



# PRODUCT INFORMATION LETTER

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

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**HITACHI EN490 epoxy glue discontinuation**

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

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 <b>STMicroelectronics</b> change Qualification Plan results availability	20-Aug-2014
Involved ST facilities	ST Shenzhen (China)

## DOCUMENT APPROVAL

<b>Name</b>	<b>Function</b>
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Borghi, Maria Rosa	Marketing Manager
Naso, Lorenzo	Marketing Manager
Pioppo, Sergio Franco	Marketing Manager
Arrigo, Domenico Massimo	Product Manager
Borghi, Maria Rosa	Product Manager
Naso, Lorenzo	Product Manager
Pioppo, Sergio Franco	Product Manager
Moretti, Paolo	Q.A. Manager



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

## **1 GLOSSARY**

<b>DUT</b>	Device Under Test
<b>SS</b>	Sample Size



IMS  
Industrial & Multisegment -Sector  
IPG-Group  
Industrial , Power, Group  
I&PC Div.  
Industrial & Power Conversion  
Quality & Reliability B-END

Report ID [RR000214CT6004](#)

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 2<sup>ND</sup>  
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	
<b>Wafer/Die fab. information</b>	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)
<b>Wafer Testing (EWS) information</b>	AMJ9 5"
Electrical testing manufacturing location	STS
<b>Assembly information</b>	
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
<b>Final testing information</b>	
Testing location	ST-SHENZHEN (CHINA)



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*U338AA6*_ P/N: L6599AD	
<b>Wafer/Die fab. information</b>	
Wafer fab manufacturing location	AMKF-AMJ9 5"
Technology	ANG MO KIO S'PORE
Process family	BCD OFF LINE
Die finishing back side	A5
Die size	Cr/Ni
Bond pad metallization layers	3200 x 1930 mm
Passivation type	Al/Si/Cu
	NITRIDE (SiN)
<b>Wafer Testing (EWS) information</b>	
Electrical testing manufacturing location	AMJ9 5"
	STS
<b>Assembly information</b>	
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
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Report ID RR000214CT6004

*L752TOX *_ P/N: SG3525AP	
<b>Wafer/Die fab. information</b>	<i>AMKF-AMJ9 6"</i>
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)
<b>Wafer Testing (EWS) information</b>	<i>AMJ9 6"</i>
Electrical testing manufacturing location	STS
<b>Assembly information</b>	
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
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Wires bonding materials/diameters	1mils Cu
Lead finishing process	Pre- plated
Package code	Q7
<b>Final testing information</b>	
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 125°C @24hrs+85°C / 85%RH @168hrs+reflow 260°C @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 125°C @24hrs+85°C / (192H 30°C/60%H.R) 260°C @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

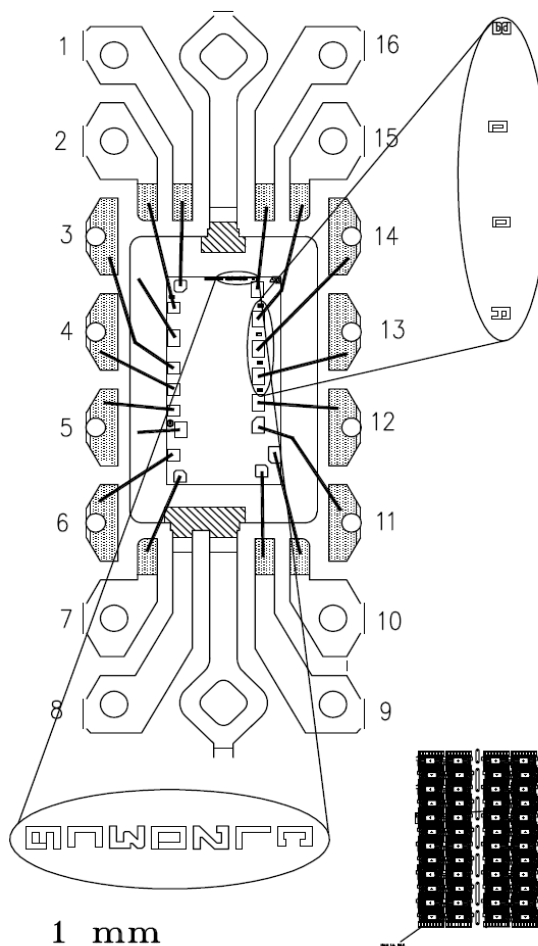
P/N L6387ED-CHF/L6387ED13TR-CHF/L6387EDR-CHF/

