S25FL216K

CS Q100237a, Q100277, Q100278

Qualification of: S25FL216K, 16 Megabit 3.0 Volt Flash Memory with 65MHz 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.

Table of Contents

I. Product Information
II. Summary of Stress Test Results
III. Revision History

I.A. Product Information

Product Description: S25FL216K
16 Megabit 3.0 Volt Flash Memory with 65MHz SPI Bus Interface

Package:	SOC008	**Qualification:**	Q100237a
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:	NFM 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:	20 mA	**Life Test Dynamic Current:**	15 mA
Est. Field Voltage:	3.0 V	**Life Test Voltage:**	3.6 V
Est. Field Power Dissipation:	60 mWatts	**Est. Stress Power Dissipation:**	54 mWatts
Est. Field Tj:	59.5 °C	**Est. Stress Tj:**	154.0 °C

Die:	98JZ4A	**Die Size:**	2.51 x 1.44 mm
Process:	90nm	**Fab:**	Dongbu
Type:	Floating Gate	**Density:**	16M

I.B. Product Information

Product Description: S25FL216K

16 Megabit 3.0 Volt Flash Memory with 65MHz SPI Bus Interface

Package:	SOC008	**Qualification:**	Q100277
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:	20 mA	**Life Test Dynamic Current:**	15 mA
Est. Field Voltage:	3.0 V	**Life Test Voltage:**	3.6 V
Est. Field Power Dissipation:	60 mWatts	**Est. Stress Power Dissipation:**	54 mWatts
Est. Field Tj:	59.5 °C	**Est. Stress Tj:**	154.0 °C

Die:	98JZ4A	**Die Size:**	2.51 x 1.44 mm
Process:	90nm	**Fab:**	Dongbu
Type:	Floating Gate	**Density:**	16M

I.C. Product Information

Product Description: S25FL216K
16 Megabit 3.0 Volt Flash Memory with 65MHz SPI Bus Interface

Package:	SOA008	**Qualification:**	Q100278
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:	20 mA	**Life Test Dynamic Current:**	15 mA
Est. Field Voltage:	3.0 V	**Life Test Voltage:**	3.6 V
Est. Field Power Dissipation:	60 mWatts	**Est. Stress Power Dissipation:**	54 mWatts
Est. Field Tj:	59.5 °C	**Est. Stress Tj:**	154.0 °C

Die:	98JZ4A	**Die Size:**	2.51 x 1.44 mm
Process:	90nm	**Fab:**	Dongbu
Type:	Floating Gate	**Density:**	16M

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 Q100237a, Q100277, Q100278:							
HTOL (EL)	(3.6V, 150°C)	SOC008 [1]	128	1	0	0.00	168 hours
High Temp Bake (200°C)	(200°C)	SOC008 [2]	45	1	0	0.00	350 hours
	(200°C)	SOA008 [3]	45	1	0	0.00	350 hours
ESD CDM	N/A	SOC008 [1]	15	1	Passed 1.0kV		
	N/A	SOC008 [2]	30	2	Passed 1.0kV		
	N/A	SOA008 [3]	30	2	Passed 1.0kV		
ESD HBM	(100pF, 1500 Ohms)	SOC008 [1]	15	1	Passed 1.0kV		
Latch Up	(125°C, +/- 100mA)	SOC008 [1]	6	1	Passed		
Preconditioning	(PC9/260°C, +0°C/-5°C)	SOC008 [2]	462	2	Passed Jedec L3 / Jeita Rank E		
	(PC9/260°C, +0°C/-5°C)	SOA008 [3]	462	2	Passed Jedec L3 / Jeita Rank E		
Precon+Temp Cycle	(PC9/260°C, -40°C/150°C)	SOC008 [2]	142	2	0	0.00	1000 cycles
	(PC9/260°C, -40°C/150°C)	SOA008 [3]	149	2	0	0.00	1000 cycles
Precon+HAST	(PC9/260°C, Biased, 130°C/85% RH)	SOC008 [2]	154	2	0	0.00	96 hours
	(PC9/260°C, Biased, 130°C/85% RH)	SOA008 [3]	154	2	0	0.00	96 hours
Precon+uHAST	(PC9/260°C, Unbiased, 130°C/85% RH)	SOC008 [2]	154	2	0	0.00	96 hours
	(PC9/260°C, Unbiased, 130°C/85% RH)	SOA008 [3]	153	2	0	0.00	96 hours
Solderability	N/A	SOC008 [2]	18	2	Passed		
	N/A	SOA008 [3]	10	2	Passed		
Generic Reference Data:							
ESD CDM	N/A	SOC008 [4]	15	1	Passed 1.0kV		
ESD HBM	(100pF, 1500 Ohms)	SOC008 [4]	15	1	Passed 1.0kV		
Latch Up	(125°C, +/- 100mA)	SOC008 [4]	6	1	0	0.00	Passed
Endurance (10k)	(-40°C, 3.6V)	SOC008 [4]	128	2	0	0.00	10k cycles
	(90°C, 3.6V)	SOC008 [4]	128	2	0	0.00	10k cycles

Notes / Justification:

1) Results from Qual Q100237a, S25FL216K, 16M 90nm Floating Gate in 8 Lead SOIC (8 x 5.28 x 2.159mm)
2) Results from Qual Q100277, S25FL216K, 16M 90nm Floating Gate in 8 Lead SOIC (8 x 5.28 x 2.159mm)
3) Results from Qual Q100278, S25FL216K, 16M 90nm Floating Gate in 8 Lead SOIC (4.9 x 6 x 1.75mm)
4) Results from Qual Q100359, S25FL216K in 8 Lead SOIC (8 x 5.28 x 2.159mm) - Same Flash, Same Package SOC 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 - 5/4/2012	
	Initial Release.

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