



PRODUCT/PROCESS CHANGE NOTIFICATION

PCN IPD-IPC/13/7708
Dated 19 Feb 2013

**VFQFPN/DFN line transfer from ST Muar (Malaysia) to
ST Calamba (Philippines)**

Table 1. Change Implementation Schedule

Forecasted implementation date for change	12-Feb-2013
Forecasted availability date of samples for customer	01-Apr-2013
Forecasted date for STMicroelectronics change Qualification Plan results availability	08-Apr-2013
Estimated date of changed product first shipment	21-May-2013

Table 2. Change Identification

Product Identification (Product Family/Commercial Product)	See attached list
Type of change	Package assembly location change
Reason for change	To rationalize the assembly locations
Description of the change	We are going to move the assembly and test line of our products housed in FPN 3x3,5x5 and 7x7 packages from ST Muar in Malaysia to ST Calamba in the Philippines.
Change Product Identification	By a new Finished Goods code and marking on the package surface.
Manufacturing Location(s)	1]St Muar - Malaysia 2]St Muar - Malaysia

DOCUMENT APPROVAL

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



WHAT:

Following the Company guidelines on the assets optimization, we are going to move our products housed in FPN 3x3, FPN 5x5 and FPN 7x7 packages, from ST Muar plant in Malaysia to ST Calamba plant in the Philippines.

WHY:

- To optimize ST's assets utilization in compliance with the Company Roadmap
- To improve service to ST Customers
- To rationalize the assembly locations.

HOW:

These changes will not affect the electrical, dimensional and thermal parameters of the products, keeping unchanged all the information reported on the relevant datasheets. There will be as well no change in the packing process and in the standard delivery quantities.

WHEN:

The production in ST Calamba will start in week 18 and the first shipments will occur in week 20.

Samples can be delivered upon request in 8 weeks A.R.O.

Qualification program and results

The qualification program consists mainly of comparative electrical yield and reliability tests. Final results on testing yield, for trial lots assembled and tested in Calamba show a yield well aligned to the actual yield in Muar.

Qualification and Reliability Plan with preliminary results is enclosed herewith.

Marking and traceability

Unless otherwise stated by customer's specific requirement, the traceability of the parts assembled in ST Calamba plant will be ensured by the Q.A. number, by a new Finished Goods code, also shown on ST standard labels, and by the character "8" marked on the top of the package.

Lack of acknowledgement of the PCN within 30 days will constitute acceptance of the change.

After acknowledgement, lack of additional response within the 90 day period will constitute acceptance of the change (Jedec Standard No. 46-C).

In any case, first shipments may start earlier with customer's written agreement.



**PRELIMINARY RELIABILITY
EVALUATION
QUALIFICATION TRANSFER
VFQFPN/DFN LINE
FROM
ST-MUAR (MALAYSIA)
TO
ST-CALAMBA (PHILIPPINES)**

DOCUMENT INFORMATION

Version	Date	Pages	Prepared by	Approved by	Comment
1.0	08-Feb-2013	35	F.VENTURA I&PC QA&R / B/E	A.MOTTA I&PC QA&R DIR.	preliminary report

NOTE:

**VFQFPN/DFN IPD/I&PC PRODUCTS BOM, ALREADY QUALIFIED BY *UJ4301 (STOD03ATPUR\$V1)
VFDFPN 3X3 12L BCD6s -SOI /REPORT N. REL-6043-212-W-10**

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.



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

Report ID : **RR000113CT6004**

General Information	
Product Line	BVWQ*UP29CC5
P/N	L6728DTR-P1LC16
Product Group	IPD
Product division	Industrial & Power Discrete
Package	VDFPN 3X3X1.0
Silicon Process technology	2L BCD6s
Maturity level step	21

Locations	
Wafer fab	CMF6 (CATANIA-ITALY)
Assembly plant	ST-CALAMBA-(PHILIPPINES)
Final Reliability Assessment	PASSED
Reliability Lab	ST-CALAMBA

General Information	
Product Line	DVXO*UQ71BA5
P/N	L6747CTR-381V
Product Group	IPD
Product division	Industrial & Power Discrete
Package	VDFPN 3X3X1.0
Silicon Process technology	2L BCD6s
Maturity level step	29

Locations	
Wafer fab	CMF6 (CATANIA-ITALY)
Assembly plant	ST-CALAMBA-(PHILIPPINES)
Final Reliability Assessment	PASSED
Reliability Lab	ST-CALAMBA

General Information	
Product Line	MVYG*UM87J51
P/N	ST1S06PUR\$1V
Product Group	IPD
Product division	Industrial & Power Discrete
Package	VDFPN6 3X3
Silicon Process technology	A2 BCD6
Maturity level step	21

Locations	
Wafer fab	CMF6 (CATANIA-ITALY)
Assembly plant	ST-CALAMBA-(PHILIPPINES)
Preliminary Reliability Assessment	PASSED
Reliability Lab	ST-MUAR



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Report ID : **RR000113CT6004**

General Information	
Product Line	88VO*UAB3CAA
P/N	ST7581-8/ST7581-8/
Product Group	IPD
Product division	Industrial & Power Conversion
Package	VFQFPN 7X7X1.0
Silicon Process technology	3Y BCD8_1V8
Maturity level step	29

Locations	
Wafer fab	AGR8 (AGRATE-ITALY)
Assembly plant	ST-CALAMBA- (PHILIPPINES)
Final Reliability Assessment	PASSED
Reliability Lab	ST-MUAR

General Information	
Product Line	MV42*UN13BA6
P/N	PM6680A\$1V
Product Group	IPD
Product division	Industrial & Power Conversion
Package	VFQFPN 5X5X1.0
Silicon Process technology	A1 BCD5S
Maturity level step	21

Locations	
Wafer fab	AMK6 (ANG MO KIO S'PORE)
Assembly plant	ST-CALAMBA- (PHILIPPINES)
Preliminary Reliability Assessment	PASSED
Reliability Lab	ST-CALAMBA



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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

QUALIFICATION TRANSFER OF VFQFPN/DFN ASSEMBLY LINE, FROM ST-MUAR (MALAYSIA) TO ST-CALAMBA (PHILIPPINES).

2.2 Conclusion

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

*UP29_P/N: L6728DTR-P1LC16	
Wafer/Die fab. information	
CMF6	
Wafer fab manufacturing location	CATANIA -ITALY
Technology	BCD6s
Process family	2L BCD6s
Die finishing back side	Cr/Ni/Au
Die size	1311X1265mm
Bond pad metallization layers	Ti/Al/Cu/Ti/NARC
Passivation type	TEOS/SIN/POLYAMMIDE
Wafer Testing (EWS) information	
Electrical testing manufacturing location	AMK6-S'PORE
Assembly information	
Assembly site	ST-CALAMBA (PHILIPPINES)
Package description	DFN 10L 3X3
Molding compound	HITACHI CEL 9220- HF13 GREEN COMPOUND
Frame material	2M Ni/Pd/Au 4020
Die attach process	EPOXY
Die attach material	ABLEBOND QMI519 38G
Die pad size	1900X2630mm
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1mils Au
Lead finishing process	Pre- plated
Package code	WQ
Final testing information	
Testing location	ST- CALAMBA (PHILIPPINES)



Construction note

*UQ71_ P/N: L6747CTR-381V	
Wafer/Die fab. information	CMF6
Wafer fab manufacturing location	CATANIA -ITALY
Technology	BCD6s
Process family	2L BCD6s
Die finishing back side	Cr/Ni/Au
Die size	1012X1242mm
Bond pad metallization layers	Ti/Al/Cu/Ti/NARC
Passivation type	TEOS/SIN/POLYAMMIDE
Wafer Testing (EWS) information	
Electrical testing manufacturing location	AMK6-S'PORE
Assembly information	
Assembly site	ST-CALAMBA (PHILIPPINES)
Package description	DFN 8L 3X3
Molding compound	HITACHI CEL 9220- HF13 GREEN COMPOUND
Frame material	2M Ni/Pd/Au 4020
Die attach process	EPOXY
Die attach material	ABLEBOND QMI519 38G
Die pad size	1900X2630mm
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1mils Au
Lead finishing process	Pre- plated
Package code	WQ
Final testing information	
Testing location	ST- CALAMBA (PHILIPPINES)



Construction note

*UM87_P/N: ST1S06PUR\$1V	
Wafer/Die fab. information	CMF6
Wafer fab manufacturing location	CATANIA -ITALY
Technology	BCD6
Process family	A2 BCD6
Die finishing back side	RAW SILICON
Die size	1418X1818mm
Bond pad metallization layers	Ti/Al/Cu/Ti/NARC
Passivation type	TEOS/SIN/POLYAMMIDE
Wafer Testing (EWS) information	
Electrical testing manufacturing location	AMK6-S'PORE
Assembly information	
Assembly site	ST-CALAMBA (PHILIPPINES)
Package description	DFN 6L 3X3
Molding compound	HITACHI CEL 9220- HF13 GREEN COMPOUND
Frame material	2M Ni/Pd/Au 4020
Die attach process	EPOXY
Die attach material	ABLEBOND QMI519 38G
Die pad size	1900X2630mm
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1.3mils Au
Lead finishing process	Pre- plated
Package code	YG
Final testing information	
Testing location	ST- CALAMBA (PHILIPPINES)