Test	PC	Std ref.	Conditions	Steps	Note
PC	Y	JESD22 A020-D	MSL_3 Bake 125°C @24hrs+85°C / (192H 30°C/60%H.R) 260°C @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)

## TITLE: MBD for PZQ7\*L203AAW

FRAME PAD :  $\frac{94 \times 150 \text{ mls}}{2,39 \times 3,81 \text{ mm}}$       DIE SIZE:  $\frac{84 \times 140 \text{ mls}}{2,13 \times 3,56 \text{ mm}}$



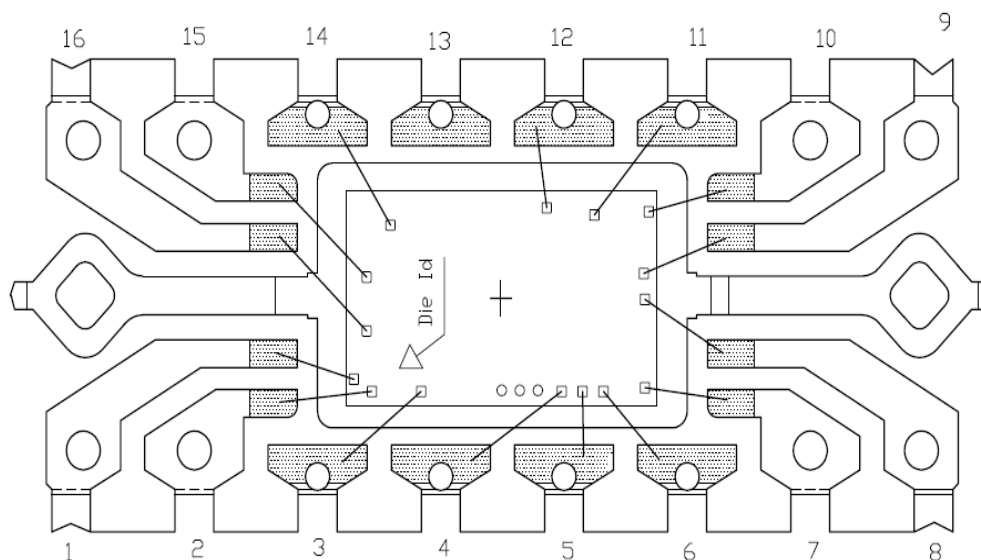
1 mm  
SCALE :

**NOTE: E.S.D. PROGRAM IS MANDATORY**  
 Wires n° 3-11-15 must be bonded with J-wire loop



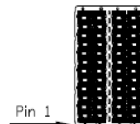
# MBD FOR Line:U338 (S016L SHENZHEN)

