

LQFP (FF80)

Package Approval MSL-3

Greatek, Taiwan (G)

CMOS, 2.5V/3.3V

Qualification Report

Built In Reliability

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PERICOM PRODUCT FAMILY AND PROCESSES

The Pericom product data presented in this report qualifies the following products from a marketing defined product family, manufactured with the following packaging process and package type:

<u>Product Family:</u>	Video Switch
<u>Wafer Supplier:</u>	MagnaChip, Korea (G)
<u>Assembly Subcontractor:</u>	Greatek, Taiwan (G)
<u>Process Technology:</u>	0.25µm, 2.5V/3.3V, 1P4M, CMOS, HDMI
<u>Product Group:</u>	HDMI

Table 1: List of Devices

Part Number	Product Description	Lead Count	Package
PI3HDMI301-AFFE PI3HMDI301FFE PI3HDMI301SFFE	3:1 HDMI/DVI Switch with ActiveEye™	80	LFQP
PI3HDMI341ARCFE PI3HDMI341ARFFE PI3HDMI341AR-BFFE PI3HDMI341ARTFFE	3:1 Active HDMI 1.3 Compatible Switch with Optimized Equalization for Enhanced Signal Integrity	80	LFQP

Note: Part Number: 'E' indicates lead-free and green.

AVAILABLE PACKAGE TYPE CODES

Table 2: List of Packages

The following is the list of part number available for ordering. Refer to

<http://www.pericom.com/pdf/datasheets/PI3HDMI341ART.pdf>

Ordering Information

Ordering Code	Package Code	Package Description
PI3HDMI341ARTFFE	FF	80-pin, Pb-free & Green LQFP

Notes:

- Thermal characteristics can be found on the company web site at www.pericom.com/packaging/
- E = Pb-free and Green
- Adding an X Suffix = Tape/Reel

PERICOM RELIABILITY TESTING METHODOLOGY

Pericom employs a commonly used industry method to generically qualify product. It is based on the premise that if one product of specific wafer fab/package assembly process/materials is already qualified, then a second product that has similar design, manufacturing process, and materials can be qualified by extending the data used to qualify the first product to the second product without generating additional data. This methodology allows the ability to benchmark suppliers to ensure continuous process improvements and minimize cost and time required for new product availability.

The basis of this “qualification by similarity or extension” is the following rules:

A. For Wafer Fabrication Process and Materials:

- i)* The wafer fabrication process technology and location are the same or similar
- ii)* The die array design rules and die size are the same or similar
- iii)* The standard and customized cell design and layout rules are the same or similar
- iv)* The density and complexity are the same or similar
- v)* The wafer fabrication materials are the same or similar

B. For Package Assembly Process and Materials:

- i)* The package assembly process technology and location are the same or similar
- ii)* The die paddle to package aspect ratio is the same or smaller
- iii)* The package dimensions width and thickness dimensions are the same or similar
- iv)* The leadframe/substrate design and lead/ball pitch are the same or similar
- v)* The package assembly materials are the same or similar

Where a product of interest is not sampled during this period, it is valid to use the reliability data of the particular process technology or package type family to which the part belongs. All parts within the same family are designed to the same rules, and manufacturing is controlled by SPC. Within a product family, a device can only be fabricated on one process technology/ option, and only assembled on one package type process.

Product Information

For further information on 3:1 Active HDMI Switches, products refer to Pericom website.

