Q&R Project Code: RR000609CT6017 **Q&R Project date:15-05-2009**

QUALITY & RELIABILITY EVALUATION REPORT

BCD OFF LINE PRODUCT TRANSFER QUALIFICATION
FROM ST- MUAR (MALAYSIA) TO ST- BOUSKOURA B-END(MOROCCO)USING HF (HALOGEN FREE) MATERIALS

Abstract:
APM/I&PC Division , decide to concentrate all the **SOIC8l assembly** activities in BSK plant, in order to optimize the production performance and have the right flexibility in delivery in compliance to the new ROHS procedure about the Halogen Free standard.
In this way**, I&PC** product transfer line**(BCD-OFF LINE family)** from ST-MUAR to ST BOUSKOURA was done using green compound**(SUMITOMO G700K)** and new glue type **ABLEBOND 8601S25** as continuous improvement.

For HF materials see spec. as reference:
JAPAN:JPCA-ES-01
IEC STANDARD:61249-2-21
JEDEC J-101

Conclusion:
A full qualification exercise it was done, to qualify the **BCD-OFF LINE** products transfer from **SOIC ST MUAR LINE** to **ST BOUSKOURA SOIC8L NRS line using SUMITOMO G700K** (already qualified in different I&PC family products) and new glue type **ABLEBOND 8601S25 using as test vehicle:**
***U324 (BCD-OFF family)**
Qualification exercise was done with Workability/Testing/ C.A & Reliability Positive results.

Note:
Product pass JEDEC LEVEL _1@260°C
Product is classified as ECOPAK E4

Issued by
Francesco Ventura
(I&PC QA&R B-END)

Approved by
Antonino Motta
(I&PC /QA&R MNG)

Reliability test conditions and results for *U324

Test	Test short description					
	Performed on 3# STD assy lots					
	Method	Conditions	Sample /Lots	Number of lots 1	Duration	Results Fail/SS
PC	Pre-Conditioning: Moisture sensitivity level@1					
	SAM T=0 & AFTER PRECOND	DUT SMD Preconditioning JL1 Bake 24hrs @ 125°C Soak 168hrs @ 85°C / 85%RH 3X Reflow @ 260°C	300			0/300 NO-DELAMINATION Before and after precond.
E.S :	Preconditioning JL@1 + Pressure pot					
	Condtions: 2atm		77		168hrs	0/77
E.S :	Preconditioning JL@1 + Thermal Cycle					
	Conditions:Ta=-65°C/+150°C		77		500Cy	0/77
HTS	High Temperature Storage					
	No bias	Tamb=150°C	77		1000h	0/77
T.H.B	Thermal Humidity Bias(A2)					
	85%/85RH	VHV=100V Vcc=17V	77		1000h	0/77

DIE FEATURES				PACKAGE FEATURES		
Die Code	**:**	XU324AE6		**Technical code(PKG)**	**:**	O7
Diffusion process	**:**	A5 BCD- OFFLINE		**Package name**	**:**	SOIC 8LN
Wafer diameter	**:**	6”		**Assembly site**	**:**	BSK(MOROCCO)
Diffusion site	**:**	AMOKIO		**Leadframe / substrate**	**:**	SO8L 94x125 MILS MTX PPF
Die size	**:**	2370 X1700UM		**Die attach**	**:**	GLUE ABLESTIK 8601S25
Die Tick.	**:**	375 ± 25 µm		**Molding compound**	**:**	SUMITOMO G700K GREEN COMPOUND (HF)
Passivation	**:**	SiN		**Wire Bonding**	**:**	1.0 mils Au
Back finishing	**:**	CHROMO NICKEL		**Solder balls / plating**	**:**	Ni/Pd/Au

Attachments:

-Reliability tests description (MANDATORY)
-MBD(Mont & Bond Diagram)
-POA (Package Outline Assembly)

ATTACHMENT 1: RELIABILITY TEST DESCRIPTION(for reference)

TEST NAME	DESCRIPTION	PURPOSE
JLn: Jedec Level n surface mounting simulation	The device is submitted to a typical temperature profile used for surface mounting, after a controlled moisture absorption.	As stand-alone test: to investigate the level of moisture sensitivity. 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.
TCT: Temperature Cycles Test	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, moulding compound delamination, wire-bonds failure, die-attach layer degradation.
PPT: Pressure Pot Test	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.
HTS: High Temperature Storage	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.
THB: Temperature Humidity Bias Test	The device is biased in static configuration minimizing its internal power dissipation, and stored at controlled conditions of ambient temperature and relative humidity.	To investigate failure mechanisms activated in the die-package environment by electrical field and wet conditions. Typical failure mechanisms are electro-chemical corrosion and surface effects related to the moulding compound.

DOCUMENT 7618399 REVISION A CONTROLLED DOCUMENT (Check latest revision) DATE 09-JAN-2004 page: 1/1