FRAME PAD :  $\frac{94 \times 150 \text{ mls}}{2,387 \times 3,810 \text{ mm}}$



Scale: 1 mm

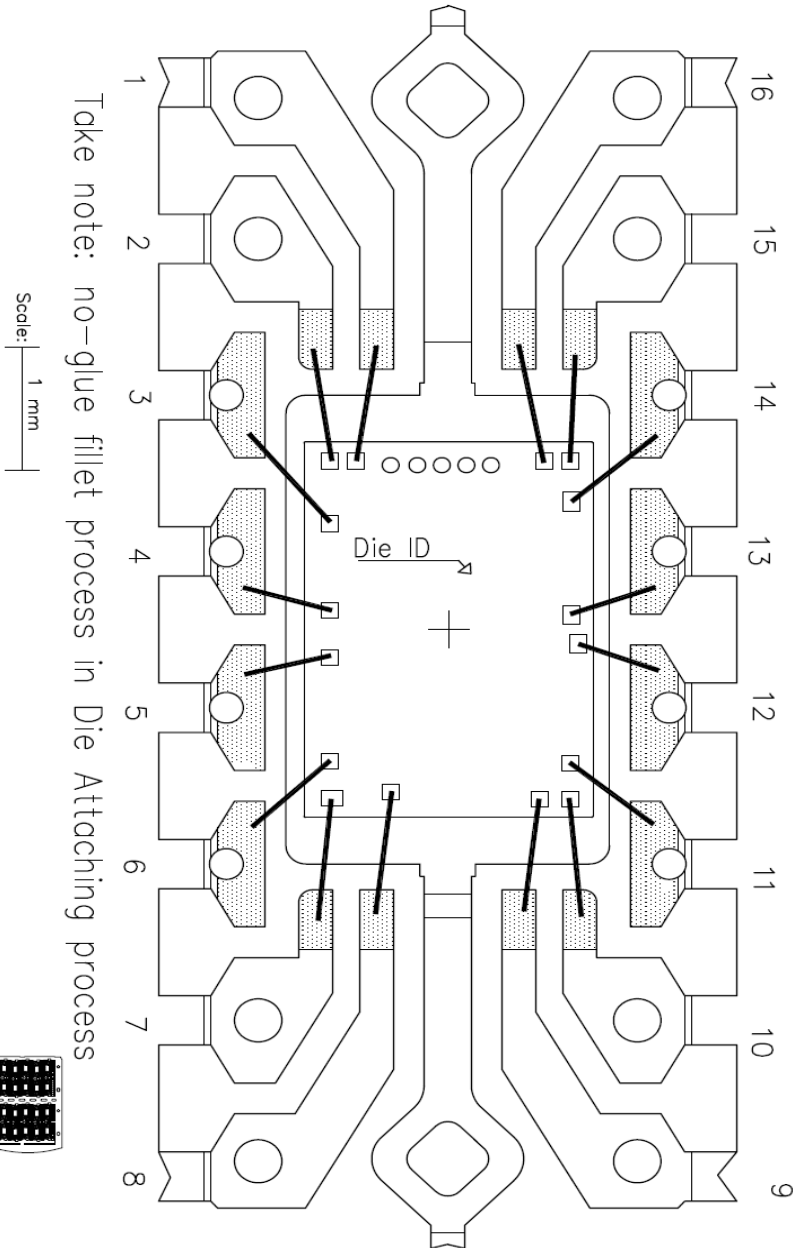
E.S.D. PROGRAM IS MANDATORY



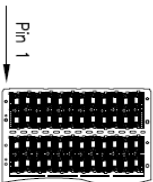


# MBD for L752 prod line (S016) - Shenzhen

FRAME PAD :  $\frac{94 \times 150 \text{ mils}}{2,387 \times 3,810 \text{ mm}}$



E.S.D. PROGRAM IS MANDATORY





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**

REF.	DIMENSIONS						NOTES
	DATABOOK (mm)			DRAWING (mm)			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
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:

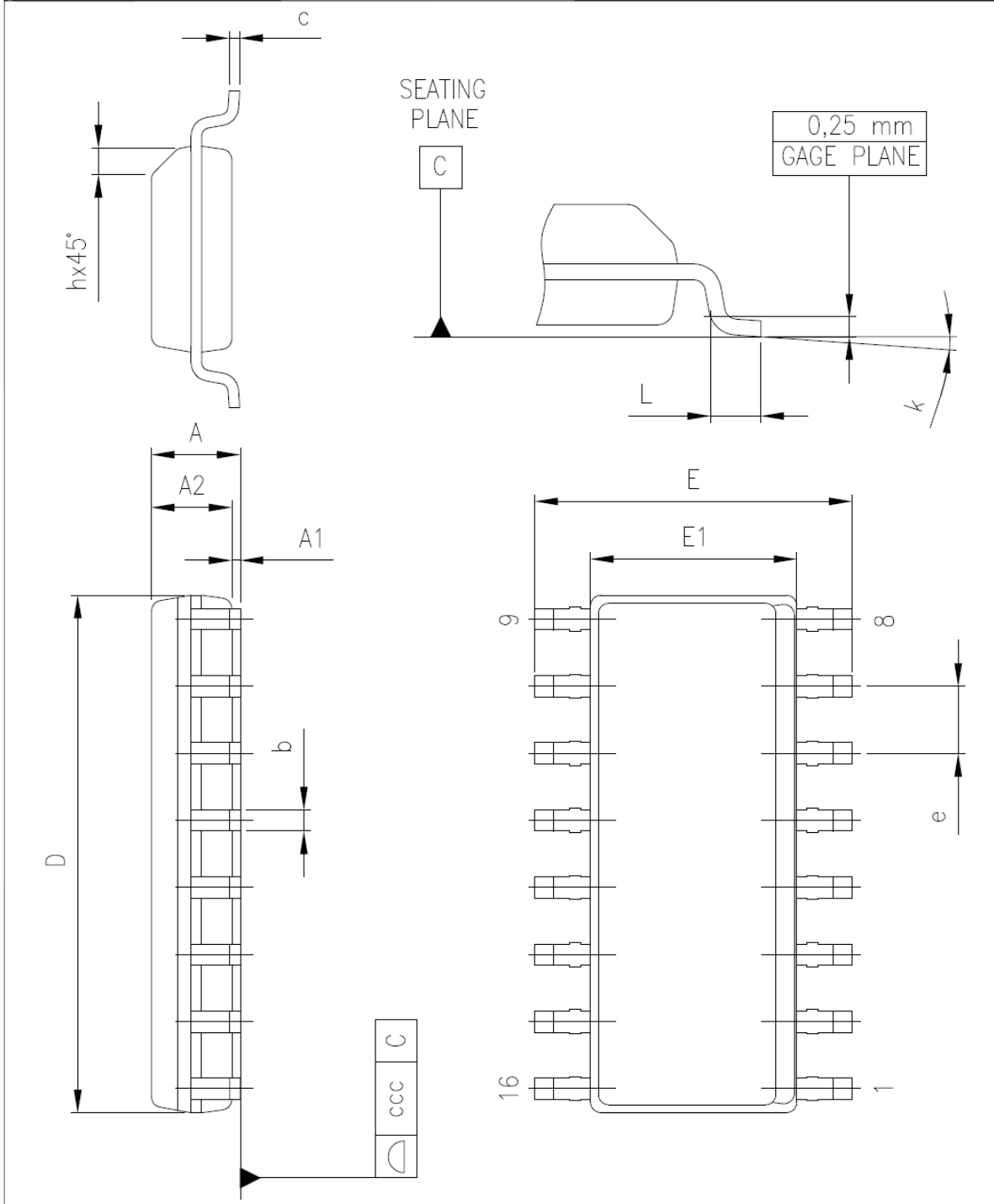
- (1) – Dimension “D” does not include mold flash, protrusions or gate burrs.  
Mold flash, protrusions or gate burrs shall not exceed 0.15mm in total (both side).
- (2) – Dimension “E1” does not include interlead flash or protrusions.  
Interlead flash or protrusions shall not exceed 0.25mm per side.
- (3) – Dimensions referred to the bottom side of the package