The screenshot shows the Pericom website interface. At the top left is the Pericom logo with the tagline 'Enabling Serial Connectivity' and a 'Home' link. To the right is a search bar with a dropdown menu set to 'Part Numbers' and a 'GO' button. Below the search bar is a navigation menu with links for 'Products', 'Design Resources', 'Investors', 'Corporate', and 'Contact'. A secondary navigation bar features a colorful graphic with a laptop and mouse. On the right side, there is a login/register prompt: 'You are not logged in [Login] [Register]'. The main content area displays 'Search Results for "PI3HDMI3"' and a table with three rows of product information. To the right of the table is a sidebar with various navigation links, including 'Products', 'Cross-Reference Tools', 'Packaging Information', 'Product Change Notice', 'Pb(Lead)-Free Info', 'Applications', 'Market Segment Search', 'Search by Product Family' (with a dropdown), 'Application Notes & Briefs', 'Application Archive', 'Technical Support', 'Pb-free RoHS Help', 'Contact Sales', and 'FAQ'. At the bottom, there are links for 'terms and conditions', 'copyright', and 'privacy' on the left, and 'Complete Interface Solutions' followed by links for 'products', 'quality', 'applications', 'investors', 'about', 'contact', 'faq', 'search', 'sitemap', and 'RSS' on the right.

Part Number	Description	Family
PI3HDMI301	3:1 HDMI/DVI Switch with ActiveEye™	ASSP
PI3HDMI341.A.R	3:1 Active HDMI switch with side band signals w/equalization, pre-emphasis, and de-emphasis, 8KV ESD, operating at HDMI Rev. 1.3 spec at 1.65Gbps offering 8-bit deep color resolution	ASSP
PI3HDMI341.A.R.T	3:1 Active HDMI switch with side band signals for sink w/equalization, pre-emphasis, and de-emphasis, 8KV ESD, operating at HDMI Rev. 1.3 spec at 2.5Gbps offering 8-bit, 10-bit & 12-bit deep color resolution	ASSP

Figure [1]: Pericom Website: <http://www.pericom.com/search/partIDsearch.php?partid=pi3hdmi3>

Reliability Process Qualification Tests

Table 3 – JEDEC Standard

PERICOM RELIABILITY TEST DESCRIPTION (ALTERNATIVE NAME)	PERICOM TEST CODE	EIA JEDEC STANDARD
External Visual Inspection	EVI	JESD22-B101A
Physical Dimensions	PD	JESD22-B100B
Lead Integrity	--	JESD22-B105C
Real Time X-Ray Inspection	RTX	MIL-STD-883, Method 2012
Pre-Conditioning	PRE	JESD22-A113D J-STD-020D
Preconditioned Unbiased Highly Accelerated Stress Testing	PUHAST	JESD22-A108-C
Preconditioned Temperature Cycle Test	PTMCL	JESD22-A104-C

