Integrated Device Technology, Inc.
6024 Silver Creek Valley Road, San Jose, CA - 95138

PRODUCT/PROCESS CHANGE NOTICE (PCN)

PCN #: **A1505-01** DATE: **18-Aug-2015**

Product Affected: FCBGA-324, 484, 672, 676, 900, 1156
Refer to Attachment II for the affected part numbers

Date Effective: **18-Nov-2015**

MEANS OF DISTINGUISHING CHANGED DEVICES:

- ☐ Product Mark
- ☐ Back Mark
- ☐ Date Code
- ■ Other

Lot # will have:
"R" prefix for ASEK, Taiwan
"AT" prefix for ATT, Taiwan

Contact: IDT PCN DESK

E-mail: pcndesk@idt.com

Attachment: ■ Yes ☐ No

Samples: Please contact your local sales representative for sample request.

DESCRIPTION AND PURPOSE OF CHANGE:

- ☐ Die Technology
- ☐ Wafer Fabrication Process
- ☐ Assembly Process
- ☐ Equipment
- ☐ Material
- ☐ Testing
- ■ Manufacturing Site
- ☐ Data Sheet
- ☐ Other

This notification is to advise our customers that IDT is transferring the affected products assembled at Amkor, Philippines (ATP) to Amkor, Taiwan (ATT) and ASEK, Taiwan (ASEK) as ATP will discontinue their assembly tooling for these products.

There is no change to the moisture performance.

Attachment I details the qualification results and
Attachment II shows the affected list of part numbers.

RELIABILITY/QUALIFICATION SUMMARY:

Refer to qualification data shown in Attachment I.

CUSTOMER ACKNOWLEDGMENT OF RECEIPT:

IDT records indicate that you require written notification of this change. Please use the acknowledgement below or E-Mail to grant approval or request additional information. If IDT does not receive acknowledgement within 30 days of this notice it will be assumed that this change is acceptable.
IDT reserves the right to ship either version manufactured after the process change effective date until the inventory on the earlier version has been depleted.

Customer: _____ ☐ ***Approval for shipments prior to effective date.***

Name/Date: _____ E-Mail Address: _____

Title: _____ Phone# /Fax# : _____

CUSTOMER COMMENTS: _____

IDT ACKNOWLEDGMENT OF RECEIPT:

RECD. BY: _____ DATE: _____

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PRODUCT/PROCESS CHANGE NOTICE (PCN)

ATTACHMENT I - PCN # : A1505-01

PCN Type: Manufacturing Site - Transfer Assembly Location

Data Sheet Change: None

Detail Of Change:

This notification is to advise our customers that IDT is transferring the affected products assembled at Amkor, Philippines (ATP) to Amkor, Taiwan (ATT) and ASEK, Taiwan (ASEK) as ATP will discontinue their assembly tooling for these products. Presently, both ATT and ASEK are qualified IDT Subcontractors.

The material set details of the current and new assembly locations are shown in Table 1.

There is no change to the moisture performance.

Table 1: Assembly Material Sets for The Existing and New Assembly Locations

i) FCBGA-324 Standard & Green (AL324, ALG324)

	Existing: ATP	New: ATT	New: ASEK
Heat spreader thermo grease	DCL-5	DCL-5	SE4450
Adhesive	DCL-5	DCL-5	SE4450
Die bump	Sn1.8Ag	Sn1.8Ag	Sn1.8Ag
Underfill	NAU-27	NAU27	NAU27
Substrate	ABF-GX13/ E679 Core	ABF-GX13/ E679 Core	ABF-GX13/ E679 Core
Solder balls	63Sn/37Pb (Standard) Sn96.5/Ag3.0/Cu0.5 (Green)	63Sn/37Pb (Standard) Sn96.5/Ag3.0/Cu0.5 (Green)	63Sn/37Pb (Standard) Sn96.5/Ag3.0/Cu0.5 (Green)

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ii) FCBGA-900 Standard (AL900)

	Existing: ATP	New: ATT	New: ASEK
Heat spreader thermo grease	TTG3	SHA-1	SE4450
Adhesive	DCL-4	DCL-4	SE4450
Die bump	95Pb5Sn	95Pb5Sn	95Pb5Sn
Underfill	NAU-8	NAU27	UA32
Substrate	ABF-GX13/ E679 Core	ABF-GX13/ E679 Core	ABF-GX13/ E679 Core
Solder balls	63Sn/37Pb	63Sn/37Pb	63Sn/37Pb

iii) FCBGA-900 (AR900)

	Existing: ATP	New: ATT	New: ASEK
Heat spreader thermo grease	TTG3	SHA-1	SE4450
Adhesive	DCL-4	DCL-4	SE4450
Die bump	95Pb5Sn	95Pb5Sn	95Pb5Sn
Underfill	NAU-8	NAU27	UA32
Substrate	ABF-GX13/ E679 Core	ABF-GX13/ E679 Core	ABF-GX13/ E679 Core
Solder balls	Sn96.5/Ag3.0/Cu0.5	Sn96.5/Ag3.0/Cu0.5	Sn96.5/Ag3.0/Cu0.5

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iv) FCBGA-484, 676,1156 Standard & Green (BL484, BLG484, BL676, BLG676, BL1156, BLG1156)

	Existing: ATP	New: ATT	New: ASEK
Heat spreader thermo grease	TTG3/DCL-5	SHA-1/ DCL-5	SE4450
Adhesive	DCL-4/DCL-5	DCL-4/DCL-5	SE4450
Die bump	Sn1.8Ag	Sn1.8Ag	Sn1.8Ag
Underfill	NAU-27	NAU-27	UA32
Substrate	ABF GX-13/E679 Core	ABF GX-13/E679 Core	ABF GX-13/E679 Core
Solder balls	63Sn/37Pb (Standard) Sn96.5/Ag3.0/Cu0.5 (Green)	63Sn/37Pb (Standard) Sn96.5/Ag3.0/Cu0.5 (Green)	63Sn/37Pb (Standard) Sn96.5/Ag3.0/Cu0.5 (Green)

v) FCBGA-484 (BR484)

