



**INTEGRATED SILICON SOLUTION, INC.**

Doc. No:  
CGS XMC 65nm  
8M~256M Combo NOR  
Flash PQR Version C  
(Automotive Grade)

## **Product Reliability Report**

**Product: XMC 65nm 8M~256M Combo NOR Flash**

**Contents: Product reliability report**

**Approved By :**

**LS Yang**

**(Director, RA)**

**Reviewed By :**

**Pao Huang**

**(PE)**

**Reported By :**

**TY Lin**

**(Manager , RA)**

# Product Qualification Summary - Die



INTEGRATED SILICON SOLUTION, INC.

**Device:** See product family worksheet

**Process:** 65nm

**Foundry:** XMC

**Location:** China

Temp range of operation: 125C/ -40C (A3 Grade)

Test	Test Method	Qty	Lots	Dev-Hr	Reject	Failure Rate
Endurance Cycle testing (100K)	AEC Q100 (JESD22-A117)	3927	17	N/A	0	NA
High Temperature Operating Life (HTOL) (Cycling 10K)	AEC Q100 (JESD22-A108)	1309	17	1,309,000	0	4.8 FIT @ 60%CL 12 FIT @ 90%CL
Early Life Failure Rate (ELFR)	AEC-Q100-008 (JESD22-A108)	12,800	16	614,400	0	
High Temperature Storage Life (HTSL) (Cycling 10K)	AEC Q100 (JESD22-A103)	1309	17	1,309,000	0	NA
Data Retention Storage Life (LTDR) (Cycling 10K)	AEC Q100-005 (JESD22-A117)	1309	17	1,309,000	0	NA
				MTBF (60% CL)	23,984 years	
				MTBF (90% CL)	9,544 years	

Remark: FIT calculation is based on average activation energy (eV) 0.6

## ESD & Latchup

FMK257A

Vcc (V): 3V

Test	Test Method	Qty	Lots	Pass
ESD - Human Body Model	AEC Q100-002 (ANSI/ESDA/JEDEC JS-001)	3	1	2000V
ESD - Charged Device Model	AEC Q100-011 (ANSI/ESDA/JEDEC JS-002)	3	1	1000V
ESD - Machine Model (Reference only)	AEC Q100-003 (JESD22-A115)	3	1	200V
LU - Current Trigger	AEC Q100-004 (JESD78)	6	1	200mA
LU - Voltage Trigger	AEC Q100-004 (JESD78)	6	1	5.5V

## ESD & Latchup

FMK127B

Vcc (V): 3V

Test	Test Method	Qty	Lots	Pass
ESD - Human Body Model	AEC Q100-002 (ANSI/ESDA/JEDEC JS-001)	3	1	2000V
ESD - Charged Device Model	AEC Q100-011 (ANSI/ESDA/JEDEC JS-002)	3	1	1000V
ESD - Machine Model (Reference only)	AEC Q100-003 (JESD22-A115)	3	1	200V

LU - Current Trigger	AEC Q100-004 (JESD78)	6	1	200mA
LU - Voltage Trigger	AEC Q100-004 (JESD78)	6	1	5.5V

**ESD & Latchup**

FMK647B

**Vcc (V): 3V**

Test	Test Method	Qty	Lots	Pass
ESD - Human Body Model	AEC Q100-002 (ANSI/ESDA/JEDEC JS-001)	3	1	2000V
ESD - Charged Device Model	AEC Q100-011 (ANSI/ESDA/JEDEC JS-002)	3	1	1000V
ESD - Machine Model (Reference only)	AEC Q100-003 (JESD22-A115)	3	1	200V
LU - Current Trigger	AEC Q100-004 (JESD78)	6	1	200mA
LU - Voltage Trigger	AEC Q100-004 (JESD78)	6	1	5.5V