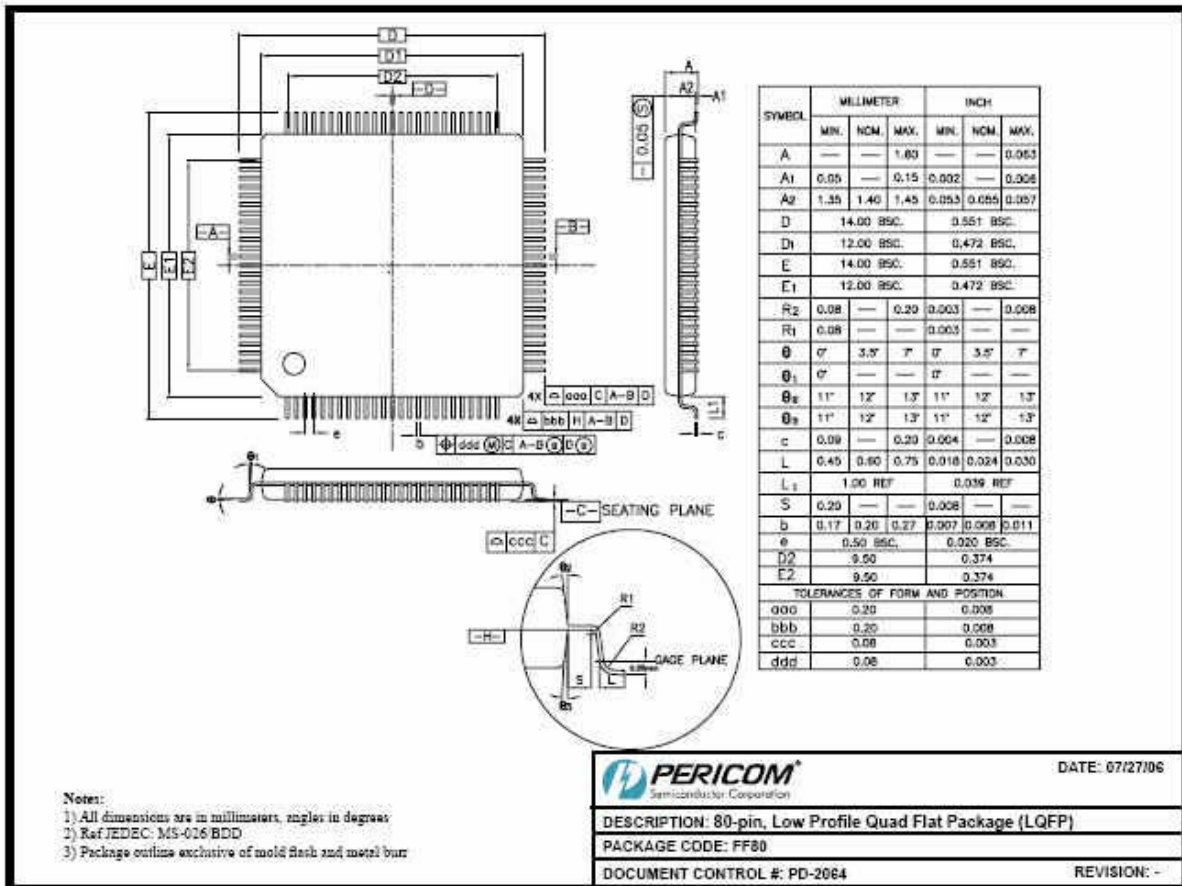
Table 4 – Test Condition

PERICOM Test Code (Refer to Table 3)	TEST Condition (Temp., Voltage, Cycles, Humidity, Time, Pressure)	Total Qty/Number of Rejects (Number of Lots)	Amplitude or Duration Stress
EVI	25°C	15/0 (3 lots)	Visual
PD	25°C	2/0 (1 lot)	Dimensions
Lead Integrity	25°C	17/0 (1 lot)	Lead Bend
RTX	25°C	15/0 (3 lots)	CSAM
PRE	25°C	180/0 (3 lots)	MSL 3
PUHAST	Temperature =130°C RH = 85% P = 33.3 psia	90/0 (3 lots)	96 hours
PTMCL	Condition C 10 min dwell T _a = -65°C to +150°C	90/0 (3 lots)	100, 500 Cycles (cumulative)

Background Information:

Pericom Device Type:	PI3HDMI341ART	Array:	HD3A
Build Sheet-Revision:	MA6855D	Outline Drawing:	PD-2064
Package Type:	LQFP	Code/Lead Count:	FF80, 80 pin
Die Pad Size (l×w×t):	170mil x 170mil, stamped	Die Attach:	Ablestik Ablebond 8352L
Leadframe Material:	C7025, stamped	Lead Finish:	Pure Matte Tin
Wire Size (Au):	0.9 mil	Die Size (l × w × t):	98 x 105 mil
Package Size (l×w×h):	12mm x 12mm x 1.4mm	Mold Compound:	G600F MSL-3
Device Function:	3:1 Active HDMI 1.3 Compatible Switch with Optimized Equalization for Enhanced Signal Integrity	Technology:	0.25μm, 1P4M, 2.5V/3.3V, CMOS, HDMI

