

EIN No: SSDCD8P-014 Rev. A Date: December 26, 2024 Originator: Enterprise SSD Product Group 1

Engineering Information Notice (EIN)

PRODUCT AFFECTED

For Generic, Standard, CD8P series (U.2)

KCD81PUGxxxx Series: 1 DWPD
KCD81PUG1T92: SDF7205GEAxxx
KCD81PUG3T84: SDF7204GEAxxx
KCD81PUG7T68: SDF7203GEAxxx
KCD81PUG15T3: SDF7201GEAxxx
KCD81PUG30T7: SDF7200GEAxxx

KCD81PUGxxxx Series: 3DWPD
KCD81PUG1T60: SDF7405GEAxxx
KCD81PUG3T20: SDF7404GEAxxx
KCD81PUG6T40: SDF7403GEAxxx
KCD81PUG12T8: SDF7401GEAxxx

For Generic, SIE, CD8P series (U.2)

KCD8XPUGxxxx Series: 1 DWPD
KCD8XPUG1T92: SDF7285GEBxxx
KCD8XPUG3T84: SDF7284GEBxxx
KCD8XPUG7T68: SDF7283GEBxxx
KCD8XPUG15T3: SDF7281GEBxxx
KCD8XPUG30T7: SDF7280GEBxxx

KCD8XPUGxxxx Series: 3 DWPD
KCD8XPUG1T60: SDF7485GEBxxx
KCD8XPUG3T20: SDF7484GEBxxx
KCD8XPUG6T40: SDF7483GEBxxx
KCD8XPUG12T8: SDF7481GEBxxx

For Generic, SED, CD8P series (U.2)

KCD8DPUGxxxx Series: 1 DWPD
KCD8DPUG1T92: SDF7245GEBxxx
KCD8DPUG3T84: SDF7244GEBxxx
KCD8DPUG7T68: SDF7243GEBxxx
KCD8DPUG15T3: SDF7241GEBxxx
KCD8DPUG30T7: SDF7240GEBxxx

KCD8DPUGxxxx Series: 3 DWPD
KCD8DPUG1T60: SDF7445GEBxxx
KCD8DPUG3T20: SDF7444GEBxxx
KCD8DPUG6T40: SDF7443GEBxxx
KCD8DPUG12T8: SDF7441GEBxxx

CLASSIFICATION

- Electrical
- Mechanical
- Others

LEVEL

- Hardware
- Software (firmware)
- Document
- Manufacturing
- Others

IMPLEMENTATION

- Factory
- Customer side
- As required
- Repaired
- Retrofit kit required

PRIORITY

- Urgent
- Immediate
- Routine

REVISION LEVEL

For Generic, Standard, KCD8P series (U.2)

KCD81PUGxxxx Series: 1 DWPD

KCD81PUG1T92: SDF7205GEAxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET6103	1XET6105

KCD81PUG3T84: SDF7204GEAxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET6103	1XET6105

KCD81PUG7T68: SDF7203GEAxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET6103	1XET6105

KCD81PUG15T3: SDF7201GEAxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET6103	1XET6105

KCD81PUG30T7: SDF7200GEAxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET6103	1XET6105

KCD81PUGxxxx Series: 3DWPD

KCD81PUG1T60: SDF7405GEAxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET6103	1XET6105

KCD81PUG3T20: SDF7404GEAxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET6103	1XET6105

KCD81PUG6T40: SDF7403GEAxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET6103	1XET6105

KCD81PUG12T8: SDF7401GEAxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET6103	1XET6105

For Generic, SIE, KCD8P series (U.2)

KCD8XPUGxxxx Series: 1 DWPD

KCD8XPUG1T92: SDF7285GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XETE103	1XETE105

KCD8XPUG3T84: SDF7284GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XETE103	1XETE105

KCD8XPUG7T68: SDF7283GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XETE103	1XETE105

KCD8XPUG15T3: SDF7281GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XETE103	1XETE105

KCD8XPUG30T7: SDF7280GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XETE103	1XETE105

KCD8XPUGxxxx Series: 3 DWPD

KCD8XPUG1T60: SDF7485GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XETE103	1XETE105

KCD8XPUG3T20: SDF7484GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XETE103	1XETE105

KCD8XPUG6T40: SDF7483GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XETE103	1XETE105

KCD8XPUG12T8: SDF7481GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XETE103	1XETE105

For Generic, SED, KCD8P series (U.2)

KCD8DPUGxxxx Series: 1 DWPD

KCD8DPUG1T92: SDF7245GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET7103	1XET7105

