PRODUCT/PROCESS CHANGE NOTIFICATION

PCN IPD-IPC/12/7262
Notification Date 05/17/2012

Supplementary Back-End transfer from Shenzhen to Long Gang of products housed in PDIP8 package

Table 1. Change Implementation Schedule

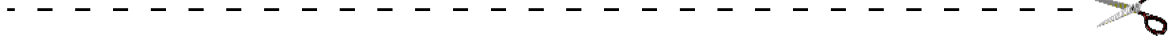
Forecasted implementation date for change	15-Jul-2012
Forecasted availabillity date of samples for customer	25-Jun-2012
Forecasted date for **STMicroelectronics** change Qualification Plan results availability	10-May-2012
Estimated date of changed product first shipment	16-Aug-2012

Table 2. Change Identification

Product Identification (Product Family/Commercial Product)	see attached
Type of change	Multiple types of changes
Reason for change	To optimize ST’s assets utilization
Description of the change	In order to complete the Back-End transfer from Shenzhen to Long Gang of PDIP8 package line, as per PCN APM-IPC/10/6077, we have added the products listed in the attachment.
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	Assembly plant area on marking as per attached description
Manufacturing Location(s)	

Table 3. List of Attachments

Customer Part numbers list	
Qualification Plan results	



Customer Acknowledgement of Receipt	**PCN IPD-IPC/12/7262**
Please sign and return to STMicroelectronics Sales Office	**Notification Date 05/17/2012**
☐ Qualification Plan Denied	Name:
☐ Qualification Plan Approved	Title:
	Company:
☐ Change Denied	Date:
☐ Change Approved	Signature:

Remark

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DOCUMENT APPROVAL

Name	Function
Arrigo, Domenico Massimo	Division Marketing Manager
Borghi, Maria Rosa	Division Marketing Manager
Pioppo, Sergio Franco	Division Marketing Manager
Arrigo, Domenico Massimo	Division Product Manager
Borghi, Maria Rosa	Division Product Manager
Pioppo, Sergio Franco	Division Product Manager
Motta, Antonino	Division Q.A. Manager

ATTACHMENT TO PCN APM-IPC/12/7262

WHAT:
Following our PCN APM-IPC/10/6077 of 12/21/2010 and the Back-End transfer of the PDIP8 productions lines described therein, we are moving the last batch of products housed in PDIP8 package from Shenzhen plant to Long Gang plant, located in the same country (China).

The part numbers involved are :

Product Line	Commercial Product
LL0201	MC34063ECN
LL0401	MC34063ECN
S13105	AVS1ACP08
U30603	L6569
U31803	L6569A
U32403	L6387E
U36003	L6571B
U36103	L6571A
U36403	L6384E
U36603	L6385E
U37103	L6388E
VN7401	VIPER20ADIP-E
VNH101	VIPER53DIP-E
VNH601	VIPER53EDIP-E

For the products **MC34063ECN, MC34063ECN, L6569, L6569A, L6387E, L6571B, L6571A, L6384E, L6385E** and **L6388E** we will also implement the ECOPACK2 grade, the so called halogen-free, to comply with the environmental requirements of the Restricted Flame Retardant resin and we will change the wire material from Gold (Au) to Copper (Cu), as per B.O.M table below :

	Old material used in Shenzhen	New material used in Long Gang
Glue	ABLEBOND 8390	ABLEBOND 8390S25
Wire	Au D1	Cu D1
Resin	HYSOL MG46FAM	HENKEL GR360A-ST

For the products **AVS1ACP08, VIPER20ADIP-E, VIPER53DIP-E** and **VIPER53EDIP-E** we will will not change the wire, as per B.O.M. below :