	Existing: ATP	New: ATT	New: ASEK
Heat spreader thermo grease	TTG3	DCL-5	SE4450
Adhesive	DCL-4	DCL-4	SE4450
Die bump	Sn1.8Ag	Sn1.8Ag	Sn1.8Ag
Underfill	NAU-27	NAU-27	UA32
Substrate	ABF GX-13/E679 Core	ABF GX-13/E679 Core	ABF GX-13/E679 Core
Solder balls	Sn96.5/Ag3.0/Cu0.5	Sn96.5/Ag3.0/Cu0.5	Sn96.5/Ag3.0/Cu0.5

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vi) FCBGA-672, 676 (BR672, BR676)

	Existing: ATP	New: ATT	New: ASEK
Heat spreader thermo grease	TTG3	SHA-1	SE4450
Adhesive	DCL-4	DCL-4	SE4450
Die bump	95Pb5Sn	95Pb5Sn	95Pb5Sn
Underfill	NAU-8	NAU27	UA32
Substrate	ABF GX-13/ E670 Core	ABF GX-13/ E670 Core	ABF GX-13/ E670 Core
Solder balls	Sn96.5/Ag3.0/Cu0.5	Sn96.5/Ag3.0/Cu0.5	Sn96.5/Ag3.0/Cu0.5

vii) FCBGA-1156 (BR1156)

	Existing: ATP	New: ATT	New: ASEK
Heat spreader thermo grease	SHA-1	SHA-1	SE4450
Adhesive	DCL-4	DCL-4	SE4450
Die bump	Sn1.8Ag	Sn1.8Ag	Sn1.8Ag
Underfill	NAU-27	NAU27	UA32
Substrate	ABF GX-13/ E670 Core	ABF GX-13/ E670 Core	ABF GX-13/ E670 Core
Solder balls	Sn96.5/Ag3.0/Cu0.5	Sn96.5/Ag3.0/Cu0.5	Sn96.5/Ag3.0/Cu0.5

PRODUCT/PROCESS CHANGE NOTICE (PCN)

ATTACHMENT I - PCN # : A1505-01

Qualification Information and Qualification Data:

Affected Packages: FCBGA-324, 484, 672, 676, 900, 1156

Assembly Material: The affected package type is using ATT & ASEK standard materials shown in the previous pages.

Qual Plan & Results: Tests are in accordance with JEDEC47 recommended tests.

Qualification Vehicle: ATT - FCBGA-1156 (3 lots)
ASEK - FCBGA-345 (3 lots)

		Test Results (Rej / SS)	
Test Description	**Test Method**	**ATT**	**ASEK**
* HAST - unbiased (130 °C/85% RH, 96 Hrs)	JESD22-A118	0/25, 0/25, 0/25	0/25, 0/25, 0/25
* Temperature Cycling (-55°C to 125°C, 700 cycles)	JESD22-A104	0/25, 0/25, 0/25	0/25, 0/25, 0/25
High Temperature Storage Bake (150°C, 1000 Hrs)	JESD22-A103	0/25, 0/25, 0/25	0/25, 0/25, 0/25

* Tests were subjected to Preconditioning per JESD22-A113 prior to stress test

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PRODUCT/PROCESS CHANGE NOTICE (PCN)

