



Cypress Semiconductor Corporation, 198 Champion Court, San Jose, CA 95134. Tel: (408) 943-2600

PRODUCT CHANGE NOTIFICATION

PCN: PCN193602

Date: September 10, 2019

Subject: Introduction of Die Overcoat for Select Automotive NOR Flash Memory Product Family

To: FUTURE ELECTRONICS
FUTURE ELE
pcn.system@futureelectronics.com

Change Type: Major

Description of Change:

Cypress has qualified a die overcoat process for select 65nm Automotive NOR Flash Memory products manufactured at Fab 25 (5204 East Ben White Boulevard, Austin, TX 78741, USA).

Cypress is adding a polybenzoxazole (PBO) layer on the topside of the wafer. Cypress has successfully utilized a die overcoat process on non-Flash products for over a decade. Cypress is now extending this best practice to Fab 25 for the FL-S, FS-S, KL-S/KS-S Automotive NOR Flash Memory products.

Benefit of Change:

The die overcoat will provide a higher level of protection to the silicon surface during production (fab, sort and assembly). As a result, it will minimize the risk of latent failures due to surface damage. Functionality and specifications remain unchanged.

Part Numbers Affected: 258

See the attached 'Affected Parts List' file for the list of part numbers affected by this change. The 'Affected Parts List' includes the customer PPAP Part number (Marketing Part number) and the corresponding Sample Part number. Note that any new parts that are introduced after the publication of this PCN will include all changes outlined in this PCN.

Qualification Status:

The change has been qualified through a series of tests documented in Qualification Test Plans summarized in the table below. The QTP reports can be found as attachments to this notification or by visiting www.cypress.com, and typing the QTP number in the keyword search window.

QTP Number	Qualification
162903	FL512S SO3016 and FS512S SO3016 Qualification
171704	FL128S WNG008 Qualification
171705	FL256S FAB024 Qualification
171706	KL/KS512S, KL/KS256S and KL/KS128S (VAA024) Qualification
002-21508	AECQ100 – PBO Qual Report

Sample Status:

Qualification samples are not built ahead of time for all part numbers affected by this change. Please refer to the affected parts list file for a list of affected part numbers with their associated sample ordering part numbers. If you require qualification samples, please contact your sales representative as soon as possible, but within 60 days of the date of this PCN. Estimated lead time for qualified samples is 2-4 weeks from order entry.

Approximate Implementation Date:

Effective 90 days from the date of notification or upon customer approval, whichever comes first, all shipments of Automotive non-PPAP part numbers in the attached file will have die overcoat.

For Automotive PPAP part numbers, this change will be effective upon customer approval.

Anticipated Impact:

None anticipated. Products manufactured with the new process are completely compatible with existing products from a functional, parametric, and quality performance perspective.

Based on our history and experience, Cypress sees this as a low-risk change to series production. The Die Overcoat process is a very mature process. It is applied on top of the existing passivation layer and has no electrical interaction with the circuit. Cypress is confident that the implementation of this change will not require our customers to perform extensive qualifications.

Cypress also recommends that customers take this opportunity to review these changes against current application notes, system design considerations and customer environment conditions to assess impact (if any) to their application.

Method of Identification:

Cypress maintains traceability of product to wafer level, including wafer fabrication location, through the lot number marked on the package.

Response Required:

Please share any additional qualification and test requirements if needed.

For additional information regarding this change, contact your local sales representative or contact the PCN Administrator at pcn_adm@cypress.com.

Sincerely,

Cypress PCN Administration

Cypress Semiconductor Reliability Qualification Report

QTP# 162903, 162904, 171704, 180401 Version *A

Qualification of PBO Protective Layer for 65nm FL-S and FS-S Products

**Qualification of PBO (Poly Benzoxazole) for the FL-S and FS-S Family
of Products on 65nm MirrorBit Technology in SOIC016, SSO016 and
WNH008 Packages**

FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT
reliability@cypress.com or via a CYLINK CRM CASE

Prepared By:
Eng Keat Ng
Reliability Engineer

Reviewed By:
Francis Classe
Reliability Manager

Approved By:
David Hoffman
Reliability Director

I.A. Product and Package Information

Product Description: S25FL512S Cypress Division: Memory Product Division
512 Megabit (64 Megabyte) MirrorBit® Flash Non-Volatile Memory CMOS 3.0 Volt Core with Versatile I/O

Package:	SO3016	QTP:	162903		
Description:	(10.3 x 10.3 x 2.65mm) 16 Lead, Small Outline Integrated Circuit (SOIC)			Flammability:	O2 Index:
Assembly:	ASE Taiwan	Molding Compound:	Hitachi CEL 9240	UL-V0	>28
Electrical Test:	Cypress Thailand				
Substrate/Leadframe:	Copper Leadframe	Die Attachment:	Hitachi EN-4900		
Lead Finish:	100% Matte Sn Plating	Bond Wire:	Copper		
Comments:					

Est. Field Temperature:	55 °C	Life Test Temperature:	125 °C
Est. DC Field Current:	33 mA	Life Test Dynamic Current:	16 mA
Est. Field Voltage:	3.0 V	Life Test Voltage:	3.6 V
Est. Field Power Dissipation:	99 mWatts	Est. Stress Power Dissipation:	57.6 mWatts

Die:	98289A	Die Size:	6.58 x 4.90 mm
Process:	CS239LS (65nm)	Fab:	Cypress Fab25
Type:	MirrorBit	Density:	512M

I.D. Product and Package Information

Product Description: S70FS01GSAGMF Cypress Division: Memory Product Division
 1 Gigabit MirrorBit® Flash Non-Volatile Memory CMOS 1.8 Volt Core with Versatile I/O

Package:	SS3016	QTP:	180401	
Description:	(10.3 x 10.3 x 2.65mm) 16 Lead, Small Outline Integrated Circuit (SOIC)		Flammability:	O2 Index:
Assembly:	ASE Taiwan	Molding Compound:	Sumitomo EME G700LA	UL-V0 >28
Electrical Test:	Cypress Thailand			
Substrate/Leadframe:	Copper Leadframe	Die Attachment:	EM700 (Die 1, Die 2), ATB 125 (Spacer)	
Lead Finish:	100% Matte Sn Plating	Bond Wire:	Copper	
Comments:	Spacer			

Est. Field Temperature:	55 °C	Life Test Temperature:	125 °C
Est. DC Field Current:	80 mA	Life Test Dynamic Current:	100 mA
Est. Field Voltage:	1.8 V	Life Test Voltage:	1.9 V
Est. Field Power Dissipation:	144 mWatts	Est. Stress Power Dissipation:	190 mWatts

Die #1: (Bottom)	Die:	98UZ0A	Die Size:	5.43 x 5.19 mm	Number of Dies: 2
	Process:	CS239LS (65nm)	Fab:	Cypress Fab25	
	Type:	MirrorBit	Density:	512M	
Die #2:	Die:	98UZ0A	Die Size:	5.43 x 5.19 mm	
	Process:	CS239LS (65nm)	Fab:	Cypress Fab25	
	Type:	MirrorBit	Density:	512M	