KCD8DPUG3T84: SDF7244GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET7103	1XET7105

KCD8DPUG7T68: SDF7243GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET7103	1XET7105

KCD8DPUG15T3: SDF7241GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET7103	1XET7105

KCD8DPUG30T7: SDF7240GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET7103	1XET7105

KCD8DPUGxxxx Series: 3 DWPD

KCD8DPUG1T60: SDF7445GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET7103	1XET7105

KCD8DPUG3T20: SDF7444GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET7103	1XET7105

KCD8DPUG6T40: SDF7443GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET7103	1XET7105

KCD8DPUG12T8: SDF7441GEBxxx

Item	Current	Revised
EC Rev.	A2	A3
FW Rev.	1XET7103	1XET7105

DESCRIPTION OF CHANGE

1. Fixed issues

(1) Error Recovery feature

Issue: If DULBE (Deallocated or Unwritten Logical Block Error) bit is set, issuing Compare command to an unallocated LBA failed with Compare error.

Cause: If DULBE bit is set, Compare command for an unallocated LBA should fail with UNALLOC_BLOCK error on NVMe spec, but failed with COMPARE_FAILED.

Fix: Fixed that Compare command for unassigned LBAs fail with UNALLOC_BLOCK error if the DULBE bit is set.

Severity: Middle

Likelihood: Middle

(2) MSI-X

Issue: When MSI-X error is detected, the error log entry of the drive is mistakenly incremented.
Cause: It is mis-implementation of the PCIe spec. The drive mistakenly increments the error log entry when the MSI-X error is detected.
Fix: When the drive detects MSI-X error, there is no Asynchronous Event (Transient Internal Error) reported.
Severity: Low
Likelihood: High

(3) SRAM ECC (Need power cycle)

Issue: The drive does not correct 1-bit error in an SRAM embedded inside of the SoC. If a 1-bit error occurs, the drive may go into failure mode.
Cause: FW mistakenly did not set the SRAM correction feature to be enabled during the SoC initialization phase at the drive power-on.
Fix: FW is fixed to enable the SRAM 1-bit error correction feature during the initialization of the SoC.
Severity: High
Likelihood: Low

(4) PCIe

Issue: When some specific retimer is used in the system side, the drive may detect unnecessary Data Parity Mismatch error during the Recovery state of the drive LTSSM.
Cause: The current drive setup is able to detect the Data Parity Mismatch error when the LTSSM is transition from Recovery to L0. This is unnecessary error detection from the PCIe spec. stand point.
Fix: Add the error clear routine when LTSSM is in the Recovery state.
Severity: Low
Likelihood: Low

(5) Sanitize/Format

Issue: During Secure Erase of Format NVM command, Erase fail was mistakenly treated as an error and an undefined error was reported.
Cause: If Erase Fail occurs during Secure Erase of Format NVM command, it is that the LogPage Sanitize Status was set to treat it as an error.
Fix: Fixed to not respond with an error when a Fail occurs during Secure Erase of Format NVM command.
Severity: Middle
Likelihood: Middle

(6) Host IO hang

Issue: Host IO may hang during host Rd/Wr operation with VDM (Vendor Defined Message) communication on the PCIe bus. When this condition happens, the drive stops the operation and cannot start the PLP routine causing user-data lost when the drive power gets lost.
Cause: During the Rd/Wr operations, when the VDM message comes in, there is a small timing window to the internal DRAM bus deadlock condition with 3 internal DRAM Wr accesses, due to the DRAM access arbiter gating locked up.
Fix: Modify the drive FW to re-allocate the DRAM range for VDM to eliminate the arbiter from being locked when three different DRAM Wr access (one is for VDM) come in simultaneously.
Severity: High
Likelihood: Low

2. Added features

(1) Lockdown command

Added lockdown command. Lockdown command is valid to the following commands.

- Firmware Image Download
- Firmware Commit
- Sanitize
- Format NVM
- Security Send/Receive
- SetFeature(FID=02h) Power Management
- SetFeature(FID=0Eh) Timestamp
- VPD Write

3. Others

(1) Identify

The value of MTFA (Maximum Time for Firmware Activation) in the Identify Controller dataset is modified from 1sec to 10sec to meet the actual drive behavior.

Note that the MTFA value other than or over 1sec deviates from the OCP spec.

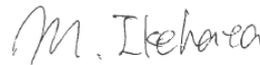
Because of the modification of MTFA, the LogPage-0xC5 for Unsupported Requirements shows the Requirement ID of FWUP-7 to list the unsupported items with this FW.

DATE OF APPLICATION

This change is applied to the factory line from March 2025.

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