



Final Product/Process Change Notification

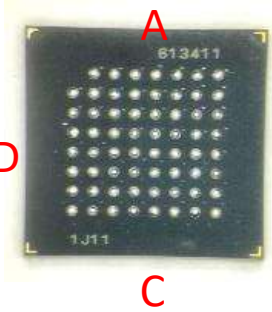
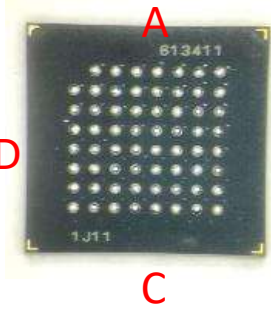
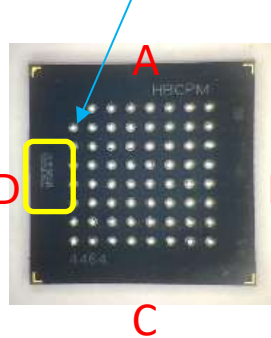
Document #:FPCN24140ZA

Issue Date:02 Feb 2023

Title of Change:	Addition of onsemi Seremban, Malaysia as an assembly site for iBGA packaging	
Proposed Changed Material First Ship Date:	02 Aug 2023 or earlier if approved by customer	
Current Material Last Order Date:	NA <i>Orders received after the Current Material Last Order Date expiration are to be considered as orders for new changed material as described in this PCN. Orders for current (unchanged) material after this date will be per mutual agreement and current material inventory availability.</i>	
Current Material Last Delivery Date:	NA <i>The Current Material Last Delivery Date may be subject to change based on build and depletion of the current (unchanged) material inventory</i>	
Product Category:	Active components – Integrated circuits	
Contact information:	Contact your local onsemi Sales Office or Geethakrishnan.Narasimhan@onsemi.com	
PCN Samples Contact:	Contact your local onsemi Sales Office to place sample order. Sample requests are to be submitted no later than 45 days after publication of this change notification. Samples delivery timing will be subject to request date, sample quantity and special customer packing/label requirements.	
Sample Availability Date:	21 Jan 2023	
PPAP Availability Date:	28 Feb 2023	
Additional Reliability Data:	Contact your local onsemi Sales Office or Amy.Wu@onsemi.com	
Type of Notification:	This is a Final Product/Process Change Notification (FPCN) sent to customers. The change will be implemented at 'Proposed Change Material First Ship Date' in compliance to J-STD-46 or ZVEI, or earlier upon customer approval, or per our signed agreements. onsemi will consider this proposed change and it's conditions acceptable, unless an inquiry is made in writing within 45 days of delivery of this notice. To do so, contact PCN.Support@onsemi.com .	
Change Category		
Category	Type of Change	
Equipment	Production from a new equipment/tool which uses the same basic technology (replacement equipment or extension of existing equipment pool) without change of process.	
Process - Assembly	Move of all or part of assembly to a different location/site/subcontractor., Die attach material	
Description and Purpose:		
<p>In order to provide higher and flexible capacity to meet growing demand, onsemi is adding an additional site for wafer backgrind and iBGA assembly at its Seremban internal manufacturing facility for AR0132 image sensor based products. Key material inputs and manufacturing site changes are shown in the table below. Units assembled in Seremban will be tested at KYEC (Taiwan), which is already used to test units assembled at current production sites at THEIL (formerly Kingpak) and ASEM.</p> <p>There is no change to the final test program. THEIL and ASEM will continue to test units assembled at their respective sites as well.</p>		
	Before Change Description	After Change Description
Assembly Site / Final Test Site	THEIL (Taiwan) / KYEC (Taiwan) THEIL / THEIL ASEM (Malaysia) / ASEM ASEM / KYEC	THEIL (Taiwan) / KYEC (Taiwan) THEIL / THEIL ASEM (Malaysia) / ASEM ASEM (Malaysia) / KYEC onsemi ISMF (backgrind), onsemi (assembly) / KYEC