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 162903, 162904, 171704, 180401:							
ELFR	(3.6V, 150°C)	SO3016 ¹	800	1	0	0.00	48 hours
	(3.6V, 150°C)	SO3016 ²	792	1	0	0.00	48 hours
HTOL (EL)	(3.6V, 150°C)	SO3016 ¹	77	1	0	0.00	168 hours
	(3.6V, 150°C)	SO3016 ²	77	1	0	0.00	168 hours
HTOL (IL)	(3.6V, 150°C)	SO3016 ¹	77	1	0	0.00	500 hours
	(3.6V, 150°C)	SO3016 ²	77	1	0	0.00	500 hours
High Temp Bake	(200°C)	SO3016 ¹	75	1	0	0.00	350 hours
	(200°C)	SO3016 ²	75	1	0	0.00	350 hours
	(200°C)	WNG008 ³	40	1	0	0.00	350 hours
	(200°C)	SS3016 ⁴	40	1	0	0.00	500 hours
ESD CDM	N/A	SO3016 ¹	45	3	Passed 1.0kV		
	N/A	SO3016 ²	45	3	Passed 1.0kV		
	N/A	WNG008 ³	3	1	Passed 250V		
ESD HBM	(100pF, 1500 Ohms)	WNG008 ³	3	1	Passed 1.0kV		
Latch Up	(125°C, +/- 200mA)	WNG008 ³	3	1	Pass 200mA		
Preconditioning	(PC9/260°C, +0°C/-5°C)	SO3016 ¹	723	3	Passed Jedec L3 / Jeita Rank E		
	(PC9/260°C, +0°C/-5°C)	SO3016 ²	712	3	Passed Jedec L3 / Jeita Rank E		
	(PC2/260°C, +0°C/-5°C)	WNG008 ³	241	1	Passed Jedec L3		
	(PC2/260°C, +0°C/-5°C)	SS3016 ⁴	241	1	Passed Jedec L3		
Precon+Temp Cycle	(PC9/260°C, -65°C/150°C)	SO3016 ¹	245	3	0	0.00	500 cycles
	(PC9/260°C, -65°C/150°C)	SO3016 ²	242	3	0	0.00	500 cycles
	(PC2/260°C, -65°C/150°C)	WNG008 ³	82	1	0	0.00	500 cycles
	(PC2/260°C, -65°C/150°C)	SS3016 ⁴	82	1	0	0.00	500 cycles
Precon+Temp Cycle (Ext.)	(PC9/260°C, -65°C/150°C)	SO3016 ¹	240	3	0	0.00	1000 cycles
	(PC9/260°C, -65°C/150°C)	SO3016 ²	232	3	0	0.00	1000 cycles
	(PC2/260°C, -65°C/150°C)	WNG008 ³	72	1	0	0.00	1000 cycles
	(PC2/260°C, -65°C/150°C)	SS3016 ⁴	62	1	0	0.00	1000 cycles
Precon+HAST	(PC9/260°C, Biased, 130°C/85% RH)	SO3016 ¹	246	3	0	0.00	96 hours
	(PC9/260°C, Biased, 130°C/85% RH)	SO3016 ²	246	3	0	0.00	96 hours
	(PC2/260°C, Biased, 130°C/85% RH)	WNG008 ³	82	1	0	0.00	96 hours
	(PC2/260°C, Biased, 130°C/85% RH)	SS3016 ⁴	82	1	0	0.00	96 hours
Precon+HAST (Ext.)	(PC9/260°C, Biased, 130°C/85% RH)	SO3016 ¹	241	3	0	0.00	192 hours
	(PC9/260°C, Biased, 130°C/85% RH)	SO3016 ²	241	3	0	0.00	192 hours
	(PC2/260°C, Biased, 130°C/85% RH)	WNG008 ³	72	1	0	0.00	192 hours

	(PC2/260°C, Biased, 130°C/85% RH)	SS3016 ⁴	62	1	0	0.00	192 hours
Precon+uHAST	(PC9/260°C, Unbiased, 130°C/85% RH)	SO3016 ¹	231	3	0	0.00	96 hours
	(PC9/260°C, Unbiased, 130°C/85% RH)	SO3016 ²	220	3	0	0.00	96 hours
	(PC2/260°C, Unbiased, 130°C/85% RH)	WNG008 ³	77	1	0	0.00	96 hours
	(PC2/260°C, Unbiased, 130°C/85% RH)	SS3016 ⁴	77	1	0	0.00	96 hours

Notes / Justification: 1) Results from Qual 162903, S25FL512S, CS239LS (65nm) MirrorBit in 16 Lead SOIC (10.3 x 10.3 x 2.65mm)
 2) Results from Qual 162904, S25FL512S, CS239LS (65nm) MirrorBit Eclipse in 16 Lead SOIC (10.3 x 10.3 x 2.65mm)
 3) Results from Qual 171704, S25FL256S, CS239LS (65nm) MirrorBit in 8 Contact WSON (6 x 8 x 0.8mm)
 4) Results from Qual 180401, S70FS01GSAGMF, CS239LS (65nm) MirrorBit + CS239LS (65nm) MirrorBit in 16 Ball SOIC (10.3 x 10.3 x 2.65mm)

Preconditioning Flows: PC2 (JEDEC L3): Bake 125°C, 24hr => Soak @ 30°C/60%RH, 192hr => 3x Reflow
 PC9 (Accelerated JEDEC L3 / JEITA Rank E): Bake 125°C, 24hr => Soak @ 60°C/70%RH, 72hr => 3x Reflow

Reliability Tests Performed per Specification Requirements

Stress	Condition	Specification Reference
ELFR	(3.6V, 150°C)	JESD22-A108 / AEC-Q100-008
ESD CDM	N/A	JS002 / AEC-Q100-011
ESD HBM	(100pF, 1500 Ohms)	JS001 / AEC-Q100-002
High Temp Bake	(200°C)	JESD22-A103
HTOL (EL)	(3.6V, 150°C)	JESD22-A108
HTOL (IL)	(3.6V, 150°C)	JESD22-A108
Latch Up	(125°C, +/- 200mA)	JESD78 / AEC Q100-004
Precon+HAST	(PC2/260°C, Biased, 130°C/85% RH)	JESD22-A110
Precon+HAST	(PC9/260°C, Biased, 130°C/85% RH)	JESD22-A110
Precon+HAST (Ext.)	(PC2/260°C, Biased, 130°C/85% RH)	JESD22-A110
Precon+HAST (Ext.)	(PC9/260°C, Biased, 130°C/85% RH)	JESD22-A110
Precon+Temp Cycle	(PC2/260°C, -65°C/150°C)	JESD22-A104
Precon+Temp Cycle	(PC9/260°C, -65°C/150°C)	JESD22-A104
Precon+Temp Cycle (Ext.)	(PC2/260°C, -65°C/150°C)	JESD22-A104
Precon+Temp Cycle (Ext.)	(PC9/260°C, -65°C/150°C)	JESD22-A104
Precon+uHAST	(PC2/260°C, Unbiased, 130°C/85% RH)	JESD22-A118
Precon+uHAST	(PC9/260°C, Unbiased, 130°C/85% RH)	JESD22-A118
Preconditioning	(PC2/260°C, +0°C/-5°C)	J-STD-020
Preconditioning	(PC9/260°C, +0°C/-5°C)	J-STD-020 / EIAJ ED-4701-100 Method 104

III. Revision History

Document Number: 002-19425

Document Title: Qualification of PBO (Poly Benzoxazole) Protective Layer for CS239LS, 65nm, FL-S and FS-S Product

Rev.	Issue Date	ECN#	Originator	Description
**	4/13/2017	5694372	EKNG	Initial Release.
*A	5/16/2019	6574870	EKNG	Change Spec Title and added WNH008 and FS-S PBO Data

Trademarks and Notice

The contents of this document are subject to change without notice. This document may contain information on a Cypress product under development by Cypress. Cypress reserves the right to change or discontinue work on any product without notice. The information in this document is provided as is without warranty or guarantee of any kind as to its accuracy, completeness, operability, fitness for particular purpose, merchantability, non-infringement of third-party rights, or any other warranty, express, implied, or statutory. Cypress assumes no liability for any damages of any kind arising out of the use of the information in this document.