ATTACHMENT II - PCN # : A1505-01

Affected Part Numbers

Part Number	Part Number	Part Number	Part Number
89HPES34H16ZABLI	89HPES22H16ZABL	89HPES64H16ZABRI	89H34H16G2ZCBL
89HPES24T6G2ZCALG8	89HPES16T4AG2ZCALI	89HPES64H16ZABR	89H32T8G2ZDBLGI8
89HPES24T6G2ZCALG	89HPES22T16ZABRI	89HPES64H16ZABLI	89H32T8G2ZDBLGI
89HPES24T6G2ZCAL8	89HPES24T3G2ZBAL	89HPES64H16ZABL	89H32T8G2ZDBLG8
89HPES24T6G2ZCAL	89HPES24T3G2ZCALI	89HPES64H16BRI	89H32T8G2ZDBLG
89HPES24T6G2ZBALI8	89HPES24T3G2ZCALGI	89HPES4T4G2ZBALGI	89H32T8G2ZCBLI8
89HPES24T6G2ZBALI	89HPES24T3G2ZCALG8	89HPES4T4G2ZBALG8	89H32T8G2ZCBLI
89HPES24T6G2ZBALGI	89HPES24T3G2ZCALG	89HPES4T4G2ZBALG	89H32T8G2ZCBLGI8
89HPES24T6G2ZBALG8	89HPES24T3G2ZCAL8	89HPES48H12SZABRI8	89H48H12AG2ZCBLG
89HPES24T6G2ZBALG	89HPES24T3G2ZCAL	89HPES48H12SZABRI	89H48H12AG2ZCBLGI
89HPES24T6G2ZBAL8	89HPES24T3G2ZBALI8	89HPES48H12SZABR8	89H48H12G2ZCBLI
89HPES24T6G2ZBAL	89HPES24T3G2ZBALI	89HPES48H12SZABR	89H48H12G2ZCBLGI8
89HPES24T3G2ZFALGI	89HPES24T3G2ZBALGI	89HPES48H12BRI	89H48H12G2ZCBLGI
89HPES24T6G2ZCALGI	89HPES24T3G2ZBALG8	89HPES48H12BR	89H48H12G2ZCBLG8
89HPES24T6G2ZCALI	89HPES24T3G2ZBALG	89HPES48H12BLI	89H48H12G2ZCBLG
89HPES34H16ZABL	89HPES24T3G2ZBAL8	89HPES48H12BL	89H48H12G2ZCBL8
89HPES32H8ZAARI	89HPES16T4AG2ZCALG	89HPES34T16ZABRI	89H48H12G2ZCBL
89HPES32H8ZAAR	89HPES34H16ZABR	89HPES34T16ZABR	89H48H12BG2ZCBLI
89HPES32H8ZAALI	89HPES6T6G2ZCALI8	89HPES34T16ZABLI	89H48H12BG2ZCBLGI
89HPES32H8ZAAL	89HPES64H16BL	89HPES34T16ZABL	89H48H12BG2ZCBLG
89HPES32H8ARI	89HPES4T4G2ZCALI8	89HPES48H12ZABL	89H48H12BG2ZCBL
89HPES32H8AR	89HPES4T4G2ZCALI	89HPES48H12ZABLI	89H48H12AG2ZCBLI
89HPES32H8ALI	89HPES4T4G2ZCALGI8	89HPES4T4G2ZBAL8	89H32T8G2ZCBLGI
89HPES32H8AL	89HPES4T4G2ZCALGI	89HPES4T4G2ZBAL	89H32T8G2ZCBLG8
89HPES24T6G2ZFALGI	89HPES4T4G2ZCALG8	89HPES48T12ZABRI	89H32T8G2ZCBLG
89HPES24T6G2ZFALG	89HPES4T4G2ZCALG	89HPES48T12ZABR	89H32H8G2ZCBLG8
89HPES24T6G2ZCALI8	89HPES4T4G2ZCAL8	89HPES48T12ZABLI	89H32H8G2ZCBLG
89HPES24T3G2ZFALG	89HPES4T4G2ZCAL	89HPES48T12ZABL	89H32H8G2ZCBL8
89HPES24T3G2ZEALG	89HPES4T4G2ZBALI8	89HPES48T12BRI	89H32H8G2ZCBL
89HPES24T3G2ZCALI8	89HPES4T4G2ZBALI	89HPES48T12BR	89H32H8G2ZBBLGI8
89HPES22T16ZABR	89HPES4T4G2ZBALGI8	89HPES48T12BLI	89H32H8G2ZBBLGI
89HPES22T16ZABLI	89HPES64H16BLI	89HPES48T12BL	89H32H8G2ZABLGI8
89HPES22T16ZABL	89HPES64H16BR	89HPES48H12ZABRI	89H32H8G2ZABLGI
89HPES22H16ZABRI8	89HPES6T6G2ZCALI	89HPES48H12ZABR	89H22H16G2ZCBLI
89HPES22H16ZABRI	89HPES6T6G2ZCALGI8	89HPES34H16ZABRI	89H22H16G2ZCBLGI
89HPES22H16ZABR8	89HPES6T6G2ZCALGI	89H48H12G2ZCBLI8	89H22H16G2ZCBLG
89HPES22H16ZABR	89HPES6T6G2ZCALG8	89H48H12AG2ZCBL	89H22H16G2ZCBL
89HPES22H16ZABLI8	89HPES6T6G2ZCALG	89H34H16G2ZCBLI	89H32H8G2ZCBLGI
89HPES22H16ZABLI	89HPES6T6G2ZCAL8	89H34H16G2ZCBLGI	89H32H8G2ZCBLGI8
89HPES22H16ZABL8	89HPES6T6G2ZCAL	89H34H16G2ZCBLG	89H32T8G2ZCBL8

PRODUCT/PROCESS CHANGE NOTICE (PCN)

ATTACHMENT II - PCN # : A1505-01

Affected Part Numbers

Part Number	Part Number	Part Number	Part Number
89H32T8G2ZCBL	89H64H16G2ZDBLGI	89HPES16T16ZABL	89H48H12G2ZDBLG
89H32H8G2ZDBLI8	89H64H16G2ZDBLG	89HPES16H16ZABRI	89H48T12G2ZCBLI
89H32H8G2ZDBLI	89H64H16G2ZDBL	89HPES16H16ZABR	89H48T12G2ZCBLI8
89H32H8G2ZDBLGI8	89H64H16G2ZCBLI	89HPES16H16ZABLI	89H64H16AG2ZCBLI
89H32H8G2ZDBLGI	89H64H16G2ZCBLGI	89H64H16AG2ZDBLGI	89H64H16AG2ZCBLGI
89H32H8G2ZDBLG8	89H64H16G2ZCBLG	89H64H16AG2ZDBLG	89H64H16AG2ZCBLG
89H32H8G2ZDBLG	89H64H16G2ZCBL	89H64H16AG2ZDBL	89H64H16AG2ZCBL
89H32H8G2ZDBL8	89H64H16AG2ZDBLI	89H48T12G2ZCBLGI8	89H48T12G2ZDBLI8
89H32H8G2ZDBL	89HI0524G2PSZCALG8	89H48T12G2ZCBLGI	89H48T12G2ZDBLI
89H32H8G2ZCBLI8	89HPES16H16ZABL	89H48T12G2ZCBLG8	89H48T12G2ZDBLGI8
89H32H8G2ZCBLI	89HPES16T4AG2ZCAL	89H48T12G2ZCBLG	89H48T12G2ZDBLGI
88K8483BRI	89HPES16T4AG2ZBALI	89H48T12G2ZCBL8	89H48T12G2ZDBLG8
89H48H12G2ZDBL	89HPES16T4AG2ZBALG	89H48T12G2ZCBL	89H48T12G2ZDBLG
89HPES16T4AG2ZCAL8	89HPES16T4AG2ZBAL8	89H48H12G2ZDBLI8	89H48T12G2ZDBL8
89HI0524G2PSZCALG	89HPES16T4AG2ZBAL	89H48H12G2ZDBLI	89H48T12G2ZDBL
89HI0524G2PSZBALG8	89HPES16T4AG2ALGI8	89H48H12G2ZDBLGI8	89H48H12G2ZDBL8
89HI0524G2PSZBALG	89HPES16T4AG2ALGI	89H48H12G2ZDBLGI	
89H64H16G2ZDBLI	89HPES16T16ZABR	89H48H12G2ZDBLG8	

