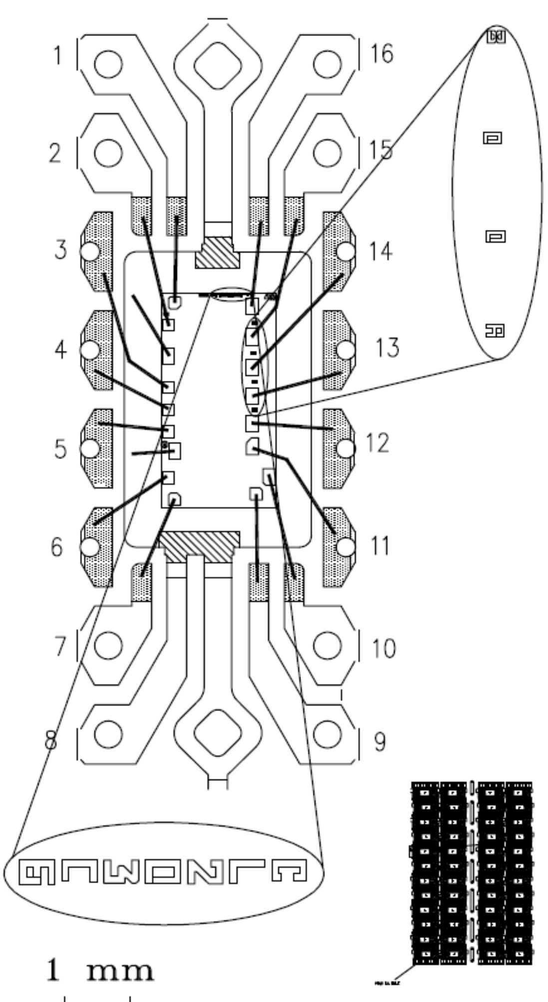
Test plan and results summary

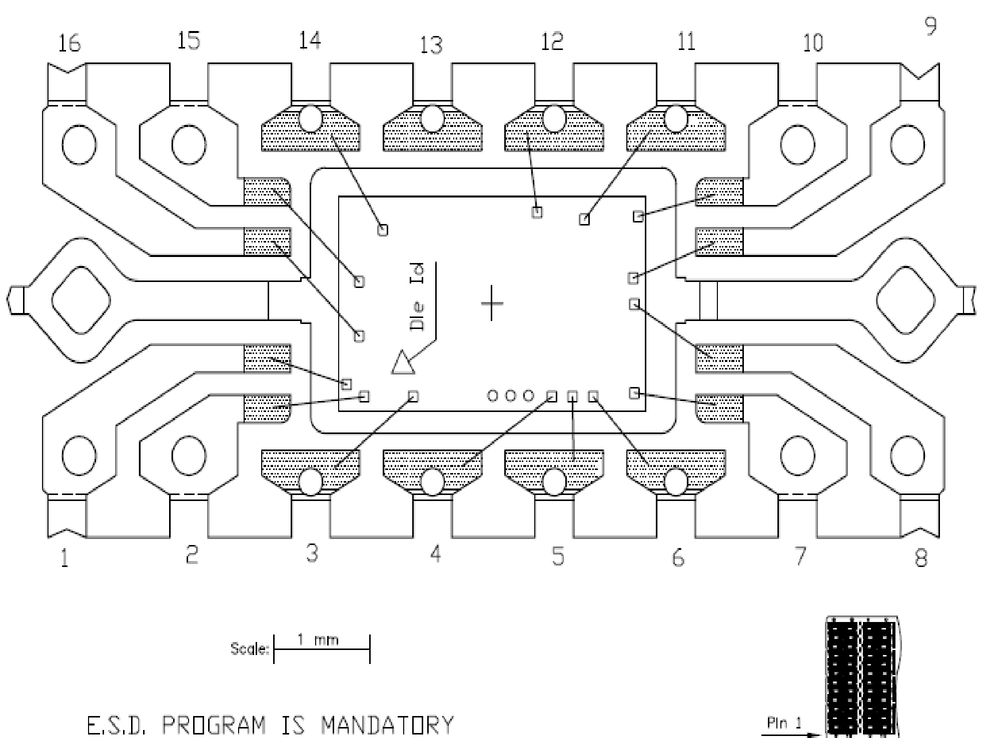
P/N:SG3525AP

Test	PC	Std ref.	Conditions	Steps	Note
PC	Y	JESD22 A020-D	MSL_3 BAKE 125C@24hrs+85C 192hrs30C/60%RH+REFLOW 260C@3TIMES	0/100	NO DELAMINATION TOP/BOTTOM AFTER PRECOND
TC	Y	JESD22 A-104	Ta = -65°C to 150°C	500CY	0/80 NO DELAMINATION AFTER PRECOND.

In case of Automotive customer insert here the family data.
In case of rejects include a short description of the failure analysis and corrective actions.

3.4.1 ANNEXES: MOUNT BOND DIAGRAM (MBD)




MBD FOR Line:U338 (SO16L SHENZHEN)
FRAME PAD : 94 x 150 mls / 2,387 x 3,810 mm
16
15
14
13
12
11
10
9
Die Id
1
2
3
4
5
6
7
8
Scale: 1 mm
E.S.D. PROGRAM IS MANDATORY
Pin 1

MBD for L752 prod line (SO16) – Shenzhen

FRAME PAD : 94 x 150 mls
2,387 x 3,810 mm

1 2 3 4 5 6 7 8
16 15 14 13 12 11 10 9

Die ID

Scale: 1 mm

Take note: no–glue fillet process in Die Attaching process

E.S.D. PROGRAM IS MANDATORY

Pin 1