Copyright © 2017-2019 Cypress Inc. All rights reserved.

Cypress Semiconductor Reliability Qualification Report

QTP# 171705, 171706, 180402 Version *A

Qualification of PBO Protective Layer for 65nm FL-S and KL-S Products in FBGA package

Qualification of PBO (Poly Benzoxazole) for the FL-S and KL- S Product
Family on 65nm MirrorBit Technology in BGA Package

FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT
reliability@cypress.com or via a CYLINK CRM CASE

Prepared By:
Bak Lee Chan
Reliability Engineer

Reviewed By:
Francis Classe
Reliability Manager

Approved By:
David Hoffman
Reliability Director

I.B. Product and Package Information

Product Description: S26KL512S Cypress Division: Memory Product Division
512 Mbit (64 Mbyte) HyperFlash™ Family Non-Volatile Memory CMOS 3.0 Volt Core and I/O

Package:	VAA024	QTP:	171706	Flammability:	O2 Index:
Description:	(8 x 6 x 1mm) 24 Ball, Fine Pitch Ball Grid Array Package (FBGA)			UL-V0	>28
Assembly:	Cypress Thailand	Molding Compound:	ShinEtsu KMC 3580LVA		
Electrical Test:	Cypress Thailand				
Substrate/Leadframe:	Laminate Substrate	Die Attachment:	Hitachi HR9070		
Lead Finish:	96.5Sn3.0Ag0.5Cu Spheres	Bond Wire:	Copper		
Comments:					

Est. Field Temperature:	55 °C	Life Test Temperature:	150 °C
Est. DC Field Current:	80 mA	Life Test Dynamic Current:	100 mA
Est. Field Voltage:	3.0 V	Life Test Voltage:	3.6 V
Est. Field Power Dissipation:	240 mWatts	Est. Stress Power Dissipation:	360 mWatts

Die:	98UZ0A	Die Size:	5.43 x 5.19 mm
Process:	CS239LS (65nm)	Fab:	FAB25
Type:	MirrorBit	Density:	512M

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 171705, 171706, 180402:							
High Temp Bake	(200°C)	FAB024 ¹	45	1	0	0.00	350 hours
	(150°C)	ELA024 ³	50	1	0	0.00	1000 hours
High Temp Bake (200°C)	(200°C)	VAA024 ²	45	1	0	0.00	500 hours
Preconditioning	(PC2/260°C, +0°C/-5°C)	FAB024 ¹	241	1			Passed Jedec L3
	(PC2/260°C, +0°C/-5°C)	VAA024 ²	241	1			Passed Jedec L3
	(PC2/260°C, +0°C/-5°C)	ELA024 ³	241	1			Passed Jedec L3
Precon+Temp Cycle	(PC2/260°C, -65°C/150°C)	FAB024 ¹	82	1	0	0.00	500 cycles
	(PC2/260°C, -65°C/150°C)	VAA024 ²	82	1	0	0.00	500 cycles
	(PC2/260°C, -55°C/125°C)	ELA024 ³	62	1	0	0.00	1000 cycles
Precon+Temp Cycle (Ext.)	(PC2/260°C, -65°C/150°C)	FAB024 ¹	72	1	0	0.00	1000 cycles
	(PC2/260°C, -65°C/150°C)	VAA024 ²	72	1	0	0.00	1000 cycles
Precon+HAST	(PC2/260°C, Biased, 110°C/85% RH)	FAB024 ¹	82	1	0	0.00	264 hours
	(PC2/260°C, Biased, 110°C/85% RH)	VAA024 ²	82	1	0	0.00	264 hours
	(PC2/260°C, Biased, 110°C/85% RH)	ELA024 ³	62	1	0	0.00	264 hours
Precon+HAST (Ext.)	(PC2/260°C, Biased, 110°C/85% RH)	FAB024 ¹	72	1	0	0.00	528 hours
	(PC2/260°C, Biased, 110°C/85% RH)	VAA024 ²	72	1	0	0.00	528 hours
Precon+uHAST	(PC2/260°C, Unbiased, 130°C/85% RH)	FAB024 ¹	77	1	0	0.00	96 hours
	(PC2/260°C, Unbiased, 130°C/85% RH)	VAA024 ²	77	1	0	0.00	96 hours
	(PC2/260°C, Unbiased, 130°C/85% RH)	ELA024 ³	77	1	0	0.00	96 hours
Construction Analysis	N/A	FAB024 ¹	30	1			Passed
High Temp Bake (Ext.)	(200°C)	FAB024 ¹	40	1	0	0.00	500 Hours

Generic Reference Data:

ELFR	(3.6V, 150°C)	SO3016 ⁴	800	1	0	0.00	48 hours
	(3.6V, 150°C)	SO3016 ⁵	792	1	0	0.00	48 hours
	(3.6V, 150°C)	LAE064 ⁶	800	1	0	0.00	48 hours
HTOL (EL)	(3.6V, 150°C)	SO3016 ⁴	77	1	0	0.00	168 hours
	(3.6V, 150°C)	SO3016 ⁵	77	1	0	0.00	168 hours
	(3.6V, 150°C)	LAE064 ⁶	77	1	0	0.00	168 hours
HTOL (IL)	(3.6V, 150°C)	SO3016 ⁴	77	1	0	0.00	500 hours
	(3.6V, 150°C)	SO3016 ⁵	77	1	0	0.00	500 hours
	(3.6V, 150°C)	LAE064 ⁶	77	1	0	0.00	500 hours
Preconditioning	(PC9/260°C, +0°C/-5°C)	LAE064 ⁶	241	1			Passed Jedec L3 / Jeita Rank E (A)
	(PC9/260°C, +0°C/-5°C)	LAE064 ⁷	241	1			Passed Jedec L3 / Jeita Rank E (A)
Precon+Temp Cycle	(PC9/260°C, -65°C/150°C)	LAE064 ⁶	82	1	0	0.00	500 cycles
	(PC9/260°C, -65°C/150°C)	LAE064 ⁷	82	1	0	0.00	500 cycles
Precon+Temp Cycle (Ext.)	(PC9/260°C, -65°C/150°C)	LAE064 ⁶	77	1	0	0.00	1000 cycles
	(PC9/260°C, -65°C/150°C)	LAE064 ⁷	82	1	0	0.00	1000 cycles
Precon+HAST	(PC9/260°C, Biased, 110°C/85% RH)	LAE064 ⁶	82	1	0	0.00	264 hours
	(PC9/260°C, Biased, 110°C/85% RH)	LAE064 ⁷	78	1	0	0.00	264 hours
Precon+HAST (Ext.)	(PC9/260°C, Biased, 110°C/85% RH)	LAE064 ⁶	76	1	0	0.00	528 hours
	(PC9/260°C, Biased, 110°C/85% RH)	LAE064 ⁷	78	1	0	0.00	528 hours
Precon+uHAST	(PC9/260°C, Unbiased, 130°C/85% RH)	LAE064 ⁶	77	1	0	0.00	96 hours
	(PC9/260°C, Unbiased, 130°C/85% RH)	LAE064 ⁷	77	1	0	0.00	96 hours