**ESD & Latchup**

FMK327A

**Vcc (V): 3V**

Test	Test Method	Qty	Lots	Pass
ESD - Human Body Model	AEC Q100-002 (ANSI/ESDA/JEDEC JS-001)	3	1	2000V
ESD - Charged Device Model	AEC Q100-011 (ANSI/ESDA/JEDEC JS-002)	3	1	1000V
ESD - Machine Model (Reference only)	AEC Q100-003 (JESD22-A115)	3	1	200V
LU - Current Trigger	AEC Q100-004 (JESD78)	6	1	200mA
LU - Voltage Trigger	AEC Q100-004 (JESD78)	6	1	5.5V

**ESD & Latchup**

FMK167B

**Vcc (V): 3V**

Test	Test Method	Qty	Lots	Pass
ESD - Human Body Model	AEC Q100-002 (ANSI/ESDA/JEDEC JS-001)	3	1	2000V
ESD - Charged Device Model	AEC Q100-011 (ANSI/ESDA/JEDEC JS-002)	3	1	1000V
ESD - Machine Model (Reference only)	AEC Q100-003 (JESD22-A115)	3	1	200V
LU - Current Trigger	AEC Q100-004 (JESD78)	6	1	200mA
LU - Voltage Trigger	AEC Q100-004 (JESD78)	6	1	5.5V

**ESD & Latchup**

FMK087A

**Vcc (V): 3V**

Test	Test Method	Qty	Lots	Pass
ESD - Human Body Model	AEC Q100-002 (ANSI/ESDA/JEDEC JS-001)	3	1	2000V
ESD - Charged Device Model	AEC Q100-011 (ANSI/ESDA/JEDEC JS-002)	3	1	1000V

ESD - Machine Model (Reference only)	AEC Q100-003 (JESD22-A115)	3	1	200V
LU - Current Trigger	AEC Q100-004 (JESD78)	6	1	200mA
LU - Voltage Trigger	AEC Q100-004 (JESD78)	6	1	5.5V

**ESD & Latchup**

FMD257A

**Vcc (V): 1.8V**

Test	Test Method	Qty	Lots	Pass
ESD - Human Body Model	AEC Q100-002 (ANSI/ESDA/JEDEC JS-001)	3	1	2000V
ESD - Charged Device Model	AEC Q100-011 (ANSI/ESDA/JEDEC JS-002)	3	1	1000V
ESD - Machine Model (Reference only)	AEC Q100-003 (JESD22-A115)	3	1	200V
LU - Current Trigger	AEC Q100-004 (JESD78)	6	1	200mA
LU - Voltage Trigger	AEC Q100-004 (JESD78)	6	1	3V

**ESD & Latchup**

FMD127B

**Vcc (V): 1.8V**

Test	Test Method	Qty	Lots	Pass
ESD - Human Body Model	AEC Q100-002 (ANSI/ESDA/JEDEC JS-001)	3	1	2000V
ESD - Charged Device Model	AEC Q100-011 (ANSI/ESDA/JEDEC JS-002)	3	1	1000V
ESD - Machine Model (Reference only)	AEC Q100-003 (JESD22-A115)	3	1	200V
LU - Current Trigger	AEC Q100-004 (JESD78)	6	1	200mA
LU - Voltage Trigger	AEC Q100-004 (JESD78)	6	1	3V

**ESD & Latchup**

FMD647B

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ESD - Human Body Model	AEC Q100-002 (ANSI/ESDA/JEDEC JS-001)	3	1	2000V
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ESD - Machine Model (Reference only)	AEC Q100-003 (JESD22-A115)	3	1	200V
LU - Current Trigger	AEC Q100-004 (JESD78)	6	1	200mA
LU - Voltage Trigger	AEC Q100-004 (JESD78)	6	1	3V

**ESD & Latchup**

FMD327A

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ESD - Human Body Model	AEC Q100-002 (ANSI/ESDA/JEDEC JS-001)	3	1	2000V

ESD - Charged Device Model	AEC Q100-011 (ANSI/ESDA/JEDEC JS-002)	3	1	1000V
ESD - Machine Model (Reference only)	AEC Q100-003 (JESD22-A115)	3	1	200V
LU - Current Trigger	AEC Q100-004 (JESD78)	6	1	200mA
LU - Voltage Trigger	AEC Q100-004 (JESD78)	6	1	3V