Dimensional Data



PACKAGE OUTLINE DIMENSION MEASUREMENT

DEVICE TYPE : PI3HDMI341ARTFFE

LOT NO :	1 (QSP0902.A)	2 (QSP0902.B)	3 (QSP0902.C)
MO :	FBA080281527F	FBA080281528F	FBA080281537F

REGULAR NEW PRODUCT CUSTOMER REQUEST OTHER

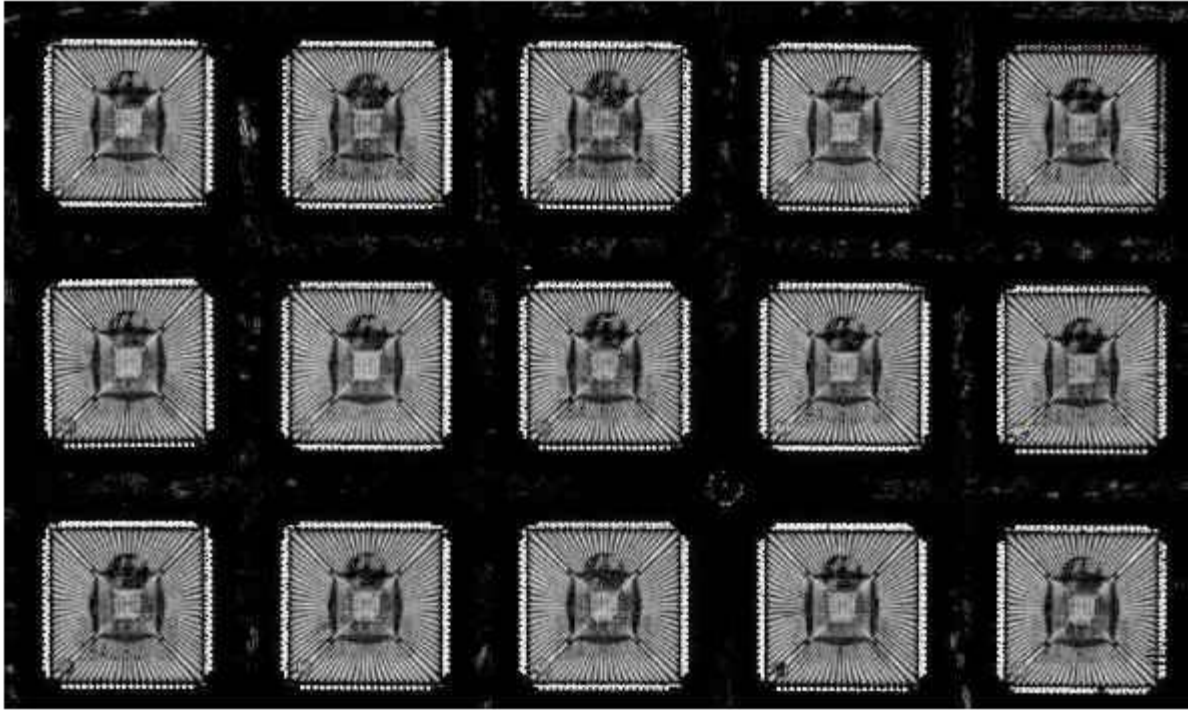
SYMBOL	SPEC			QSP0902.A		QSP0902.B		QSP0902.C		Max.	Min.	Avg.	JUDGEMENT
	MIN.	NOM.	MAX.	S1	S2	S1	S2	S1	S2				
A	—	—	1.60	1.439	1.506	1.477	1.492	1.438	1.439	1.506	1.477	1.435	ACC
A1	0.05	—	0.15	0.107	0.101	0.098	0.103	0.092	0.093	0.107	0.092	0.099	ACC
A2	1.35	—	1.45	1.393	1.394	1.357	1.395	1.385	1.375	1.395	1.357	1.383	ACC
C1	0.09	—	0.16	0.142	0.143	0.153	0.152	0.143	0.143	0.153	0.142	0.147	ACC
D	—	14.00 BSC	—	14.012	14.003	14.005	14.027	14.034	14.029	14.034	14.003	14.018	ACC
D1	—	12.00 BSC	—	11.973	11.962	12.025	11.980	12.019	11.976	12.025	11.962	11.989	ACC
E	—	14.00 BSC	—	14.006	14.001	14.004	14.008	14.011	14.015	14.015	14.001	14.008	ACC
E1	—	12.00 BSC	—	11.981	11.978	11.999	11.986	11.986	12.003	12.003	11.978	11.989	ACC
e	—	0.5 BSC	—	0.436	0.509	0.497	0.436	0.506	0.497	0.509	0.497	0.501	ACC
b	0.17	—	0.27	0.211	0.210	0.240	0.246	0.240	0.246	0.246	0.210	0.233	ACC
L	0.45	—	0.75	0.594	0.578	0.576	0.590	0.607	0.575	0.607	0.575	0.587	ACC
L1	—	1 REF	—	1.052	1.058	0.966	0.931	1.057	1.046	1.058	0.966	1.032	ACC
Y	—	—	0.08	0.001	0.002	0.040	0.060	0.040	0.030	0.060	0.001	0.029	ACC
theta	0.00	—	7.00	2.473	6.381	5.542	3.485	5.542	3.105	6.381	2.473	4.421	ACC