- Notes / Justification:
- 1) Results from Qual 171705, S25FL512S, CS239LS (65nm) MirrorBit in 24 Ball FBGA (8 x 6 x 1.2mm)
 - 2) Results from Qual 171706, S26KL512S, CS239LS (65nm) MirrorBit in 24 Ball FBGA (8 x 6 x 1mm)
 - 3) Results from Qual 180402, S71KL512S, CS239LS (65nm) MirrorBit + 63nm HYPERRAM in 24 Ball MCP (8 x 6 x 1mm)
 - 4) Results from Qual 162903, S25FL512S in 16 Lead SOIC (10.3 x 10.3 x 2.65mm) - Same Product in SOIC Package
 - 5) Results from Qual 162904, S25FL512S in 16 Lead SOIC (10.3 x 10.3 x 2.65mm) - Same Product in SOIC Package
 - 6) Results from Qual 162801d, S29GL01GS in 64 Ball fFBGA (9 x 9 x 1.4mm) - Same BGA package assembled at Cypress Thailand
 - 7) Results from Qual 162801e, S29GL01GS in 64 Ball fFBGA (9 x 9 x 1.4mm) - Same BGA package assembled at Cypress Thailand

Preconditioning Flows: PC2 (JEDEC L3): Bake 125°C, 24hr => Soak @ 30°C/60%RH, 192hr => 3x Reflow

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

Reliability Tests Performed per Specification Requirements

Stress	Condition	Specification Reference
Construction Analysis	N/A	Internal Specifications
ELFR	(3.6V, 150°C)	JESD22-A108 / AEC-Q100-008
High Temp Bake	(150°C)	JESD22-A103
High Temp Bake	(200°C)	JESD22-A103
High Temp Bake (200°C)	(200°C)	JESD22-A103
High Temp Bake (Ext.)	(200°C)	JESD22-A103
HTOL (EL)	(3.6V, 150°C)	JESD22-A108
HTOL (IL)	(3.6V, 150°C)	JESD22-A108
Precon+HAST	(PC2/260°C, Biased, 110°C/85% RH)	JESD22-A110
Precon+HAST	(PC9/260°C, Biased, 110°C/85% RH)	JESD22-A110
Precon+HAST (Ext.)	(PC2/260°C, Biased, 110°C/85% RH)	JESD22-A110
Precon+HAST (Ext.)	(PC9/260°C, Biased, 110°C/85% RH)	JESD22-A110
Precon+Temp Cycle	(PC2/260°C, -55°C/125°C)	JESD22-A104
Precon+Temp Cycle	(PC2/260°C, -65°C/150°C)	JESD22-A104
Precon+Temp Cycle	(PC9/260°C, -65°C/150°C)	JESD22-A104
Precon+Temp Cycle (Ext.)	(PC2/260°C, -65°C/150°C)	JESD22-A104
Precon+Temp Cycle (Ext.)	(PC9/260°C, -65°C/150°C)	JESD22-A104
Precon+uHAST	(PC2/260°C, Unbiased, 130°C/85% RH)	JESD22-A118
Precon+uHAST	(PC9/260°C, Unbiased, 130°C/85% RH)	JESD22-A118
Preconditioning	(PC2/260°C, +0°C/-5°C)	J-STD-020
Preconditioning	(PC9/260°C, +0°C/-5°C)	J-STD-020 / EIAJ ED-4701-100 Method 104

III. Revision History

Document Number: 002-20463

Document Title: Qualification of PBO (Poly Benzoxazole) Protective Layer for CS239LS, 65nm, FL-S and KL-S
Product in FBGA package

Rev.	Issue Date	ECN#	Originator	Description
**	9/29/2017	5832049	BAKC	Initial Release.
*A	5/16/2019	6574880	EKNG	Update Spec title and Added KL-S, VAA024, ELA024 Data

Trademarks and Notice

The contents of this document are subject to change without notice. This document may contain information on a Cypress product under development by Cypress. Cypress reserves the right to change or discontinue work on any product without notice. The information in this document is provided as is without warranty or guarantee of any kind as to its accuracy, completeness, operability, fitness for particular purpose, merchantability, non-infringement of third-party rights, or any other warranty, express, implied, or statutory. Cypress assumes no liability for any damages of any kind arising out of the use of the information in this document.

Copyright © 2017-2019 Cypress Inc. All rights reserved.

Cypress Semiconductor Automotive Reliability Qualification Report

AEC-Q100 Automotive Qualification Test Plan Report for

PBO Protection Layer for S25FLXXS, 65nm, Grade 2 -40 to 105C

Contents:

- Page 1: Cover Page**
- Page 2 – 6: AEC-Q100 QTP**
- Page 7: Revision History**

Q100 Qualification Test Plan

Automotive Grade Level = 2 -40 to +105C

MSL = 3

Supplier Name:	CYPRESS	General Specification:	AEC-Q100 Rev. H
Supplier Code:		Supplier Wafer Fabrication:	FAB25 (Austin)
Supplier Part Number:	S25FLXXXS	Supplier Wafer Test:	TEST25 (Austin)
Supplier Contact:		Supplier Assembly Site:	ASE Taiwan (SOIC), ZKT China (SOIC), CYPRESS BKK (Thailand) (FBGA)
Supplier Family Type:	SO3016, FAB/FAC024	Supplier Final Test Site:	CYPRESS BKK (Thailand)
Device Description:	(65nm) MirrorBit Eclipse Process- 3Volt-Only	Supplier Reliability Signature:	
PPAP Submission Date:		Customer Test ID:	
Reason for Qualification:	PBO Protection Layer for S25FLXXXS	Customer Part Number:	
Prepared by Signature:	BAKC	Date: 09-28-17	Customer Approval Signature: _____ Date: _____

Test	#	Reference	Test Conditions	Lots	S.S.	Total	Results Lot/Pass/Fail	Comments: (N/A =Not Applicable)
------	---	-----------	-----------------	------	------	-------	-----------------------	---------------------------------

TEST GROUP A – ACCELERATED ENVIRONMENT STRESS TESTS

PC	A1	JESD22 A113 J-STD-020	Preconditioning: (Test @ Rm) SMD only; Moisture Preconditioning for THB/HAST, AC/UHST, TC, & PTC; Peak Reflow Temp = 260C,0/-5C	Min. MSL = 3			MSL = 3	a. RQ Results (ASE - SOIC) = 3 lots / 721 units / 0 Fails (3X Reflow) b. RQ Results (ZKT - SOIC) = 3 lots / 721 units / 0 Fails (3X Reflow) c. RQ Results (FBGA) = 3 lots / 721 units / 0 Fails (3X Reflow)
THB or HAST	A2	JESD22 A101 JESD22 A110	Temperature Humidity Bias: (Test @ Rm/Hot) Highly Accelerated Stress Test: (Test @ Rm/Hot/) 130C/85%RH, 3.6V, 96Hrs (SOIC) 110C/85%RH, 3.6V, 264Hrs (FBGA)	3	77	231	0 of 738	a. RQ Results (ASE - SOIC) = 3 lots / 246 units / 0 Fails b. RQ Results (ZKT -SOIC) = 3 lots / 246 units / 0 Fails c. RQ Results (FBGA) = 3 lots / 246 units / 0 Fails