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Report ID RR000214CT6004

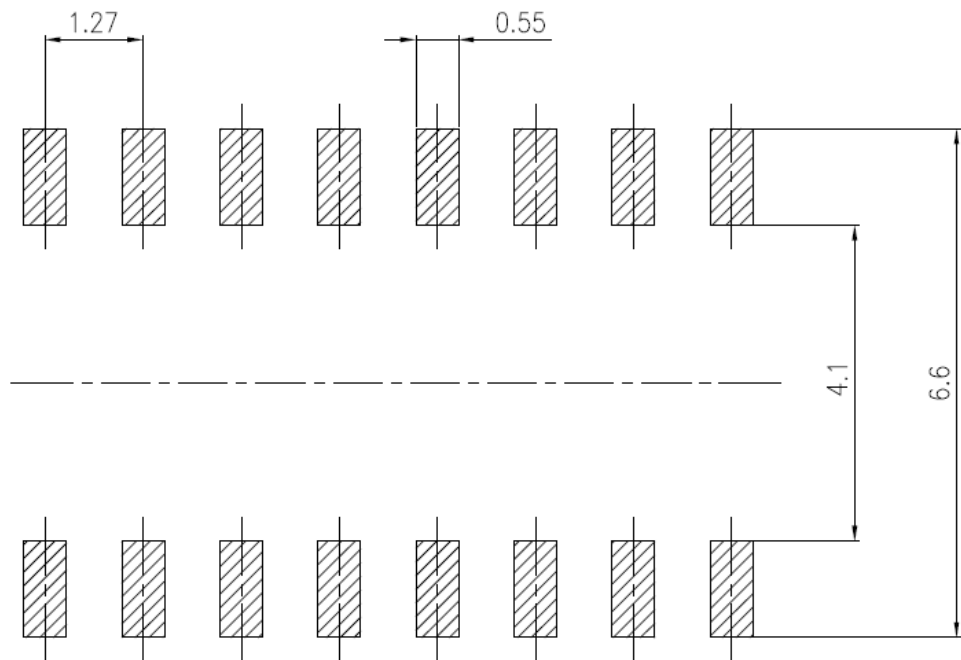
FIGURE : 1      DOC. NUMBER : 0016020  
 TITLE : PLASTIC SMALL OUTLINE PACKAGE 16L NARROW



	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
		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'
MATERIAL								



## RECOMMENDED FOOTPRINT



	NATIVE SCALE	<i>DIM are in mm – Unspecified tolerance</i>						
		Precision rate	0 mm 6 mm	6,01 mm 30 mm	30,01mm 120 mm	120,01mm 315 mm	over 315 mm	Angular
MATERIAL _____	 PROJECTION	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'