3.4.1 Package outline/Mechanical data

PACKAGE OUTLINE ASSEMBLY

TITLE: PLASTIC SMALL OUTLINE PACKAGE 16L NARROW

PACKAGE CODE: Q7

JEDEC/EIAJ REFERENCE NUMBER: JEDEC MS-012-AC

	DIMENSIONS						
	DATABOOK (mm)			DRAWING (mm)			
REF.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	NOTES
A			1.75	1.43	1.55	1.68	
A1	0.10		0.25	0.12	0.15	0.18	
A2	1.25			1.48	1.52	1.56	
b	0.31		0.51	0.375	0.40	0.425	
c	0.17		0.25			0.238	
D	9.80	9.90	10.00	9.82	9.85	9.88	(1) (3)
E	5.80	6.00	6.20	5.90	6.00	6.10	
E1	3.80	3.90	4.00	3.87	3.90	3.93	(2) (3)
e		1.27			1.27		
h	0.25		0.50	0.425		0.50	
L	0.40		1.27	0.585	0.635	0.685	
k	0		8	2	4	8	DEGREES
ccc			0.10			0.04	

NOTES:

(1) – Dimension "D" does not include mold flash, protrusions or gate burrs.
Mold flash, protrusions or gate burrs shall not exceed 0.15mm in total (both side).

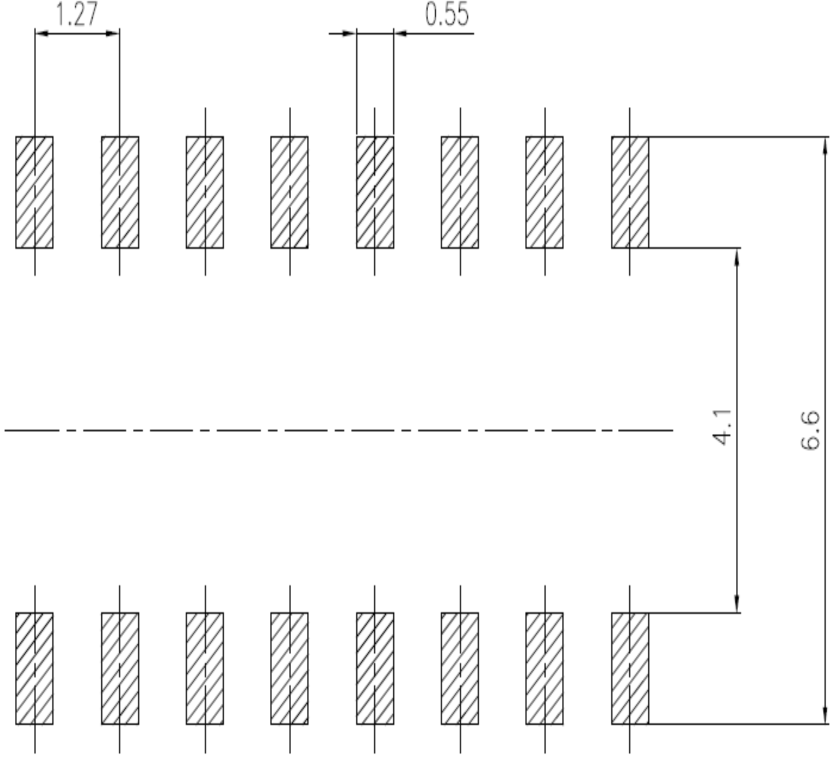
(2) – Dimension "E1" does not include interlead flash or protrusions.
Interlead flash or protrusions shall not exceed 0.25mm per side.

