



AllianceMemoryInc.

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Product Change Notification (PCN)

Date: September 29th, 2016

PCN TRACKING NO:PCN-29092016-1

Subject: Product Change Notification (PCN) for Alliance DRAM's (1G DDR3)

Description of Change:	Product will only be offered in a new Die Revision (A die)
Reason for Change	Product revision to provide continuous support to Alliance's customers
Traceability, Guidelines (lot, date code, markings, shipment date)	Traceable through marketing part #
Updated Datasheet Summary of Changes between New and Old part numbers	Part # has been changed and updated datasheets are posted on our website http://www.alliancememory.com/products/ddr3.asp See table 1 Below

Table 1

Density	Organization	Alliance Part Number	Alliance New Part Number
1G	128M x 8	AS4C128M8D3-12BCN	AS4C128M8D3A-12BCN
1G	128M x 8	AS4C128M8D3-12BIN	AS4C128M8D3A-12BIN
1G	128M x 8	AS4C128M8D3-12BAN	AS4C128M8D3A-12BAN
1G	128M x 8	AS4C128M8D3L-12BCN	AS4C128M8D3LA-12BCN
1G	128M x 8	AS4C128M8D3L-12BIN	AS4C128M8D3LA-12BIN
1G	128M x 8	AS4C128M8D3L-12BAN	AS4C128M8D3LA-12BAN
1G	64Mx16	AS4C64M16D3-12BCN	AS4C64M16D3A-12BCN
1G	64Mx16	AS4C64M16D3-12BIN	AS4C64M16D3A-12BIN
1G	64Mx16	AS4C64M16D3L-12BCN	AS4C64M16D3LA-12BCN
1G	64Mx16	AS4C64M16D3L-12BIN	AS4C64M16D3LA-12BIN
1G	64Mx16	AS4C64M16D3L-12BAN	AS4C64M16D3LA-12BAN

Last Time Buy Date:	December 29 th 2016
Last Time Ship Date:	March 28 th 2017
Sample Available Date (128M x 8 – 1G)	September End
Sample Available Date (64M x 16 – 1G)	September End
PCN Effective Date:	August 29 th 2016

*** Any orders after December 29th ,2016 are Non-cancelable / Non-Returnable and cannot be changed. Products cannot be returned in stock rotations after this date**



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Dear Valued Customer:

This letter provides End-of-Life (EOL) notice of DDR3 products with an 1G density. These products will move to new 'A' die revision in Q1-2017.

The delivery deadline is March 28th, 2017 with last time buy (LTB) deadline on December 29th, 2016. Please note that the standard shipment dates will apply in general and extended delivery dates must be pre-arranged and accepted in writing by Alliance Memory Management.

Please see the below comparison between the current die rev and the new A die. Samples are available now.

Please contact your local Alliance Memory representative if you have any questions regarding this information.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'David Bagby', written over a horizontal line.

David Bagby

President

Alliance Memory Inc.