Lead Integrity

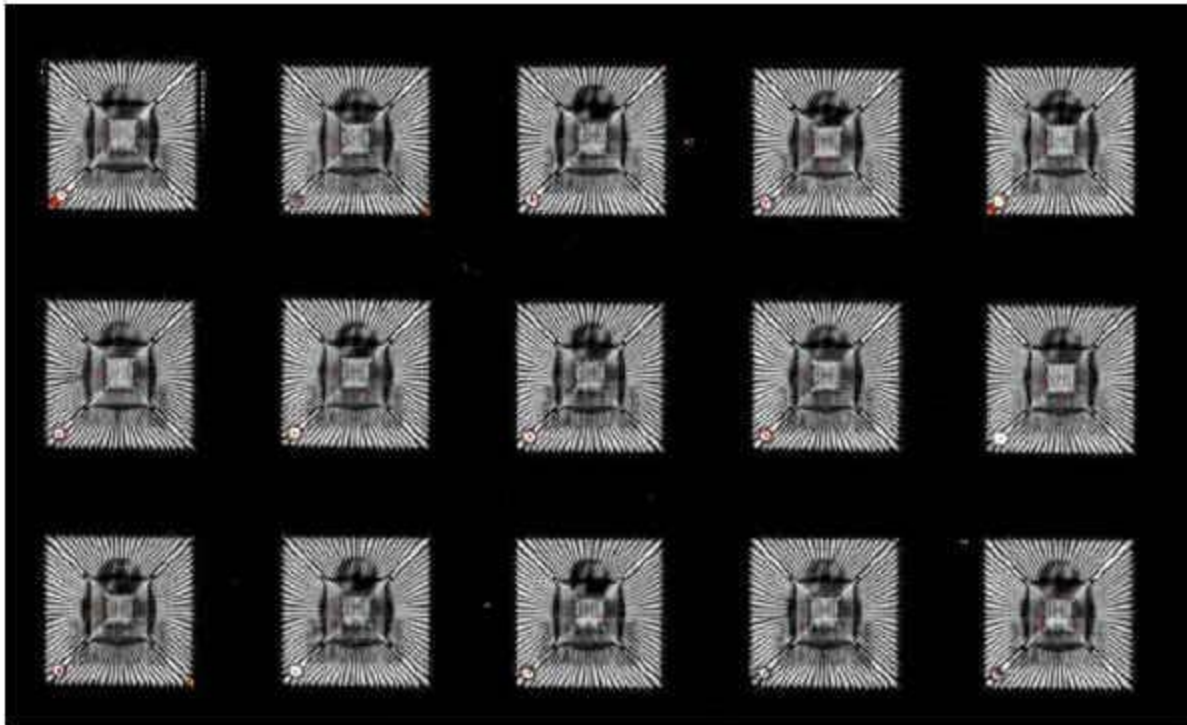
Device : PI3HDMI341ARTFFE												
S/N	PIN 1	PIN 10	PIN20	PIN 21	PIN 30	PIN 40	PIN41	PIN 50	PIN 60	PIN 61	PIN 70	PIN 80
1	4.5	4	4.5	4	5	3	4.5	5	4	4	4	5
2	3.5	4	4	5	5	5.5	4.5	4.5	3.5	3.5	4	3.5
3	3	4.5	4	4	5	5.5	3.5	3	3	4	4.5	4
4	3.5	4.5	3	5	3.5	3.5	5	3	3.5	4.5	3.5	4
5	5.5	4.5	4.5	3.5	4.5	4	5	3.5	4.5	4	4.5	4
6	4	4	5.5	3.5	3.5	4	4	3	5.5	6	4	4.5
7	4.5	4	4	4	3.5	5	5	4.5	4.5	4.5	3.5	4
8	3.5	4.5	3.5	4	5.5	5	5.5	5	4.5	3.5	4.5	5
9	5.5	4	3.5	5	4.5	4.5	4.5	6	5.5	5.5	4.5	4.5
10	5.5	6	4.5	4.5	5	4	4	4.5	4	4	5	3
11	4.5	3.5	4.5	4	5	3.5	5	5	4	4	5.5	3.5
12	5	5.5	4	4.5	3.5	4	5.5	4	5.5	4.5	4.5	3.5
13	5	5	5	4.5	4	4.5	4	4	4	4.5	5	5.5
14	4.5	4.5	3.5	4	4	4	3.5	4.5	5	5	5	5
15	3.5	4	4	5	4.5	4	4.5	5	5	4.5	4.5	4.5