Construction note

UAB3_P/N: ST7581-8/ST7581-8/	
Wafer/Die fab. information	
AGR8	
Wafer fab manufacturing location	ANG MO KIO S'PORE
Technology	BCD8
Process family	3Y BCD8 _1V8
Die finishing back side	Cr/Ni/Au
Die size	3539X3339mm
Bond pad metallization layers	Ti/AlCu/Ti/TxTn
Passivation type	TEOS/SIN/POLYAMMIDE
Wafer Testing (EWS) information	
Electrical testing manufacturing location	AMK6-S'PORE
Assembly information	
Assembly site	ST-CALAMBA (PHILIPPINES)
Package description	QFN 48L
Molding compound	HITACHI CEL 9220- HF13 GREEN COMPOUND
Frame material	2Map Ni/Pd/Au ET
Die attach process	EPOXY
Die attach material	ABLEBOND QMI519 38G
Die pad size	4.0X4.0mm
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1.2mils Au/Pd1%/Black Nickel 5000m
Lead finishing process	Pre- plated
Package code	V0
Final testing information	
Testing location	ST- CALAMBA (PHILIPPINES)



Construction note

*UN13_P/N: PM6680A\$1V	
Wafer/Die fab. information	
Wafer fab manufacturing location	AMK6
Technology	ANG MO KIO S'PORE
Process family	BCD5
Die finishing back side	A1 BCD5s
Die size	Cr/Ni/Au
Bond pad metallization layers	2310X2310mm
Passivation type	Ti/ALSiCu/TiN
	TEOS+PTEOS+SiON+PIX
Wafer Testing (EWS) information	
Electrical testing manufacturing location	AMK6 S'PORE
Assembly information	
Assembly site	ST-CALAMBA (PHILIPPINES)
Package description	QFN 32L
Molding compound	HITACHI CEL 9220- HF13 GREEN COMPOUND
Frame material	2M Ni/Pd/Au 4981
Die attach process	EPOXY
Die attach material	ABLEBOND QMI519 38G
Die pad size	3065X3065mm
Wire bonding process	THERMOSONIC
Wires bonding materials/diameters	1.0mils Au (BN)
Lead finishing process	Pre- plated
Package code	42
Final testing information	
Testing location	ST- CALAMBA (PHILIPPINES)



3 TESTS RESULTS SUMMARY

3.1 Test vehicle *UP29

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	V5214866	VOHZ9YA101	N/A	DFN 10L 3X3	BVWQ*UP29CC5	

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

3.2 Test plan and results summary

P/N L6728DTR-P1LC16

Test	PC	Std ref.	Conditions	Steps	Note	
PC	Y	JESD22 A020-D	MSL_3 (192H 30°C/60%H.R)	0/300	NO DELAMINATION TOP/BOTTOM	
AC	Y	JESD22 A-102	Pa=2Atm / Ta=121°C	96H 168H	0/77 0/77	
TC	Y	JESD22 A-104	Ta = -65°C to 150°C	500CY 1000CY	0/77 0/77	
HTSL	N	JESD22 A-103	Ta = 150°C	500H 1000H	0/77 0/77	
E.S HTS+TC	Y	JESD22 A-103/104	Ta =150°C + -65°C to 150°C	(HTS) 500H (TC) 500CY	0/77 0/77	
CDM	N	JEDEC- JESD22 C-101	(+/-500V)_ (+/-750V) SEE REPORT(349_012_UP29CC5)	+/-500V +/-750V	0/3 0/3	



3.3 Test vehicle *UQ71

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	V5215320	OHZ9ZA101	N/A	DFN 8L 3X3	DVXO*UQ71BA5	

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

3.4 Test plan and results summary

PIN: L6747CTR-381V

Test	PC	Std ref.	Conditions	Steps	Note
PC	Y	JESD22 A020-D	MSL_3 (192H 30°C/60%H.R)	0/300	NO DELAMINATION TOP/BOTTOM
AC	Y	JESD22 A-102	Pa=2Atm / Ta=121°C	96H 168H	0/77 0/77
TC	Y	JESD22 A-104	Ta = -65°C to 150°C	500CY 1000CY	0/77 0/77
HTSL	N	JESD22 A-103	Ta = 150°C	500H 1000H	0/77 0/77
E.S HTS+TC	Y	JESD22 A-103/104	Ta =150°C + -65°C to 150°C	(HTS) 500H (TC) 500CY	0/77 0/77

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 * UM87

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	V5215320	OOHZA2A101	A2839039	DFN 6L	MVYG*UM87J51	

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

Test plan and results summary

P/N:ST1S06PUR\$1V

Test	PC	Std ref.	Conditions	Steps	Note	
PC	Y	JESD22 A020-D	MSL_3 (192H 30°C/60%H.R)	0/300	NO DELAMINATION TOP/BOTTOM	
AC	Y	JESD22 A-102	Pa=2Atm / Ta=121°C	96H 168H	*Wk07/13 *Wk08/13	
TC	Y	JESD22 A-104	Ta = -65°C to 150°C	500CY 1000CY	*Wk09/13 *Wk13/13	
HTSL	N	JESD22 A-103	Ta = 150°C	500H 1000H	*Wk09/13 *Wk13/13	
E.S HTS+TC	Y	JESD22 A-103/104	Ta =150°C + -65°C to 150°C	(HTS) 500H (TC) 500CY	*Wk09/13 *Wk13/13	

***DATE OF COMPLETION**

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.



Test vehicle * UAB3

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	A1363271	OJ45KA101	N/A	QFN 48L 7X7	88VO*UAB3CAA	

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

Test plan and results summary

P/N:ST7581-8/ST7581-8/

Test	PC	Std ref.	Conditions	Steps	Note	
PC	Y	JESD22 A020-D	MSL_3 (192H 30°C/60%H.R)	0/300	NO DELAMINATION TOP/BOTTOM	
AC	Y	JESD22 A-102	Pa=2Atm / Ta=121°C	96H 168H	0/77 0/77	
TC	Y	JESD22 A-104	Ta = -65°C to 150°C	500CY 1000CY	0/77 0/77	
HTSL	N	JESD22 A-103	Ta = 150°C	500H 1000H	0/77 0/77	
E.S HTS+TC	Y	JESD22 A-103/104	Ta =150°C + -65°C to 150°C	(HTS) 500H (TC) 500CY	0/77 0/77	

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.



Test vehicle * UN13

Lot #	Diffusion Lot	Assy Lot	Trace Code	Process/ Package	Product Line	Comments
1	V62332T4	OJSJJA101	N/A	QFN32L 5X5	MV42*UN13BA6	

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

Test plan and results summary

P/N: PM6680A\$1V

Test	PC	Std ref.	Conditions	Steps	Note	
PC	Y	JESD22 A020-D	MSL_3 (192H 30°C/60%H.R)	0/300	NO DELAMINATION TOP/BOTTOM	
AC	Y	JESD22 A-102	Pa=2Atm / Ta=121°C	96H 168H	*Wk07/13 *Wk09/13	
TC	Y	JESD22 A-104	Ta = -65°C to 150°C	500CY 1000CY	*Wk09/13 *Wk12/13	
HTSL	N	JESD22 A-103	Ta = 150°C	500H 1000H	*Wk10/13 *Wk13/13	
E.S HTS+TC	Y	JESD22 A-103/104	Ta =150°C + -65°C to 150°C	(HTS) 500H (TC) 500CY	*Wk08/13 *Wk10/13	

***DATE OF COMPLETION**

In case of Automotive customer insert here the family data.

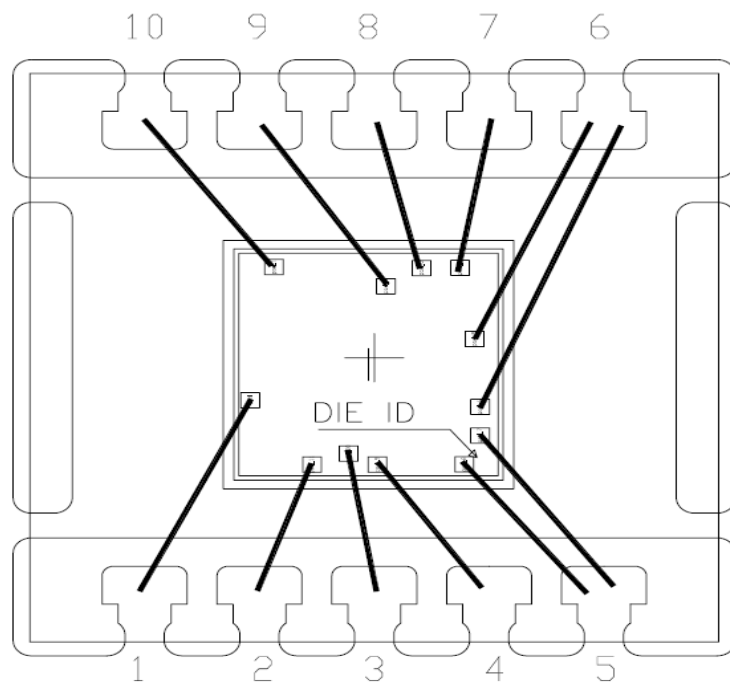
In case of rejects include a short description of the failure analysis and corrective actions.