Comparison between

AS4C128M8D3L and AS4C128M8D3LA for C & I Temp - 1Gb DDR3

Part Number&result Parameter	AS4C128M8D3L-12BCN AS4C128M8D3L-12BIN	AS4C128M8D3LA-12BCN AS4C128M8D3LA-12BIN	Comparison Result
Wafer Process	30nm	30nm	Same
Power Supply	V DD & V DDQ = 1.35V Backward compatible VDD & VDDQ = 1.5 ± 0.075V	V DD & V DDQ = 1.35V Backward compatible VDD & VDDQ = 1.5 ±0.075V	Same
Typical Power Dissipation of Normal Operation	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=40mA Operating One Bank Active-Read-Precharge Current: IDD1=45mA Precharge Standby Current: IDD2N=20mA Precharge Power-Down Current Slow Exit: IDD2P0=10mA Precharge Power-Down Current Fast Exit: IDD2P1=12mA Precharge Quiet Standby Current: IDD2Q=16mA Active Standby Current: IDD3N=25mA Active Power-Down Current: IDD3P=17 mA Operating Burst Read Current: IDD4R=90mA Operating Burst Write Current: IDD4W=95mA Burst Refresh Current: IDD5B=90 mA Self Refresh Current: IDD6=10mA Operating Bank Interleave Read Current: IDD7=130mA RESET Low Current IDD8=10mA	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=40mA Operating One Bank Active-Read-Precharge Current: IDD1=45mA Precharge Standby Current: IDD2N=20mA Precharge Power-Down Current Slow Exit: IDD2P0=10mA Precharge Power-Down Current Fast Exit: IDD2P1=12mA Precharge Quiet Standby Current: IDD2Q=16mA Active Standby Current: IDD3N=30mA Active Power-Down Current: IDD3P=17mA Operating Burst Read Current: IDD4R=90mA Operating Burst Write Current: IDD4W=95mA Burst Refresh Current: IDD5B=95mA Self Refresh Current: IDD6=10mA Operating Bank Interleave Read Current: IDD7=149mA RESET Low Current IDD8=10mA	D3LA is equal to or less than D3L .
Operating Temperature	Commercial (0°C to 95°C) Industrial (-40 ~ 95°C)	Commercial (0°C to 95°C) Industrial (-40 ~ 95°C)	Same
Max Operating Speed	800MHz	800MHz	Same
Interface (Input/Output)	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.5– 2.3pF Input capacitance, CK and	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.4– 2.3pF Input capacitance, CK and	D3LA is equal to or less than D3L .

Capacitance	CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.3pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.2pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	
Interface Definition	Omit.(See datasheet)	Omit.(See datasheet)	Same. They are pin to pin.
Interface Material	Pb and Halogen Free	Pb and Halogen Free	Same
Timing Parameters	Omit.(See datasheet)	Omit.(See datasheet)	Same
Timing Diagram & Command	Omit.(See datasheet)	Omit.(See datasheet)	Same
ESD Level	JEDEC: 2KV HBM	JEDEC: 2KV HBM	Same
Capacity	1Gb	1Gb	Same
Package	78-ball 8 x 10.5 x 1.2mm FBGA package	78-ball 8 x 10.5 x 1.0mm FBGA package	Pin to Pin compatible
Truth Table	Omit.(See datasheet)	Omit.(See datasheet)	same
Supply Time			D3LA will replace D3L.

Comparison between

AS4C128M8D3L and AS4C128M8D3LA for Auto Temp- 1Gb DDR3

Part Number&result Parameter	AS4C128M8D3L-12BAN	AS4C128M8D3LA-12BAN	Comparison Result
Wafer Process	30nm	30nm	Same
Power Supply	V DD & V DDQ = 1.35V Backward compatible VDD & VDDQ = 1.5 ± 0.075V	V DD & V DDQ = 1.35V Backward compatible VDD & VDDQ = 1.5 ±0.075V	Same
Typical Power Dissipation of Normal Operation	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=48mA Operating One Bank Active-Read-Precharge Current: IDD1=54mA Precharge Standby Current: IDD2N=24mA Precharge Power-Down Current Slow Exit: IDD2P0=12mA Precharge Power-Down Current Fast Exit: IDD2P1=15mA Precharge Quiet Standby Current: IDD2Q=20mA Active Standby Current: IDD3N=36mA Active Power-Down Current: IDD3P=21 mA Operating Burst Read Current: IDD4R=108mA Operating Burst Write Current: IDD4W=114mA Burst Refresh Current: IDD5B=114 mA Self Refresh Current: IDD6=22mA Operating Bank Interleave Read Current: IDD7=179mA RESET Low Current IDD8=12mA	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=48mA Operating One Bank Active-Read-Precharge Current: IDD1=54mA Precharge Standby Current: IDD2N=24mA Precharge Power-Down Current Slow Exit: IDD2P0=12mA Precharge Power-Down Current Fast Exit: IDD2P1=15mA Precharge Quiet Standby Current: IDD2Q=20mA Active Standby Current: IDD3N=36mA Active Power-Down Current: IDD3P=21mA Operating Burst Read Current: IDD4R=108mA Operating Burst Write Current: IDD4W=114mA Burst Refresh Current: IDD5B=114mA Self Refresh Current: IDD6=22mA Operating Bank Interleave Read Current: IDD7=179mA RESET Low Current IDD8=12mA	Same
Operating Temperature	Commercial (0°C to 95°C) Industrial (-40 ~ 95°C)	Commercial (0°C to 95°C) Industrial (-40 ~ 95°C)	Same
Max Operating Speed	800MHz	800MHz	Same
Interface (Input/Output)	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.4– 2.2pF Input capacitance, CK and	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.4– 2.2pF Input capacitance, CK and	Same