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Report ID **RR000214CT6004**

<p style="text-align: center;"><b>PC</b> Preconditioning</p>	<p>The device is submitted to a typical temperature profile used for surface mounting devices, after a controlled moisture absorption.</p>	<p>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.</p>
<p style="text-align: center;"><b>AC</b> Auto Clave (Pressure Pot)</p>	<p>The device is stored in saturated steam, at fixed and controlled conditions of pressure and temperature.</p>	<p>To investigate corrosion phenomena affecting die or package materials, related to chemical contamination and package hermeticity.</p>
<p style="text-align: center;"><b>TC</b> Temperature Cycling</p>	<p>The device is submitted to cycled temperature excursions, between a hot and a cold chamber in air atmosphere.</p>	<p>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.</p>
<p style="text-align: center;"><b>HTSL</b> High Temperature Storage Life</p>	<p>The device is stored in unbiased condition at the max. temperature allowed by the package materials, sometimes higher than the max. operative temperature.</p>	<p>To investigate the failure mechanisms activated by high temperature, typically wire-bonds solder joint ageing, data retention faults, metal stress-voiding.</p>
<p style="text-align: center;"><b>THSL</b> Thermal Humidity Storage Life</p>	<p>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.</p>	<p>This test is used to identify failure mechanism internal to the package and is desctructive.</p>



**RELIABILITY EVALUATION**  
**QUALIFICATION OF 2<sup>ND</sup> 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

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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

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

Locations	
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Reliability Lab	ST-SHENZHEN



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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





## **2 RELIABILITY EVALUATION OVERVIEW**

### **2.1 Objectives**

DUE TO SUPPLIER HITACHI EN490 EPOXY GLUE DISCONTINUATION WE (I&PC DIV). QUALIFIED AS 2<sup>ND</sup> 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	
<b>Wafer/Die fab. information</b>	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
<b>Wafer Testing (EWS) information</b>	
Electrical testing manufacturing location	AMJ9 5"
<b>Assembly information</b>	
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
<b>Final testing information</b>	
Testing location	ST-SHENZHEN (CHINA)



## Construction note

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



## Construction note

<b>*L752TOX_P/N:SG3525AP</b>	
<b>Wafer/Die fab. information</b>	
Wafer fab manufacturing location	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)
<b>Wafer Testing (EWS) information</b>	
Electrical testing manufacturing location	AMJ9 6"
<b>Assembly information</b>	
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	
<b>Final testing information</b>	
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	CA07*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.

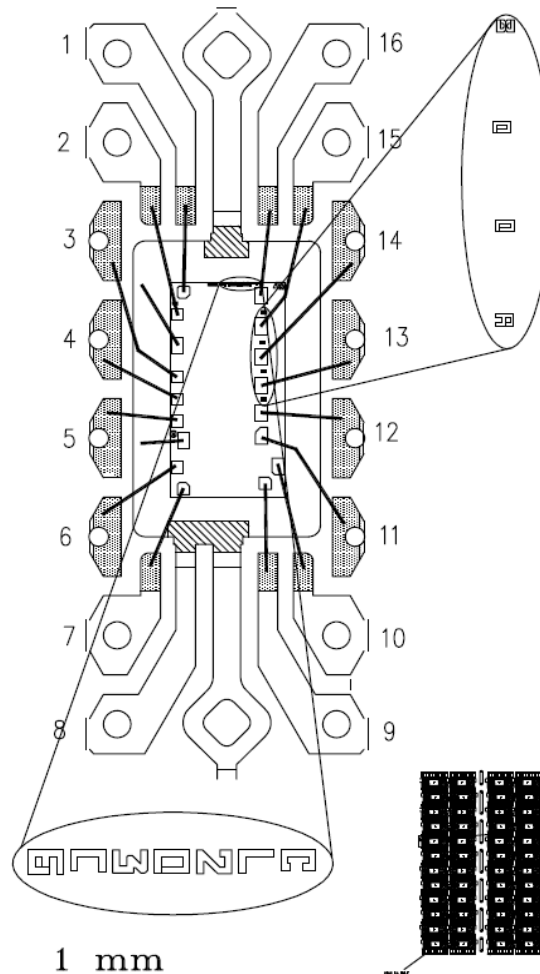
In case of rejects include a short description of the failure analysis and corrective actions.

