

## PCN201022-01

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### **Affected Part Number(s):**

EMMC32G-TA29-XXXX

EMMC32G-TB29-XXXX

EMMC64G-TA29-XXXX

EMMC128G-TA29-XXXX

### **Date Issued:**

04 December 2020

### **Change Description:**

Kingston's eMMC devices based on Kioxia's 3D 256Gb 3D NAND flash will be transitioning to Kioxia's BiCS4 High Data Rate (HDR) 3D NAND technology. BiCS4 HDR is Kioxia's latest generation of 3D NAND flash technology. This new eMMC device will maintain many of the features of the prior generation. This includes:

- Large on-board SRAM for high performance
- Support for controller SRAM parity. This feature provides increased reliability by providing fault detection and correction related to SRAM soft errors and is part of Kingston's eMMC end-to-end data reliability.
- 120-bit / 1K LDPC error control engine for NAND flash data reliability

### **Considerations / Impact:**

In almost all cases, the new BiCS4 generation of 3D NAND technology devices should be a drop-in replacement. All of Kingston's eMMC devices undergo extensive compatibility validation in Kingston's validation laboratory. This validation consists of many platforms to include mobile compute, embedded application processors, and microcontrollers. Compatibility testing is also performed across several operating and file systems. The following are areas to consider when transitioning. Consult the specific device data sheet for further details.

## **Mechanical**

The new generation will support the same 153 ball, 11.5 mm x 13 mm JEDEC package dimensions and ball-out. Mechanically, this will be a drop-in replacement to the current product.

## **Functional Compatibility / JEDEC eMMC Specification Revision**

The NAND management firmware will be updated to support the new BiCS4 NAND flash and take advantage of the latest features. By default, this firmware will support the latest revision of the JEDEC eMMC specification. The latest JEDEC eMMC standard is at revision 5.1. Since newer JEDEC eMMC revisions only add features without removing existing features, any future revision to the specification will be compatible with host systems that support revision 5.1 or earlier. The current Kingston BiCS3 based eMMC devices are either compliant with the 5.0 or 5.1 revision. Therefore, there should be no impact to compatibility when transitioning to the new devices.

In some cases, systems with older eMMC device drivers may read the eMMC revision and abort system boot if the operating system driver detects a newer JEDEC eMMC revision that it does not recognize. This behavior is not necessary and is in violation of the JEDEC specification. Later revisions to Linux and Android drivers have removed this behavior. Therefore, if your system exhibits this behavior, it can be corrected by updating the driver. Additionally, Kingston does offer devices that comply with the 5.1 eMMC revision but report an earlier revision to address the compatibility issue with these older drivers. This would avoid the need to update the system driver. Contact your Kingston representative for support.

The new BiCS4 based devices will also maintain the same electrical compatibility as the BiCS3 devices.

## **Endurance / Device Life Cycle**

The TLC endurance will be maintained at 3,000 program-erase cycles. When the BiCS4 device is configured in pSLC mode, the eMMC device will withstand 30,000 program-erase cycles.

## **Capacity**

All BiCS4 based eMMC devices provide equivalent capacities to the prior generation of BiCS3 based devices. This includes the Boot1, Boot2, RPMB and User Partitions. Refer to the specific device data sheet for actual capacities.

## Replacement Part and Last Time Buy:

Affected Part Numbers	Recommended Replacement PN	Sample Available Date	Last Time Buy (LTB) Date <sup>(1)(2)(3)(4)</sup>	Last Time Ship (LTS) date <sup>(1)</sup>
EMMC32G-TA29-90F01	EMMC32G-TX29-8AC01	Dec. 11 <sup>th</sup> 2020	Mar 31 <sup>st</sup> 2021	Jun 30 <sup>th</sup> 2021
EMMC32G-TA29-PE90	EMMC32G-TX29-8AC02	Dec. 11 <sup>th</sup> 2020	Mar 31 <sup>st</sup> 2021	Jun 30 <sup>th</sup> 2021
EMMC32G-TA29-PZ90	EMMC32G-TX29-8AC01	Dec. 11 <sup>th</sup> 2020	Mar 31 <sup>st</sup> 2021	Jun 30 <sup>th</sup> 2021
EMMC32G-TB29-90F01	EMMC32G-TX29-8AC01	Dec. 11 <sup>th</sup> 2020	Mar 31 <sup>st</sup> 2021	Jun 30 <sup>th</sup> 2021
EMMC32G-TB29-PZ90	EMMC32G-TX29-8AC01	Dec. 11 <sup>th</sup> 2020	Mar 31 <sup>st</sup> 2021	Jun 30 <sup>th</sup> 2021
EMMC32G-TA29-70E01	EMMC32G-TX29-8AC01	Dec. 11 <sup>th</sup> 2020	Mar 31 <sup>st</sup> 2021	Jun 30 <sup>th</sup> 2021
EMMC64G-TA29-90F01	EMMC64G-TX29-8AC01	Dec. 11 <sup>th</sup> 2020	Mar 31 <sup>st</sup> 2021	Jun 30 <sup>th</sup> 2021
EMMC64G-TA29-90F02	EMMC64G-TX29-8AC02	Dec. 11 <sup>th</sup> 2020	Mar 31 <sup>st</sup> 2021	Jun 30 <sup>th</sup> 2021
EMMC64G-TA29-PE90	EMMC64G-TX29-8AC02	Dec. 11 <sup>th</sup> 2020	Mar 31 <sup>st</sup> 2021	Jun 30 <sup>th</sup> 2021
EMMC64G-TA29-PZ90	EMMC64G-TX29-8AC01	Dec. 11 <sup>th</sup> 2020	Mar 31 <sup>st</sup> 2021	Jun 30 <sup>th</sup> 2021
EMMC128-TA29-90F01	EMMC128-TX29-8AC01	Dec. 11 <sup>th</sup> 2020	Mar 31 <sup>st</sup> 2021	Jun 30 <sup>th</sup> 2021
EMMC128-TA29-90F02	EMMC128-TX29-8AC02	Dec. 11 <sup>th</sup> 2020	Mar 31 <sup>st</sup> 2021	Jun 30 <sup>th</sup> 2021
EMMC128-TA29-PZ90	EMMC128-TX29-8AC01	Dec. 11 <sup>th</sup> 2020	Mar 31 <sup>st</sup> 2021	Jun 30 <sup>th</sup> 2021

### Notes

- (1) Last time ship date can be arranged within 3 months of the LTB order date. All LTB orders are NCNR.
- (2) An increase in demand may cause the LTB date to be pulled in. Please contact your Kingston representative to forecast and to assist with replacement part sampling.
- (3) A mutually agreed upon forecast between Kingston and the customer for the LTB quantity is needed 3 months prior to the LTB date in order to secure LTB quantity.
- (4) LTB availability is on a first-come, first-served basis.