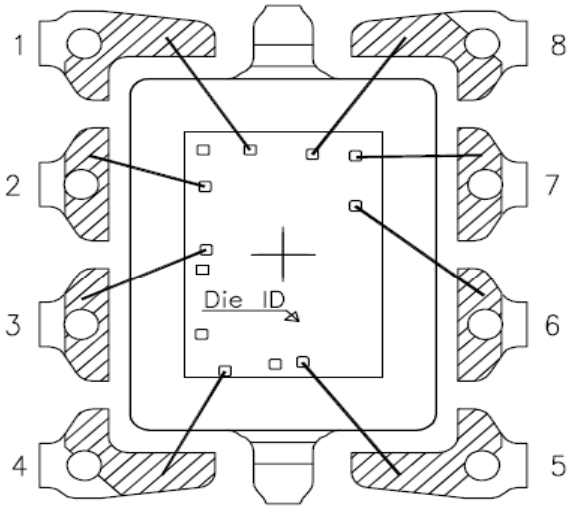
BONDING DIAGRAM FOR LINE : U324

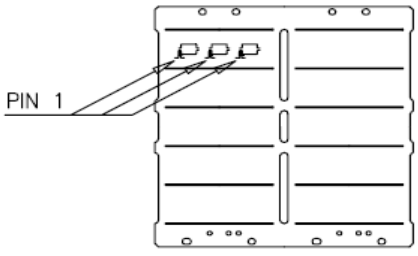
PACKAGE : 07

FRAME PAD : .094 x .125 inch / 2,388 x 3,175 mm

SCALE

1mm



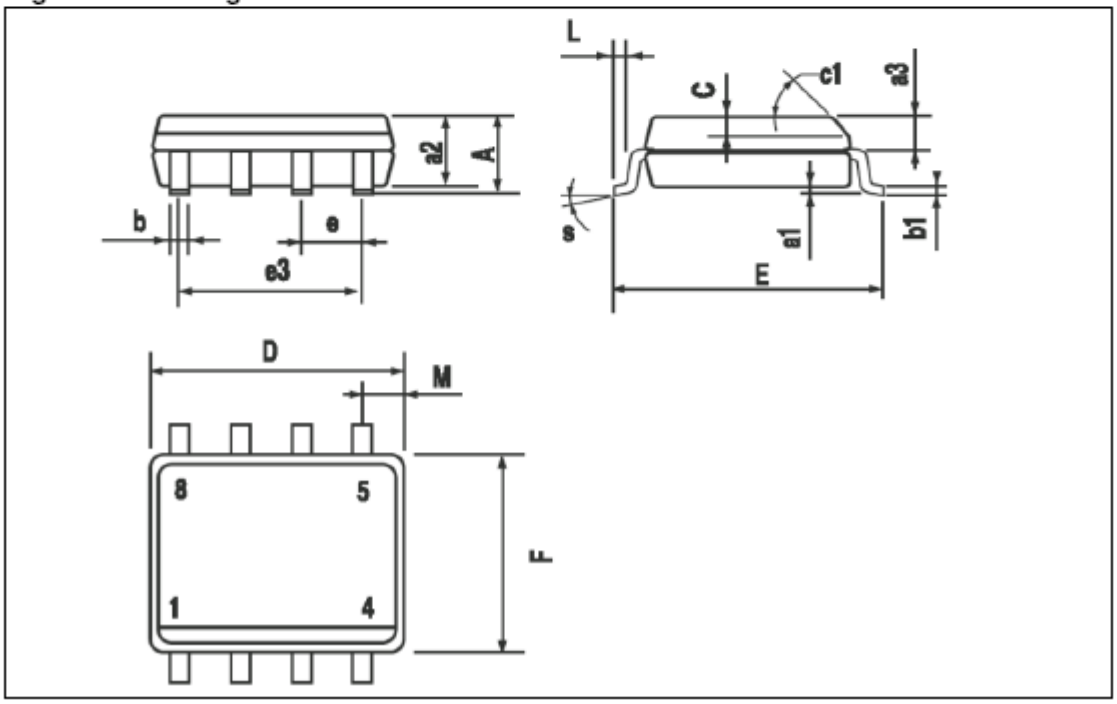


SOP 8L MATRIX 3x5
BLANK BOND. DIAG. REF. : 5FT72302

Table 9. SO-8 mechanical data

Dim.	mm			inch		
	Min	Typ	Max	Min	Typ	Max
A			1.75			0.068
a1	0.1		0.25	0.003		0.009
a2			1.65			0.064
a3	0.65		0.85	0.025		0.033
b	0.35		0.48	0.013		0.018
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.019
c1	45 (typ.)					
D	4.8		5.0	0.188		0.196
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.14		0.157
L	0.4		1.27	0.015		0.050
M			0.6			0.023
S	8º (max.)					

Figure 9. Package dimensions



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Autore ultimo salvataggio:	francesco ventura
Tempo totale modifica	107 minuti
Data ultima stampa:	5/15/2009 4:35:00 PM
Come da ultima stampa completa	
Numero pagine:	6
Numero parole:	801 (circa)
Numero caratteri:	4,570 (circa)

Q&R Project Code: **RR000709CT6017** **Q&R Project date:19-05-2009**

QUALITY & RELIABILITY EVALUATION REPORT

QUALIFICATION OF SOIC 8/14/16L NRS & STAND ALONE LINE

USING HF (HALOGEN FREE) MATERIALS

SUMITOMO G700K MOLDING COMPOUND
AND NEW GLUE ABLEBOND 8601S25

ST-BOUSKOURA(MOROCCO) B-END

Abstract:

APM/I&PC Division , decide to concentrate all the SOIC8/14/16L assembly activities in BSK plant, in order to optimize the production performance and have the right flexibility in delivery in compliance to the new ROHS procedure about the Halogen Free standard.

See HF IPC-JEDEC spec. as reference:

JAPAN:JPCA-ES-01
IEC STANDARD:61249-2-21
JEDEC J-101

Conclusion:

A full qualification exercise it was done with, Workability/Testing/C.A/Reliability evaluation positive results, to qualify the new Halogen Free products assembled on **SOIC8/14/16L NRS/STAND ALONE** line using **SUMITOMO G700K , and ABLEBOND 8601S25** as new glue type.(Both already qualified in different I&PC family products **see RR:000609CT6017- date 15-05-2009)** having as test vehicles:

***U093 (BCD1 family)**
***L264/0303 (BIP family)**
***UM06/07 (BCD6s family)**
Note:
Product pass JEDEC LEVEL _1_3@260°C
Product is classified as ECOPAK E4

Issued by
Francesco Ventura
(I&PC QA&R B-END)

Approved by
Antonino Motta
(I&PC /QA&R MNG)

Preliminary Reliability test conditions and results for *U093

Test	Test short description					
				Performed on 3# STD assy lots		
	Method	Conditions	Sample /Lots	Number of lots 1	Duration	Results Fail/SS
PC	Pre-Conditioning: Moisture sensitivity level@1					
	SAM T=0 & AFTER PRECOND	DUT SMD Preconditioning JL1 Bake 24hrs @ 125°C Soak 168hrs @ 85°C / 85%RH 3X Reflow @ 260°C	154			0/154 NO-DELAMINATION Before and after precond.
E.S :	Preconditioning JL@1 + Pressure pot					
	Condtions: 2atm		77		168hrs	0/77
E.S :	Preconditioning JL@1 + Thermal Cycle					
	Conditions:Ta=-65°C/+150°C		77		1000Cy	0/77
HTS	High Temperature Storage					
	No bias	Tamb=150°C	77		1000h	0/77

DIE FEATURES				PACKAGE FEATURES		
Die Code	:	XU093ADZ		Technical code(PKG)	:	O7
Diffusion process	:	A3 BCD1		Package name	:	SOIC 8LN
Wafer diameter	:	6”		Assembly site	:	BSK(MOROCCO)
Diffusion site	:	AMOKIO		Leadframe / substrate	:	SO8L 94x125 MILS MTX PPF
Die size	:	2590 X2060UM		Die attach	:	GLUE ABLESTIK 8601S25
Die Tick.	:	375 ± 25 µm		Molding compound	:	SUMITOMO G700K GREEN COMPOUND (HF)
Passivation	:	SiN		Wire Bonding	:	1.0 mils Au
Back finishing	:	CHROMO NICKEL GOLD		Solder balls / plating	:	Ni/Pd/Au

Preliminary Reliability test conditions and results for *L264

Test	Test short description					
	Performed on 3# STD assy lots					
	Method	Conditions	Sample /Lots	Number of lots 1	Duration	Results Fail/SS
PC	Pre-Conditioning: Moisture sensitivity level@1					
	SAM T=0 & AFTER PRECOND	DUT SMD Preconditioning JL1 Bake 24hrs @ 125°C Soak 168hrs @ 85°C / 85%RH 3X Reflow @ 260°C	77			0/77 NO-DELAMINATION Before and after precond.
E.S :	Preconditioning JL@1 + Pressure pot					
	Condtions: 2atm		77		168hrs	0/77
E.S :	Preconditioning JL@1 + Thermal Cycle					
	Conditions:Ta=-65°C/+150°C		77		100Cy	0/77
HTS	High Temperature Storage					
	No bias	Tamb=150°C	77		100h	0/77

DIE FEATURES				PACKAGE FEATURES		
Die Code	:	XL264EA6		Technical code(PKG)	:	O7
Diffusion process	:	C1 BIP		Package name	:	SOIC 8LN
Wafer diameter	:	6”		Assembly site	:	BSK(MOROCCO)
Diffusion site	:	AMOKIO		Leadframe / substrate	:	SO8L 94x125 MILS MTX PPF
Die size	:	2440 X1940UM		Die attach	:	GLUE ABLESTIK 8601S25
Die Tick.	:	280 ± 20 µm		Molding compound	:	SUMITOMO G700K GREEN COMPOUND (HF)
Passivation	:	SiN		Wire Bonding	:	1.0 mils Au
Back finishing	:	CHROMO NICKEL		Solder balls / plating	:	Ni/Pd/Au