3.4.1 ANNEXES: MOUNT BOND DIAGRAM (MBD) L6728DTR-P1LC16

TITLE: MBD for BVWQ*UP29CC5

FRAME PAD : $\frac{74 \times 103 \text{ mls}}{1,90 \times 2,63 \text{ mm}}$

DIE SIZE: $\frac{70 \times 99 \text{ mls}}{1,80 \times 2.53 \text{ mm}}$



SCALE : $\frac{1 \text{ mm}}{\text{---}}$

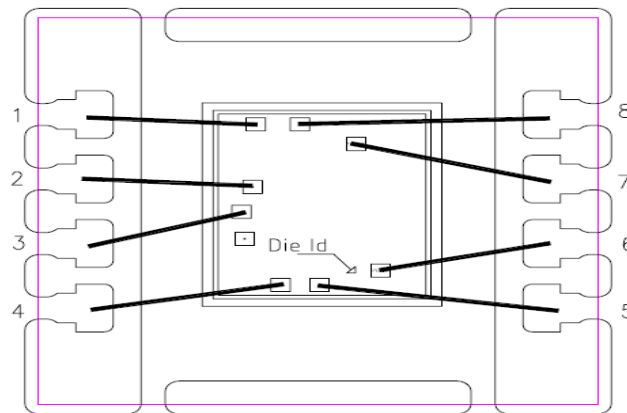
NOTE: E.S.D. PROGRAM IS MANDATORY

MOUNT BOND DIAGRAM (MBD) **L6747CTR-381V**

TITLE: MBD FOR DVX0*UQ71BA5

FRAME PAD : $\frac{74 \times 103 \text{ mls}}{1,90 \times 2,63 \text{ mm}}$

DIE SIZE: $\frac{64 \times 93 \text{ mls}}{1,62 \times 2,36 \text{ mm}}$



Scale : 1 mm



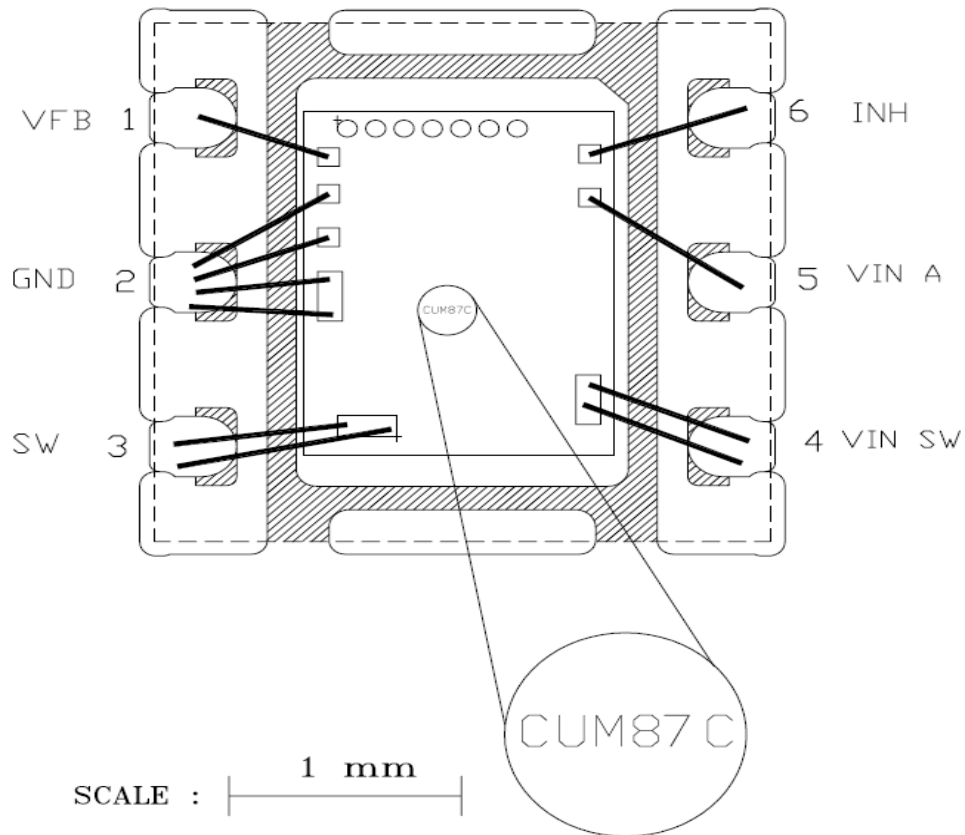
E.S.D. PROGRAM IS MANDATORY

MOUNT BOND DIAGRAM (MBD) **ST1S06PUR\$1V**

TITLE : MBD For MVYG*UM87J51

FRAME PAD : $\frac{75 \times 104 \text{ mls}}{1.90 \times 2.63 \text{ mm}}$

MAX DIE SIZE: $\frac{65 \times 94 \text{ mls}}{1.65 \times 2.38 \text{ mm}}$



E.S.D. PROGRAM IS MANDATORY

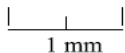
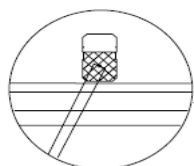
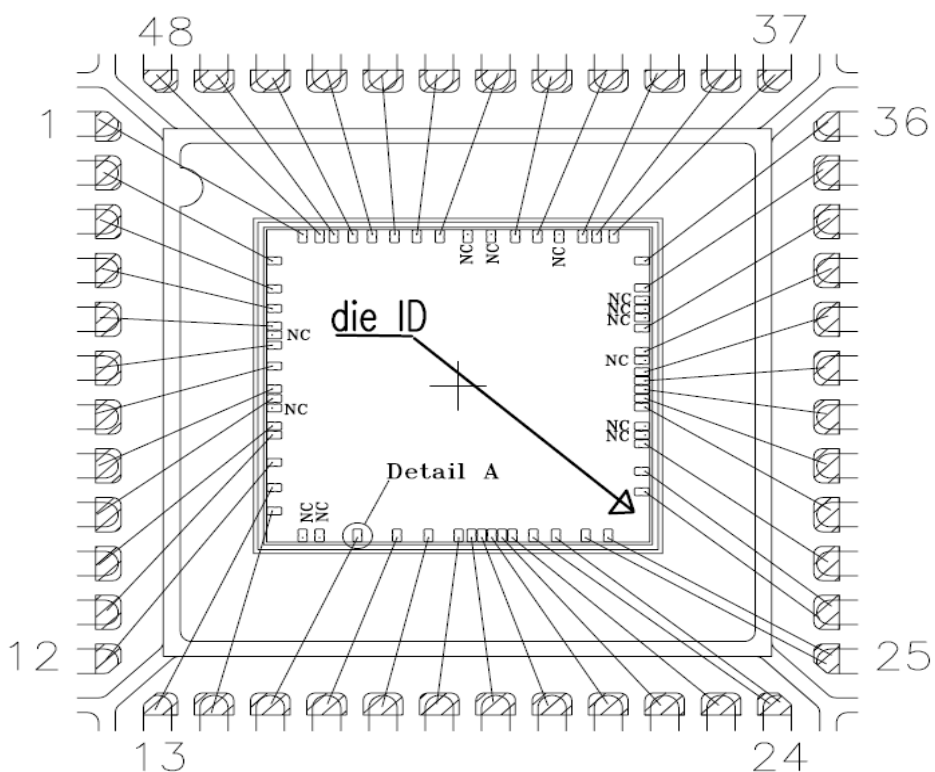


MOUNT BOND DIAGRAM (MBD) **ST7581-8 ST7581-8/**

BONDING DIAGRAM FOR LINE :UAB3 MUAR

PACKAGE : V0

FRAME PAD : $\frac{0.212 \times 0.212}{5.4 \times 5.4} \frac{\text{inch}}{\text{mm}}$ VFQFPN 7x7 48L