Capacitance	CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.2pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.2pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	
Interface Definition	Omit.(See datasheet)	Omit.(See datasheet)	Same. They are pin to pin.
Interface Material	Pb and Halogen Free	Pb and Halogen Free	Same
Timing Parameters	Omit.(See datasheet)	Omit.(See datasheet)	D3LA is equal to or less than D3L .
Timing Diagram & Command	Omit.(See datasheet)	Omit.(See datasheet)	Same
ESD Level	JEDEC: 2KV HBM	JEDEC: 2KV HBM	Same
Capacity	1Gb	1Gb	Same
Package	78-ball 8 x 10.5 x 1.0mm FBGA package	78-ball 8 x 10.5 x 1.0mm FBGA package	Pin to Pin compatible
Truth Table	Omit.(See datasheet)	Omit.(See datasheet)	same
Supply Time			D3LA will replace D3L.

Comparison between

AS4C128M8D3 and AS4C128M8D3A for C & I Temp - 1Gb DDR3

Part Number&result Parameter	AS4C128M8D3-12BCN AS4C128M8D3-12BIN	AS4C128M8D3A-12BCN AS4C128M8D3A-12BIN	Comparison Result
Wafer Process	30nm	30nm	Same
Power Supply	V DD & V DDQ = 1.5 ± 0.075V	V DD & V DDQ = 1.5 ± 0.075V	Same
Typical Power Dissipation of Normal Operation	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=45mA Operating One Bank Active-Read-Precharge Current: IDD1=55mA Precharge Standby Current: IDD2N=24mA Precharge Power-Down Current Slow Exit: IDD2P0=11mA Precharge Power-Down Current Fast Exit: IDD2P1=13mA Precharge Quiet Standby Current: IDD2Q=19mA Active Standby Current: IDD3N=28mA Active Power-Down Current: IDD3P=18 mA Operating Burst Read Current: IDD4R=105mA Operating Burst Write Current: IDD4W=110mA Burst Refresh Current: IDD5B=95 mA Self Refresh Current: IDD6=11mA Operating Bank Interleave Read Current: IDD7=140mA RESET Low Current IDD8=11mA	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=45mA Operating One Bank Active-Read-Precharge Current: IDD1=55mA Precharge Standby Current: IDD2N=24mA Precharge Power-Down Current Slow Exit: IDD2P0=11mA Precharge Power-Down Current Fast Exit: IDD2P1=13mA Precharge Quiet Standby Current: IDD2Q=19mA Active Standby Current: IDD3N=34mA Active Power-Down Current: IDD3P=18mA Operating Burst Read Current: IDD4R=105mA Operating Burst Write Current: IDD4W=110mA Burst Refresh Current: IDD5B=97 mA Self Refresh Current: IDD6=11mA Operating Bank Interleave Read Current: IDD7=159mA RESET Low Current IDD8=11mA	D3A is equal to or less than D3 .

Operating Temperature	Commercial (0°C to 95°C) Industrial (-40 ~ 95°C)	Commercial (0°C to 95°C) Industrial (-40 ~ 95°C)	Same
Max Operating Speed	800MHz	800MHz	Same
Interface (Input/Output) Capacitance	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.5– 2.3pF Input capacitance, CK and CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.3pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.4– 2.3pF Input capacitance, CK and CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.3pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	Same
Interface Definition	Omit.(See datasheet)	Omit.(See datasheet)	Same. They are pin to pin.
Interface Material	Pb and Halogen Free	Pb and Halogen Free	Same
Timing Parameters	Omit.(See datasheet)	Omit.(See datasheet)	Same
Timing Diagram & Command	Omit.(See datasheet)	Omit.(See datasheet)	Same
ESD Level	JEDEC: 2KV HBM	JEDEC: 2KV HBM	Same
Capacity	1Gb	1Gb	Same

Package	78-ball 8 x 10.5 x 1.2mm FBGA package	78-ball 8 x 10.5 x 1.0mm FBGA package	Pin to Pin compatible
Truth Table	Omit.(See datasheet)	Omit.(See datasheet)	same
Supply Time			D3A will replace D3.