Preliminary Reliability test conditions and results for *0303

Test	Test short description					
				Performed on 3# STD assy lots		
	Method	Conditions	Sample /Lots	Number of lots 1	Duration	Results Fail/SS
PC	Pre-Conditioning: Moisture sensitivity level@1					
	SAM T=0 & AFTER PRECOND	DUT SMD Preconditioning JL3 Bake 24hrs @ 125°C Soak 192hrs @ 30°C / 60%RH 3X Reflow @ 260°C	77			0/77 NO-DELAMINATION Before and after precond.
E.S :	Preconditioning JL@1 + Pressure pot					
	Condtions: 2atm		77		168hrs	0/77
E.S :	Preconditioning JL@1 + Thermal Cycle					
	Conditions:Ta=-65°C/+150°C		77		1000Cy	0/77
HTS	High Temperature Storage					
	No bias	Tamb=150°C	77		1000h	0/77
THB	Temperature Humidty Bias	(A2) 85°C/85%RH, Vin=32V	45		1000h	0/45

DIE FEATURES				PACKAGE FEATURES		
Die Code	:	X0303AC6		Technical code(PKG)	:	O7
Diffusion process	:	C6 BIP		Package name	:	SOIC 8LN
Wafer diameter	:	6”		Assembly site	:	BSK(MOROCCO)
Diffusion site	:	AMOKIO		Leadframe / substrate	:	SO8L 94x125 MILS MTX PPF
Die size	:	18900 X 2120UM		Die attach	:	GLUE ABLESTIK 8601S25
Die Tick.	:	375 ± 25 µm		Molding compound	:	SUMITOMO G700K GREEN COMPOUND (HF)
Passivation	:	SiN-POLYAMMIDE		Wire Bonding	:	1.0 mils Au
Back finishing	:	ROW SILICON		Solder balls / plating	:	Ni/Pd/Au

Preliminary Reliability test conditions and results for *UM06

Test	Test short description					
	Performed on 3# STD assy lots					
	Method	Conditions	Sample /Lots	Number of lots 1	Duration	Results Fail/SS
PC	Pre-Conditioning: Moisture sensitivity level@1					
	SAM T=0 & AFTER PRECOND	DUT SMD Preconditioning JL1 Bake 24hrs @ 125°C Soak 168hrs @ 85°C / 85%RH 3X Reflow @ 260°C	77			0/77 NO-DELAMINATION Before and after precond.
E.S :	Preconditioning JL@1 + Pressure pot					
	Condtions: 2atm		77		168hrs	0/77
E.S :	Preconditioning JL@1 + Thermal Cycle					
	Conditions:Ta=-65°C/+150°C		77		1000Cy	0/77
HTS	High Temperature Storage					
	No bias	Tamb=150°C	77		1000h	0/77

DIE FEATURES				PACKAGE FEATURES		
Die Code	:	XUM06AEP		Technical code(PKG)	:	O7
Diffusion process	:	2L BCD6s		Package name	:	SOIC 8LN
Wafer diameter	:	6”		Assembly site	:	BSK(MOROCCO)
Diffusion site	:	AMOKIO		Leadframe / substrate	:	SO8L 85x85 MILS MTX PPF
Die size	:	1311 X 1242UM		Die attach	:	GLUE ABLESTIK 8601S25
Die Tick.	:	375 ± 25 µm		Molding compound	:	SUMITOMO G700K GREEN COMPOUND (HF)
Passivation	:	USG-SiON-PIX		Wire Bonding	:	1.0 mils Au
Back finishing	:	CHROMO NICKEL GOLD		Solder balls / plating	:	Ni/Pd/Au

ATTACHMENT 1: RELIABILITY TEST DESCRIPTION(for reference)

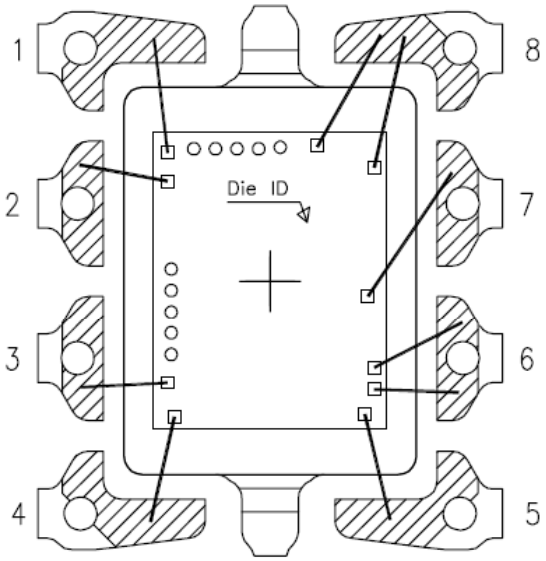
TEST NAME	DESCRIPTION	PURPOSE
JLn: Jedec Level n surface mounting simulation	The device is submitted to a typical temperature profile used for surface mounting, after a controlled moisture absorption.	As stand-alone test: to investigate the level of moisture sensitivity. As preconditioning before other 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.
TCT: Temperature Cycles Test	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, moulding compound delamination, wire-bonds failure, die-attach layer degradation.
PPT: Pressure Pot Test	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.
HTS: High Temperature Storage	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.
THB: Temperature Humidity Bias Test	The device is biased in static configuration minimizing its internal power dissipation, and stored at controlled conditions of ambient temperature and relative humidity.	To investigate failure mechanisms activated in the die-package environment by electrical field and wet conditions. Typical failure mechanisms are electro-chemical corrosion and surface effects related to the moulding compound.

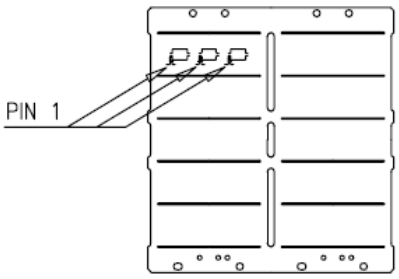
DOCUMENT 7862867 REVISION A CONTROLLED DOCUMENT (Check latest revision) DATE 09-JUN-2005 page: 1/1

