S25FL208K

CS Q100337, Q100322

Qualification of: S25FL208K, 8 Megabit 3.0 Volt Flash Memory with 50MHz SPI Bus Interface in SOC008 and SOA008

Reliability Qualification Summary

CONFIDENTIAL

NOTICE: The material in this report is confidential. It is prepared to assist in the qualification of our product. It is declassified for the internal use of our customers only, and may be modified to meet the needs of specific customers. It also serves as a record of full qualification according to JESD47 and AEC-Q100 Grade 1 requirements.

Additionally, the package details (material set, assembly location, etc.) are specific to the qual vehicle used for the qualification. Alternate material sets and assembly locations may be qualified for the product. Production material can be assembled with any qualified material set and at any qualified assembly location. Tests are performed in accordance with AEC-Q100 and relevant JEDEC specifications.

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I.A. Product Information

Product Description: S25FL208K

8 Megabit 3.0 Volt Flash Memory with 50MHz SPI Bus Interface

Package:	SOC008	Qualification:	Q100337
Description:	(8.00 x 5.28 x 2.159mm) 8 Lead, Small Outline Integrated Circuit (SOIC)		
Theta Ja:	75 °C/W	Psi Jt:	15 °C/W
Assembly Location:	ZKT China	Molding Compound:	RoHS Compliant Epoxy Resin
Substrate/Leadframe:	Copper Leadframe	Die Attachment:	Paste
Lead Finish:	100% Matte Sn Plating	Bond Wire:	Copper
Comments:			

Est. Field Temperature:	55 °C	Life Test Temperature:	150 °C
Est. DC Field Current:	25 mA	Life Test Dynamic Current:	12 mA
Est. Field Voltage:	3.0 V	Life Test Voltage:	3.6 V
Est. Field Power Dissipation:	75 mWatts	Est. Stress Power Dissipation:	43.2 mWatts
Est. Field Tj:	60.6 °C	Est. Stress Tj:	153.2 °C

Die:	98GZ2A	Die Size:	1.73 x 1.42 mm
Process:	90nm	Fab:	Dongbu
Type:	Floating Gate	Density:	8M

I.B. Product Information

Product Description:	S25FL208K
	8 Megabit 3.0 Volt Flash Memory with 50MHz SPI Bus Interface

Package:	SOA008	Qualification:	Q100322
Description:	(4.9 x 6.0 x 1.75mm) 8 Lead, Small Outline Integrated Circuit (SOIC)		
Theta Ja:	75 °C/W	Psi Jt:	15 °C/W
Assembly Location:	ZKT China	Molding Compound:	RoHS Compliant Epoxy Resin
Substrate/Leadframe:	Copper Leadframe	Die Attachment:	Paste
Lead Finish:	100% Matte Sn Plating	Bond Wire:	Copper
Comments:			

Est. Field Temperature:	55 °C	Life Test Temperature:	150 °C
Est. DC Field Current:	25 mA	Life Test Dynamic Current:	12 mA
Est. Field Voltage:	3.0 V	Life Test Voltage:	3.6 V
Est. Field Power Dissipation:	75 mWatts	Est. Stress Power Dissipation:	43.2 mWatts
Est. Field Tj:	60.6 °C	Est. Stress Tj:	153.2 °C

Die:	98GZ2A	Die Size:	1.73 x 1.42 mm
Process:	90nm	Fab:	Dongbu
Type:	Floating Gate	Density:	8M

II. Summary of Stress Test Results

Stress Test	Stress Condition	Package Type	Sample Size	Num. of Lots	Num. of Fails	Failure Rate %	Comments
Data From Qualification Q100337, Q100322:							
HTOL (EL)	(3.6V, 150°C)	SOC008 [1]	127	1	0	0.00	168 hours
ESD CDM	N/A	SOC008 [1]	15	1	Passed 1.0kV		
ESD HBM	(100pF, 1500 Ohms)	SOC008 [1]	15	1	Passed 2.0kV		
Latch Up	(125°C, +/- 100mA)	SOC008 [1]	6	1	Passed		
Endurance (10k)	(-40°C, 3.6V)	SOC008 [1]	188	1	0	0.00	10k cycles
	(90°C, 3.6V)	SOC008 [1]	184	1	0	0.00	10k cycles
Preconditioning	(PC9/260°C, +0°C/-5°C)	SOA008 [2]	154	2	Passed Jedec L3 / Jeita Rank E		
Precon+Temp Cycle	(PC9/260°C, -40°C/150°C)	SOA008 [2]	68	1	0	0.00	1000 cycles
Precon+HAST	(PC9/260°C, Biased, 130°C/85% RH)	SOA008 [2]	77	1	0	0.00	96 hours
Generic Reference Data:							
High Temp Bake (200°C)	(200°C)	SOC008 [4]	45	1	0	0.00	350 hours
ESD CDM	N/A	SOC008 [4]	30	2	Passed 1.0kV		
Preconditioning	(PC9/260°C, +0°C/-5°C)	SOC008 [3]	154	2	Passed Jedec L3 / Jeita Rank E		
	(PC9/260°C, +0°C/-5°C)	SOC008 [4]	462	2	Passed Jedec L3 / Jeita Rank E		
Precon+Temp Cycle	(PC9/260°C, -40°C/150°C)	SOC008 [3]	72	1	0	0.00	1000 cycles
	(PC9/260°C, -40°C/150°C)	SOC008 [4]	142	2	0	0.00	1000 cycles
Precon+HAST	(PC9/260°C, Biased, 130°C/85% RH)	SOC008 [3]	77	1	0	0.00	96 hours
	(PC9/260°C, Biased, 130°C/85% RH)	SOC008 [4]	154	2	0	0.00	96 hours
Precon+uHAST	(PC9/260°C, Unbiased, 130°C/85% RH)	SOC008 [4]	154	2	0	0.00	96 hours

Notes / Justification:
1) Results from Qual Q100337, S25FL208K, 8M 90nm Floating Gate in 8 Lead SOIC (8 x 5.28 x 2.159mm)
2) Results from Qual Q100322, S25FL208K, 8M 90nm Floating Gate in 8 Lead SOIC (4.9 x 6 x 1.75mm) - Same Flash, Similar Package
3) Results from Qual Q100321, S25FL208K in 8 Lead SOIC (8 x 5.28 x 2.159mm)
4) Results from Qual Q100277, S25FL216K in 8 Lead SOIC (8 x 5.28 x 2.159mm) - Same Technology, Similar Flash and Package

Preconditioning Flows: PC9 (Accelerated JEDEC L3 / JEITA Rank E): Bake 125°C, 24hr => Soak @ 60°C/70%RH, 72hr => 3x Reflow

III. Revision History

Section	Description
Revision A - 8/10/2012	
	Initial Release.