**ESD & Latchup**

FMD167B

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ESD - Human Body Model	AEC Q100-002 (ANSI/ESDA/JEDEC JS-001)	3	1	2000V
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ESD - Machine Model (Reference only)	AEC Q100-003 (JESD22-A115)	3	1	200V
LU - Current Trigger	AEC Q100-004 (JESD78)	6	1	200mA
LU - Voltage Trigger	AEC Q100-004 (JESD78)	6	1	3V

**ESD & Latchup**

FMD087A

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ESD - Human Body Model	AEC Q100-002 (ANSI/ESDA/JEDEC JS-001)	3	1	2000V
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ESD - Machine Model (Reference only)	AEC Q100-003 (JESD22-A115)	3	1	200V
LU - Current Trigger	AEC Q100-004 (JESD78)	6	1	200mA
LU - Voltage Trigger	AEC Q100-004 (JESD78)	6	1	3V

# Product Qualification Data - Die



Device: See product family worksheet

Process: 65nm

Foundry: XMC

Location: China

## Endurance Cycle testing (High temperature)

Vcc typical: 1.8V/3V Combo

Lot No.	Vcc Stress	Temp (°C)	Date	Qty	Cycling	Rej	Failure Mode	Remark
PP478536C2	3.6V	85	2016/5/16	154	100K	0		3V, 256M
PP6166322	3.6V	85	2016/9/30	154	100K	0		3V, 256M
PP616645L1	3.6V	85	2016/9/30	154	100K	0		3V, 256M
PP650659L3	3.6V	85	2017/5/11	154	100K	0		3V, 128M
PP6999L1	3.6V	85	2018/1/19	154	100K	0		3V, 64M
PP6461L1	3.6V	85	2016/12/2	154	100K	0		3V, 32M
P646431L3	3.6V	85	2016/11/4	154	100K	0		3V, 16M
P508883C1	3.6V	85	2016/9/5	154	100K	0		3V, 8M
P508893C1	3.6V	85	2016/9/5	154	100K	0		3V, 8M
P508874C1	3.6V	85	2016/9/5	154	100K	0		3V, 8M
PP616650L1	1.95V	85	2017/1/25	154	100K	0		1.8V, 256M
PP619943L2	1.95V	85	2017/3/7	154	100K	0		1.8V, 256M
PP6506L7	1.95V	85	2017/8/11	154	100K	0		1.8V, 128M
PP6999L5	1.95V	85	2018/2/13	154	100K	0		1.8V, 64M
P646144L2	1.95V	85	2017/3/9	154	100K	0		1.8V, 32M
P646433L1	1.95V	85	2016/12/26	154	100K	0		1.8V, 16M
PP508869C1	1.95V	85	2016/5/30	154	100K	0		1.8V, 8M

Pattern (0000)

Endurance Cycle.

- (1) 64M~256M: P/E 1K cycles for 100% array size, 10K cycles for 10% array size, 100K cycles for 1% array size  
 (2) 8M~32M: P/E 10K cycles for 100% array size, 100K cycles for 50% array size