Package Comparizon at Current and New Site

FCBGA-324		Current Site	New Site
	Pkg and Si Attribute	**ATP**	**ATT/ASEK**
Pkg	Pkg type	AL, ALG324	NO change
	Pkg x & y (mm)	19 mm x 19 mm	NO change
	Pkg z (mm)	1.0 mm	NO change
	Max Voltage	NA	
	Capacitors	NA	
Silicon & FLI	Si Process	No change	No change same wafer and bump
	Wafer Size	No change	No change same wafer and bump
	Die size (mm2)	No change	No change same wafer and bump
	Die Aspect Ratio	No change	No change same wafer and bump
	Die thickness (mils)	No change	No change same wafer and bump
	Polyimide (Y/N)	No change	No change same wafer and bump
	Silicon Metal Layers	No change	No change same wafer and bump
	Scribe Width (um)	No change	No change same wafer and bump
	UBM source	No change	No change same wafer and bump
	Silicon UBM Stack-up	No change	No change same wafer and bump
	Bump source	No change	No change same wafer and bump
	Bump pitch I/O & Core (um)	No change	No change same wafer and bump
	Total Bump count	No change	No change same wafer and bump
	Bump Diameter	No change	No change same wafer and bump
	Bump Height	No change	No change same wafer and bump
	Bump Metallurgy	No change	No change same wafer and bump
	Wafer Bump Flux	No change	No change same wafer and bump
	CAM Flux	No change	No change same wafer and bump
	Underfill Material	No change	No change same wafer and bump
	Silicon UBM/SRO	No change	No change same wafer and bump
Substrate	Halogen Free ?	use 37-602-324	No change will use same substrate
	Substrate Layers	use 37-602-324	No change will use same substrate
	Substrate thickness	use 37-602-324	No change will use same substrate
	Core thickness (um)	use 37-602-324	No change will use same substrate
	Core Material	use 37-602-324	No change will use same substrate
	Outer layer Lines/space (um)	use 37-602-324	No change will use same substrate
	Bump Pre-solder (SOP)	use 37-602-324	No change will use same substrate
	Bump presolder (SOP) height/diameter	use 37-602-324	No change will use same substrate
	Bump Capture Pad/SRO IO (um)	use 37-602-324	No change will use same substrate
	Substrate Ball Capture Pad/SRO (um)	use 37-602-324	No change will use same substrate
	Number of PTH/M1-M2 uVias	use 37-602-324	No change will use same substrate
	Core PTH/Capture pad (um)	use 37-602-324	No change will use same substrate
	Substrate Design Rule & BOM	use 37-602-324	No change will use same substrate
	Substrate Supplier	use 37-602-324	No change will use same substrate
	Build up layer (thickness)	use 37-602-324	No change will use same substrate
	Solder mask (thickness)	use 37-602-324	No change will use same substrate
	C1 & C4 thickness (plate)	use 37-602-324	No change will use same substrate
	C2 & C3 thickness (foil + plate)	use 37-602-324	No change will use same substrate
	Surface finish (thickness)	use 37-602-324	No change will use same substrate

FCBGA-900		Current Site	New Site
	Pkg and Si Attribute	**ATP**	**ATT/ASEK**
Pkg	Pkg type	AL900/AR900	AL900/AR900
	Pkg x & y (mm)	31 mm x 31 mm	No change
	Pkg z (mm)	2.82 mm	No change
	Max Voltage	NA	
	Capacitors	NA	
Silicon & FLI	Si Process	No change	No change same wafer and bump
	Wafer Size	No change	No change same wafer and bump
	Die size (mm2)	No change	No change same wafer and bump
	Die Aspect Ratio	No change	No change same wafer and bump
	Die thickness (mils)	No change	No change same wafer and bump
	Polyimide (Y/N)	No change	No change same wafer and bump
	Silicon Metal Layers	No change	No change same wafer and bump
	Scribe Width (um)	No change	No change same wafer and bump
	UBM source	No change	No change same wafer and bump
	Silicon UBM Stack-up	No change	No change same wafer and bump
	Bump source	No change	No change same wafer and bump
	Bump pitch I/O & Core (um)	No change	No change same wafer and bump
	Total Bump count	No change	No change same wafer and bump
	Bump Diameter	No change	No change same wafer and bump
	Bump Height	No change	No change same wafer and bump
	Bump Metallurgy	No change	No change same wafer and bump
	Wafer Bump Flux	No change	No change same wafer and bump
	CAM Flux	No change	No change same wafer and bump
	Underfill Material	No change	No change same wafer and bump
	Silicon UBM/SRO	No change	No change same wafer and bump
Substrate	Halogen Free ?	use37-383-900	No change will use same substrate
	Substrate Layers	use37-383-900	No change will use same substrate
	Substrate thickness	use37-383-900	No change will use same substrate
	Core thickness (um)	use37-383-900	No change will use same substrate
	Core Material	use37-383-900	No change will use same substrate
	Outer layer Lines/space (um)	use37-383-900	No change will use same substrate
	Bump Pre-solder (SOP)	use37-383-900	No change will use same substrate
	Bump presolder (SOP) height/diameter	use37-383-900	No change will use same substrate
	Bump Capture Pad/SRO IO (um)	use37-383-900	No change will use same substrate
	Substrate Ball Capture Pad/SRO (um)	use37-383-900	No change will use same substrate
	Number of PTH/M1-M2 uVias	use37-383-900	No change will use same substrate
	Core PTH/Capture pad (um)	use37-383-900	No change will use same substrate
	Substrate Design Rule & BOM	use37-383-900	No change will use same substrate
	Substrate Supplier	use37-383-900	No change will use same substrate
	Build up layer (thickness)	use37-383-900	No change will use same substrate
	Solder mask (thickness)	use37-383-900	No change will use same substrate
	C1 & C4 thickness (plate)	use37-383-900	No change will use same substrate
	C2 & C3 thickness (foil + plate)	use37-383-900	No change will use same substrate
	Surface finish (thickness)	use37-383-900	No change will use same substrate