Test	#	Reference	Test Conditions	Lots	S.S.	Total	Results Lot/Pass/Fail	Comments: (N/A =Not Applicable)
AC or UHST or TH	A3	JESD22 A102 JESD22 A118 or JESD22-A101	Autoclave: (Test @ Rm) Unbiased Highly Accelerated Stress Test: (Test @ Rm) Temperature Humidity without Bias: (Test @ Rm) 130C/85%RH, 96Hrs	3	77	231	0 of 682	a. RQ Results (ASE - SOIC) = 3 lots / 231 units / 0 Fails b. RQ Results (ZKT - SOIC) = 3 lots / 220 units / 0 Fails c. RQ Results (FBGA) = 3 lots / 231 units / 0 Fails
TC	A4	JESD22 A104	Temperature Cycle: (Test @ Hot) -65C to 150C, 1000 Cycles WBP Test after TC 1000 cyc	3	77	231	0 of 693	a. RQ Results (ASE - SOIC) = 3 lots / 231 units / 0 Fails b. RQ Results (ZKT - SOIC) = 3 lots / 231 units / 0 Fails c. RQ Results (FBGA) = 3 lots / 231 units / 0 Fails * Wire pull results: 1 lot/ 5 units/ Passed on each packages
PTC	A5	JESD22 A105	Power Temperature Cycle: (Test @ Rm/Hot)	1	45	45	of	N/A. Cypress performs normal Temperature Cycling instead of PTC.
HTSL	A6	JESD22 A103	High Temperature Storage Life: (Test @ Rm/Hot) 200C, 350 Hrs.	1	45	45	0 of 135	a. RQ Results (ASE - SOIC) = 1 lot / 45 units / 0 Fails b. RQ Results (ZKT - SOIC) = 1 lot / 45 units / 0 Fails c. RQ Results (FBGA) = 1 lot / 45 units / 0 Fails

TEST GROUP B – ACCELERATED LIFETIME SIMULATION TESTS

HTOL	B1	JESD22 A108	High Temp Operating Life: (Test @ Rm/Cold/Hot) 150C, 500 Hrs	3	77	231	0 of 231	a. RQ Results = 3 lots / 231 units / 0 Fails
ELFR	B2	AEC-Q100-008	Early Life Failure Rate: (Test @ Rm/Hot) 48 Hrs. @ 125C	3	800	2400	0 of 2400	a. RQ Results= 3 lots / 2400 Units/ 0 Fails
EDR	B3	AEC-Q100-005	NVM Endurance & Data Retention Test: (Test @ Rm/Hot) 90C, 3.6V, 10K Cycle	3	77	231	0 of 231	a. RQ Results = 3 lots / 231 units/ 0 Fails

TEST GROUP C – PACKAGE ASSEMBLY INTEGRITY TESTS

WBS	C1	AEC-Q100-001 AEC-Q003	Wire Bond Shear Test: (Cpk > 1.67)	30 bonds	5 parts Min.	bonds	0 of 90	a. RQ Results (ASE - SOIC) = 30 Bonds/ 0 Fails b. RQ Results (ZKT - SOIC) = 30 Bonds/ 0 Fails c. RQ Results (FBGA) = 30 bonds / 0 Fails
WBP	C2	Mil-STD-883, Method 2011 AEC-Q003	Wire Bond Pull: (Cpk > 1.67); Each bonder used	30 bonds	5 parts Min.	bonds	0 of 90	a. RQ Results (ASE - SOIC) = 30 Bonds/ 0 Fails b. RQ Results (ZKT - SOIC) = 30 Bonds/ 0 Fails c. RQ Results (FBGA) = 30 bonds / 0 Fails

Test	#	Reference	Test Conditions	Lots	S.S.	Total	Results Lot/Pass/Fail	Comments: (N/A =Not Applicable)
SD	C3	JESD22 B102 JSTD-002D	Solderability: (>95% coverage) 8hr steam aging prior to testing	1	15	15	0 of 30	a. RQ Results (ASE - SOIC) = 1 lot / 15 units / 0 Fails b. RQ Results (ZKT - SOIC) = 1 lot / 15 units / 0 Fails
PD	C4	JESD22 B100, JESD22 B108 AEC-Q003	Physical Dimensions: (Cpk > 1.67)	3	10	30	0 of 90	a. RQ Results (ASE - SOIC) = 1 lot / 30 units / 0 Fails b. RQ Results (ZKT - SOIC) = 1 lot / 30 units / 0 Fails c. RQ Results (FBGA) = 1 lot / 30 units / 0 Fails
SBS	C5	AEC-Q100-010 AEC-Q003	Solder Ball Shear: (Cpk > 1.67); 5 balls from min. of 10 devices	3	50 balls	150	0 of 150	a. RQ Results (FBGA) = 1 lot / 3 units / 150 balls / 0 Fails
LI	C6	JESD22 B105	Lead Integrity: (No lead cracking or breaking); Through-hole only; 10 leads from each of 5 devices	1	50 leads	50	0 of 100	a. RQ Results (ASE - SOIC) = 1 lot / 50 Leads / 0 Fails b. RQ Results (ZKT - SOIC) = 1 lot / 50 Leads / 0 Fails

TEST GROUP D – DIE FABRICATION RELIABILITY TESTS

EM	D1	JESD61	Electromigration: Constant current 0.8MA/cm2 and 10MA/cm2 at 225C and 250C	-	-	-		Data Available RQ Results = Pass 100khr operating equivalent
TDDB	D2	JESD35	Time Dependant Dielectric Breakdown: Constant voltage 6-9MV.cm at 130C	-	-	-		Data Available TQ Generic Data Results = Pass 100khr operating equivalent
HCI	D3	JESD60 & 28	Hot Carrier Injection: Vg at Isubmax with 3 Vds conditions	-	-	-		Data Available TQ Generic Data Results = Pass 100khr operating equivalent
NBTI	D4	JESD90	Negative Bias Temperature Instability:	-	-	-		Data Available TQ Generic Data Results = Pass 100khr operating equivalent
SM	D5	JESD61, 87, & 202	Stress Migration:	-	-	-		Data Available RQ Results = Pass 100khr operating equivalent

TEST GROUP E- ELECTRICAL VERIFICATION

TEST	E1	User/Supplier Specification	Pre and Post Stress Electrical Test:	All	All	All	of	Performed on all qualification units.
------	----	-----------------------------	--------------------------------------	-----	-----	-----	----	---------------------------------------