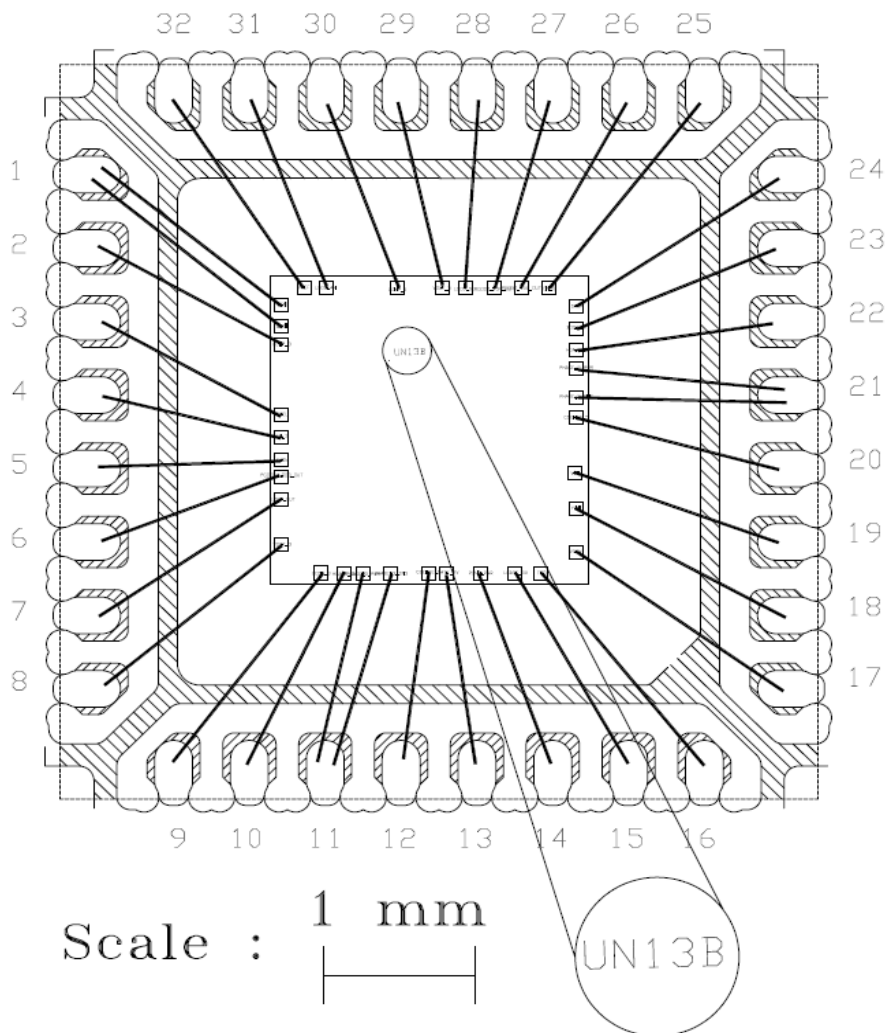


E.S.D. PROGRAM MANDATORY

MOUNT BOND DIAGRAM (MBD) **PM6680A\$1V**

TITLE : MBD for MV42*UN13BA6

FRAME PAD : $\frac{145 \times 145 \text{ mls}}{3.700 \times 3.700 \text{ mm}}$ MAX DIE SIZE : $\frac{141 \times 141 \text{ mls}}{3.600 \times 3.600 \text{ mm}}$



E.S.D. PROGRAM IS MANDATORY



3.4.1 Package outline/Mechanical data :L6728DTR-P1LC16

TITLE: VFD FPN 3x3x1.0 10 PITCH 0.50

PACKAGE CODE: WQ

JEDEC/EIAJ REFERENCE NUMBER: JEDEC MO-229 VEED-5

DIMENSIONS							
REF.	DATABOOK (mm)			DRAWING (mm)			NOTES
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
A	0.80	0.90	1.00	0.80	0.90	1.00	(1)
A1		0.02	0.05		0.02	0.05	
A2	0.55	0.65	0.80		0.70		
A3		0.20			0.20		
b	0.18	0.25	0.30	0.18	0.23	0.30	
D	2.85	3.00	3.15	2.85	3.00	3.15	
D2	2.20		2.70	2.23	2.38	2.50	
E	2.85	3.00	3.15	2.85	3.00	3.15	
E2	1.40		1.75	1.49	1.64	1.75	
E3				0.230 REF			
E4				0.365 REF			
e		0.50			0.50		
L	0.30	0.40	0.50	0.30	0.40	0.50	
ddd			0.08			0.08	

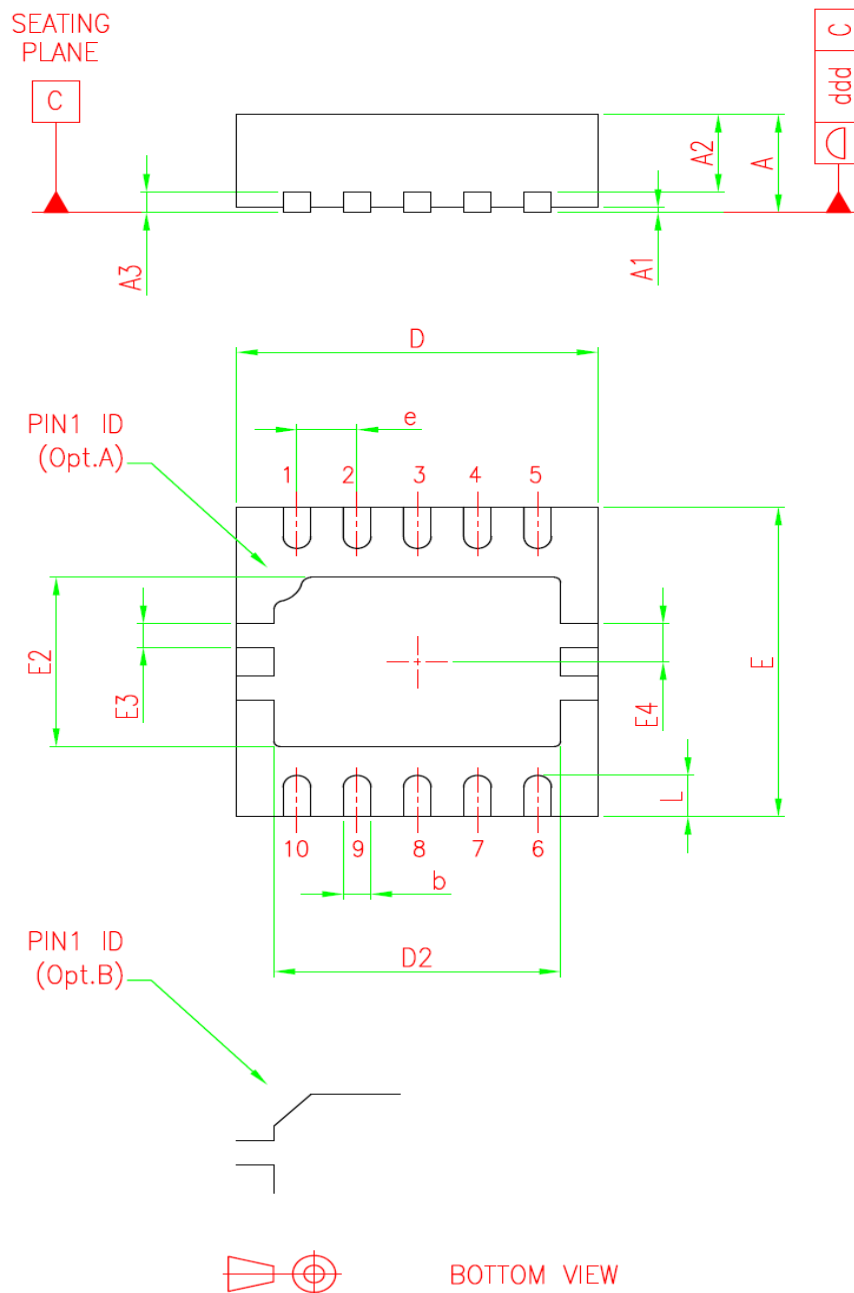
NOTES:

- (1) - VFDFPN stands for Thermally Enhanced Very thin Fine pitch Dual Flat Packages No lead.
- Very thin: 0.80 mm < A ≤ 1.00 mm / Fine pitch: e < 1.00 mm.

- (2) - The pin #1 identifier must be existed on the top surface of the package by using indentation mark or other feature of package body. Exact shape and size of this feature is optional.