## High Temperature Operating Life (HTOL)

Vcc typical: 1.8V/3V Combo

Lot No.	Vcc Stress	Temp (°C)	Date	Qty	Hours	Rej	Failure Mode	Remark
PP478536C2	3.6V	125	2016/7/7	77	1000	0		3V, 256M
PP6166322	3.6V	125	2016/12/7	77	1000	0		3V, 256M
PP616645L1	3.6V	125	2016/12/7	77	1000	0		3V, 256M
PP650659L3	3.6V	125	2017/7/8	77	1000	0		3V, 128M
PP6999L1	3.6V	125	2018/3/20	77	1000	0		3V, 64M
PP6461L1	3.6V	125	2017/2/8	77	1000	0		3V, 32M
P646431L3	3.6V	125	2016/12/27	77	1000	0		3V, 16M
PP2789CB	3.6V	125	2016/11/2	77	1000	0		3V, 8M
P278945C1	3.6V	125	2016/11/2	77	1000	0		3V, 8M
P278725C1	3.6V	125	2016/11/2	77	1000	0		3V, 8M
PP616650L1	1.95V	125	2017/3/22	77	1000	0		1.8V, 256M
PP619943L2	1.95V	125	2017/5/2	77	1000	0		1.8V, 256M
PP6506L7	1.95V	125	2017/10/11	77	1000	0		1.8V, 128M
PP6999L5	1.95V	125	2018/5/2	77	1000	0		1.8V, 64M
P646144L2	1.95V	125	2017/4/28	77	1000	0		1.8V, 32M
P646433L1	1.95V	125	2017/2/23	77	1000	0		1.8V, 16M
PP508869C1	1.95V	125	2016/7/21	77	1000	0		1.8V, 8M

Pattern CKB(0101).

Endurance Cycle before HTOL:

- (1) 64M~256M: P/E 1K cycles for 100% array size, 10K cycles for 10% array size.  
 (2) 8M~32M: P/E 10K cycles for 100% array size, 100K cycles for 50% array size

## High Temperature Storage Life (HTSL, Data Retention bake)

Vcc typical: 1.8V/3V Combo

Lot No.	Vcc Stress	Temp (°C)	Date	Qty	Hours	Rej	Failure Mode	Remark
PP478536C2	NA	150	2016/7/12	77	1000	0		3V, 256M
PP6166322	NA	150	2016/12/7	77	1000	0		3V, 256M
PP616645L1	NA	150	2016/12/7	77	1000	0		3V, 256M
PP650659L3	NA	150	2017/7/8	77	1000	0		3V, 128M
PP6999L1	NA	150	2018/3/20	77	1000	0		3V, 64M

PP6461L1	NA	150	2017/2/8	77	1000	0		3V, 32M
P646431L3	NA	150	2016/12/27	77	1000	0		3V, 16M
PP2789CB	NA	150	2016/11/2	77	1000	0		3V, 8M
P278945C1	NA	150	2016/11/2	77	1000	0		3V, 8M
P278725C1	NA	150	2016/11/2	77	1000	0		3V, 8M
PP616650L1	NA	150	2017/3/22	77	1000	0		1.8V, 256M
PP619943L2	NA	150	2017/5/2	77	1000	0		1.8V, 256M
PP6506L7	NA	150	2017/10/11	77	1000	0		1.8V, 128M
PP6999L5	NA	150	2018/5/2	77	1000	0		1.8V, 64M
P646144L2	NA	150	2017/4/28	77	1000	0		1.8V, 32M
P646433L1	NA	150	2017/2/23	77	1000	0		1.8V, 16M
PP508869C1	NA	150	2016/7/10	77	1000	0		1.8V, 8M

Pattern Write (0000) Endurance Cycle before HTSL:

- (1) 64M~256M: P/E 1K cycles for 100% array size, 10K cycles for 10% array size.  
(2) 8M~32M: P/E 10K cycles for 100% array size, 100K cycles for 50% array size

#### Endurance Cycle testing (Low temperature)

Vcc typical: 1.8V/3V Combo

Lot No.	Vcc Stress	Temp (°C)	Date	Qty	Cycling	Rej	Failure Mode	Remark
PP478536C2	3.6V	25	2016/5/16	77	100K	0		3V, 256M
PP6166322	3.6V	25	2016/9/30	77	100K	0		3V, 256M
PP616645L1	3.6V	25	2016/9/30	77	100K	0		3V, 256M
PP650659L3	3.6V	25	2017/5/11	77	100K	0		3V, 128M
PP6999L1	3.6V	25	2018/1/19	77	100K	0		3V, 64M
PP6461L1	3.6V	25	2016/12/2	77	100K	0		3V, 32M
P646431L3	3.6V	25	2016/11/4	77	100K	0		3V, 16M
PP2789CB	3.6V	25	2016/9/5	77	100K	0		3V, 8M
P278945C1	3.6V	25	2016/9/5	77	100K	0		3V, 8M
P278725C1	3.6V	25	2016/9/5	77	100K	0		3V, 8M
PP616650L1	1.95V	25	2017/1/25	77	100K	0		1.8V, 256M
PP619943L2	1.95V	25	2017/3/7	77	100K	0		1.8V, 256M
PP6506L7	1.95V	25	2017/8/11	77	100K	0		1.8V, 128M
PP6999L5	1.95V	25	2018/2/13	77	100K	0		1.8V, 64M
P646144L2	1.95V	25	2017/3/9	77	100K	0		1.8V, 32M
P646433L1	1.95V	25	2016/12/26	77	100K	0		1.8V, 16M
PP508869C1	1.95V	25	2016/5/30	77	100K	0		1.8V, 8M