Test	#	Reference	Test Conditions	Lots	S.S.	Total	Results Lot/Pass/Fail	Comments: (N/A =Not Applicable)
HBM	E2	AEC-Q100-002	Electrostatic Discharge, Human Body Model: (Test @ Rm/Hot); (2KV HBM / Class 2 or better) HBM (100pF, 1,500 ohms)	1	42	42	0 of 420 ESD Level = 2	a. RQ Results (S25FL128S) = 2 lots/ 84 units/ 0 Fails b. RQ Results (S25FL256S) = 3 lots/ 252 units/ 0 Fails c. RQ Results (S25FL512S) = 2 lots/ 84 units/ 0 Fails Pass +/-2.0Kv HBM
CDM	E3	AEC-Q100-011	Electrostatic Discharge, Charged Device Model: (Test @ Rm/Hot); (750V corner leads, 500V all other leads / Class C4B or better)	1	12	12	0 of 105 ESD Level = C5	a. RQ Results (ASE - SOIC) = 3 lots / 45 units / 0 Fails b. RQ Results (ZKT - SOIC) = 3 lots / 45 units / 0 Fails c. RQ Results (FBGA) = 1 lot / 15 units / 0 Fails Pass 1kV CDM
LU	E4	AEC-Q100-004	Latch-Up: (Test @ Rm/Hot) 125C +/- 100mA Class II	1	6	6	0 of 18	a. RQ Results (S25FL128S) = 1 lot / 6 units/ 0 Fails b. RQ Results (S25FL256S) = 1 lot / 6 units/ 0 Fails c. RQ Results (S25FL512S) = 1 lot / 6 units/ 0 Fails
ED	E5	AEC-Q100-009 AEC-Q003	Electrical Distributions: (Test @ Rm/Hot/Cold) (where applicable, Cpk >1.67)	3	30	90	of	Refer to characterization data in QDB.
FG	E6	AEC-Q100-007	Fault Grading:	-	-	-	Fault Grade	N/A. But Cypress screens out the failures through internal test mode and 100% tested to sort and class tests.
CHAR	E7	AEC-Q003	Characterization: (Test @ Rm/Hot/Cold)	-	-	-	Requested Data	Refer to Device Characterization Data in S25FLXXXS QDB.
EMC	E9	SAE J1752/3	Electromagnetic Compatibility (Radiated Emissions)	-	-	-		Data will be provided upon customer request.
SC	E10	AEC Q100-012	Short Circuit Characterization	-	-	-		Applicable for smart power device only per AEC Q100.
SER	E11	JESD89-1 JESD89-2 JESD89-3	Soft Error Rate	-	-	-		N/A. But, Cypress performed some accelerated neutron irradiation tests on our product. Refer separate document for more information
LF	E12	AEC-Q005	Lead (Pb) Free: (see AEC-Q005)	-	-	-		Pass.

Test	#	Reference	Test Conditions	Lots	S.S.	Total	Results Lot/Pass/Fail	Comments: (N/A =Not Applicable)
------	---	-----------	-----------------	------	------	-------	-----------------------	---------------------------------

TEST GROUP F – DEFECT SCREENING TESTS

PAT	F1	AEC-Q001	Process Average Testing: (see AEC-Q001)	All	All	All	Reject units outside Avg.	Cypress incorporates the principle of PAT methodology
SBA	F2	AEC-Q002	Statistical Bin/Yield Analysis: (see AEC-Q002)	All	All	All	Reject units outside criteria	Cypress incorporates the principle of SBA methodology

TEST GROUP G – CAVITY PACKAGE INTEGRITY TESTS (for Ceramic Package testing only)

MS	G1	JESD22 B104	Mechanical Shock: (Test @ Rm)	-	-	-		N/A. Applicable for ceramic package only
VFV	G2	JESD22 B103	Variable Frequency Vibration: (Test @ Rm)	-	-	-		N/A. Applicable for ceramic package only
CA	G3	MIL-STD-883 Method 2001	Constant Acceleration: (Test @ Rm)	-	-	-		N/A. Applicable for ceramic package only
GFL	G4	MIL-STD-883 Method 1014	Gross and Fine Leak:	-	-	-		N/A. Applicable for ceramic package only
DROP	G5	-----	Drop Test: (Test @ Rm) MEMS cavity parts only. Drop part on each of 6 axes once from a height of 1.2m onto a concrete surface.	-	-	-		N/A. Applicable for ceramic package only
LT	G6	MIL-STD-883 Method 2004	Lid Torque:	-	-	-		N/A. Applicable for ceramic package only
DS	G7	MIL-STD-883 Method 2019	Die Shear:	-	-	-		N/A. Applicable for ceramic package only
IWV	G8	MIL-STD-883 Method 1018	Internal Water Vapor:	-	-	-		N/A. Applicable for ceramic package only

Document History Page

Document Title: AEC-Q100 Automotive Qualification Test Plan Report for PBO Protection Layer for S25FLXXXS, 65nm, Grade 2 -40 to 105C
Document Number: 002-21508

Rev.	ECN No.	Orig. of Change	Description of Change
**	5899312	BAKC	New Qualification report for PBO Protection Layer for S25FLXXXS, 65nm, Grade 2 -40 to 105C

Item	Marketing Part Number	Sample Order Part Number	Sample Availability
1	8611200594	S26KS512SDPBHB020-001	2-4 weeks lead time
2	8909008440	S70FS01GSDSBHM210-001	2-4 weeks lead time
3	8909008441	S25FS512SDSBHM210-001	2-4 weeks lead time
4	00003354733	S25FS512SFABHB210-001	2-4 weeks lead time
5	05529-135/0000	S79FL512SDSMFBG00-001	2-4 weeks lead time
6	0791080939RCP00	S71KL512SC0BHB000-001	2-4 weeks lead time
7	0791081069RCP00	S25FS512SDSMFB010-001	2-4 weeks lead time
8	0791083189RCP00	S26KS256SDPBHB020-001	2-4 weeks lead time
9	09706-247/0000	S26KS256SDPBHA020-001	2-4 weeks lead time
10	10233523	S25FL256SDPNFB000-001	2-4 weeks lead time
11	1034030-00-A	S25FL256SDPNFB000-001	2-4 weeks lead time
12	1089244-00-A	S25FS512SDSBHB210-001	2-4 weeks lead time
13	1120204-00-A	S25FS064SAGBHB020-001	2-4 weeks lead time
14	170-0249-000	S25FS512SDSBHB210-001	2-4 weeks lead time
15	170-0317-000	S25FS512SDSBHB210-001	2-4 weeks lead time
16	170-0383-000	S79FS01GSFABHB210-001	2-4 weeks lead time
17	28576411 A	S70FL01GSAGBHBC10-001	2-4 weeks lead time
18	28576411 B	S70FL01GSAGBHBC10-001	2-4 weeks lead time
19	28586389 A	S25FS512SDSBHB210-001	2-4 weeks lead time
20	28586389 A	S25FS512SDSBHB210-001	2-4 weeks lead time
21	28605353 A	S70FL01GSDSBHMC10-001	2-4 weeks lead time
22	28636813 A	S25FS512SDSBHM210-001	2-4 weeks lead time
23	28636813 A	S25FS512SDSBHM210-001	2-4 weeks lead time
24	28636813 A	S25FS512SDSBHM210-001	2-4 weeks lead time
25	28682863 A	S70FS01GSDSBHB210-001	2-4 weeks lead time
26	28683084 A	S70FS01GSDSBHM210-001	2-4 weeks lead time
27	2ICZ00347A	S25FS512SDSBHB210-001	2-4 weeks lead time
28	34256350A.02	S25FS128SDSBHM200-001	2-4 weeks lead time
29	34264348A.02	S25FS512SDSBHM210-001	2-4 weeks lead time
30	34268156A.02	S70FS01GSDSBHM210-001	2-4 weeks lead time
31	50700000018A	S25FL128SAGNFA000-001	2-4 weeks lead time
32	51-40300Z01	S25FS128SAGMFB100-001	2-4 weeks lead time
33	520966231626	S26KL512SDABHB020-001	2-4 weeks lead time
34	520966232007	S26KL512SDABHB020-001	2-4 weeks lead time
35	8611200244	S26KL512SDABHB020-001	2-4 weeks lead time
36	8611200245	S26KL256SDABHB020-001	2-4 weeks lead time
37	8611200593	S26KS256SDPBHB020-001	2-4 weeks lead time
38	8909007117	S70FL01GSAGBHMC10-001	2-4 weeks lead time
39	8909007444	S25FS512SAGBHM210-001	2-4 weeks lead time
40	8909007445	S70FS01GSAGBHM210-001	2-4 weeks lead time
41	8909007819	S70FS01GSDSBHM210-001	2-4 weeks lead time
42	8909008289	S70FS01GSAGBHM210-001	2-4 weeks lead time
43	8909008290	S25FS512SAGBHM210-001	2-4 weeks lead time
44	8909B02540	S70FS01GSDSBHM210-001	2-4 weeks lead time
45	8928919956	S27KL0641DABHB020-001	2-4 weeks lead time
46	9022693	S25FL256SDPNFB000-001	2-4 weeks lead time