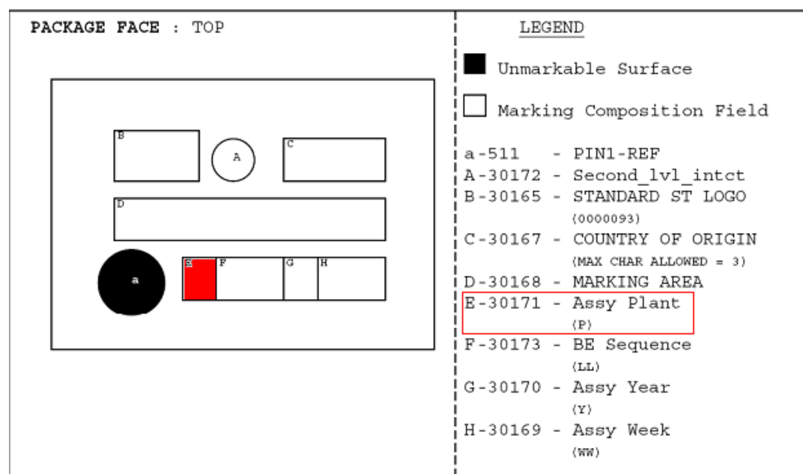
	Old material used in Shenzhen	New material used in Long Gang
Glue	ABLEBOND 8390	ABLEBOND 8390S25
Wire	Au D1	Au D1
Resin	HYSOL MG46FAM	HENKEL GR360A-ST

WHY:
To optimize ST's assets utilization in compliance with the Company Roadmap.

HOW:
As described in the PCN APM-IPC/10/6077, the Back-End relocation will be done moving the current equipments and tools from Shenzhen to Long Gang.
The location transfer will not affect the electrical, dimensional and thermal parameters, keeping unchanged all information reported on the relevant datasheets. There is as well no change in the packing process nor in the standard delivery quantities.

Qualification program and results
All the products included in this PCN have been qualified based on the positive results achieved in the qualification program completed in Q1 2011, see attached .

Marking and traceability
The parts assembled in the Long Gang plant will have a differentiated marking on the package face, as shown below :



where:

B-E plant Assy plant
Shenzhen (old) K
Long Gang (new) 4

The full traceability of the parts assembled in Long Gang plant will also be ensured by the date code, the internal codification and the Q.A. number on ST standard labels.

WHEN:
The production will start in July, 2012
Samples can be delivered on request in 4 weeks A.R.O.

RELIABILITY EVALUATION

QUALIFICATION OF TRANSFER from ST-SHENZHEN (CHINA) to ST LONG-GANG (CHINA) M-DIP8L HALOGEN FREE VERSION Cu WIRE & NEW GLUE D/ATTACH

DOCUMENT INFORMATION

Version	Date	Pages	Prepared by	Approved by	Comment
1.1	05-May-2011		F.VENTURA I&PC QA&R / B/E	A.MOTTA I&PC QA&R DIR.	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	BL8W*U093ADZ
P/N	*L6561-4HF*
Product Group	*APM*
Product division	*Industrial & Power Conversion*
Package	*DIP-8L*
Silicon Process technology	A3 BCD1
Maturity level step	*30*

Locations	
Wafer fab	*AMK6F (ANG MO KIO S'PORE)*
Assembly plant	*LGGA ST- CHINA*
Preliminary Reliability Assessment	*PASSED*
Reliability Lab	*ST-AGR(ITALY)*

General Information	
Product Line	*A58W*UE27AD6*
P/N	*L6562N-4HF/*
Product Group	*APM*
Product division	*Industrial & Power Conversion*
Package	*DIP-8L*
Silicon Process technology	
Maturity level step	*30*

Locations	
Wafer fab	*AMK6F (ANG MO KIO S'PORE*
Assembly plant	*LGGA ST- CHINA*
Preliminary Reliability Assessment	*PASSED*
Reliability Lab	*ST-AGR(ITALY)*

General Information	
Product Line	*GL8W*L096EA6*
P/N	*UC2842BN-2HF/*
Product Group	*APM*
Product division	*Industrial & Power Conversion*
Package	*DIP-8L*
Silicon Process technology	*A7 BCD2S*
Maturity level step	*30*

Locations	
Wafer fab	*AMK6F (ANG MO KIO S'PORE*
Assembly plant	*LGGA ST- CHINA*
Preliminary Reliability Assessment	*PASSED*
Reliability Lab	*ST-AGR(ITALY)*

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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

1 GLOSSARY

DUT	Device Under Test
SS	Sample Size

2 RELIABILITY EVALUATION OVERVIEW

2.1 Objectives

To qualify the transfer line of PDIP14/16L from ST-SHENZHEN (CHINA) to ST- LONG GANG (CHINA)