BONDING DIAGRAM FOR LINE : U093 PACKAGE : 07

FRAME PAD : .094 x .125 inch / 2,388 x 3,175 mm

SCALE 1mm



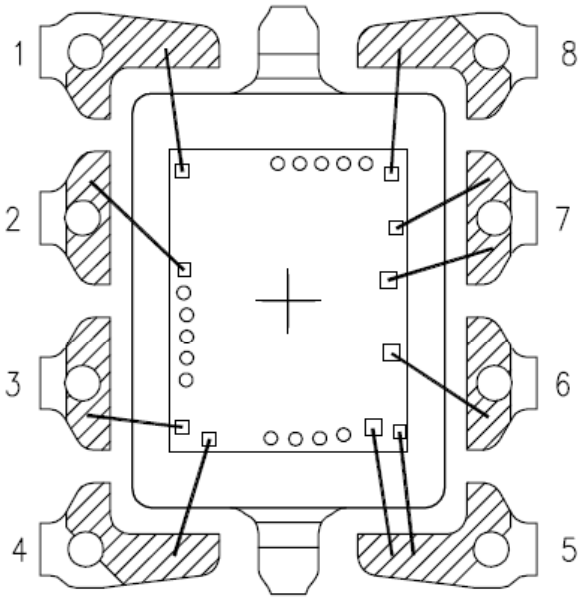


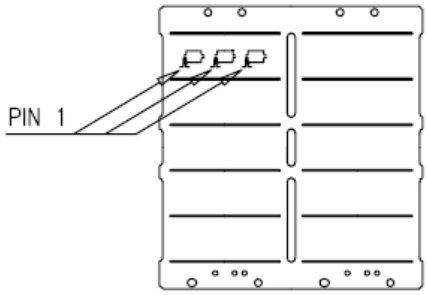
BONDING DIAGRAM FOR LINE : L764

PACKAGE : 07

FRAME PAD : .094 x .125 inch / 2,388 x 3,175 mm

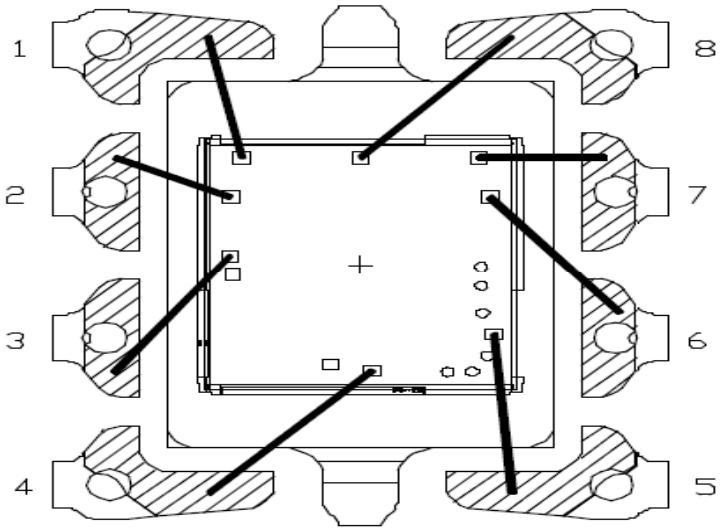
SCALE
1mm

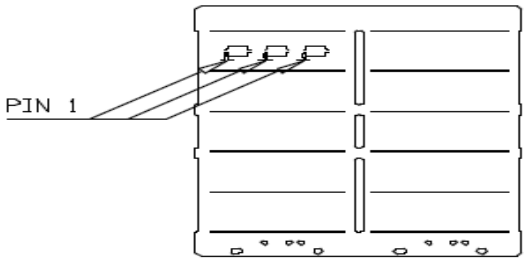




BONDING DIAGRAM FOR LINE : 0303 PACKAGE : D 7

FRAME PAD : .094 x .125 inch / 2,388 x 3,175 mm DIE SIZE : inch / Dimensions in the bsa

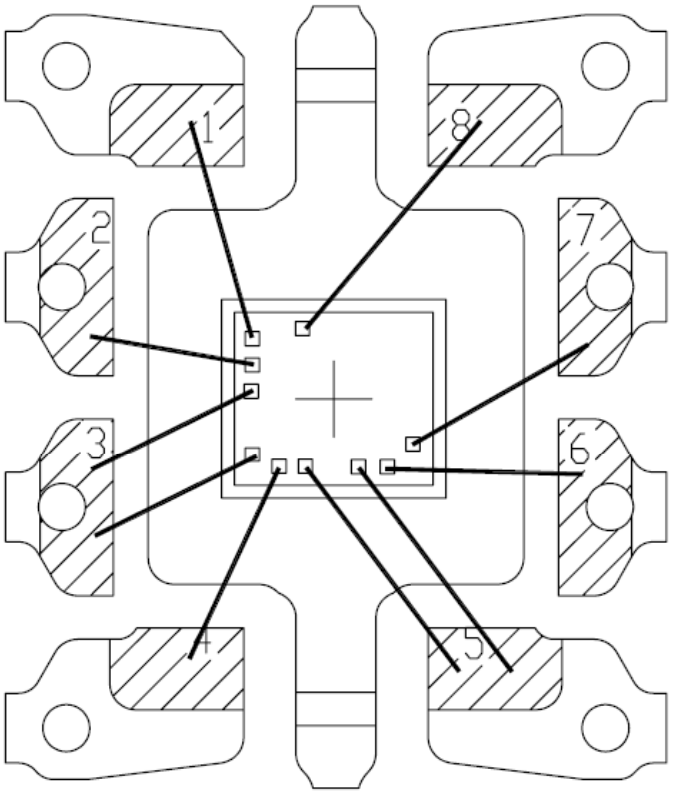




SOP 8L MATRIX
BLANK BOND. DIAG. REF. : 0108482

MOUNT & BOND DIAGRAM FOR B507*UM06AEP

FRAME PAD : 85 x 85 mils / 2,159 x 2,159 mm



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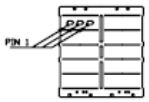
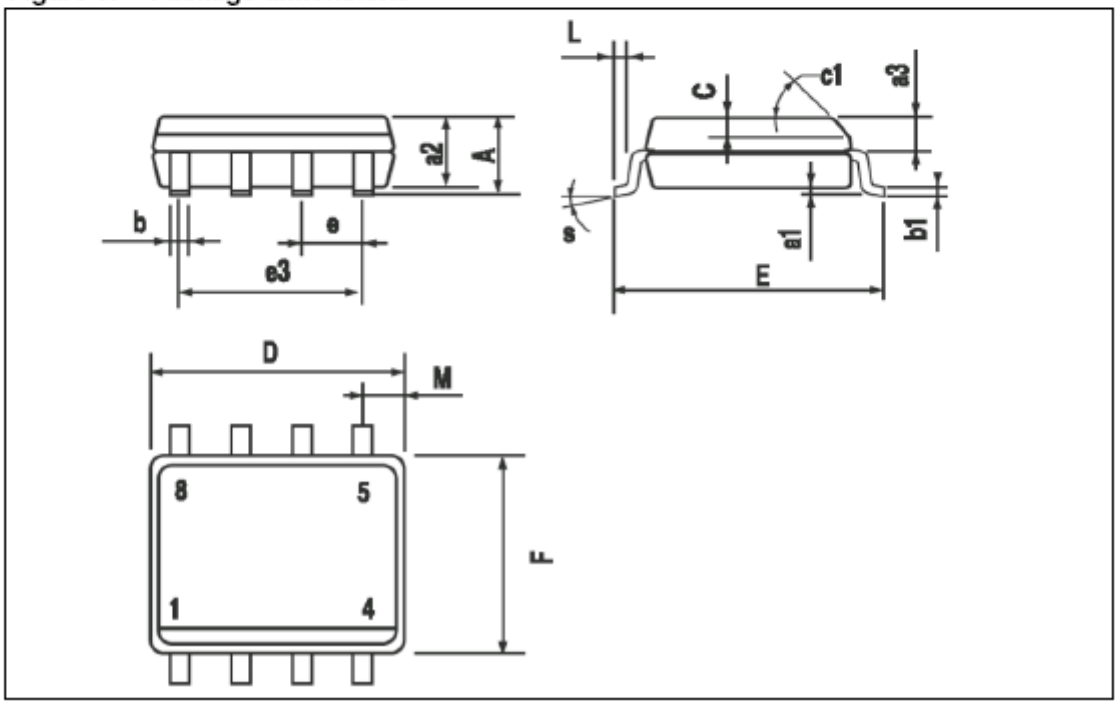


E.S.D. PROGRAM IS MANDATORY

Table 9. SO-8 mechanical data

Dim.	mm			inch		
	Min	Typ	Max	Min	Typ	Max
A			1.75			0.068
a1	0.1		0.25	0.003		0.009
a2			1.65			0.064
a3	0.65		0.85	0.025		0.033
b	0.35		0.48	0.013		0.018
b1	0.19		0.25	0.007		0.010
C	0.25		0.5	0.010		0.019
c1	45 (typ.)					
D	4.8		5.0	0.188		0.196
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.14		0.157
L	0.4		1.27	0.015		0.050
M			0.6			0.023
S	8º (max.)					