Pattern (0000)

Endurance Cycle.

- (1) 64M~256M: P/E 1K cycles for 100% array size, 10K cycles for 10% array size, 100K cycles for 1% array size  
(2) 8M~32M: P/E 10K cycles for 100% array size, 100K cycles for 50% array size

#### Data Retention Storage Life (LTDR)

Vcc typical: 1.8V/3V Combo

Lot No.	Vcc Stress	Temp (°C)	Date	Qty	Hours	Rej	Failure Mode	Remark
PP478536C2	NA	25	2016/6/14	77	1000	0		3V, 256M
PP6166322	NA	25	2016/11/2	77	1000	0		3V, 256M
PP616645L1	NA	25	2016/11/2	77	1000	0		3V, 256M
PP650659L3	NA	25	2017/7/8	77	1000	0		3V, 128M
PP6999L1	NA	25	2018/3/20	77	1000	0		3V, 64M
PP6461L1	NA	25	2017/2/8	77	1000	0		3V, 32M
P646431L3	NA	25	2016/12/27	77	1000	0		3V, 16M
PP2789CB	NA	25	2016/11/2	77	1000	0		3V, 8M
P278945C1	NA	25	2016/11/2	77	1000	0		3V, 8M
P278725C1	NA	25	2016/11/2	77	1000	0		3V, 8M
PP616650L1	NA	25	2017/3/22	77	1000	0		1.8V, 256M
PP619943L2	NA	25	2017/5/2	77	1000	0		1.8V, 256M
PP6506L7	NA	25	2017/10/11	77	1000	0		1.8V, 128M
PP6999L5	NA	25	2018/5/2	77	1000	0		1.8V, 64M
P646144L2	NA	25	2017/4/28	77	1000	0		1.8V, 32M
P646433L1	NA	25	2017/2/23	77	1000	0		1.8V, 16M
PP508869C1	NA	25	2016/7/21	77	1000	0		1.8V, 8M

Pattern CKB(0101)

Endurance Cycle before LTDR:

- (1) 64M~256M: P/E 1K cycles for 100% array size, 10K cycles for 10% array size.  
(2) 8M~32M: P/E 10K cycles for 100% array size, 100K cycles for 50% array size

Early Life Failure Rate (ELFR) \_\_\_\_\_

Vcc typical: 1.8V/3V Combo

Lot No.	Vcc Stress	Temp (°C)	Date	Qty	Hours	Rej	Failure Mode	Remark
PP616646L1	3.6V	125	2016/12/7	800	48	0		3V, 256M
PP6166322	3.6V	125	2016/12/7	800	48	0		3V, 256M
PP616645L1	3.6V	125	2016/12/7	800	48	0		3V, 256M
PP6506L1	3.6V	125	2017/8/10	800	48	0		3V, 128M
PP6999L1	3.6V	125	2018/3/20	800	48	0		3V, 64M
PP6461L1	3.6V	125	2016/12/2	800	48	0		3V, 32M
P646431L3	3.6V	125	2016/10/26	800	48	0		3V, 16M
P278945C1	3.6V	125	2016/9/6	800	48	0		3V, 8M
P278725C1	3.6V	125	2016/9/6	800	48	0		3V, 8M
PP2788CA	3.6V	125	2016/9/6	800	48	0		3V, 8M
P1592608L1	1.95V	125	2017/4/20	800	48	0		1.8V, 256M
PP6506L7	1.95V	125	2017/11/5	800	48	0		1.8V, 128M
PP6999L5	1.95V	125	2018/5/2	800	48	0		1.8V, 64M
P646144L2	1.95V	125	2017/3/7	800	48	0		1.8V, 32M
P646433L1	1.95V	125	2016/12/16	800	48	0		1.8V, 16M
PP508869C1	1.95V	125	2016/5/26	800	48	0		1.8V, 8M