FCBGA-484		Current Site	New Site
	Pkg and Si Attribute	**ATP**	**ATT/ASEK**
Pkg	Pkg type	BL/BLG484	BL/BLG484
	Pkg x & y (mm)	23mm x 23 mm	No change
	Pkg z (mm)	3.34 mm	No change
	Max Voltage	NA	
	Capacitors	NA	
Silicon & FLI	Si Process	No change	No change same wafer and bump
	Wafer Size	No change	No change same wafer and bump
	Die size (mm2)	No change	No change same wafer and bump
	Die Aspect Ratio	No change	No change same wafer and bump
	Die thickness (mils)	No change	No change same wafer and bump
	Polyimide (Y/N)	No change	No change same wafer and bump
	Silicon Metal Layers	No change	No change same wafer and bump
	Scribe Width (um)	No change	No change same wafer and bump
	UBM source	No change	No change same wafer and bump
	Silicon UBM Stack-up	No change	No change same wafer and bump
	Bump source	No change	No change same wafer and bump
	Bump pitch I/O & Core (um)	No change	No change same wafer and bump
	Total Bump count	No change	No change same wafer and bump
	Bump Diameter	No change	No change same wafer and bump
	Bump Height	No change	No change same wafer and bump
	Bump Metallurgy	No change	No change same wafer and bump
	Wafer Bump Flux	No change	No change same wafer and bump
	CAM Flux	No change	No change same wafer and bump
	Underfill Material	No change	No change same wafer and bump
	Silicon UBM/SRO	No change	No change same wafer and bump
Substrate	Halogen Free ?	use37-434-484 /37-605-484	No change will use same substrate
	Substrate Layers	use37-434-484 /37-605-484	No change will use same substrate
	Substrate thickness	use37-434-484 /37-605-484	No change will use same substrate
	Core thickness (um)	use37-434-484 /37-605-484	No change will use same substrate
	Core Material	use37-434-484 /37-605-484	No change will use same substrate
	Outer layer Lines/space (um)	use37-434-484 /37-605-484	No change will use same substrate
	Bump Pre-solder (SOP)	use37-434-484 /37-605-484	No change will use same substrate
	Bump presolder (SOP) height/diameter	use37-434-484 /37-605-484	No change will use same substrate
	Bump Capture Pad/SRO IO (um)	use37-434-484 /37-605-484	No change will use same substrate
	Substrate Ball Capture Pad/SRO (um)	use37-434-484 /37-605-484	No change will use same substrate
	Number of PTH/M1-M2 uVias	use37-434-484 /37-605-484	No change will use same substrate
	Core PTH/Capture pad (um)	use37-434-484 /37-605-484	No change will use same substrate
	Substrate Design Rule & BOM	use37-434-484 /37-605-484	No change will use same substrate
	Substrate Supplier	use37-434-484 /37-605-484	No change will use same substrate
	Build up layer (thickness)	use37-434-484 /37-605-484	No change will use same substrate
	Solder mask (thickness)	use37-434-484 /37-605-484	No change will use same substrate
	C1 & C4 thickness (plate)	use37-434-484 /37-605-484	No change will use same substrate
	C2 & C3 thickness (foil + plate)	use37-434-484 /37-605-484	No change will use same substrate
	Surface finish (thickness)	use37-434-484 /37-605-484	No change will use same substrate