Package Substrate	ASEK (AEM) SCC (THEIL)	ASEK (ASEM) SCC (THEIL/Seremban)
Die Attach Epoxy	DA Epoxy 2053s	DA Epoxy 2053s
Encapsulation	Nagase T693, Henkel FP4802	Nagase T693, Henkel FP4802
Glass	Crystal Optech BBAR 125mmx125mm	Crystal Optech BBAR 125mmx125mm
Glass Attach Epoxy	EMI 1748-HTG (THEIL & ASEM)	EMI 1748-HTG (THEIL & ASEM) NAGASE T694 (Seremban)
Wire	Tanaka 0.9mils Au wire	Tanaka 0.9mils Au wire

There is a product material change in glass attach epoxy but supplier is same as that for encapsulation.

	From (THEIL/ASEM)	To (THEIL/ASEM/onsemi Seremban)
Product marking change		<p>THEIL/ASEM Marking</p>  <p>onsemi Seremban Marking (Additional lettering)</p> 

There are product marking changes as a result of this change as shown above.

Reason / Motivation for Change:	Quality improvement
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Anticipated impact on fit, form, function, reliability, product safety or manufacturability:	The device has been qualified and validated based on the same Product Specification. The device has successfully passed the qualification tests. Potential impacts can be identified, but due to testing performed by onsemi in relation to the PCN, associated risks are verified and excluded. No anticipated impacts.
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Sites Affected:	
onsemi Sites	External Foundry/Subcon Sites
onsemi Seremban, Malaysia	None

Marking of Parts/ Traceability of Change:	Date Code July 2023
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Reliability Data Summary:

QV DEVICE NAME: AR0132AT
PACKAGE: iBGA

Test	Specification	Condition	Result
HTOL	JESD22-A108	Ta = <u>105</u> °C, 100 % max rated Vcc, 1008hrs	0/231
ELFR	AEC Q100-008	Ta= <u>125</u> °C, 24hrs	0/2400
PC	J-STD-020 JESD-A113	MSL 3 @ 260 °C	0/231
HTSL	JESD22-A103	Ta= <u>150</u> °C, 504hr	0/80
TC	JESD22-A104	Ta= <u>-55</u> °C to <u>+125</u> °C, 1000cyc	0/231
HAST	JESD22-A110	130°C, 85% RH, with bias, 96hrs	0/231
uHAST	JESD22-A118	130°C, 85% RH, unbiased, 96hrs	0/231
WBS	AEC Q100-001 AEC Q003	CPK >1.67	PASS
WBP	MIL-STD883 Method 2011 AEC Q003	CPK >1.67 or 0 Fails after TC (test #A4)	PASS
HBM	AEC Q100-002	0 Fails; 2KV HBM	PASS
CDM	AEC Q100-011	0 Fails: 750V for corner pins, 500V all other pins	PASS
LU	AEC Q100-004	0 Fails	PASS
SD	JSTD002	Ta= 245°C, 10 sec	PASS
SBS	AEC Q100-010	2X IR 245°C	PASS
ED	AEC Q100-009 AEC Q003	Elect. Distribution: (Test @ C/ R/ H)	PASS

NOTE: AEC 1 pager is attached.

To view attachments:

1. Download pdf copy of the PCN to your computer
2. Open the downloaded pdf copy of the PCN
3. Click on the paper clip icon available on the menu provided in the left/bottom portion of the screen to reveal the Attachment field
4. Then click on the attached file.

Electrical Characteristics Summary:
Electrical characteristics are not impacted and are comparable to current assembly and final test flow. A summary of key parameters are shown below. As mentioned earlier, there is no change in final test site or final test program.