2.2 Conclusion

Qualification Plan requirements (WORKABILITY/ TESTING / CONSTRUCTION ANALISYS)have been fulfilled without exception. It is stressed that **final** 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

	L6561-4HF **HF (U093)**
Wafer/Die fab. information	*AMK6F*
Wafer fab manufacturing location	*AMK6F ANG MO KIO S'PORE*
Technology	A3 BCD1
Process family	BCD1
Die finishing back side	Cr/Ni/Au
Die size	2590 x 2060 mm
Bond pad metallization layers	Al/Si
Passivation type	SIN(nitride)
Wafer Testing (EWS) information	
Electrical testing manufacturing location	AMK6F
Assembly information	
Assembly site	ST-LGG (CHINA)
Package description	DIP8L 0.25 (TROUGH HOLE) DUAL IN LINE PKG
Molding compound **HALOGEN FREE**	HENKEL GR360A-ST
Frame material	PDIP8L IDF Mat3x2 OL194 T
Die attach process	EPOXY
Die attach material	ABLEBOND 8390S25
Die pad size	110 x 140 mil
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1MIL Cu
Lead finishing process	RAW COPPER +SILVER SPOT
Package code	8W
Final testing information	
Testing location	ST-LGG (CHINA)

Construction note

	L6562N-4HF/ **HF (UE27)**
Wafer/Die fab. information	
Wafer fab manufacturing location	*AMK6F ANG MO KIO S'PORE*
Technology	A7 BCD2 S
Process family	BCD2 S
Die finishing back side	Cr/Ni/Au
Die size	1770 x 1840 mm
Bond pad metallization layers	Al/Si
Passivation type	SIN/POLYMIDE
Wafer Testing (EWS) information	*AMK6F*
Electrical testing manufacturing location	*ANG MO KIO S'PORE*
Assembly information	
Assembly site	ST-LGG (CHINA)
Package description	DIP8L 0.25 (TROUGH HOLE) DUAL IN LINE PKG
Molding compound **HALOGEN FREE**	HENKEL GR360A-ST
Frame material	PDIP8L IDF Mat3x2 SpAg
Die attach process	EPOXY
Die attach material	ABLEBOND 8390S25
Die pad size	100 x 100 MIL
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1MIL Cu
Lead finishing process	RAW COPPER +SILVER SPOT
Package code	8W
Final testing information	
Testing location	ST-LGG (CHINA)

Construction note

	UC2842BN-2HF/ **HF(*L096*)**
Wafer/Die fab. information	
Wafer fab manufacturing location	*AMK6 ANG MO KIO S'PORE*
Technology	A7 BCD2S
Process family	A7 BCD2S
Die finishing back side	RAW SILICON
Die size	1860 x 1810 mm
Bond pad metallization layers	Al/Si/Cu
Passivation type	P-VAPOX (SiO2) /NITRIDE (SiN)
Wafer Testing (EWS) information	
Electrical testing manufacturing location	AMK6 *ANG MO KIO S'PORE*
Assembly information	
Assembly site	ST-LGG (CHINA)
Package description	DIP8L 0.25 (TROUGH HOLE) DUAL IN LINE PKG
Molding compound **HALOGEN FREE**	HENKEL GR360A-ST
Frame material	PDIP8L IDF Mat3x2 SpAg
Die attach process	EPOXY
Die attach material	ABLEBOND 8390S25
Die pad size	100 x 100 MIL
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1MIL Cu
Lead finishing process	RAW COPPER +SILVER SPOT
Package code	8W
Final testing information	
Testing location	ST-LGG (CHINA)

3 TESTS RESULTS SUMMARY

3.1 Test vehicle HF (U093)

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	V6024V68	G411602C01	G411602C V6 G4	PDIP8L	U093	