FCBGA-676		Current Site	New Site
	Pkg and Si Attribute	**ATP**	**ATT/ASEK**
Pkg	Pkg type	BL/BLG676	BL/BLG676
	Pkg x & y (mm)	27mm x 27 mm	No change
	Pkg z (mm)	3.4mm	No change
	Max Voltage	NA	
	Capacitors	NA	
Silicon & FLI	Si Process	No change	No change same wafer and bump
	Wafer Size	No change	No change same wafer and bump
	Die size (mm2)	No change	No change same wafer and bump
	Die Aspect Ratio	No change	No change same wafer and bump
	Die thickness (mils)	No change	No change same wafer and bump
	Polyimide (Y/N)	No change	No change same wafer and bump
	Silicon Metal Layers	No change	No change same wafer and bump
	Scribe Width (um)	No change	No change same wafer and bump
	UBM source	No change	No change same wafer and bump
	Silicon UBM Stack-up	No change	No change same wafer and bump
	Bump source	No change	No change same wafer and bump
	Bump pitch I/O & Core (um)	No change	No change same wafer and bump
	Total Bump count	No change	No change same wafer and bump
	Bump Diameter	No change	No change same wafer and bump
	Bump Height	No change	No change same wafer and bump
	Bump Metallurgy	No change	No change same wafer and bump
	Wafer Bump Flux	No change	No change same wafer and bump
	CAM Flux	No change	No change same wafer and bump
	Underfill Material	No change	No change same wafer and bump
	Silicon UBM/SRO	No change	No change same wafer and bump
Substrate	Halogen Free ?	use37-603-676	No change will use same substrate
	Substrate Layers	use37-603-676	No change will use same substrate
	Substrate thickness	use37-603-676	No change will use same substrate
	Core thickness (um)	use37-603-676	No change will use same substrate
	Core Material	use37-603-676	No change will use same substrate
	Outer layer Lines/space (um)	use37-603-676	No change will use same substrate
	Bump Pre-solder (SOP)	use37-603-676	No change will use same substrate
	Bump presolder (SOP) height/diameter	use37-603-676	No change will use same substrate
	Bump Capture Pad/SRO IO (um)	use37-603-676	No change will use same substrate
	Substrate Ball Capture Pad/SRO (um)	use37-603-676	No change will use same substrate
	Number of PTH/M1-M2 uVias	use37-603-676	No change will use same substrate
	Core PTH/Capture pad (um)	use37-603-676	No change will use same substrate
	Substrate Design Rule & BOM	use37-603-676	No change will use same substrate
	Substrate Supplier	use37-603-676	No change will use same substrate
	Build up layer (thickness)	use37-603-676	No change will use same substrate
	Solder mask (thickness)	use37-603-676	No change will use same substrate
	C1 & C4 thickness (plate)	use37-603-676	No change will use same substrate
	C2 & C3 thickness (foil + plate)	use37-603-676	No change will use same substrate
	Surface finish (thickness)	use37-603-676	No change will use same substrate

FCBGA-1156		Current Site	New Site
	Pkg and Si Attribute	**ATP**	**ATT/ASEK**
Pkg	Pkg type	BL/BLG1156	BL/BLG1156
	Pkg x & y (mm)	35mm x 35 mm	No change
	Pkg z (mm)	2.82mm	No change
	Max Voltage	NA	
	Capacitors	NA	
Silicon & FLI	Si Process	No change	No change same wafer and bump
	Wafer Size	No change	No change same wafer and bump
	Die size (mm2)	No change	No change same wafer and bump
	Die Aspect Ratio	No change	No change same wafer and bump
	Die thickness (mils)	No change	No change same wafer and bump
	Polyimide (Y/N)	No change	No change same wafer and bump
	Silicon Metal Layers	No change	No change same wafer and bump
	Scribe Width (um)	No change	No change same wafer and bump
	UBM source	No change	No change same wafer and bump
	Silicon UBM Stack-up	No change	No change same wafer and bump
	Bump source	No change	No change same wafer and bump
	Bump pitch I/O & Core (um)	No change	No change same wafer and bump
	Total Bump count	No change	No change same wafer and bump
	Bump Diameter	No change	No change same wafer and bump
	Bump Height	No change	No change same wafer and bump
	Bump Metallurgy	No change	No change same wafer and bump
	Wafer Bump Flux	No change	No change same wafer and bump
	CAM Flux	No change	No change same wafer and bump
	Underfill Material	No change	No change same wafer and bump
	Silicon UBM/SRO	No change	No change same wafer and bump
Substrate	Halogen Free ?	use37-633-1156	No change will use same substrate
	Substrate Layers	use37-633-1156	No change will use same substrate
	Substrate thickness	use37-633-1156	No change will use same substrate
	Core thickness (um)	use37-633-1156	No change will use same substrate
	Core Material	use37-633-1156	No change will use same substrate
	Outer layer Lines/space (um)	use37-633-1156	No change will use same substrate
	Bump Pre-solder (SOP)	use37-633-1156	No change will use same substrate
	Bump presolder (SOP) height/diameter	use37-633-1156	No change will use same substrate
	Bump Capture Pad/SRO IO (um)	use37-633-1156	No change will use same substrate
	Substrate Ball Capture Pad/SRO (um)	use37-633-1156	No change will use same substrate
	Number of PTH/M1-M2 uVias	use37-633-1156	No change will use same substrate
	Core PTH/Capture pad (um)	use37-633-1156	No change will use same substrate
	Substrate Design Rule & BOM	use37-633-1156	No change will use same substrate
	Substrate Supplier	use37-633-1156	No change will use same substrate
	Build up layer (thickness)	use37-633-1156	No change will use same substrate
	Solder mask (thickness)	use37-633-1156	No change will use same substrate
	C1 & C4 thickness (plate)	use37-633-1156	No change will use same substrate
	C2 & C3 thickness (foil + plate)	use37-633-1156	No change will use same substrate
	Surface finish (thickness)	use37-633-1156	No change will use same substrate