47	9023260		S25FS512SDSBHB210-003	2-4 weeks lead time
48	90700000010A		S79FL01GSDSBHBC10-001	2-4 weeks lead time
49	A2C01602900	A	S98FL01GSDSBHBC10-001	2-4 weeks lead time
50	A2C01603300	A	S98FL256SDSMFBG00-001	2-4 weeks lead time
51	A2C01697900	A	S98FL512SDSMFBG00-001	2-4 weeks lead time
52	A2C02144300	A	S26KL512SDABHB020-001	2-4 weeks lead time
53	A2C02144400	A	S27KL0641DABHB020-001	2-4 weeks lead time
54	A2C02457200	A	S25FS128SAGMFB100-001	2-4 weeks lead time
55	A2C02502800	A	S98FL256SDSMFBG00-001	2-4 weeks lead time
56	A2C02523700	A	S26KL128SDABHB020-001	2-4 weeks lead time
57	A2C02779000	A	S98FL256SDSMFBG00-001	2-4 weeks lead time
58	A2C02865700	A	S98FL256SDSMFBG00-001	2-4 weeks lead time
59	A2C02919800	A	S25FS256SDSBHM200-001	2-4 weeks lead time
60	A2C03252500	A	S26KL256SDABHB020-001	2-4 weeks lead time
61	A2C03296900	A	S25FS128SDSBHB200-001	2-4 weeks lead time
62	A2C03496600	A	S98FL01GSDSBHBC10-001	2-4 weeks lead time
63	B103918A		S25FS512SDSBHB210-001	2-4 weeks lead time
64	C08-0628-0002-0		S25FL256SAGNFB000-001	2-4 weeks lead time
65	C3FBRY000091		S25FL256SAGNFB000-001	2-4 weeks lead time
66	E151958		S25FS512SDSBHB210-001	2-4 weeks lead time
67	E3203006443		S25FL128SAGNFB000-001	2-4 weeks lead time
68	E3203010373		S25FS512SDSBHB210-001	2-4 weeks lead time
69	E3203010591		S25FS512SDSMFB010-001	2-4 weeks lead time
70	EAN64535601		S25FS064SAGMFM010-001	2-4 weeks lead time
71	EAN65606401		S25FS512SDSBHB210-001	2-4 weeks lead time
72	F010109087		S25FS512SDSBHB210-001	2-4 weeks lead time
73	F010109089		S25FS512SDSMFB010-001	2-4 weeks lead time
74	H00.025-93		S25FS512SDSBHB210-001	2-4 weeks lead time
75	HE-FL128SAGNFV003		S25FL128SAGNFB000-001	2-4 weeks lead time
76	IS26KL128S-DABLA100		S26KS256SDPBHB020-001	2-4 weeks lead time
77	IS26KL128S-DABLA100-TR		S26KS256SDPBHA020-001	2-4 weeks lead time
78	IS26KL128S-DABLA200		S26KL128SDABHB020-001	2-4 weeks lead time
79	IS26KL128S-DABLA200-TR		S26KL128SDABHB020-001	2-4 weeks lead time
80	IS26KL128S-DABLA300		S26KL128SDABHM020-001	2-4 weeks lead time
81	IS26KL128S-DABLA300-TR		S26KL128SDABHM020-001	2-4 weeks lead time
82	IS26KL256S-DABLA100		S26KL256SDABHA020-001	2-4 weeks lead time
83	IS26KL256S-DABLA100-TR		S26KL256SDABHA020-001	2-4 weeks lead time
84	IS26KL256S-DABLA200		S26KL256SDABHB020-001	2-4 weeks lead time
85	IS26KL256S-DABLA200-TR		S26KL256SDABHB020-001	2-4 weeks lead time
86	IS26KL256S-DABLA300		S26KL256SDABHM020-001	2-4 weeks lead time
87	IS26KL256S-DABLA300-TR		S26KL256SDABHM020-001	2-4 weeks lead time
88	IS26KL512S-DABLA100		S26KL512SDABHA020-001	2-4 weeks lead time
89	IS26KL512S-DABLA100-TR		S26KL512SDABHA020-001	2-4 weeks lead time
90	IS26KL512S-DABLA200		S26KL512SDABHB020-001	2-4 weeks lead time
91	IS26KL512S-DABLA200-TR		S26KL512SDABHB020-001	2-4 weeks lead time
92	IS26KL512S-DABLA300		S26KL512SDABHM020-001	2-4 weeks lead time
93	IS26KL512S-DABLA300-TR		S26KL512SDABHM020-001	2-4 weeks lead time

94	IS26KS128S-DPBLA100	S26KS128SDPBHA020-001	2-4 weeks lead time
95	IS26KS128S-DPBLA100-TR	S26KS128SDPBHA020-001	2-4 weeks lead time
96	IS26KS128S-DPBLA200	S26KS128SDPBHB020-001	2-4 weeks lead time
97	IS26KS128S-DPBLA200-TR	S26KS128SDPBHB020-001	2-4 weeks lead time
98	IS26KS128S-DPBLA300	S26KS128SDPBHM020-001	2-4 weeks lead time
99	IS26KS128S-DPBLA300-TR	S26KS128SDPBHM020-001	2-4 weeks lead time
100	IS26KS256S-DPBLA100	S26KS256SDPBHA020-001	2-4 weeks lead time
101	IS26KS256S-DPBLA100-TR	S26KS256SDPBHA020-001	2-4 weeks lead time
102	IS26KS256S-DPBLA200	S26KS256SDPBHB020-001	2-4 weeks lead time
103	IS26KS256S-DPBLA200-TR	S26KS256SDPBHB020-001	2-4 weeks lead time
104	IS26KS256S-DPBLA300	S26KS256SDPBHM020-001	2-4 weeks lead time
105	IS26KS256S-DPBLA300-TR	S26KS256SDPBHM020-001	2-4 weeks lead time
106	IS26KS512S-DPBLA100	S26KS512SDPBHA020-001	2-4 weeks lead time
107	IS26KS512S-DPBLA100-TR	S26KS512SDPBHA020-001	2-4 weeks lead time
108	IS26KS512S-DPBLA200	S26KS512SDPBHB020-001	2-4 weeks lead time
109	IS26KS512S-DPBLA200-TR	S26KS512SDPBHB020-001	2-4 weeks lead time
110	IS26KS512S-DPBLA300	S26KS512SDPBHM020-001	2-4 weeks lead time
111	IS26KS512S-DPBLA300-TR	S26KS512SDPBHM020-001	2-4 weeks lead time
112	LKE5EF-TI00	S25FS064SAGBHB020-001	2-4 weeks lead time
113	LKE5FFPTI00	S25FS512SDSBHB210-001	2-4 weeks lead time
114	N270P03910	S26KS256SDPBHA020-001	2-4 weeks lead time
115	NIOH-P1003705	S25FS512SDSBHB210-001	2-4 weeks lead time
116	P770003DFSC000	S25FS512SDSBHB210-001	2-4 weeks lead time
117	P770003D-FSC000	S25FS512SDSBHB210-001	2-4 weeks lead time
118	P770018DF2C000	S27KL0641DABHB020-001	2-4 weeks lead time
119	P770018D-F2C000	S27KL0641DABHB020-001	2-4 weeks lead time
120	P770030DF9C000	S26KL256SDABHB020-001	2-4 weeks lead time
121	P770030D-F9C000	S26KL256SDABHB020-001	2-4 weeks lead time
122	P770045DF80000	S26KL128SDABHB020-001	2-4 weeks lead time
123	P770045D-F80000	S26KL128SDABHB020-001	2-4 weeks lead time
124	P7700910F0C000	S26KL512SDABHB020-001	2-4 weeks lead time
125	P7700910-F0C000	S26KL512SDABHB020-001	2-4 weeks lead time
126	P770091DF0C000	S26KL512SDABHB020-001	2-4 weeks lead time
127	P780003D-F0C000	S71KL256SC0BHB000-001	2-4 weeks lead time
128	R8J77951	S26KS512SDPBHB020-001	2-4 weeks lead time
129	S25FL128SAGNFA000	S25FL128SAGNFA000-001	2-4 weeks lead time
130	S25FL128SAGNFA003	S25FL128SAGNFA000-001	2-4 weeks lead time
131	S25FL128SAGNFB000	S25FL128SAGNFB000-001	2-4 weeks lead time
132	S25FL128SAGNFB003	S25FL128SAGNFB000-001	2-4 weeks lead time
133	S25FL128SAGNFM000	S25FL128SAGNFM000-001	2-4 weeks lead time
134	S25FL128SAGNFM003	S25FL128SAGNFM000-001	2-4 weeks lead time
135	S25FL256SAGNFB000	S25FL256SAGNFB000-001	2-4 weeks lead time
136	S25FL256SAGNFB003	S25FL256SAGNFB000-001	2-4 weeks lead time
137	S25FL256SDPNFB000	S25FL256SDPNFB000-001	2-4 weeks lead time
138	S25FL256SDPNFB003	S25FL256SDPNFB000-001	2-4 weeks lead time
139	S25FS064SAGBHB020	S25FS064SAGBHB020-001	2-4 weeks lead time
140	S25FS064SAGBHB023	S25FS064SAGBHB020-001	2-4 weeks lead time