Comparison between

AS4C128M8D3 and AS4C128M8D3A for Auto Temp - 1Gb DDR3

Part Number&result Parameter	AS4C128M8D3-12BAN	AS4C128M8D3A-12BAN	Comparison Result
Wafer Process	30nm	30nm	Same
Power Supply	V DD & V DDQ = 1.5 ± 0.075V	V DD & V DDQ = 1.5 ± 0.075V	Same
Typical Power Dissipation of Normal Operation	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=54mA Operating One Bank Active-Read-Precharge Current: IDD1=66mA Precharge Standby Current: IDD2N=29mA Precharge Power-Down Current Slow Exit: IDD2P0=14mA Precharge Power-Down Current Fast Exit: IDD2P1=16mA Precharge Quiet Standby Current: IDD2Q=23mA Active Standby Current: IDD3N=34mA Active Power-Down Current: IDD3P=22 mA Operating Burst Read Current: IDD4R=126mA Operating Burst Write Current: IDD4W=132mA Burst Refresh Current: IDD5B=114 mA Self Refresh Current: IDD6=24mA Operating Bank Interleave Read Current: IDD7=168mA RESET Low Current IDD8=14mA	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=45mA Operating One Bank Active-Read-Precharge Current: IDD1=66mA Precharge Standby Current: IDD2N=29mA Precharge Power-Down Current Slow Exit: IDD2P0=14mA Precharge Power-Down Current Fast Exit: IDD2P1=16mA Precharge Quiet Standby Current: IDD2Q=23mA Active Standby Current: IDD3N=41mA Active Power-Down Current: IDD3P=22mA Operating Burst Read Current: IDD4R=126mA Operating Burst Write Current: IDD4W=132mA Burst Refresh Current: IDD5B=117 mA Self Refresh Current: IDD6=24mA Operating Bank Interleave Read Current: IDD7=191mA RESET Low Current IDD8=14mA	D3A is equal to or less than D3 .
Operating	Automotive (-40 ~ 105°C)	Automotive (-40 ~ 105°C)	Same

Temperature			
Max Operating Speed	800MHz	800MHz	Same
Interface (Input/Output) Capacitance	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.5– 2.3pF Input capacitance, CK and CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.3pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.4– 2.3pF Input capacitance, CK and CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.3pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	Same
Interface Definition	Omit.(See datasheet)	Omit.(See datasheet)	Same. They are pin to pin.
Interface Material	Pb and Halogen Free	Pb and Halogen Free	Same
Timing Parameters	Omit.(See datasheet)	Omit.(See datasheet)	Same
Timing Diagram & Command	Omit.(See datasheet)	Omit.(See datasheet)	Same
ESD Level	JEDEC: 2KV HBM	JEDEC: 2KV HBM	Same
Capacity	1Gb	1Gb	Same
Package	78-ball 8 x 10.5 x 1.2mm FBGA package	78-ball 8 x 10.5 x 1.0mm FBGA package	Pin to Pin compatible

Truth Table	Omit.(See datasheet)	Omit.(See datasheet)	same
Supply Time			D3A will replace D3.