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

3.2 Test plan and results summary

P/N *L6561-4HF*

Test	PC	Std ref.	Conditions	SS	Steps	SS	Note
AC	Y	JESD22 A-102	Pa=2Atm / Ta=121℃	25	96 H	0/25	
					168 H	0/25	
					240H	0/25	
TC	Y	JESD22 A-104	Ta = -65℃ to 150℃	25	500CY	0/25	
					1000CY	0/25	
					1500CY	0/25	
					2000CY	0/25	
HTSL	N	JESD22 A-103	Ta = 150℃	25	500H	0/25	
					1000H	0/25	
					1500H	0/25	
					2000H	0/25	
E.S. HTS+TC	Y	NA	Ta = 150℃ (1000H) + Ta = -65℃ to 150℃(1000CY)	25	500CY	0/25	
					1000CY	0/25	
					500H	0/25	
					1000H	0/25	
THSL	N	JESD22 A-103	*Ta=85℃, 85%R.H*	25	500H	0/25	
					1000H	0/25	
					1500H	0/25	
					2000H	0/25	
THB	N	JESD22-A101	TA / RH = +85℃/85% *Vcc= 18V*	40	168 H	0/40	
					500H	0/40	
					1000H	0/40	

*Note: Testing with datalog performed at 25℃

3.3 Test vehicle HF (UE27)

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	V60120JE	G403206A01	G403206A V6 G4	PDIP8L	UE27	

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

3.4 Test plan and results summary

P/N *L6562N-4HF/*

Test	PC	Std ref.	Conditions	SS	Steps	SS	Note
AC	Y	JESD22 A-102	Pa=2Atm / Ta=121℃	25	96 H	0/25	
					168 H	0/25	
					240H	0/25	
TC	Y	JESD22 A-104	Ta = -65℃ to 150℃	25	500CY	0/25	
					1000CY	0/25	
					1500CY	0/25	
					2000CY	0/25	
HTSL	N	JESD22 A-103	Ta = 150℃	25	500H	0/25	
					1000H	0/25	
					1500H	0/25	
					2000H	0/25	
E.S. HTS+TC	Y	NA	Ta = 150℃ (1000H) + Ta = -65℃ to 150℃(1000CY)	25	500CY	0/25	
					1000CY	0/25	
					500H	0/25	
					1000H	0/25	
THSL	N		*Ta=85℃, 85%R.H*	25	500H	0/25	
					1000H	0/25	
					1500H	0/25	
					2000H	0/25	
THB	N	JESD22-A101	TA / RH = +85℃/85% *Vcc= 18V*	40	168 H	0/40	
					500H	0/40	
					1500H	0/40	
					2000H	0/40	

*Note: Testing with datalog performed at 25℃

3.5 Test vehicle HF (L096)

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	V6014KX1	G403206B01	G403206B V6 G4	PDIP8L	L096	

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

3.6 Test plan and results summary

P/N *UC2842BN-2HF/*

Test	PC	Std ref.	Conditions	SS	Steps	SS	Note
AC	Y	JESD22 A-102	Pa=2Atm / Ta=121℃	25	96 H	0/25	
					168 H	0/25	
					240H	0/25	
TC	Y	JESD22 A-104	Ta = -65℃ to 150℃	25	500CY	0/25	
					1000CY	0/25	
					1500CY	0/25	
					2000CY	0/25	
HTSL	N	JESD22 A-103	Ta = 150℃	25	500H	0/25	
					1000H	0/25	
					1500H	0/25	
					2000H	0/25	
E.S. HTS+TC	Y	NA	Ta = 150℃ (1000H) + Ta = -65℃ to 150℃(1000CY)	25	500CY	0/25	
					1000CY	0/25	
					500H	0/25	
					1000H	0/25	
THSL	N	JESD22 A-103	*Ta=85℃, 85%R.H*	25	500H	0/25	
					1000H	0/25	
					1500H	0/25	
					2000H	0/25	