Figure 9. Package dimensions



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Numero revisione: 34
Data ultimo salvataggio: 6/3/2009 5:04:00 PM
Autore ultimo salvataggio: francesco ventura
Tempo totale modifica 223 minuti
Data ultima stampa: 6/3/2009 5:09:00 PM
Come da ultima stampa completa
Numero pagine: 11
Numero parole: 1,342 (circa)
Numero caratteri: 7,654 (circa)

RELIABILITY EVALUATION

QUALIFICATION OF:

*UQ1801

ASSEMBLED ON SOIC8L STAND ALONE ST-BSK (MOROCCO) MATRIX LINE USING HALOGEN FREE MOLDING COMPOUND SUMITOMO G700K

DOCUMENT INFORMATION

Version	Date	Pages	Prepared by	Approved by	Comment
1.0	12-Sept-2016		F.VENTURA I&PC QA&R / B/E	A.PLATINI I&PC QA&R MNG.	Final report

General Information	
Product Line	F5O7*UQ18BA5
P/N	*PM8834-5/ AP239-5/*
Product Group	*AMG*
Product division	*Industrial & Power Discrete*
Package	*SOIC 8L .150 NARROW*
Silicon Process technology	2L - BCD6S
Maturity level step	*21*

Locations	
Wafer fab	CM5F - Catania CTM8
Assembly plant	BO2A ST BOUSKOURA 2 - MOROCCO 64BA
Final Reliability Assessment	*PASSED*
Reliability Lab	*ST-MOROCCO /ST-ITALY*

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

To qualify *UQ1801 assembled on SOIC8L NARROW MATRIX STAND ALONE LINE using HALOGEN FREE MOLDING COMPOUND.

2.2 Conclusion:

Basis on the positive results of qualification and reliability evaluation:
ReportLibrary_Product_RR000609CT6017.pdf
ReportLibrary_Product_RR000709CT6017.pdf

Basis on positive workability & testing report comparison between UQ1801 using std (no HF molding) Vs UQ1801 using HF (HF molding compound),
FT_comparison.pptx
Product can be considered QUALIFIED by ext.

Moreover, the stability of electrical parameters during the accelerated tests demonstrates the ruggedness of the products and safe operation, which is onsequently expected during their lifetime.

2.3 Construction note

	***UQ1801_ P/N:** *PM8834-5/ AP239-5/*
Wafer/Die fab. information	CM5F
Wafer fab manufacturing location	CM5F Catania CTM8
Technology	*BCD6S*
Process family	2L - BCD6S
Die finishing back side	CHROMIUM/NICKEL/GOLD
Die size	989,1058 UM
Bond pad metallization layers	Ti/AlCu/TiNARC
Passivation type	TEOS/SiN/Polyimide
Wafer Testing (EWS) information	
Electrical testing manufacturing location	CM5F
Assembly information	
Assembly site	ST-BSK MOROCCCO
Package description	SOIC8L NARROW .150
Molding compound	RESIN SUMITOMO EME-G700K ECOPAK 2 COMPLIANCE
Frame material	PRE =PLATED L/F ThPPF
Die attach process	EPOXY GLUE
Die attach material	GLUE LOCTITE ABLESTIK 8601S-25
Die pad size	85x85 Mtx Flo OptA
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1.0 mils Au
Lead finishing process	Pre- plated
Package code	O7
Final testing information	
Testing location	ST-BSK MOROCCO

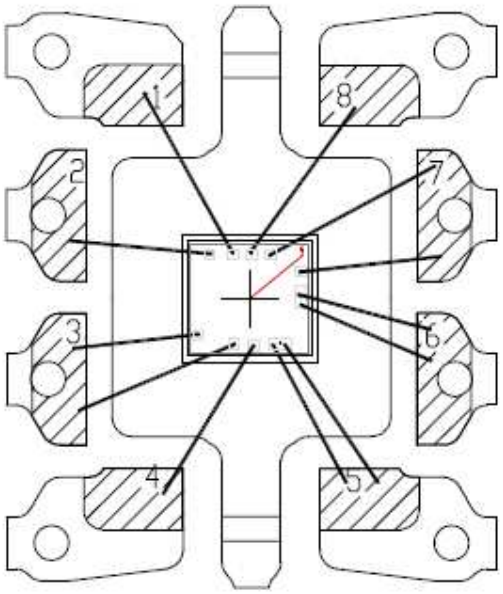
3.4.1 ANNEXES: MOUNT BOND DIAGRAM (MBD)

0036859 1.0 CONTROLLED DOCUMENT ACTIVE 05-Oct-2007 PAGE 1/1
0036859_A

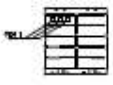
MOUNT & BOND DIAGRAM FOR UQ18 BSK

FRAME PAD : 85 x 85 mils / 2,159 x 2,159 mm

PK: 07



SCALE : 1 mm



E.S.D. PROGRAM IS MANDATORY

2.3.1 Package outline/Mechanical data

PACKAGE OUTLINE ASSEMBLY

TITLE: PLASTIC SMALL OUTLINE PACKAGE 8L

PACKAGE CODE: O7 (O like OSCAR)
PACKAGE WEIGHT: 0,0765 g/unit typ
JEDEC/EIAJ REFERENCE NUMBER: JEDEC MS-012-AA

	DIMENSIONS						
	DATABOOK (mm)			DRAWING (mm)			
REF.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	NOTES
A			1.75			1.74	
A1	0.10		0.25	0.12	0.15	0.18	
A2	1.25			1.48	1.52	1.56	
b	0.28		0.48	0.375	0.40	0.425	
c	0.17		0.23	0.192	0.20	0.225	
D	4.80	4.90	5.00	4.87	4.90	4.93	(1)
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)
e		1.27			1.27		
h	0.25		0.50	0.425		0.50	
L	0.40		1.27	SEE LEADFRAME OPTIONS			
L1		1.04			1.05		
k	0		8	2	4	8	DEGREES
ccc			0.10			0.04	

	LEADFRAME OPTIONS						
	PREPLATED			POSTPLATED			
REF.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	NOTES
L	0.567	0.617	0.667	0.585	0.635	0.685	

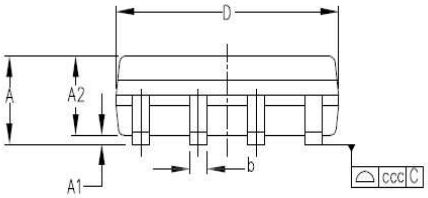
NOTES:

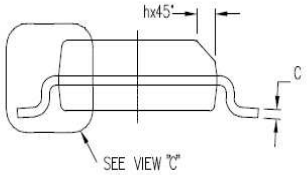
(1) – Dimension "D" does not include mold flash, protrusions or gate burrs.
Mold flash, protrusions or gate burrs shall not exceed 0.15mm in total (both side).

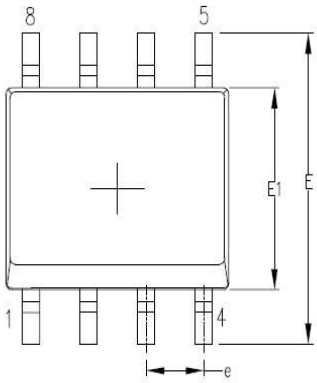
(2) – Dimension "E1" does not include interlead flash or protrusions.
Interlead flash or protrusions shall not exceed 0.25mm per side.

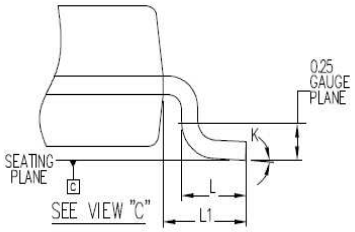
FIGURE : 2 | DOC. NUMBER : 0016023

TITLE : POA PLASTIC SMALL OUTLINE PACKAGE 8L (ASE SUBCON.)