Comparison between

AS4C64M16D3L and AS4C64M16D3LA for C & I Temp - 1Gb DDR3

Part Number&result Parameter	AS4C64M16D3L-12BCN AS4C64M16D3L-12BIN	AS4C64M16D3LA-12BCN AS4C64M16D3LA-12BIN	Comparison Result
Wafer Process	30nm	30nm	Same
Power Supply	V DD & V DDQ = 1.35V Backward compatible VDD & VDDQ = 1.5 ± 0.075V	V DD & V DDQ = 1.35V Backward compatible VDD & VDDQ = 1.5 ± 0.075V	Same
Typical Power Dissipation of Normal Operation	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=45mA Operating One Bank Active-Read-Precharge Current: IDD1=60mA Precharge Standby Current: IDD2N=20mA Precharge Power-Down Current Slow Exit: IDD2P0=10mA Precharge Power-Down Current Fast Exit: IDD2P1=12mA Precharge Quiet Standby Current: IDD2Q=16mA Active Standby Current: IDD3N=25mA Active Power-Down Current: IDD3P=17 mA Operating Burst Read Current: IDD4R=120mA Operating Burst Write Current: IDD4W=125mA Burst Refresh Current: IDD5B=90 mA Self Refresh Current: IDD6=10mA Operating Bank Interleave Read Current: IDD7=190mA RESET Low Current	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=50mA Operating One Bank Active-Read-Precharge Current: IDD1=63mA Precharge Standby Current: IDD2N=20mA Precharge Power-Down Current Slow Exit: IDD2P0=10mA Precharge Power-Down Current Fast Exit: IDD2P1=12mA Precharge Quiet Standby Current: IDD2Q=16mA Active Standby Current: IDD3N=39mA Active Power-Down Current: IDD3P=24mA Operating Burst Read Current: IDD4R=127mA Operating Burst Write Current: IDD4W=134mA Burst Refresh Current: IDD5B=99 mA Self Refresh Current: IDD6=10mA Operating Bank Interleave Read Current: IDD7=200mA RESET Low Current	D3LA is equal to or less than D3L .

	IDD8=10mA	IDD8=10mA	
Operating Temperature	Commercial (0°C to 95°C) Industrial (-40 ~ 95°C)	Commercial (0°C to 95°C) Industrial (-40 ~ 95°C)	Same
Max Operating Speed	800MHz	800MHz	Same
Interface (Input/Output) Capacitance	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.5– 2.3pF Input capacitance, CK and CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.3pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.4– 2.3pF Input capacitance, CK and CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.2pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	Almost the same
Interface Definition	Omit.(See datasheet)	Omit.(See datasheet)	Same. They are pin to

			pin.
Interface Material	Pb and Halogen Free	Pb and Halogen Free	Same
Timing Parameters	Omit.(See datasheet)	Omit.(See datasheet)	D3A is equal to or less than D3 .
Timing Diagram & Command	Omit.(See datasheet)	Omit.(See datasheet)	Same
ESD Level	JEDEC: 2KV HBM	JEDEC: 2KV HBM	Same
Capacity	1Gb	1Gb	Same
Package	96-ball 9 x 13 x 1.2mm FBGA package	96-ball 8 x 13 x 1.0mm FBGA package	Pin to Pin compatible
Truth Table	Omit.(See datasheet)	Omit.(See datasheet)	same
Supply Time			D3LA will replace D3L.

Comparison between

AS4C64M16D3L and AS4C64M16D3LA for Auto Temp - 1Gb DDR3

Part Number&result Parameter	AS4C64M16D3L-12BAN	AS4C64M16D3LA-12BAN	Comparison Result
Wafer Process	30nm	30nm	Same
Power Supply	V DD & V DDQ = 1.35V Backward compatible VDD & VDDQ = 1.5 ± 0.075V	V DD & V DDQ = 1.35V Backward compatible VDD & VDDQ = 1.5 ±0.075V	Same
Typical Power Dissipation of Normal Operation	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=60mA Operating One Bank Active-Read-Precharge Current: IDD1=76mA Precharge Standby Current: IDD2N=24mA Precharge Power-Down Current Slow Exit: IDD2P0=12mA Precharge Power-Down Current Fast Exit: IDD2P1=15mA Precharge Quiet Standby Current: IDD2Q=20mA Active Standby Current: IDD3N=47mA Active Power-Down Current: IDD3P=29mA Operating Burst Read Current: IDD4R=153mA Operating Burst Write Current: IDD4W=161mA Burst Refresh Current: IDD5B=119mA Self Refresh Current: IDD6=22mA Operating Bank Interleave Read Current: IDD7=240mA RESET Low Current	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=60mA Operating One Bank Active-Read-Precharge Current: IDD1=76mA Precharge Standby Current: IDD2N=24mA Precharge Power-Down Current Slow Exit: IDD2P0=12mA Precharge Power-Down Current Fast Exit: IDD2P1=15mA Precharge Quiet Standby Current: IDD2Q=20mA Active Standby Current: IDD3N=47mA Active Power-Down Current: IDD3P=29mA Operating Burst Read Current: IDD4R=153mA Operating Burst Write Current: IDD4W=161mA Burst Refresh Current: IDD5B=119 mA Self Refresh Current: IDD6=22mA Operating Bank Interleave Read Current: IDD7=240mA RESET Low Current	Same