*Note: Testing with datalog performed at 25℃

ANNEXES

3.6.1 Bonding diagram

-

(UO93) *L6561-4HF*	**(UE27)** *L6562N-4HF*	**(L096)** *UC2842BN-2HF*

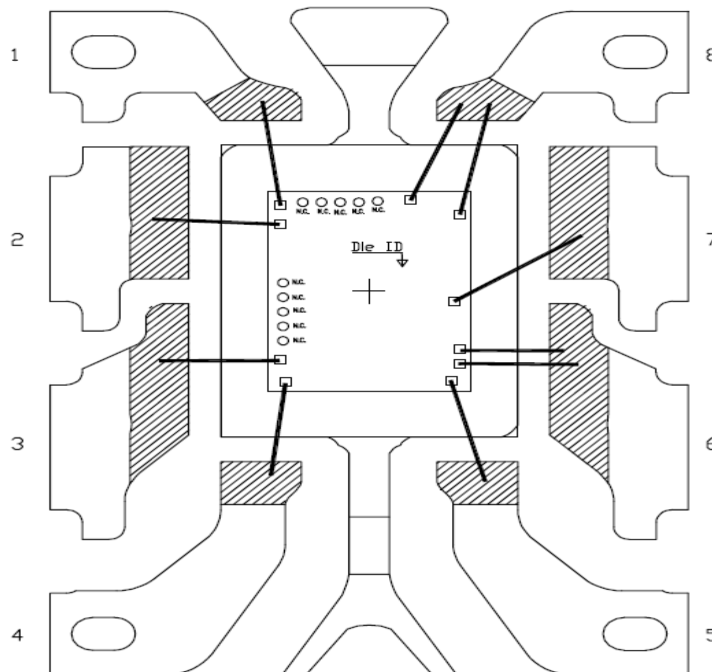
See below attached docs.

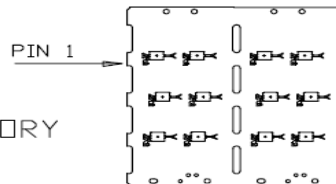
DOCUMENT 8271715 REVISION A CONTROLLED DOCUMENT (Check latest revision) DATE 24-JUN-2010 page: 1/1

MOUNT & BONDING DIAGRAM for: U093 Prod line

PACKAGE : 8 W LGG 3901

FRAME PAD : .110 x .140 inch / 2,794 x 3,556 mm DIE SIZE : Dimensions in the bsa





E.S.D. PROGRAM IS MANDATORY

MINIDIP 8L MATRIX
BLANK BOND. DIAG. REF. :5FT73182

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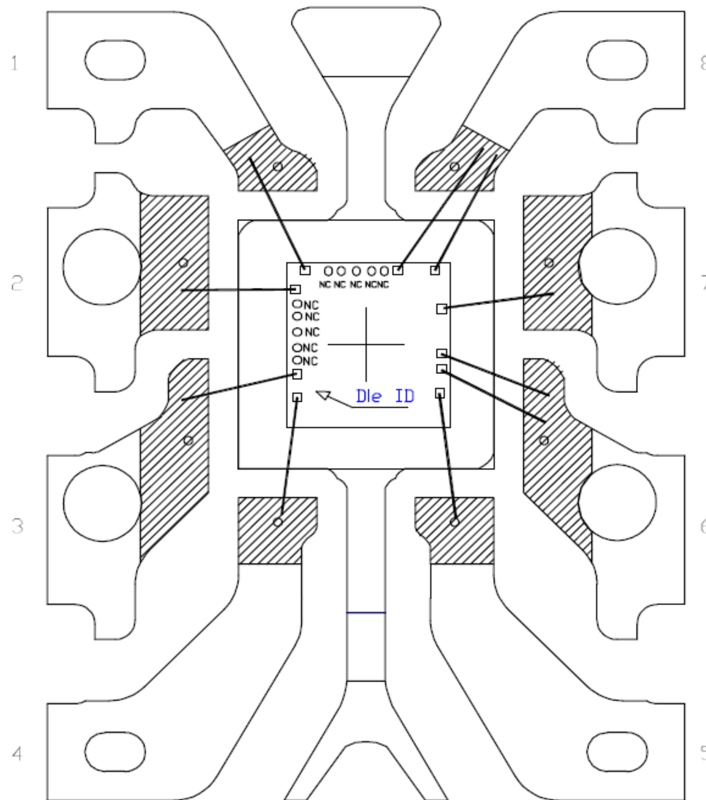
DOCUMENT 8271684 REVISION A CONTROLLED DOCUMENT (Check latest revision) DATE 24-JUN-2010 page: 1/1

MBD FOR line: UE27 (pack. 8W) LGG 3901

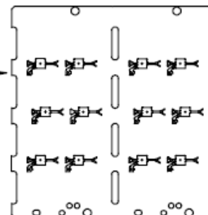
FRAME PAD : 0.1 x 0.1 inch / 2.54 x 2.54 mm DIE SIZE : 69.2 x 72.6 mils / 1760 x 1840 µm