Pattern CKB(0101)

ESD & Latchup		FMK257A	256M	Vcc typical: 3V	
Lot No.	Date	Test	Qty	Pass	Classification Level
PP616632L1	2016/9/7	ESD-HBM	3	2000V	Class : H2
PP616632L1	2016/9/7	ESD-CDM	3	1000V	Class : C6
PP616632L1	2016/9/7	ESD-MM (Reference only)	3	200V	Class : M3
PP616632L1	2016/9/7	LU-I	6	200mA	Class : II
PP616632L1	2016/9/7	LU-V	6	5.5V	Class : II

ESD & Latchup		FMK127B	128M	Vcc typical: 3V	
Lot No.	Date	Test	Qty	Pass	Classification Level
PP6506L2	2017/6/2	ESD-HBM	3	2000V	Class : H2
PP6506L2	2017/6/2	ESD-CDM	3	1000V	Class : C6
PP6506L2	2017/6/2	ESD-MM (Reference only)	3	200V	Class : M3
PP6506L2	2017/6/2	LU-I	6	200mA	Class : II
PP6506L2	2017/6/2	LU-V	6	5.5V	Class : II

ESD & Latchup		FMK647B	64M	Vcc typical: 3V	
Lot No.	Date	Test	Qty	Pass	Classification Level
PP6999L3	2017/12/15	ESD-HBM	3	2000V	Class : H2
PP6999L3	2017/12/15	ESD-CDM	3	1000V	Class : C6
PP6999L3	2017/12/15	ESD-MM (Reference only)	3	200V	Class : M3
PP6999L3	2017/12/15	LU-I	6	200mA	Class : II
PP6999L3	2017/12/15	LU-V	6	5.5V	Class : II

ESD & Latchup		FMK327A	32M	Vcc typical: 3V	
Lot No.	Date	Test	Qty	Pass	Classification Level
PP6461L1	2016/11/12	ESD-HBM	3	2000V	Class : H2
PP6461L1	2016/11/12	ESD-CDM	3	1000V	Class : C6
PP6461L1	2016/11/12	ESD-MM (Reference only)	3	200V	Class : M3
PP6461L1	2016/11/12	LU-I	6	200mA	Class : II
PP6461L1	2016/11/12	LU-V	6	5.5V	Class : II

ESD & Latchup		FMK167B	16M	Vcc typical: 3V	
Lot No.	Date	Test	Qty	Pass	Classification Level
P646431L3	2016/10/6	ESD-HBM	3	2000V	Class : H2
P646431L3	2016/10/6	ESD-CDM	3	1000V	Class : C6



P646431L3	2016/10/6	ESD-MM (Reference only)	3	200V	Class : M3
P646431L3	2016/10/6	LU-I	6	200mA	Class : II
P646431L3	2016/10/6	LU-V	6	5.5V	Class : II

ESD & Latchup		FMK087A	8M	Vcc typical: 3V	
Lot No.	Date	Test	Qty	Pass	Classification Level
P508883C1	2016/8/11	ESD-HBM	3	2000V	Class : H2
P508883C1	2016/8/11	ESD-CDM	3	1000V	Class : C6
P508883C1	2016/8/11	ESD-MM (Reference only)	3	200V	Class : M3
P508883C1	2016/8/22	LU-I	6	200mA	Class : II
P508883C1	2016/8/22	LU-V	6	5.5V	Class : II