MATERIAL

NATIVE SCALE

PROJECTION

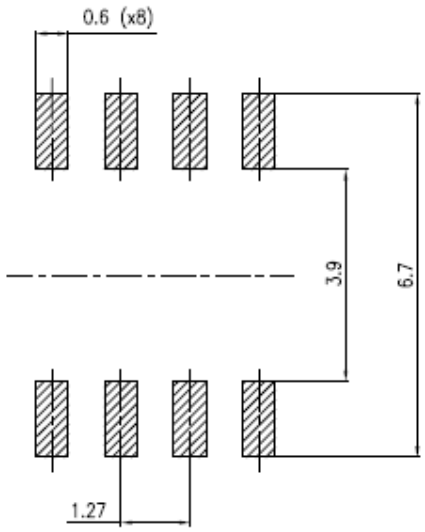
DIM are in mm – Unspecified tolerance

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°10'

FIGURE : 4	DOC. NUMBER : 0016023

TITLE : PLASTIC SMALL OUTLINE PACKAGE 8L

RECOMMENDED FOOTPRINT



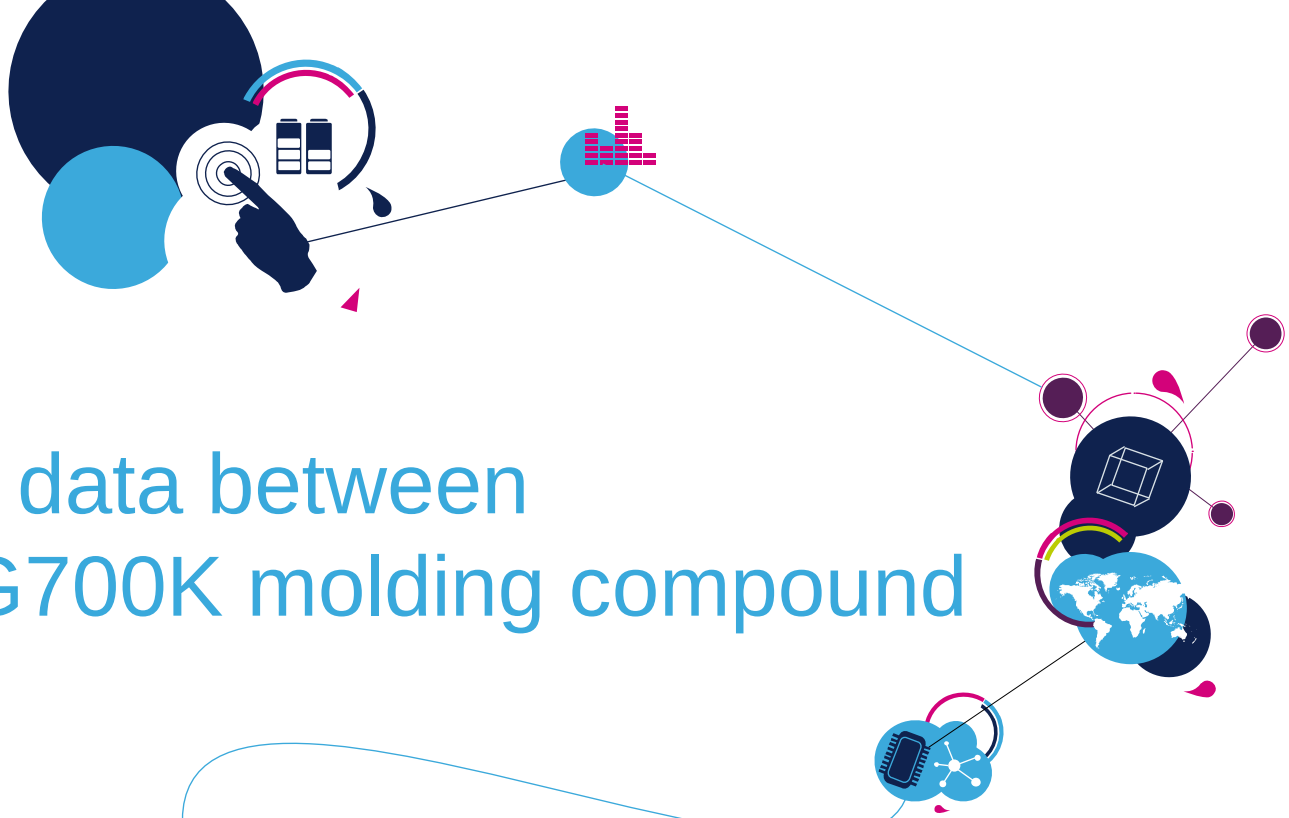
MATERIAL _____

NATIVE SCALE

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'



FT comparison data between No HF Vs HF G700K molding compound

Francesco Uggetti

life.augmented

FT Yield comparison

STD Resin : 98.6 %
G700 Resin : 98.7 %

Group name : STD resin

Software Binning	Bin Name	Pass/ Fail	Total count	Percentage
1	Good	P	13129	98.6 %
5	Open	F	78	0.6 %
6	Short	F	20	0.2 %
7	Rdson	F	1	0.0 %
8	Uvlo_Rise	F	70	0.5 %
10	I_Vcc_En_pwm	F	9	0.1 %
12	Switch_freq_2.5nF	F	4	0.0 %
13	Switch_freq_14nF	F	2	0.0 %
All PASS Bins	**All PASS Bins**	P	**13129**	**98.6 %**
All FAIL Bins	**All FAIL Bins**	F	**184**	**1.4 %**
ALL Bins	**ALL Bins**	-	**13313**	**100.0 %**

Software Binning Chart

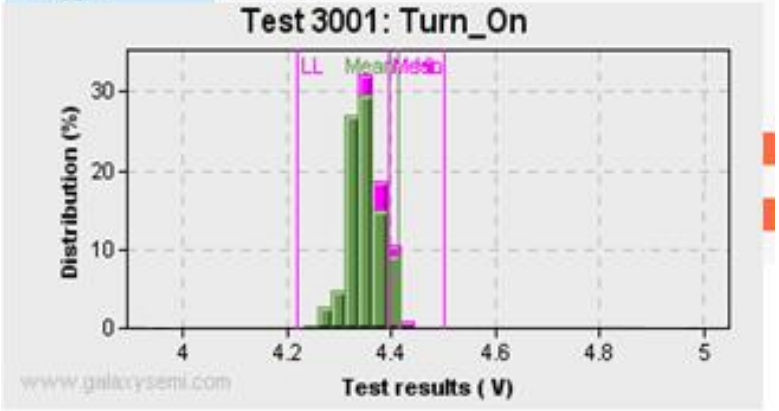
Group name : G700K resin

Software Binning	Bin Name	Pass/ Fail	Total count	Percentage
1	Good	P	13009	98.7 %
5	Open	F	49	0.4 %
6	Short	F	36	0.3 %
7	Rdson	F	3	0.0 %
8	Uvlo_Rise	F	53	0.4 %
10	I_Vcc_En_pwm	F	6	0.0 %
12	Switch_freq_2.5nF	F	13	0.1 %
13	Switch_freq_14nF	F	18	0.1 %
All PASS Bins	**All PASS Bins**	P	**13009**	**98.7 %**
All FAIL Bins	**All FAIL Bins**	F	**178**	**1.3 %**
ALL Bins	**ALL Bins**	-	**13187**	**100.0 %**