FCBGA-484		Current Site	New Site
	Pkg and Si Attribute	**ATP**	**ATT/ASEK**
Pkg	Pkg type	BR484	BR484
	Pkg x & y (mm)	23mm x 23 mm	No change
	Pkg z (mm)	3.34 mm	No change
	Max Voltage	NA	
	Capacitors	NA	
Silicon & FLI	Si Process	No change	No change same wafer and bump
	Wafer Size	No change	No change same wafer and bump
	Die size (mm2)	No change	No change same wafer and bump
	Die Aspect Ratio	No change	No change same wafer and bump
	Die thickness (mils)	No change	No change same wafer and bump
	Polyimide (Y/N)	No change	No change same wafer and bump
	Silicon Metal Layers	No change	No change same wafer and bump
	Scribe Width (um)	No change	No change same wafer and bump
	UBM source	No change	No change same wafer and bump
	Silicon UBM Stack-up	No change	No change same wafer and bump
	Bump source	No change	No change same wafer and bump
	Bump pitch I/O & Core (um)	No change	No change same wafer and bump
	Total Bump count	No change	No change same wafer and bump
	Bump Diameter	No change	No change same wafer and bump
	Bump Height	No change	No change same wafer and bump
	Bump Metallurgy	No change	No change same wafer and bump
	Wafer Bump Flux	No change	No change same wafer and bump
	CAM Flux	No change	No change same wafer and bump
	Underfill Material	No change	No change same wafer and bump
	Silicon UBM/SRO	No change	No change same wafer and bump
Substrate	Halogen Free ?	use37-434-484	No change will use same substrate
	Substrate Layers	use37-434-484	No change will use same substrate
	Substrate thickness	use37-434-484	No change will use same substrate
	Core thickness (um)	use37-434-484	No change will use same substrate
	Core Material	use37-434-484	No change will use same substrate
	Outer layer Lines/space (um)	use37-434-484	No change will use same substrate
	Bump Pre-solder (SOP)	use37-434-484	No change will use same substrate
	Bump presolder (SOP) height/diameter	use37-434-484	No change will use same substrate
	Bump Capture Pad/SRO IO (um)	use37-434-484	No change will use same substrate
	Substrate Ball Capture Pad/SRO (um)	use37-434-484	No change will use same substrate
	Number of PTH/M1-M2 uVias	use37-434-484	No change will use same substrate
	Core PTH/Capture pad (um)	use37-434-484	No change will use same substrate
	Substrate Design Rule & BOM	use37-434-484	No change will use same substrate
	Substrate Supplier	use37-434-484	No change will use same substrate
	Build up layer (thickness)	use37-434-484	No change will use same substrate
	Solder mask (thickness)	use37-434-484	No change will use same substrate
	C1 & C4 thickness (plate)	use37-434-484	No change will use same substrate
	C2 & C3 thickness (foil + plate)	use37-434-484	No change will use same substrate
	Surface finish (thickness)	use37-434-484	No change will use same substrate

FCBGA-672		Current Site	New Site
	Pkg and Si Attribute	**ATP**	**ATT/ASEK**
Pkg	Pkg type	BR672	BR672
	Pkg x & y (mm)	27mm x 27 mm	No change
	Pkg z (mm)	3.3mm	No change
	Max Voltage	NA	
	Capacitors	NA	
Silicon & FLI	Si Process	No change	No change same wafer and bump
	Wafer Size	No change	No change same wafer and bump
	Die size (mm2)	No change	No change same wafer and bump
	Die Aspect Ratio	No change	No change same wafer and bump
	Die thickness (mils)	No change	No change same wafer and bump
	Polyimide (Y/N)	No change	No change same wafer and bump
	Silicon Metal Layers	No change	No change same wafer and bump
	Scribe Width (um)	No change	No change same wafer and bump
	UBM source	No change	No change same wafer and bump
	Silicon UBM Stack-up	No change	No change same wafer and bump
	Bump source	No change	No change same wafer and bump
	Bump pitch I/O & Core (um)	No change	No change same wafer and bump
	Total Bump count	No change	No change same wafer and bump
	Bump Diameter	No change	No change same wafer and bump
	Bump Height	No change	No change same wafer and bump
	Bump Metallurgy	No change	No change same wafer and bump
	Wafer Bump Flux	No change	No change same wafer and bump
	CAM Flux	No change	No change same wafer and bump
	Underfill Material	No change	No change same wafer and bump
	Silicon UBM/SRO	No change	No change same wafer and bump
Substrate	Halogen Free ?	use37-293-672	No change will use same substrate
	Substrate Layers	use37-293-672	No change will use same substrate
	Substrate thickness	use37-293-672	No change will use same substrate
	Core thickness (um)	use37-293-672	No change will use same substrate
	Core Material	use37-293-672	No change will use same substrate
	Outer layer Lines/space (um)	use37-293-672	No change will use same substrate
	Bump Pre-solder (SOP)	use37-293-672	No change will use same substrate
	Bump presolder (SOP) height/diameter	use37-293-672	No change will use same substrate
	Bump Capture Pad/SRO IO (um)	use37-293-672	No change will use same substrate
	Substrate Ball Capture Pad/SRO (um)	use37-293-672	No change will use same substrate
	Number of PTH/M1-M2 uVias	use37-293-672	No change will use same substrate
	Core PTH/Capture pad (um)	use37-293-672	No change will use same substrate
	Substrate Design Rule & BOM	use37-293-672	No change will use same substrate
	Substrate Supplier	use37-293-672	No change will use same substrate
	Build up layer (thickness)	use37-293-672	No change will use same substrate
	Solder mask (thickness)	use37-293-672	No change will use same substrate
	C1 & C4 thickness (plate)	use37-293-672	No change will use same substrate
	C2 & C3 thickness (foil + plate)	use37-293-672	No change will use same substrate
	Surface finish (thickness)	use37-293-672	No change will use same substrate