PACKAGE : 8 W



1 mm

PIN 1



MINIDIP 8L MATRIX

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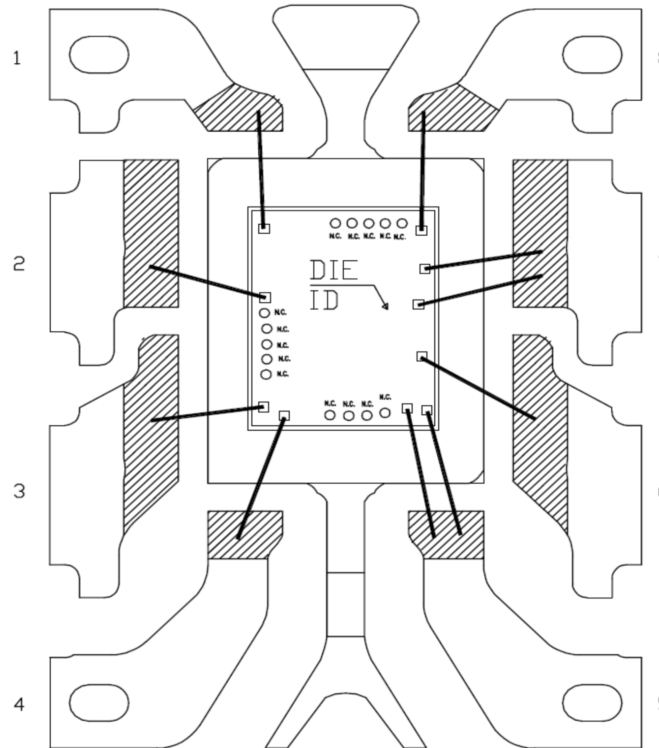
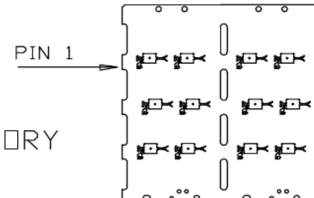
DOCUMENT 8271716 | REVISION B | CONTROLLED DOCUMENT (Check latest revision) | DATE 11-APR-2011 | page: 1/1

MOUNT & BONDING DIAGRAM for: L096 Prod line

PACKAGE : 8 W LGG 3901

FRAME PAD : $\frac{.110 \times .140 \text{ inch}}{2,794 \times 3,556 \text{ mm}}$ DIE SIZE : Dimensions in the bsa





E.S.D. PROGRAM IS MANDATORY

MINIDIP 8L MATRIX
BLANK BOND. DIAG. REF. :5FT73182

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3.6.2 Package outline/Mechanical data

DOCUMENT 0037880 REVISION D NOT AN APPROVED DOCUMENT (Check latest revision) DATE 19-APR-2011 page: 1/2

PACKAGE OUTLINE ASSEMBLY

TITLE: PLASTIC MINIDIP 8L (.300" 0.25)

PACKAGE CODE: 8W

JEDEC/EIAJ REFERENCE NUMBER:JEDEC- MS-001-VARIATION BA

	DIMENSIONS					
	DATABOOK (mm)			DRAWING (mm)		
REF.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			5.33		3.81	
A1	0.38			0.51		
A2	2.92	3.30	4.95	3.30	3.32	3.37
b	0.36	0.46	0.56	0.42	0.46	0.55
b2	1.14	1.52	1.78	1.48	1.52	1.61
c	0.20	0.25	0.36	0.26	0.28	0.30
D	9.02	9.27	10.16	9.00	9.05	9.10
E	7.62	7.87	8.26	7.57	7.62	7.67
E1	6.10	6.35	7.11	6.32	6.36	6.40
e		2.54		2.44	2.54	2.64
eA		7.62			7.62	
eB			10.92	7.95		9.75
L	2.92	3.30	3.81	3.25	3.30	3.35

NOTES:

(1) – Dimensions "D" and "E1" do not include mold flash, protrusions or gate burrs.
Mold flash, protrusions or gate burrs shall not exceed 0.25mm in total (both side).