Criteria : Pass 3 Cycles at least

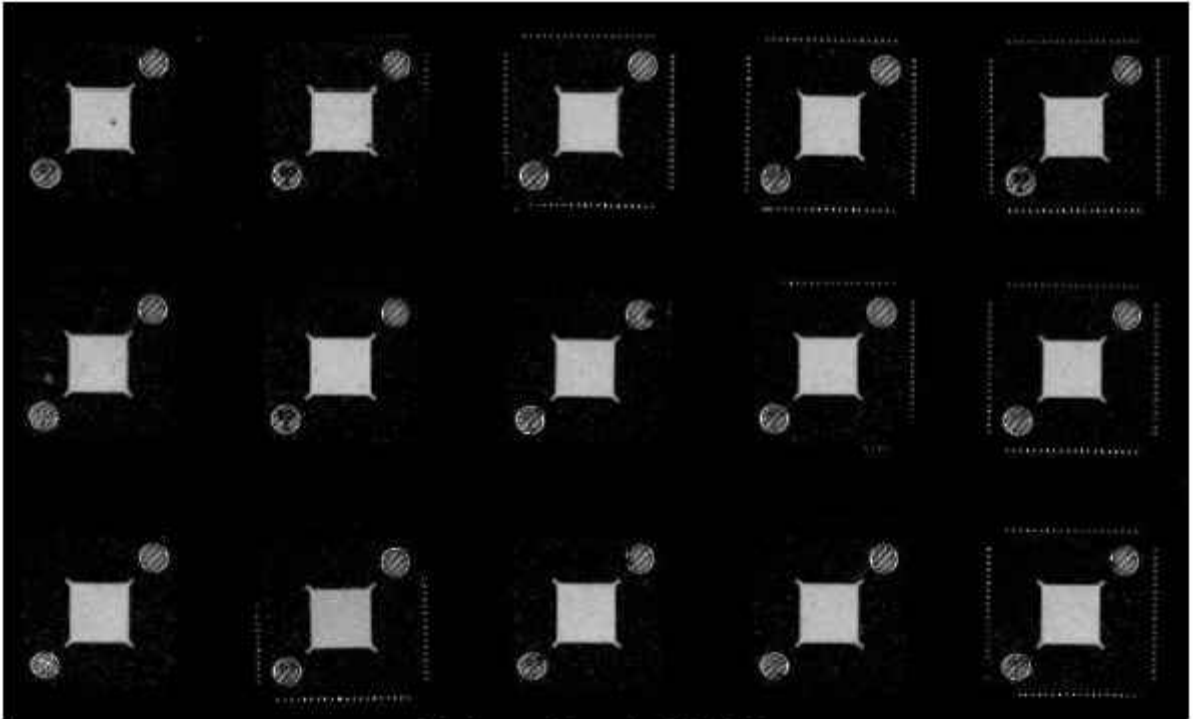
Real Time X-Ray Inspection