FCBGA-676		Current Site	New Site
	Pkg and Si Attribute	**ATP**	**ATT/ASEK**
Pkg	Pkg type	BR676	BR676
	Pkg x & y (mm)	27mm x 27 mm	No change
	Pkg z (mm)	3.4mm	No change
	Max Voltage	NA	
	Capacitors	NA	
Silicon & FLI	Si Process	No change	No change same wafer and bump
	Wafer Size	No change	No change same wafer and bump
	Die size (mm2)	No change	No change same wafer and bump
	Die Aspect Ratio	No change	No change same wafer and bump
	Die thickness (mils)	No change	No change same wafer and bump
	Polyimide (Y/N)	No change	No change same wafer and bump
	Silicon Metal Layers	No change	No change same wafer and bump
	Scribe Width (um)	No change	No change same wafer and bump
	UBM source	No change	No change same wafer and bump
	Silicon UBM Stack-up	No change	No change same wafer and bump
	Bump source	No change	No change same wafer and bump
	Bump pitch I/O & Core (um)	No change	No change same wafer and bump
	Total Bump count	No change	No change same wafer and bump
	Bump Diameter	No change	No change same wafer and bump
	Bump Height	No change	No change same wafer and bump
	Bump Metallurgy	No change	No change same wafer and bump
	Wafer Bump Flux	No change	No change same wafer and bump
	CAM Flux	No change	No change same wafer and bump
	Underfill Material	No change	No change same wafer and bump
	Silicon UBM/SRO	No change	No change same wafer and bump
Substrate	Halogen Free ?	use37-426-676; 37-449-676	No change will use same substrate
	Substrate Layers	use37-426-676; 37-449-676	No change will use same substrate
	Substrate thickness	use37-426-676; 37-449-676	No change will use same substrate
	Core thickness (um)	use37-426-676; 37-449-676	No change will use same substrate
	Core Material	use37-426-676; 37-449-676	No change will use same substrate
	Outer layer Lines/space (um)	use37-426-676; 37-449-676	No change will use same substrate
	Bump Pre-solder (SOP)	use37-426-676; 37-449-676	No change will use same substrate
	Bump presolder (SOP) height/diameter	use37-426-676; 37-449-676	No change will use same substrate
	Bump Capture Pad/SRO IO (um)	use37-426-676; 37-449-676	No change will use same substrate
	Substrate Ball Capture Pad/SRO (um)	use37-426-676; 37-449-676	No change will use same substrate
	Number of PTH/M1-M2 uVias	use37-426-676; 37-449-676	No change will use same substrate
	Core PTH/Capture pad (um)	use37-426-676; 37-449-676	No change will use same substrate
	Substrate Design Rule & BOM	use37-426-676; 37-449-676	No change will use same substrate
	Substrate Supplier	use37-426-676; 37-449-676	No change will use same substrate
	Build up layer (thickness)	use37-426-676; 37-449-676	No change will use same substrate
	Solder mask (thickness)	use37-426-676; 37-449-676	No change will use same substrate
	C1 & C4 thickness (plate)	use37-426-676; 37-449-676	No change will use same substrate
	C2 & C3 thickness (foil + plate)	use37-426-676; 37-449-676	No change will use same substrate
	Surface finish (thickness)	use37-426-676; 37-449-676	No change will use same substrate

FCBGA-1156		Current Site	New Site
	Pkg and Si Attribute	**ATP**	**ATT/ASEK**
Pkg	Pkg type	BR1156	BL/BLG1156
	Pkg x & y (mm)	35mm x 35 mm	No change
	Pkg z (mm)	2.82mm	No change
	Max Voltage	NA	
	Capacitors	NA	
Silicon & FLI	Si Process	No change	No change same wafer and bump
	Wafer Size	No change	No change same wafer and bump
	Die size (mm2)	No change	No change same wafer and bump
	Die Aspect Ratio	No change	No change same wafer and bump
	Die thickness (mils)	No change	No change same wafer and bump
	Polyimide (Y/N)	No change	No change same wafer and bump
	Silicon Metal Layers	No change	No change same wafer and bump
	Scribe Width (um)	No change	No change same wafer and bump
	UBM source	No change	No change same wafer and bump
	Silicon UBM Stack-up	No change	No change same wafer and bump
	Bump source	No change	No change same wafer and bump
	Bump pitch I/O & Core (um)	No change	No change same wafer and bump
	Total Bump count	No change	No change same wafer and bump
	Bump Diameter	No change	No change same wafer and bump
	Bump Height	No change	No change same wafer and bump
	Bump Metallurgy	No change	No change same wafer and bump
	Wafer Bump Flux	No change	No change same wafer and bump
	CAM Flux	No change	No change same wafer and bump
	Underfill Material	No change	No change same wafer and bump
	Silicon UBM/SRO	No change	No change same wafer and bump
Substrate	Halogen Free ?	use37-633-1156	No change will use same substrate
	Substrate Layers	use37-633-1156/37-604-1156	No change will use same substrate
	Substrate thickness	use37-633-1156/37-604-1156	No change will use same substrate
	Core thickness (um)	use37-633-1156/37-604-1156	No change will use same substrate
	Core Material	use37-633-1156/37-604-1156	No change will use same substrate
	Outer layer Lines/space (um)	use37-633-1156/37-604-1156	No change will use same substrate
	Bump Pre-solder (SOP)	use37-633-1156/37-604-1156	No change will use same substrate
	Bump presolder (SOP) height/diameter	use37-633-1156/37-604-1156	No change will use same substrate
	Bump Capture Pad/SRO IO (um)	use37-633-1156/37-604-1156	No change will use same substrate
	Substrate Ball Capture Pad/SRO (um)	use37-633-1156/37-604-1156	No change will use same substrate
	Number of PTH/M1-M2 uVias	use37-633-1156/37-604-1156	No change will use same substrate
	Core PTH/Capture pad (um)	use37-633-1156/37-604-1156	No change will use same substrate
	Substrate Design Rule & BOM	use37-633-1156/37-604-1156	No change will use same substrate
	Substrate Supplier	use37-633-1156/37-604-1156	No change will use same substrate
	Build up layer (thickness)	use37-633-1156/37-604-1156	No change will use same substrate
	Solder mask (thickness)	use37-633-1156/37-604-1156	No change will use same substrate
	C1 & C4 thickness (plate)	use37-633-1156/37-604-1156	No change will use same substrate
	C2 & C3 thickness (foil + plate)	use37-633-1156/37-604-1156	No change will use same substrate
	Surface finish (thickness)	use37-633-1156/37-604-1156	No change will use same substrate