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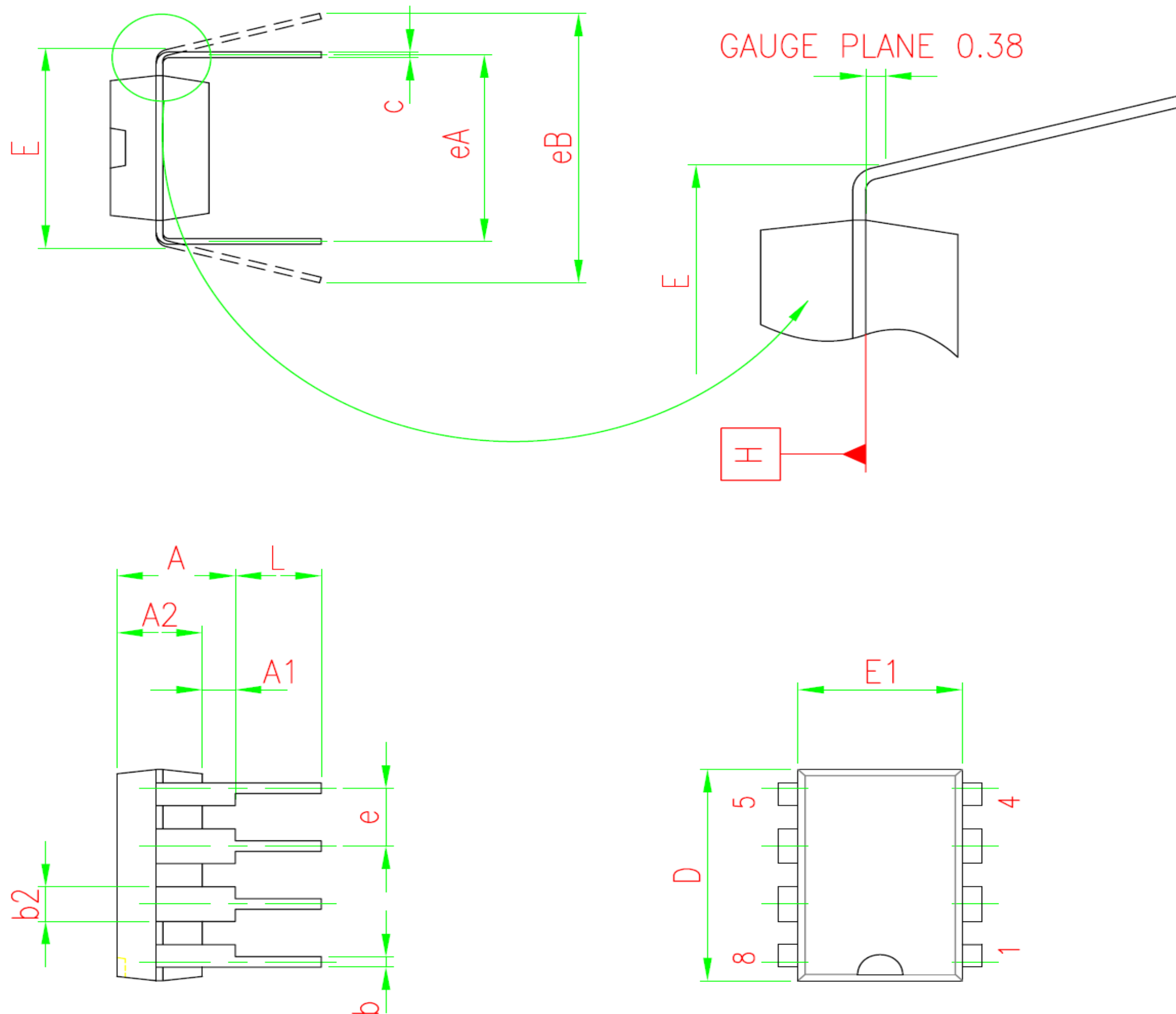
DOCUMENT 0037880 REVISION D NOT AN APPROVED DOCUMENT (Check latest revision) DATE 19-APR-2011 page: 2/2



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Tests Description

Test name	Description	Purpose
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.
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.
THS Thermal Humidity Storage	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 trough it.	This test is used to identify failure mechanism internal to the package and is desctructive.
Other		

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