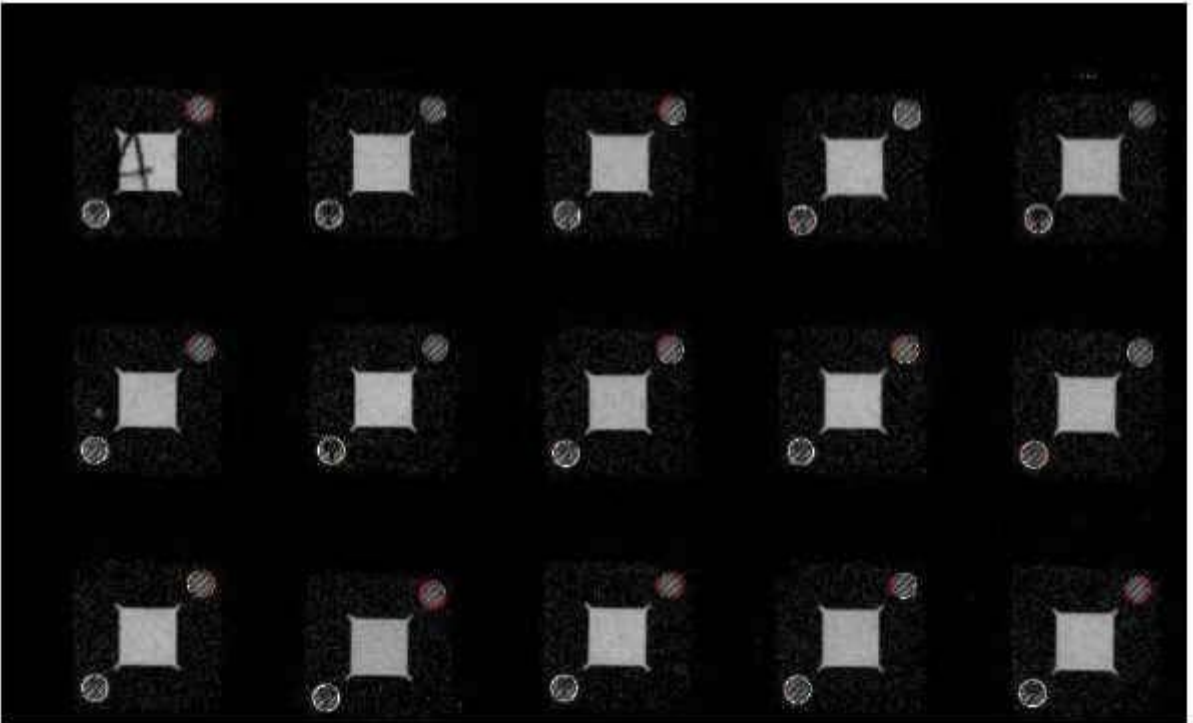
Package Type: LQFP 80L
Before Pre-con LEVEL 3
Photo no : Fig 1
Die Surface SAT Result : 0/15ea PASS