Package outline/Mechanical data :L6728DTR-P1LC16

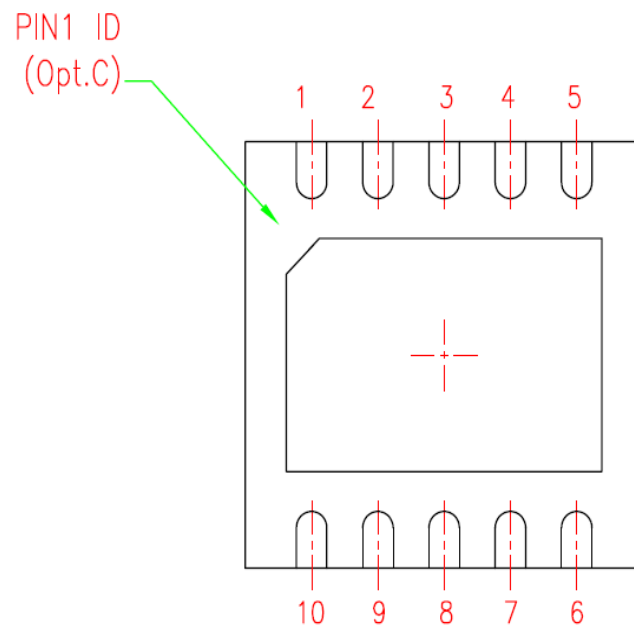
FIGURE.1: VFDFPN 10 3x3x1.0 PITCH 0.5
PACKAGE CODE: WQ



Package outline/Mechanical data :L6728DTR-P1LC16

FIGURE.2: VFDFPN 10 3x3x1.0 PITCH 0.5
PACKAGE CODE: WQ

SPECIFIC TO MUAR/CALAMBA PACKAGE OUTLINE





Package outline/Mechanical data :L6747CTR-381V

TITLE: VFDFPN 3x3x1.0 8 PITCH 0.50

PACKAGE CODE: X0 (X ZERO)

JEDEC/EIAJ REFERENCE NUMBER: JEDEC MO-229 VDDE-4

REF.	DIMENSIONS						NOTES
	DATABOOK (mm)			DRAWING (mm)			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
A	0.80	0.90	1.00	0.80	0.90	1.00	(1)
A1		0.02	0.05		0.02	0.05	
A2	0.55	0.65	0.80		0.70		
A3		0.20			0.20		
b	0.18	0.25	0.30	0.18	0.23	0.30	
D	2.85	3.00	3.15	2.85	3.00	3.15	
D2	2.20		2.70	2.23	2.38	2.48	
E	2.85	3.00	3.15	2.85	3.00	3.15	
E2	1.40		1.75	1.49	1.64	1.74	
e		0.50			0.50		
L	0.30	0.40	0.50	0.30	0.40	0.50	
ddd			0.08			0.08	

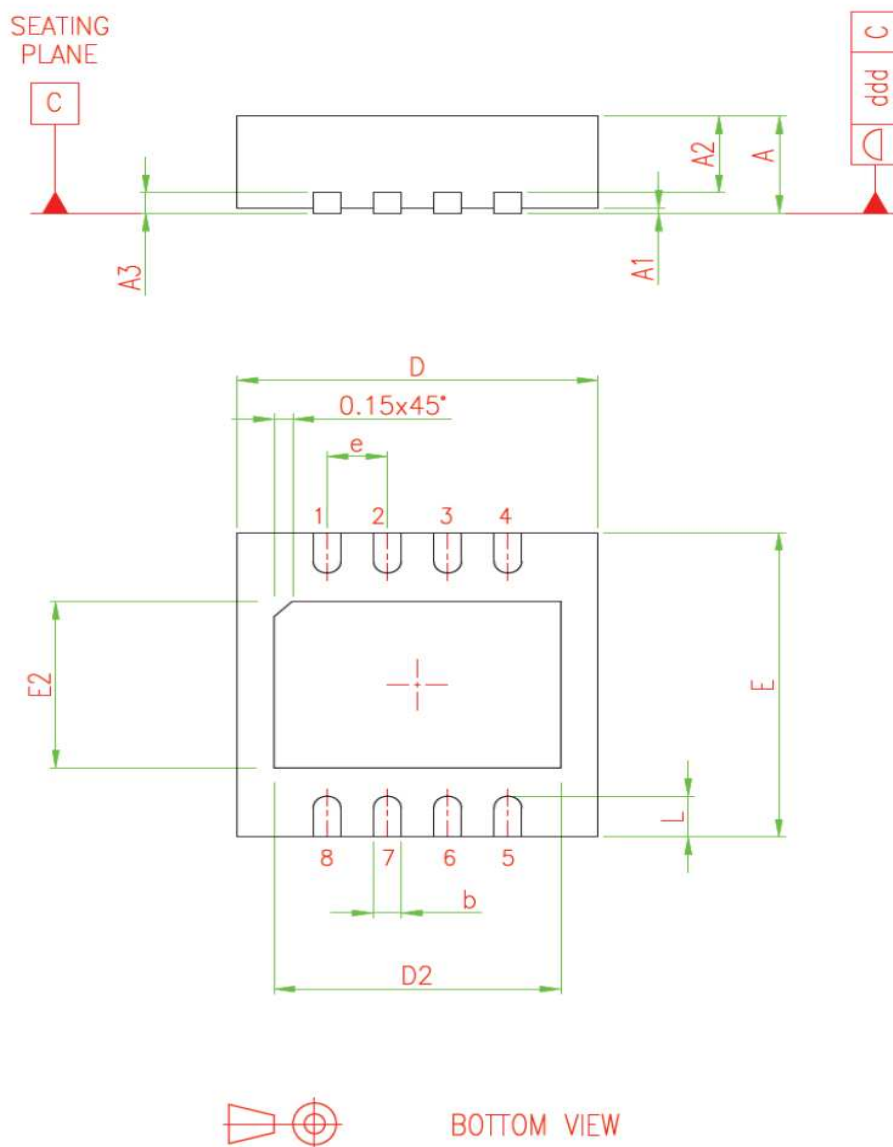
NOTES:

(1) - VFDFPN stands for Thermally Enhanced Very thin Fine pitch Dual Flat Packages No lead.
- Very thin: $0.80 < A \leq 1.00$ mm / Fine pitch: $e < 1.00$ mm.

(2) - The pin #1 identifier must be existed on the top surface of the package by using indentation mark or other feature of package body. Exact shape and size of this feature is optional.

Package outline/Mechanical data :L6747CTR-381V

FIGURE.1 : VFDFPN 3x3x1.0 8 PITCH 0.5
PACKAGE CODE : X0 (X ZERO)





Package outline/Mechanical data :ST1S06PUR\$1V

PACKAGE OUTLINE ASSEMBLY

TITLE : POA VFDFPN 6L 3x3 0,95 PITCH (ST MUAR//CARSEM / NSEB SUBCON.)

PACKAGE CODE : YG

PACKAGE WEIGHT : 0,025 g /unit Typ

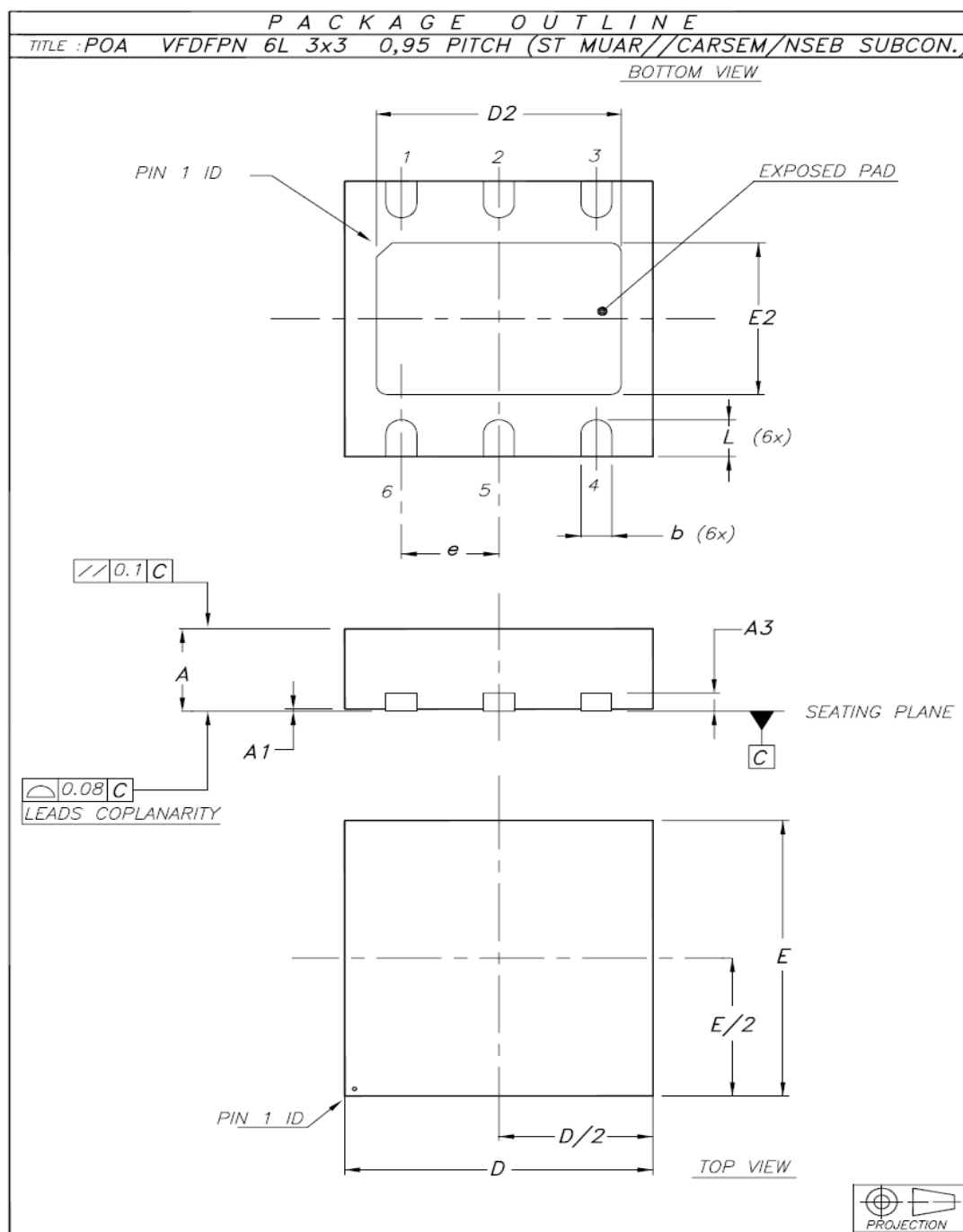
JEDEC/EIAJ REFERENCE NUMBER : IN JEDEC MO-229/VEEA-2 (See note 5)