Test Name	Control (THEIL)			Seremban			Spec Hi (D/S)	Unit	Temp	Description
	Avg	STD	Cpk/Cpku	Avg	STD	Cpk/Cpku				
Ia_OPER_VAA	59.5	1.7	2.92	59.6	1.86	2.82	75	mA	25C	Operating Current HDR, parallel
Ip_OPER_VAA_PIX	9.55	0.294	12.3	9.48	0.417	11.2	20	mA	25C	Operating Current HDR, parallel
Id_OPER_VDD	107	4.16	2.07	108	1.94	1.85	115	mA	25C	Operating Current HDR, parallel
Io_OPER_VDD_IO	33.7	2.14	1.57	33.7	5.4	1.53	40	mA	25C	Operating Current HDR, parallel
Il_OPER_VDD_PLL	6.84	0.0936	38.6	6.86	0.0782	40.9	15	mA	25C	Operating Current HDR, parallel
IA_OPER_VAA (2)	7.54	1.33	27.2	7.51	1.64	27.8	45	mA	25C	Operating Current Linear, serial
IP_OPER_VAA_PIX (2)	2.02	0.172	70.9	1.99	0.148	83	15	mA	25C	Operating Current Linear, serial
ID_OPER_VDD (2)	80.9	4.26	9.86	81.1	1.71	10.5	115	mA	25C	Operating Current Linear, serial
IL_OPER_VDD_PLL (2)	7.61	0.0887	34.6	7.63	0.0801	36.9	15	mA	25C	Operating Current Linear, serial
II_OPER_VDD_SLVS (2)	3.29	7.78	52.4	3.02	0.275	64.3	15	mA	25C	Operating Current Linear, serial
STBY_HARD_CLOCK_ANALOG	12.3	1.67	17.1	12.6	3.96	18.6	100	µA	25C	Hard Standby Clock On Analog (VAA+VAA_PIX+VDD_PLL)
STBY_HARD_CLOCK_DIGITAL	1090	356	66.2	1100	403	65.4	4000	µA	25C	Hard Standby Clock On Digital (VDD+VDD_IO+VDD_SLVS)
STBY_SOFT_ANALOG	3.03	1.74	20.2	3.41	4.33	21	100	µA	25C	Soft Standby Clock Off Analog (VAA+VAA_PIX+VDD_PLL)
STBY_SOFT_DIGITAL	41.1	395	203	48.4	448	141	2500	µA	25C	Soft Standby Clock Off Digital (VDD+VDD_IO+VDD_SLVS)

List of Affected Parts:

Note: Only the standard (off the shelf) part numbers are listed in the parts list. Any custom parts affected by this PCN are shown in the customer specific PCN addendum in the PCN email notification, or on the [PCN Customized Portal](#).

Current Part Number	New Part Number	Qualification Vehicle
AR0132AT6C00XPEA0-DPBR	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6C00XPEA0-DRBR	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6C00XPEA0-DRBR1	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6C00XPEA0-TPBR	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6C00XPEA0-TRBR	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6G00XPEA0-AA-DRBR	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6M00XPEA0-DPBR	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6M00XPEA0-DRBR	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6M00XPEA0-DRBR1	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6R00XPEA0-DPBR	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6R00XPEA0-DPBR1	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6R00XPEA0-DRBR	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6R00XPEA0-TB-DPBR	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6R00XPEA0-TB-TPBR	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6R00XPEA0-TPBR	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6R00XPEA0-TRBR	NA	AR0132AT6C00XPEA0-DRBR
AR0132AT6C00XPEA0-VA-DRBR	NA	AR0132AT6C00XPEA0-DRBR

Appendix A: Changed Products

PCN#: FPCN24140ZA
Issue Date: Feb 02, 2023

DIKG: DIGI-KEY

Product	Customer Part Number	Qualification Vehicle	New Part Number	Replacement Supplier
AR0132AT6C00XPEA0-DRBR		AR0132AT6C00XPEA0-DRBR	NA	
AR0132AT6C00XPEA0-DPBR		AR0132AT6C00XPEA0-DRBR	NA	
AR0132AT6R00XPEA0-DPBR		AR0132AT6C00XPEA0-DRBR	NA	
AR0132AT6M00XPEA0-DPBR		AR0132AT6C00XPEA0-DRBR	NA	
AR0132AT6M00XPEA0-DRBR		AR0132AT6C00XPEA0-DRBR	NA	