**3.4.1 ANNEXES: MOUNT BOND DIAGRAM (MBD)**

# TITLE: MBD for PZQ7\*L203AAW

FRAME PAD :  $\frac{94 \times 150 \text{ mls}}{2,39 \times 3,81 \text{ mm}}$

DIE SIZE:  $\frac{84 \times 140 \text{ mls}}{2,13 \times 3,56 \text{ mm}}$



1 mm  
 SCALE :

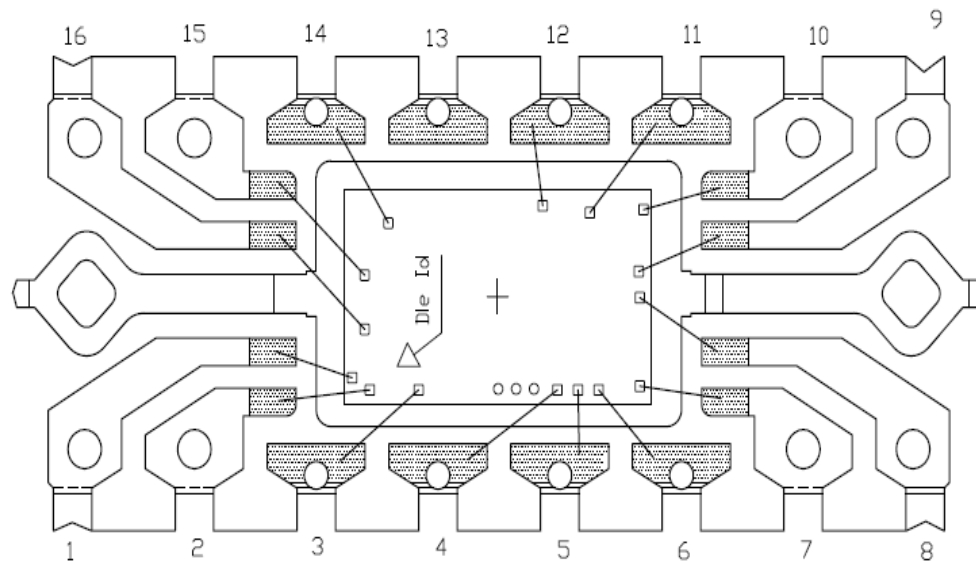
NOTE: E.S.D. PROGRAM IS MANDATORY  
 Wires n° 3-11-15 must be bonded with J-wire loop





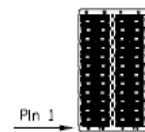
# MBD FOR Line:U338 (S016L SHENZHEN)