	IDD8=12mA	IDD8=12mA	
Operating Temperature	Automotive (-40 ~ 105°C)	Automotive (-40 ~ 105°C)	Same
Max Operating Speed	800MHz	800MHz	Same
Interface (Input/Output) Capacitance	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.4– 2.2pF Input capacitance, CK and CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.2pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.4– 2.2pF Input capacitance, CK and CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.2pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	Same
Interface Definition	Omit.(See datasheet)	Omit.(See datasheet)	Same. They are pin to

			pin.
Interface Material	Pb and Halogen Free	Pb and Halogen Free	Same
Timing Parameters	Omit.(See datasheet)	Omit.(See datasheet)	Same
Timing Diagram & Command	Omit.(See datasheet)	Omit.(See datasheet)	Same
ESD Level	JEDEC: 2KV HBM	JEDEC: 2KV HBM	Same
Capacity	1Gb	1Gb	Same
Package	96-ball 8 x 13 x 1.0mm FBGA package	96-ball 8 x 13 x 1.0mm FBGA package	Pin to Pin compatible
Truth Table	Omit.(See datasheet)	Omit.(See datasheet)	same
Supply Time			D3LA will replace D3L.

Comparison between

AS4C64M16D3 and AS4C64M16D3A for C & I Temp - 1Gb DDR3

Part Number&result Parameter	AS4C64M16D3-12BCN AS4C64M16D3-12BIN	AS4C64M16D3A-12BCN AS4C64M16D3A-12BIN	Comparison Result
Wafer Process	30nm	30nm	Same
Power Supply	V DD & V DDQ = 1.5 ± 0.075V	V DD & V DDQ = 1.5 ± 0.075V	Same
Typical Power Dissipation of Normal Operation	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=49mA Operating One Bank Active-Read-Precharge Current: IDD1=65mA Precharge Standby Current: IDD2N=24mA Precharge Power-Down Current Slow Exit: IDD2P0=11mA Precharge Power-Down Current Fast Exit: IDD2P1=13mA Precharge Quiet Standby Current: IDD2Q=19mA Active Standby Current: IDD3N=28mA Active Power-Down Current: IDD3P=18 mA Operating Burst Read Current: IDD4R=140mA Operating Burst Write Current: IDD4W=140mA Burst Refresh Current: IDD5B=95 mA Self Refresh Current: IDD6=11mA Operating Bank Interleave Read Current: IDD7=200mA RESET Low Current IDD8=11mA	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=55mA Operating One Bank Active-Read-Precharge Current: IDD1=67mA Precharge Standby Current: IDD2N=24mA Precharge Power-Down Current Slow Exit: IDD2P0=11mA Precharge Power-Down Current Fast Exit: IDD2P1=13mA Precharge Quiet Standby Current: IDD2Q=19mA Active Standby Current: IDD3N=44mA Active Power-Down Current: IDD3P=26mA Operating Burst Read Current: IDD4R=141mA Operating Burst Write Current: IDD4W=150mA Burst Refresh Current: IDD5B=103 mA Self Refresh Current: IDD6=11mA Operating Bank Interleave Read Current: IDD7=212mA RESET Low Current IDD8=11mA	D3A is equal to or less than D3 .

Operating Temperature	Commercial (0°C to 95°C) Industrial (-40 ~ 95°C)	Commercial (0°C to 95°C) Industrial (-40 ~ 95°C)	Same
Max Operating Speed	800MHz	800MHz	Same
Interface (Input/Output) Capacitance	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.5– 2.3pF Input capacitance, CK and CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.3pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.4– 2.3pF Input capacitance, CK and CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.3pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	Same
Interface Definition	Omit.(See datasheet)	Omit.(See datasheet)	Same. They are pin to pin.
Interface Material	Pb and Halogen Free	Pb and Halogen Free	Same
Timing Parameters	Omit.(See datasheet)	Omit.(See datasheet)	Same
Timing Diagram & Command	Omit.(See datasheet)	Omit.(See datasheet)	Same
ESD Level	JEDEC: 2KV HBM	JEDEC: 2KV HBM	Same
Capacity	1Gb	1Gb	Same
Package	96-ball 9 x 13 x 1.2mm FBGA	96-ball 8 x 13 x 1.0mm FBGA	Pin to Pin compatible

	package	package	
Truth Table	Omit.(See datasheet)	Omit.(See datasheet)	same
Supply Time			D3A will replace D3.