Package Type: LQFP 80L
After Pre-con LEVEL 3
Photo no : Fig 3
Die Surface SAT Result : 0/15ea PASS



Package Type: LQFP 80L
Before Pre-con LEVEL 3
Photo no : Fig 2
Die Pad(back side) SAT Result : 0/15ea PASS



Package Type: LQFP 80L
After Pre-con LEVEL 3
Photo no : Fig 4
Die Pad(back side) SAT Result : 0/15ea PASS

PUHAST and PTMCT

Preconditioned Unbiased HAST and Preconditioned Temperature Cycling Test Summary

Lot 1 (QSP0902.A)

5.1 Summary of test results :

Test Procedure	Sample Size	Visual Insp. Rej/s.s	Function/Test rej/s.s	SAT insp Rej/s.s	Judgment
Before Pre-condition	90EA	0/90	0/90	0/15	PASS
After Pre-condition	90EA	0/90	0/90	0/15	PASS
TCT 100cycles	30EA	0/30	N/A	N/A	PASS
TCT 500cycles	30EA	0/30	N/A	N/A	PASS
HAST 96hrs	30EA	0/30	N/A	N/A	PASS
Dimensions	2EA	0/2	N/A	N/A	PASS
Lead Integrity	17EA	0/17	N/A	N/A	PASS

5.2 Detail Informations of SAT Inspection :

Focus	Die Surface (Top)				Die Pad(back side)			
	0% acc	0%~10% rej	>10% rej	SAT Photo	0%	0%~50% acc	>50% rej	SAT Photo
Before Precondition	15	0	0	Fig-1	15	0	0	Fig-2
After Precondition	15	0	0	Fig-3	15	0	0	Fig-4

Lot 2 (QSP0902.B)

5.1 Summary of test results :

Test Procedure	Sample Size	Visual Insp. Rej/s.s	Function/Test rej/s.s	SAT insp Rej/s.s	Judgment
Before Pre-condition	90EA	0/90	0/90	0/15	PASS
After Pre-condition	90EA	0/90	0/90	0/15	PASS
TCT 100cycles	30EA	0/30	N/A	N/A	PASS
TCT 500cycles	30EA	0/30	N/A	N/A	PASS
HAST 96hrs	30EA	0/30	N/A	N/A	PASS
Dimensions	2EA	0/2	N/A	N/A	PASS
Lead Integrity	17EA	0/17	N/A	N/A	PASS

5.2 Detail Informations of SAT Inspection :

Focus	Die Surface (Top)				Die Pad(back side)			
	0% acc	0%~10% rej	>10% rej	SAT Photo	0%	0%~50% acc	>50% rej	SAT Photo
Before Precondition	15	0	0	Fig-1	15	0	0	Fig-2
After Precondition	15	0	0	Fig-3	15	0	0	Fig-4

Lot 3 (QSP0902.C)

5.1 Summary of test results :

Test Procedure	Sample Size	Visual Insp. Rej/s.s	Function/Test rej/s.s	SAT insp Rej/s.s	Judgment
Before Pre-condition	90EA	0/90	0/90	0/15	PASS
After Pre-condition	90EA	0/90	0/90	0/15	PASS
TCT 100cycles	30EA	0/30	N/A	N/A	PASS
TCT 500cycles	30EA	0/30	N/A	N/A	PASS
HAST 96hrs	30EA	0/30	N/A	N/A	PASS
Dimensions	2EA	0/2	N/A	N/A	PASS
Lead Integrity	17EA	0/17	N/A	N/A	PASS

5.2 Detail Informations of SAT Inspection :

Focus	Die Surface (Top)				Die Pad(back side)			
	0% acc	0%~10% rej	>10% rej	SAT Photo	0%	0%~50% acc	>50% rej	SAT Photo
Before Precondition	15	0	0	Fig-1	15	0	0	Fig-2
After Precondition	15	0	0	Fig-3	15	0	0	Fig-4