FRAME PAD :  $\frac{94 \times 150 \text{ mls}}{2,387 \times 3,810 \text{ mm}}$



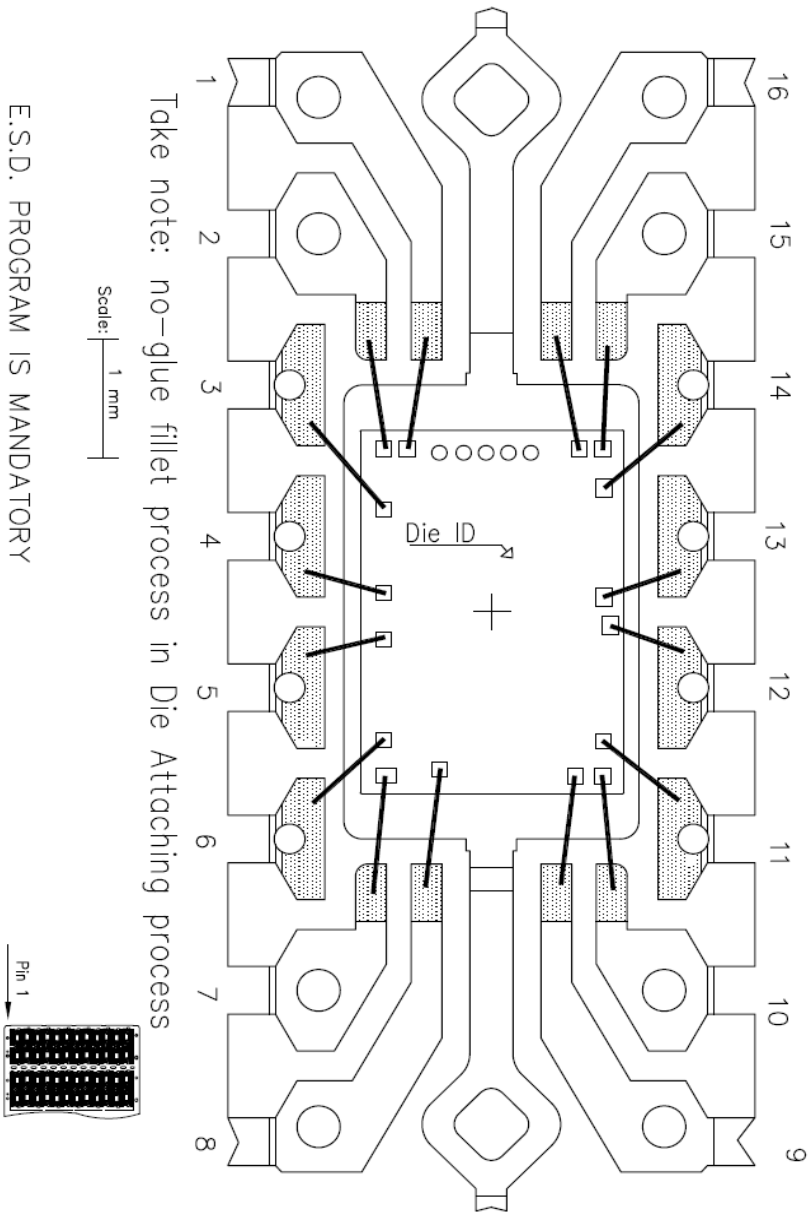
Scale: 1 mm

E.S.D. PROGRAM IS MANDATORY



# MBD for L752 prod line (S016) – Shenzhen

FRAME PAD :  $\frac{94 \times 150 \text{ mils}}{2,387 \times 3,810 \text{ mm}}$





### 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

REF.	DIMENSIONS						NOTES
	DATABOOK (mm)			DRAWING (mm)			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
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:

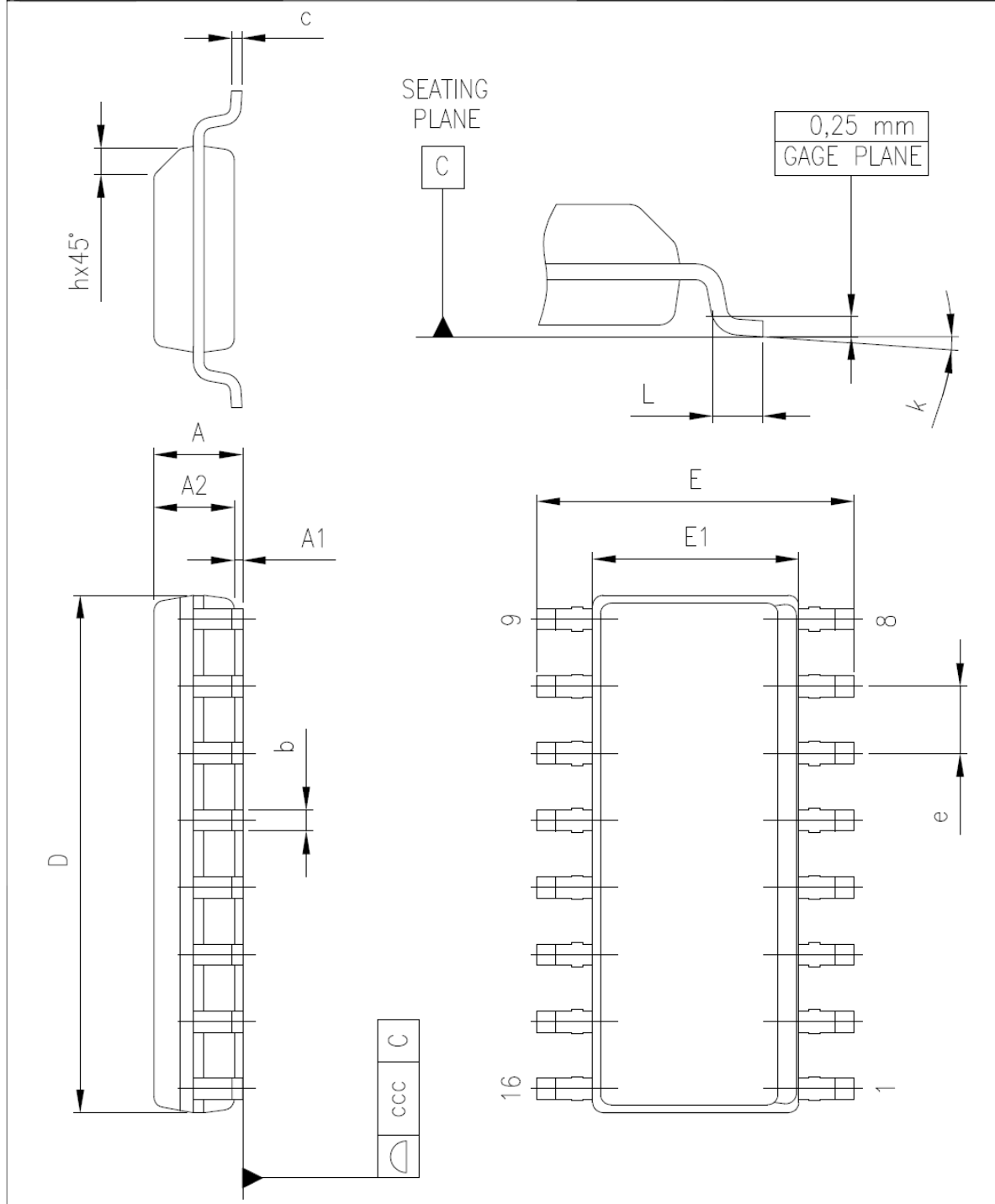
- (1) – Dimension “D” does not include mold flash, protrusions or gate burrs.  
Mold flash, protrusions or gate burrs shall not exceed 0.15mm in total (both side).
- (2) – Dimension “E1” does not include interlead flash or protrusions.  
Interlead flash or protrusions shall not exceed 0.25mm per side.
- (3) – Dimensions referred to the bottom side of the package