D I M E N S I O N S				
REF. DIM	DATA BOOK (mm)			NOTES
	NOM	MIN	MAX	
A		0,80	1	
A1	0,02	0	0,05	
A3	0,20			
b		0,23	0,45	
D	3	2,90	3,10	
D2		2,23	2,50	
E	3	2,90	3,10	
E2		1,50	1,75	
e	0,95			
L	0,40	0,30	0,50	

GENERAL PACKAGE PERFORMANCE

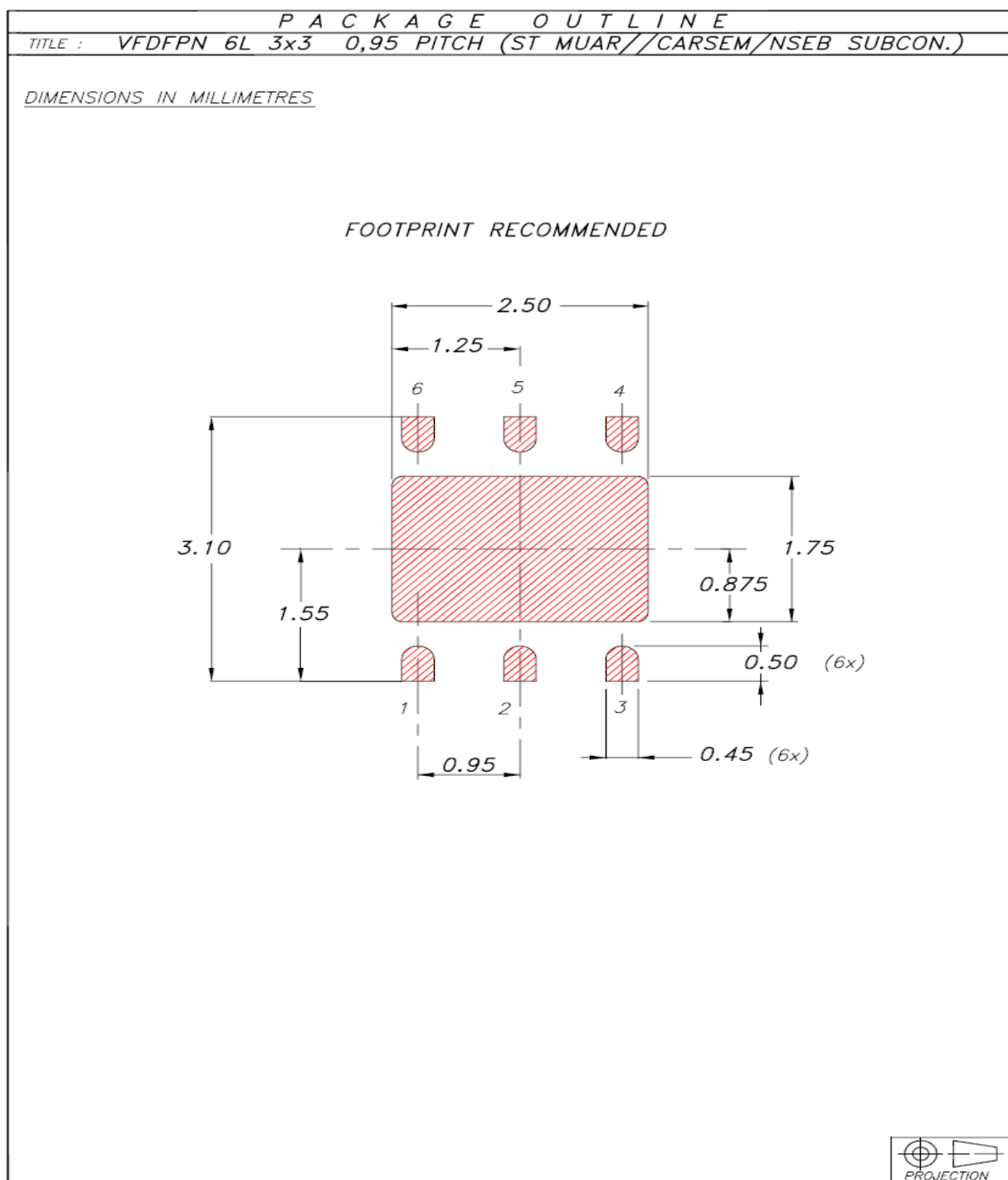
- 1- VFDFPN - standard for Termally Enhanced plastic Very thin Fine pitch Dual Flat Package No leads.
- 2- The leads size is comprehensive of the thickness of the leads finishing material.
- 3- Dimensions do not include mold protrusion, not to exceed 0,15 mm
- 4- Package outline exclusive of metal burr dimensions.
- 5- The dimension of "b" a jedec norm is MIN 0,30

Package outline/Mechanical data :ST1S06PUR\$1V





Package outline/Mechanical data :ST1S06PUR\$1V





Package outline/Mechanical data : ST7581-8 ST7581-8/

PACKAGE OUTLINE ASSEMBLY

TITLE: VFQFPN 7x7x1.0 48L PITCH 0.50

PACKAGE CODE: V0

JEDEC/EIAJ REFERENCE NUMBER: MO-220-A-VKGD-2

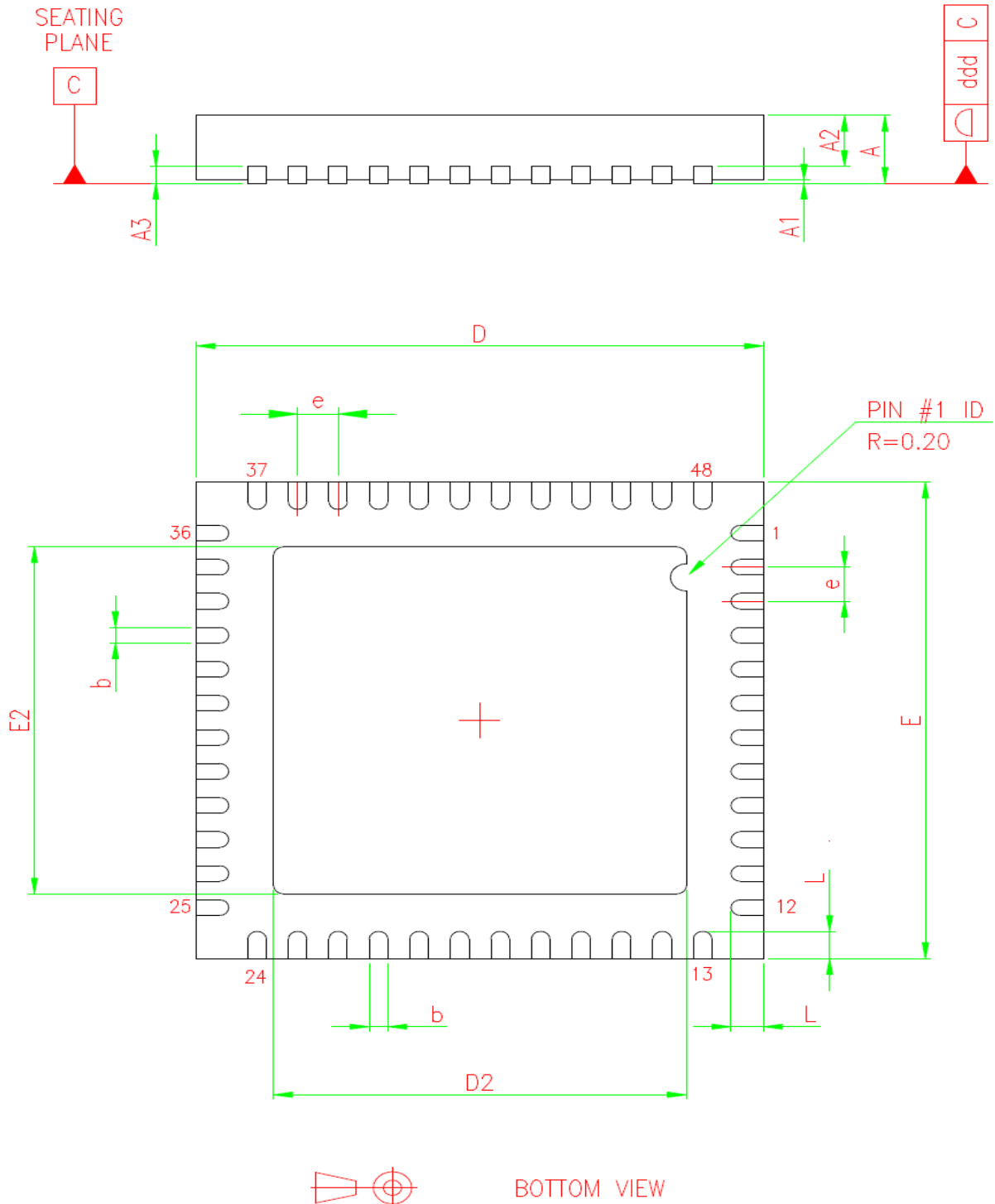
REF.	DIMENSIONS					
	DATABOOK (mm)			DRAWING (mm)		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	0.80	0.90	1.00	0.80	0.85	1.00
A1		0.02	0.05		0.01	0.05
A2		0.65	1.00		0.65	
A3		0.25			0.20	
b	0.18	0.23	0.30	0.18	0.23	0.30
D	6.85	7.00	7.15	6.90	7.00	7.10
D2	2.25	4.70	5.25	SEE EXPOSED PAD VARIATIONS		
E	6.85	7.00	7.15	6.90	7.00	7.10
E2	2.25	4.70	5.25	SEE EXPOSED PAD VARIATIONS		
e	0.45	0.50	0.55	0.45	0.50	0.55
L	0.30	0.40	0.50	0.30	0.40	0.50
ddd			0.08			0.08