ESD & Latchup		FMD257A	256M	Vcc typical: 1.8V	
Lot No.	Date	Test	Qty	Pass	Classification Level
PP616650L1	2017/1/9	ESD-HBM	3	2000V	Class : H2
PP616650L1	2017/1/9	ESD-CDM	3	1000V	Class : C6
PP616650L1	2017/1/9	ESD-MM (Reference only)	3	200V	Class : M3
PP616650L1	2017/1/9	LU-I	6	200mA	Class : II
PP616650L1	2017/1/9	LU-V	6	3V	Class : II

ESD & Latchup		FMD127B	128M	Vcc typical: 1.8V	
Lot No.	Date	Test	Qty	Pass	Classification Level
PP6506L7	2017/6/14	ESD-HBM	3	2000V	Class : H2
PP6506L7	2017/6/14	ESD-CDM	3	1000V	Class : C6
PP6506L7	2017/6/14	ESD-MM (Reference only)	3	200V	Class : M3
PP6506L7	2017/6/14	LU-I	6	200mA	Class : II
PP6506L7	2017/6/14	LU-V	6	3V	Class : II

ESD & Latchup		FMD647B	64M	Vcc typical: 1.8V	
Lot No.	Date	Test	Qty	Pass	Classification Level
PP6999L5	2018/1/23	ESD-HBM	3	2000V	Class : H2
PP6999L5	2018/1/23	ESD-CDM	3	1000V	Class : C6
PP6999L5	2018/1/23	ESD-MM (Reference only)	3	200V	Class : M3
PP6999L5	2018/1/23	LU-I	6	200mA	Class : II
PP6999L5	2018/1/23	LU-V	6	3V	Class : II

ESD & Latchup		FMD327A	32M	Vcc typical: 1.8V	
Lot No.	Date	Test	Qty	Pass	Classification Level
PP646144L1	2017/3/7	ESD-HBM	3	2000V	Class : H2
PP646144L1	2017/3/10	ESD-CDM	3	1000V	Class : C6
PP646144L1	2017/3/7	ESD-MM (Reference only)	3	200V	Class : M3
PP646144L1	2017/3/10	LU-I	6	200mA	Class : II
PP646144L1	2017/3/10	LU-V	6	3V	Class : II

ESD & Latchup		FMD167B	16M	Vcc typical: 1.8V	
Lot No.	Date	Test	Qty	Pass	Classification Level
P646433L1	2016/12/8	ESD-HBM	3	2000V	Class : H2
P646433L1	2016/12/8	ESD-CDM	3	1000V	Class : C6
P646433L1	2016/12/8	ESD-MM (Reference only)	3	200V	Class : M3
P646433L1	2016/12/8	LU-I	6	200mA	Class : II
P646433L1	2016/12/8	LU-V	6	3V	Class : II

ESD & Latchup		FMD087A	8M	Vcc typical: 1.8V	
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Lot No.	Date	Test	Qty	Pass	Classification Level
P508894L2	2016/8/21	ESD-HBM	3	2000V	Class : H2
P508894L2	2016/8/21	ESD-CDM	3	1000V	Class : C6
P508894L2	2016/8/21	ESD-MM (Reference only)	3	200V	Class : M3
P508894L2	2016/8/21	LU-I	6	200mA	Class : II
P508894L2	2016/8/21	LU-V	6	3V	Class : II

Below devices are belonged to the same design product family.

Memory S	Part number	Device
256M	IS25LP256D, IS25LP256, IS25WP256 IS25LP128D	FMK257A
	IS25WP256D	FMD257A
128M	IS25LP128F	FMK127B
	IS25WP128F	FMD127B
64M	IS25LP064D	FMK647B
	IS25WP064D	FMD647B
32M	IS25LP032D	FMK327A
	IS25WP032D, IS25WP032E	FMD327A
16M	IS25LP016D	FMK167B
	IS25WP016D	FMD167B
8M	IS25LP080D	FMK087A
	IS25WP080D, IS25WP080E IS25WP040D, IS25WP020D	FMD087A