(3) – Dimensions referred to the bottom side of the package

	FIGURE : 1	DOC. NUMBER : 0016020
TITLE : PLASTIC SMALL OUTLINE PACKAGE 16L NARROW		

	NATIVE SCALE	DIM are in mm — Unspecified tolerance					
		Precision rate	0 mm 6 mm	6,01 mm 30 mm	30,01mm 120 mm	120,01mm 315 mm	over 315 mm	Angular
MATERIAL		Coarse	±0.2	±0.5	±0.8	±1.2	±2	±1°
		Medium	±0.1	±0.2	±0.3	±0.5	±0.8	±0°30'
	PROJECTION	Fine	±0.05	±0.1	±0.15	±0.2	±0.3	±0°20'

RECOMMENDED FOOTPRINT



Tests Description

Test name	Description	Purpose
Package Oriented		
PC Preconditioning	The device is submitted to a typical temperature profile used for surface mounting devices, after a controlled moisture absorption.	As stand-alone test: to investigate the moisture sensitivity level. As preconditioning before other reliability tests: to verify that the surface mounting stress does not impact on the subsequent reliability performance. The typical failure modes are "pop corn" effect and delamination.
AC Auto Clave (Pressure Pot)	The device is stored in saturated steam, at fixed and controlled conditions of pressure and temperature.	To investigate corrosion phenomena affecting die or package materials, related to chemical contamination and package hermeticity.
TC Temperature Cycling	The device is submitted to cycled temperature excursions, between a hot and a cold chamber in air atmosphere.	To investigate failure modes related to the thermo-mechanical stress induced by the different thermal expansion of the materials interacting in the die-package system. Typical failure modes are linked to metal displacement, dielectric cracking, molding compound delamination, wire-bonds failure, die-attach layer degradation.
HTSL High Temperature Storage Life	The device is stored in unbiased condition at the max. temperature allowed by the package materials, sometimes higher than the max. operative temperature.	To investigate the failure mechanisms activated by high temperature, typically wire-bonds solder joint ageing, data retention faults, metal stress-voiding.
THSL Thermal Humidity Storage Life	The THS is performed for the purpose of evaluating the reliability of non-hermetic packaged solid state devices in humidity environments. Test employs temperature and humidity under non –condensed conditions to accelerate the penetration of moisture trough the external protective material and the metallic conductor which pass through it.	This test is used to identify failure mechanism internal to the package and is desctructive.
Die Oriented		
THB Temperature Humidity Bias	The device is biased in static configuration minimizing its internal power dissipation, and stored at controlled conditions of ambient temperature and relative humidity.	To evaluate the package moisture resistance with electrical field applied, both electrolytic and galvanic corrosion are put in evidence.
HTRB **High Temperature Reverse Bias**	The device is biased in dynamic configuration maximizing its internal reverse power dissipation, and stored at controlled conditions of ambient temperature and relative humidity.	This test is performed to evaluate die problems related with chip stability, layout structure, surface contamination and oxide faults.

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