VARIATION	EXPOSED PAD VARIATIONS					
	D2			E2		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.95	5.10	5.25	4.95	5.10	5.25
B	5.45	5.60	5.75	5.45	5.60	5.75

NOTES:

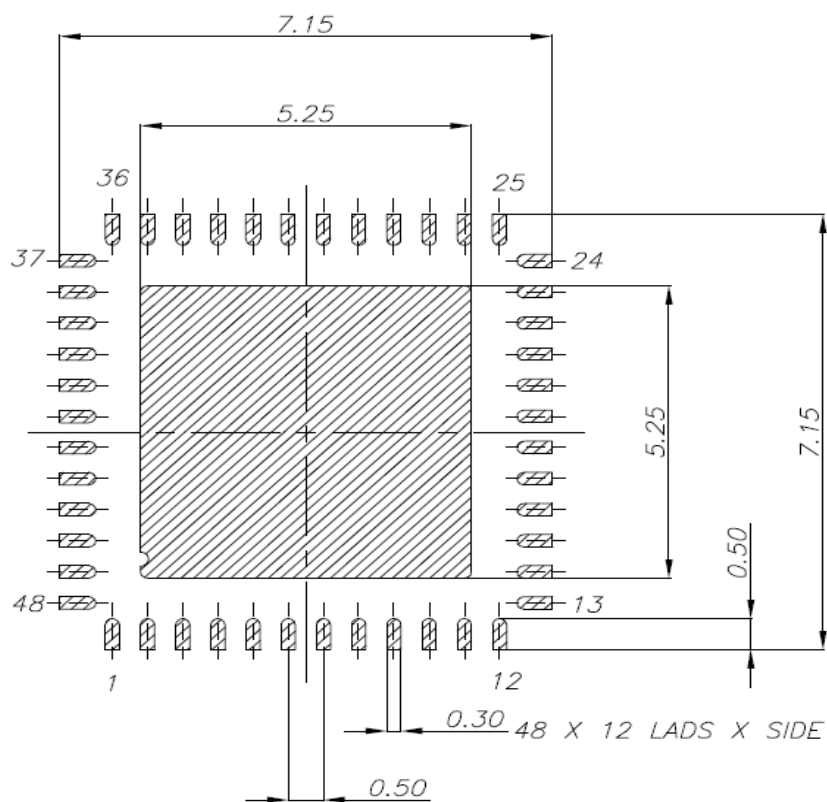
- (1) -VFQFPN stands for Thermally Enhanced Very thin Fine pitch Quad Flat Package No lead.
- Very thin: A = 1.00 Max.
- (2) – Details of terminal 1 identifier are optional but must be located on the top surface of the package by using either a mold or marked features.

Package outline/Mechanical data : ST7581-8 ST7581-8/



Package outline/Mechanical data : ST7581-8 ST7581-8/

FOOTPRINT RECOMMENDED





Package outline/Mechanical data : PM66680A\$1V

TITLE: QFN.50.50.10-050-32L-E

PACKAGE CODE: 42

PACKAGE WEIGHT: 0,071 g/unit Typ

JEDEC/EIAJ REFERENCE NUMBER: MO-220 VARIATION VHHD-5

ST MUAR PACKAGE

TABLE 6 / FIGURE 6

TABLE 67 FIGURE 6							
REF.	DIMENSIONS						NOTES
	DATABOOK (mm)			DRAWING (mm)			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
A	0.80	0.90	1.00	0.80	0.85	0.90	(1)
A1	0	0.02	0.05	0		0.05	
A3		0.20			0.20		
b	0.18	0.25	0.30	0.225	0.25	0.275	
D	4.85	5.00	5.15	4.90	5.00	5.10	
D2	3.20		3.70	3.40	3.45	3.50	
E	4.85	5.00	5.15	4.90	5.00	5.10	
E2	3.20		3.70	3.40	3.45	3.50	
e		0.50			0.50		
L	0.30	0.40	0.50	0.30	0.40	0.50	
ddd			0.08			0.08	

NOTES:

- (1) – VFQFPN stands for Thermally Enhanced Very thin profile Fine pitch Quad Flat Package No lead.
– Very thin profile: $0.80 < A = 1.00\text{mm}$.
- (2) – Details of terminal 1 are optional but must be located on the top surface of the package by using either a mold or marked features.
- (3) – Package outline exclusive of any mold flashes dimensions and metal burrs.



Package outline/Mechanical data : PM66680A\$1V

PACKAGE OUTLINE ASSEMBLY

TITLE: QFN.50.50.10-050-32L-E

PACKAGE CODE: 42

PACKAGE WEIGHT: 0,071 g/unit Typ

JEDEC/EIAJ REFERENCE NUMBER: MO-220 VARIATION VHHD-2

CALAMBA PACKAGE

TABLE 7 / FIGURE 7

REF.	DIMENSIONS						NOTES
	DATABOOK (mm)			DRAWING (mm)			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
A	0.80	0.90	1.00	0.80	0.85	1.00	(1)
A1	0		0.05	0		0.05	
A3		0.20			0.20		
b	0.18	0.25	0.30	0.18	0.21	0.30	
D	4.9	5.00	5.1	4.95	5.00	5.05	
D2	SEE EXPOSED PAD VARIATIONS			SEE EXPOSED PAD VARIATIONS			
E	4.9	5.00	5.1	4.95	5.00	5.05	
E2	SEE EXPOSED PAD VARIATIONS			SEE EXPOSED PAD VARIATIONS			
e		0.50			0.50		
L	0.30	0.40	0.50	0.30	0.40	0.50	
ddd			0.05			0.05	

VARIATIONS	EXPOSED PAD VARIATIONS					
	D2			E2		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	3.0	3.10	3.20	3.0	3.10	3.20

NOTES:

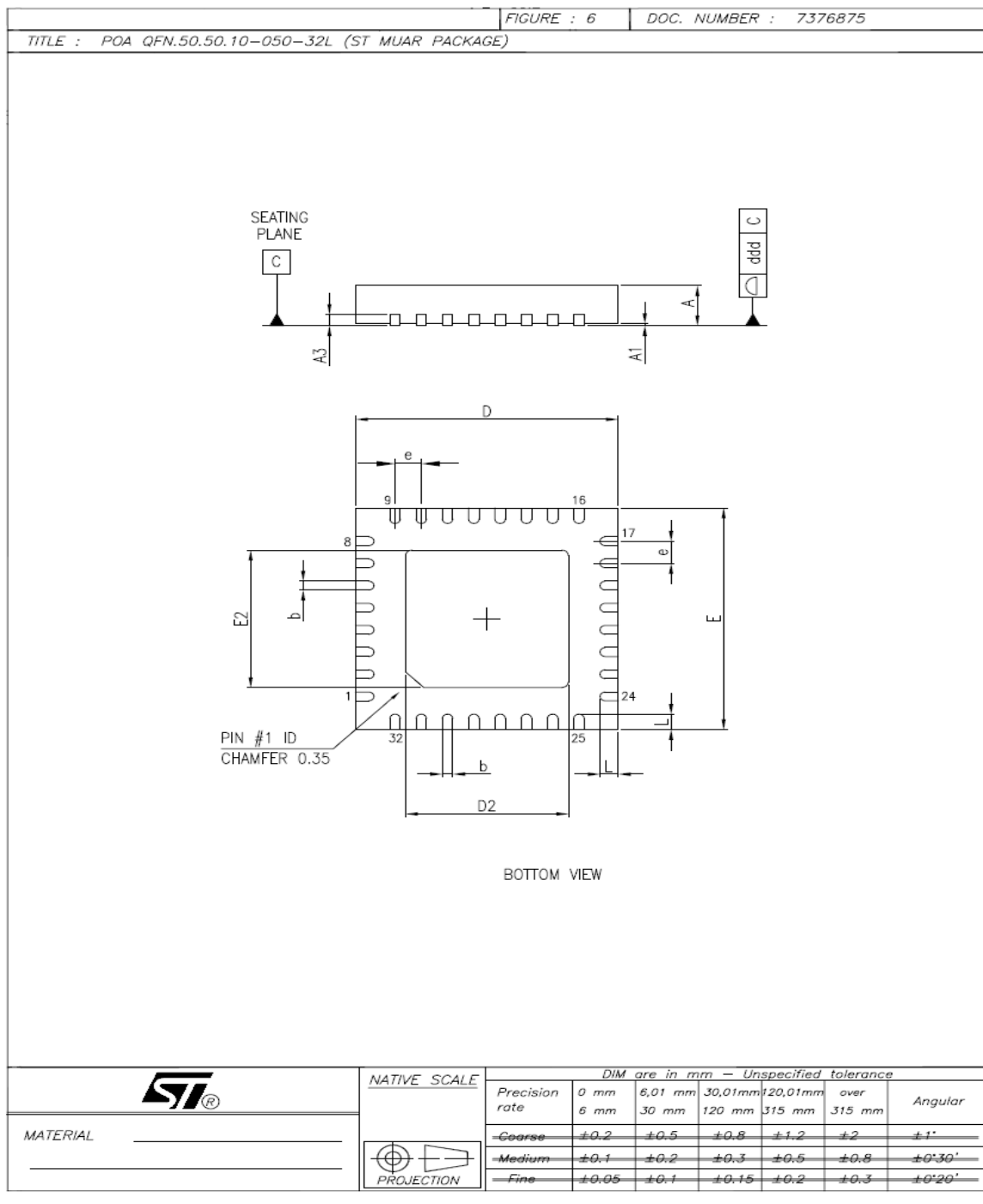
- (1) – VFQFPN stands for Thermally Enhanced Very thin Fine pitch Quad Flat Package No lead.
– Very thin profile: $0.80 < A = 1.00\text{mm}$.
- (2) – Details of terminal 1 are optional but must be located on the top surface of the package by using either a mold or marked features.
- (3) – Package outline exclusive of any mold flashes dimensions and metal burrs.



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IPD-Group
Industrial , Power, Discrete
I&PC Div.
Industrial & Power Conversion
Quality & Reliability B-END

Report ID : **RR000113CT6004**

Package outline/Mechanical data : PM66680A\$1V

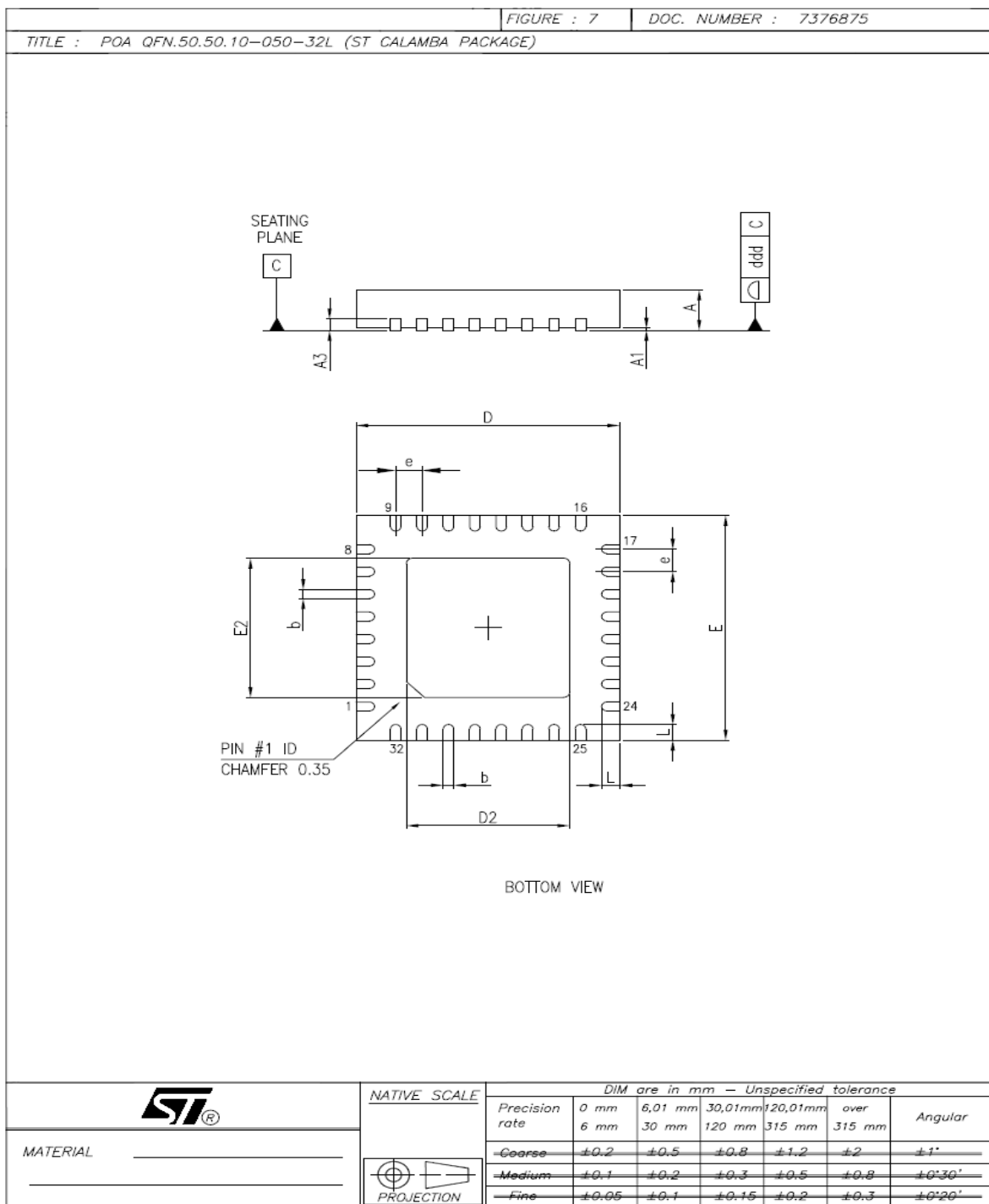




IMS
Industrial & Multisegment -Sector
IPD-Group
Industrial , Power, Discrete
I&PC Div.
Industrial & Power Conversion
Quality & Reliability B-END

Report ID : RR000113CT6004

Package outline/Mechanical data : PM66680A\$1V





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.
ESD Electro Static Discharge	The device is submitted to a high voltage peak on all his pins simulating ESD stress according to different simulation models. CBM: Charged Device Model HBM: Human Body Model MM: Machine Model	To classify the device according to his susceptibility to damage or degradation by exposure to electrostatic discharge.



Public Products List

PCN Title : VFQFPN/DFN line transfer from ST Muar (Malaysia) to ST Calamba (Philippines)

PCN Reference : IPD-IPC/13/7708

PCN Created on : 14-FEB-2013

Subject : Public Products List

Dear Customer,

Please find below the Standard Public Products List impacted by the change:

ST COMMERCIAL PRODUCT

100419510	100510827	L5980
L5980TR	L5981	L5981TR
L5983	L5983TR	L5985
L5985TR	L5986	L5986TR
L5987	L5987TR	L6206Q
L6206QTR	L6207Q	L6207QTR
L6208Q	L6208QTR	L6235Q
L6235QTR	L6370Q	L6370QTR
L6716	L6716TR	L6728AH
L6728AHTR	L6728DTR	L6738
L6738A	L6738ATR	L6738TR
L6743B	L6743BTR	L6743Q
L6743QTR	L6747A	L6747ATR
L6747C	L6747CTR	L7980
L7980TR	L7981	L7981TR
L7985	L7985TR	L7986
L7986TR	LED7708	LED7708TR
PM6652	PM6652TR	PM6680
PM6680A	PM6680ATR	PM6680TR
PM6681A	PM6681ATR	PM6685
PM6685TR	PM6686	PM6686TR
ST1S03PUR	ST1S09IPUR	ST1S09PUR
ST7570	ST7570TR	ST7580
ST7580TR	ST7590	

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