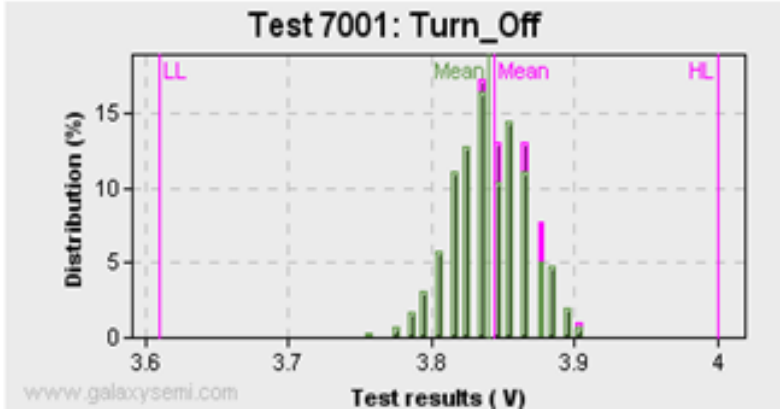
Software Binning Chart

Histogram : Turn_On - Turn_Off Uvlo_hist

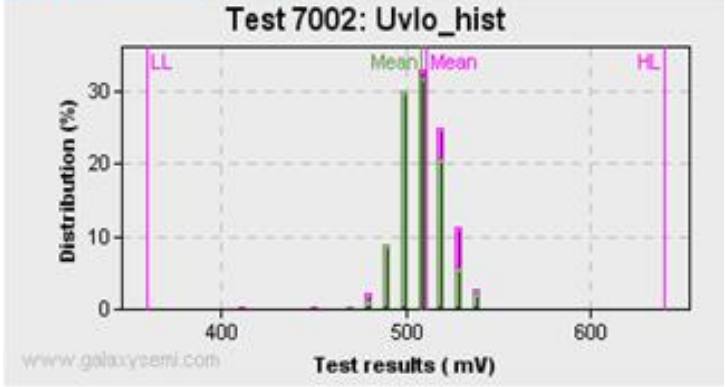
Test	3001
Groups colors	STD resin G700K resin
Name	Turn_On
Test type	Parametric



Test	7001
Groups colors	STD resin G700K resin
Name	Turn_Off
Test type	Parametric

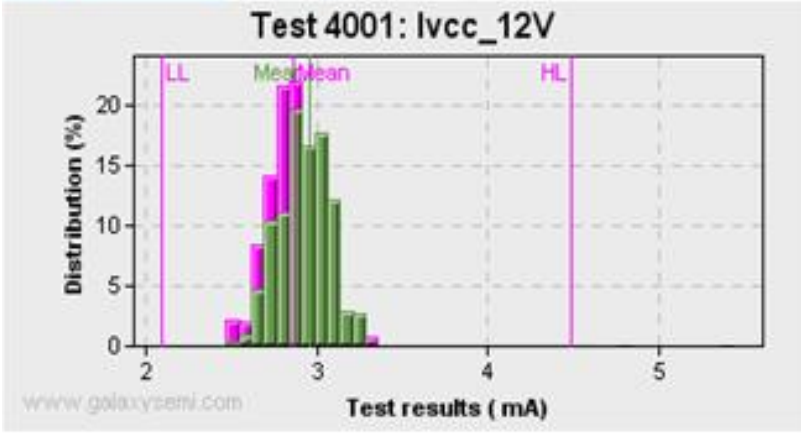


Test	7002
Groups colors	STD resin G700K resin
Name	Uvlo_hist
Test type	Parametric

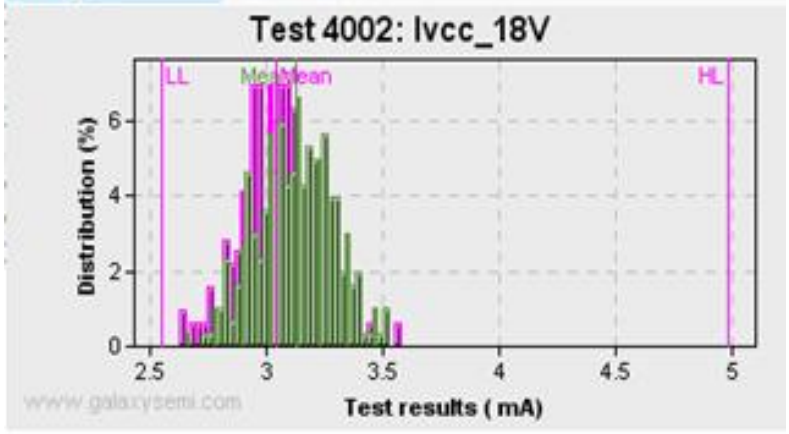


Histogram : Ivcc_12V Ivcc_18V

Test	4001
Groups colors	STD resin G700K resin
Name	Ivcc_12V
Test type	Parametric

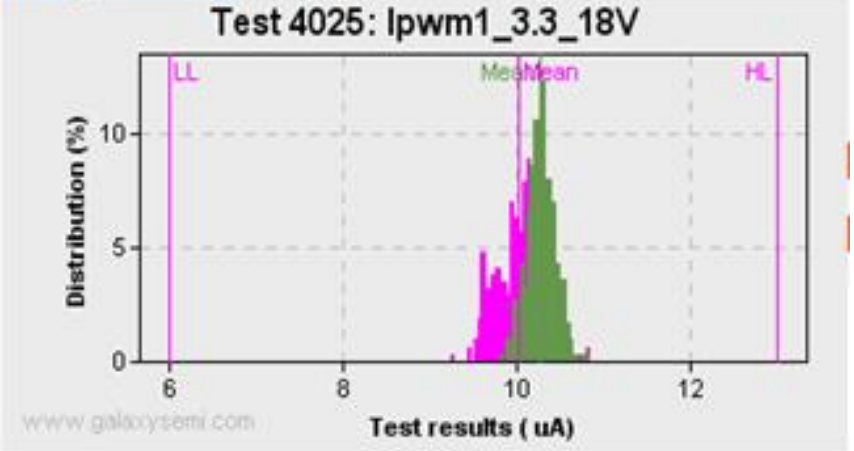


Test	4002
Groups colors	STD resin G700K resin
Name	Ivcc_18V
Test type	Parametric

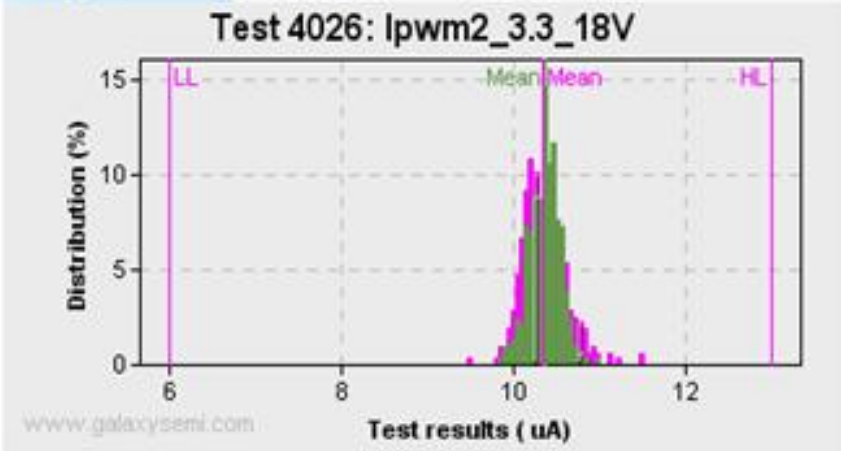


Histogram : Ipwm1_3.3_18V
Ipwm2_3.3_18V

Test	4025
Groups colors	STD resin G700K resin
Name	Ipwm1_3.3_18V
Test type	Parametric