Comparison between

AS4C64M16D3 and AS4C64M16D3A for Auto Temp - 1Gb DDR3

Part Number&result Parameter	AS4C64M16D3-12BAN	AS4C64M16D3A-12BAN	Comparison Result
Wafer Process	30nm	30nm	Same
Power Supply	V DD & V DDQ = 1.5 ± 0.075V	V DD & V DDQ = 1.5 ± 0.075V	Same
Typical Power Dissipation of Normal Operation	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=59mA Operating One Bank Active-Read-Precharge Current: IDD1=78mA Precharge Standby Current: IDD2N=29mA Precharge Power-Down Current Slow Exit: IDD2P0=14mA Precharge Power-Down Current Fast Exit: IDD2P1=16mA Precharge Quiet Standby Current: IDD2Q=23mA Active Standby Current: IDD3N=34mA Active Power-Down Current: IDD3P=22mA Operating Burst Read Current: IDD4R=168mA Operating Burst Write Current: IDD4W=168mA Burst Refresh Current: IDD5B=114mA Self Refresh Current: IDD6=24mA Operating Bank Interleave Read Current: IDD7=240mA RESET Low Current IDD8=14mA	CLK = 800MHZ: Operating One Bank Active-Precharge Current IDD0=66mA Operating One Bank Active-Read-Precharge Current: IDD1=81mA Precharge Standby Current: IDD2N=29mA Precharge Power-Down Current Slow Exit: IDD2P0=14mA Precharge Power-Down Current Fast Exit: IDD2P1=16mA Precharge Quiet Standby Current: IDD2Q=23mA Active Standby Current: IDD3N=53mA Active Power-Down Current: IDD3P=32mA Operating Burst Read Current: IDD4R=170mA Operating Burst Write Current: IDD4W=180mA Burst Refresh Current: IDD5B=124 mA Self Refresh Current: IDD6=24mA Operating Bank Interleave Read Current: IDD7=255mA RESET Low Current IDD8=14mA	D3A is equal to or less than D3 .

Operating Temperature	Automotive (-40 ~ 105°C)	Automotive (-40 ~ 105°C)	Same
Max Operating Speed	800MHz	800MHz	Same
Interface (Input/Output) Capacitance	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.5– 2.3pF Input capacitance, CK and CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.3pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	Input/output capacitance, (DQ, DM, DQS, DQS#);Cio: 1.4– 2.3pF Input capacitance, CK and CK#;Cck 0.8– 1.4pF Input capacitance delta, CK and CK#;Cdck 0– 0.15pF Input/output capacitance delta,DQS and DQS#;Cddqs: 0– 0.15pF Input capacitance, (CTRL, ADD, CMD input-only pins);Ci: 0.75– 1.3pF Input capacitance delta, (All CTRL input-only pins); Cdi_ctrl: -0.4– 0.2pF Input capacitance delta, (All ADD, CMD input-only pins); Cdi_add_cmd: -0.4– 0.4pF Input/output capacitance delta, (DQ, DM, DQS, DQS#);Cdio: -0.5– 0.3pF Input/output capacitance of ZQ pin;Czq: 0– 3pF	Same
Interface Definition	Omit.(See datasheet)	Omit.(See datasheet)	Same. They are pin to pin.
Interface Material	Pb and Halogen Free	Pb and Halogen Free	Same
Timing Parameters	Omit.(See datasheet)	Omit.(See datasheet)	Same
Timing Diagram & Command	Omit.(See datasheet)	Omit.(See datasheet)	Same
ESD Level	JEDEC: 2KV HBM	JEDEC: 2KV HBM	Same
Capacity	1Gb	1Gb	Same

Package	96-ball 9 x 13 x 1.2mm FBGA package	96-ball 8 x 13 x 1.0mm FBGA package	Pin to Pin compatible
Truth Table	Omit.(See datasheet)	Omit.(See datasheet)	same
Supply Time			D3A will replace D3.