IMS  
 Industrial & Multisegment -Sector  
 IPG-Group  
 Industrial , Power, Group  
 I&PC Div.  
 Industrial & Power Conversion  
 Quality & Reliability B-END

Report ID RR000214CT6004

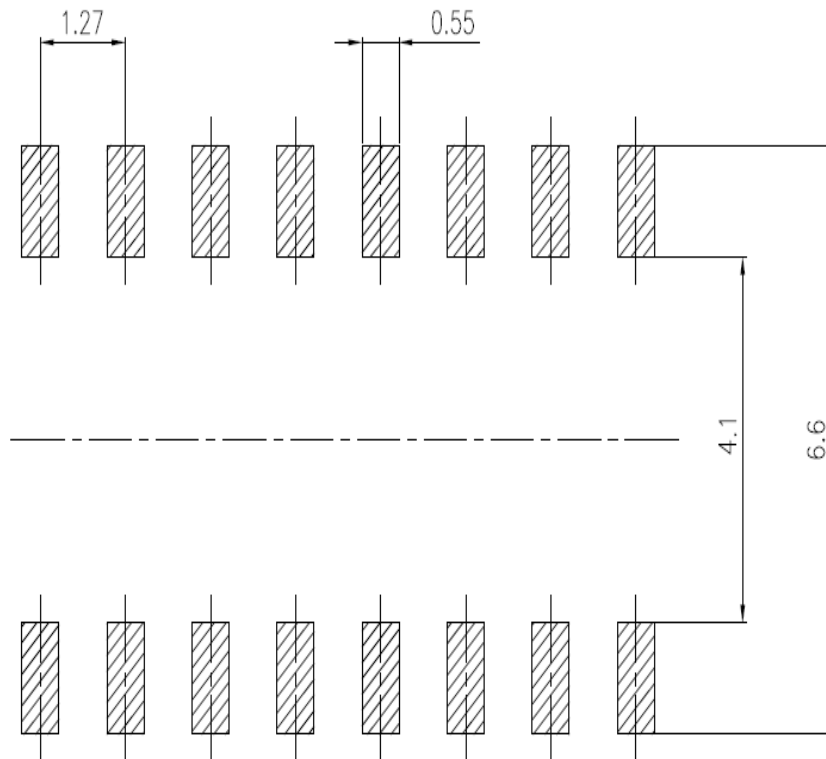
FIGURE : 1      DOC. NUMBER : 0016020  
 TITLE : PLASTIC SMALL OUTLINE PACKAGE 16L NARROW



	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'
		Fine	±0.05	±0.1	±0.15	±0.2	±0.3	±0°20'



## RECOMMENDED FOOTPRINT





## Tests Description

Test name	Description	Purpose
<b>Package Oriented</b>		
<b>PC</b> 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.
<b>AC</b> 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.
<b>TC</b> 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.
<b>HTSL</b> 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.
<b>THSL</b> 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.
<b>Die Oriented</b>		
<b>THB</b> 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.
<b>HTRB</b> 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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