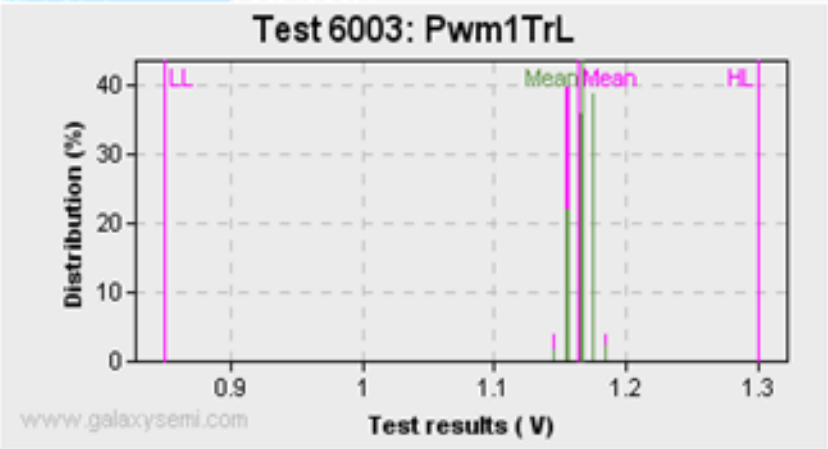


Test	4026
Groups colors	STD resin G700K resin
Name	Ipwm2_3.3_18V
Test type	Parametric

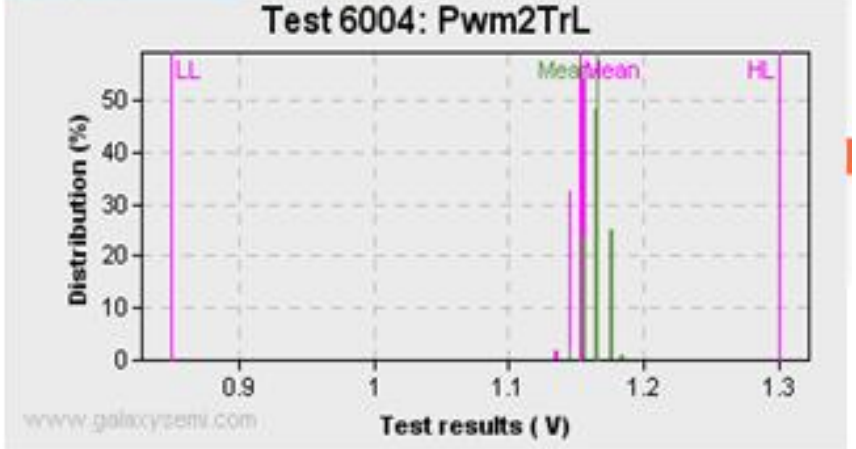


Histogram : Pwm1TrL Pwm2TrL

Test	6003
Groups colors	STD resin G700K resin
Name	Pwm1TrL
Test type	Parametric

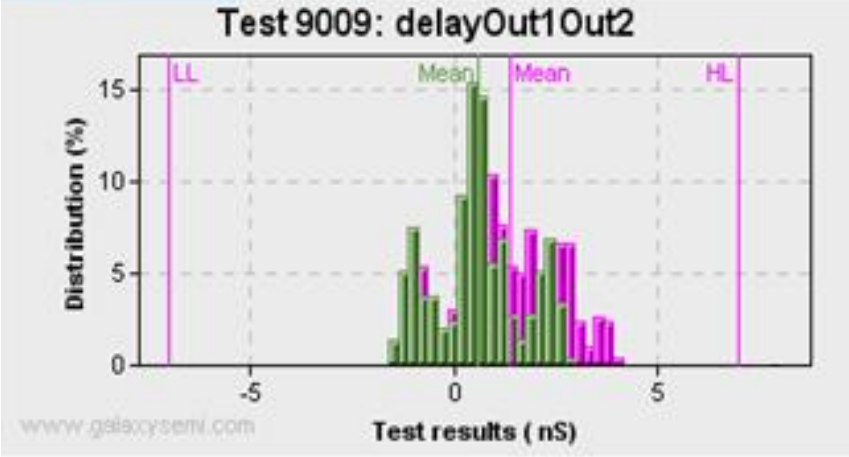


Test	6004
Groups colors	STD resin G700K resin
Name	Pwm2TrL
Test type	Parametric

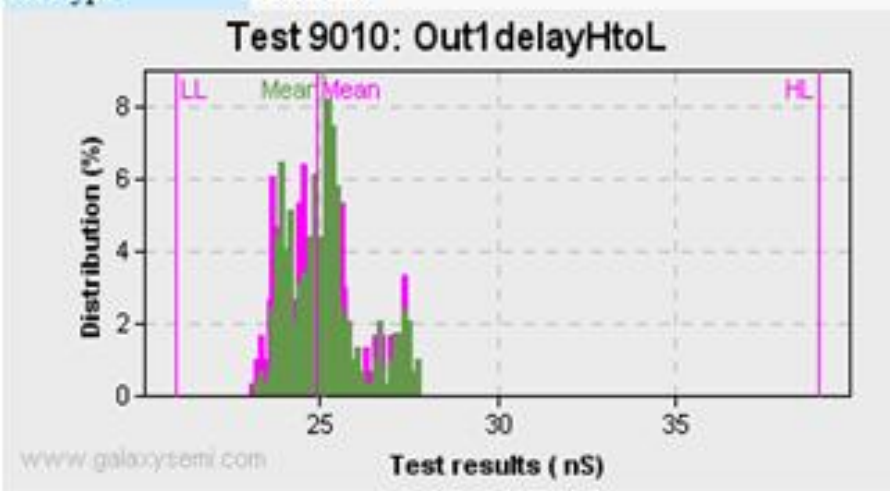


Histogram : delayOut1Out2 Out1delayHtoL

Test	9009
Groups colors	STD resin G700K resin
Name	delayOut1Out2
Test type	Parametric

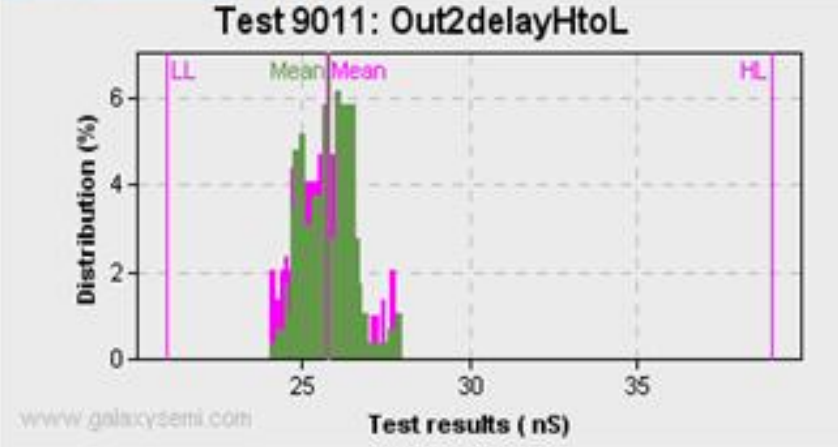


Test	9010
Groups colors	STD resin G700K resin
Name	Out1delayHtoL
Test type	Parametric



Histogram : Out2delayHtoL delayOut1Out2HL

Test	9011
Groups colors	STD resin G700K resin
Name	Out2delayHtoL
Test type	Parametric



Test	9012
Groups colors	STD resin G700K resin
Name	delayOut1Out2HL
Test type	Parametric