141	S25FS064SAGMFB010	S25FS064SAGMFB010-001	2-4 weeks lead time
142	S25FS064SAGMFB011	S25FS064SAGMFB010-001	2-4 weeks lead time
143	S25FS064SAGMFB013	S25FS064SAGMFB010-001	2-4 weeks lead time
144	S25FS064SAGMFM010	S25FS064SAGMFM010-001	2-4 weeks lead time
145	S25FS064SAGMFM013	S25FS064SAGMFM010-001	2-4 weeks lead time
146	S25FS064SAGNFB030	S25FS064SAGNFB030-001	2-4 weeks lead time
147	S25FS064SAGNFB033	S25FS064SAGNFB030-001	2-4 weeks lead time
148	S25FS064SAGNFM030	S25FS064SAGNFM030-001	2-4 weeks lead time
149	S25FS064SAGNFM033	S25FS064SAGNFM030-001	2-4 weeks lead time
150	S25FS064SDSMFA010	S25FS064SDSMFA010-001	2-4 weeks lead time
151	S25FS064SDSMFA013	S25FS064SDSMFA010-001	2-4 weeks lead time
152	S25FS064SDSMFB010	S25FS064SDSMFB010-001	2-4 weeks lead time
153	S25FS064SDSMFB013	S25FS064SDSMFB010-001	2-4 weeks lead time
154	S25FS064SDSMFM010	S25FS064SDSMFM010-001	2-4 weeks lead time
155	S25FS064SDSMFM013	S25FS064SDSMFM010-001	2-4 weeks lead time
156	S25FS128SAGBHM200	S25FS128SAGBHM200-001	2-4 weeks lead time
157	S25FS128SAGBHM203	S25FS128SAGBHM200-001	2-4 weeks lead time
158	S25FS128SAGMFB100	S25FS128SAGMFB100-001	2-4 weeks lead time
159	S25FS128SAGMFB101	S25FS128SAGMFB100-001	2-4 weeks lead time
160	S25FS128SAGMFB103	S25FS128SAGMFB100-001	2-4 weeks lead time
161	S25FS128SAGNFM100	S25FS128SAGNFM100-001	2-4 weeks lead time
162	S25FS128SAGNFM103	S25FS128SAGNFM100-001	2-4 weeks lead time
163	S25FS128SDSBHB200	S25FS128SDSBHB200-001	2-4 weeks lead time
164	S25FS128SDSBHB203	S25FS128SDSBHB200-001	2-4 weeks lead time
165	S25FS128SDSBHM200	S25FS128SDSBHM200-001	2-4 weeks lead time
166	S25FS128SDSBHM203	S25FS128SDSBHM200-001	2-4 weeks lead time
167	S25FS256SAGBHM200	S25FS256SAGBHM200-001	2-4 weeks lead time
168	S25FS256SAGBHM203	S25FS256SAGBHM200-001	2-4 weeks lead time
169	S25FS256SAGMFB000	S25FS256SAGMFB000-001	2-4 weeks lead time
170	S25FS256SAGMFB000HA	S25FS256SAGMFB000-001	2-4 weeks lead time
171	S25FS256SAGMFB001	S25FS256SAGMFB000-001	2-4 weeks lead time
172	S25FS256SAGMFB003	S25FS256SAGMFB000-001	2-4 weeks lead time
173	S25FS256SAGMFM000	S25FS256SAGMFM000-001	2-4 weeks lead time
174	S25FS256SAGMFM001	S25FS256SAGMFM000-001	2-4 weeks lead time
175	S25FS256SAGMFM003	S25FS256SAGMFM000-001	2-4 weeks lead time
176	S25FS256SDSBHB200	S25FS256SDSBHB200-001	2-4 weeks lead time
177	S25FS256SDSBHB203	S25FS256SDSBHB200-001	2-4 weeks lead time
178	S25FS256SDSBHM200	S25FS256SDSBHM200-001	2-4 weeks lead time
179	S25FS256SDSBHM203	S25FS256SDSBHM200-001	2-4 weeks lead time
180	S25FS256SDSBHM300	S25FS256SDSBHM300-001	2-4 weeks lead time
181	S25FS256SDSBHM303	S25FS256SDSBHM300-001	2-4 weeks lead time
182	S25FS512SAGBHB210	S25FS512SAGBHB210-001	2-4 weeks lead time
183	S25FS512SAGBHB213	S25FS512SAGBHB210-001	2-4 weeks lead time
184	S25FS512SAGBHM210	S25FS512SAGBHM210-001	2-4 weeks lead time
185	S25FS512SAGBHM213	S25FS512SAGBHM210-001	2-4 weeks lead time
186	S25FS512SAGMFB010	S25FS512SAGMFB010-001	2-4 weeks lead time
187	S25FS512SAGMFB013	S25FS512SAGMFB010-001	2-4 weeks lead time

188	S25FS512SAGMFM010	S25FS512SAGMFM010-001	2-4 weeks lead time
189	S25FS512SAGMFM013	S25FS512SAGMFM010-001	2-4 weeks lead time
190	S25FS512SAGNFA010	S25FS512SAGNFA010-001	2-4 weeks lead time
191	S25FS512SAGNFA013	S25FS512SAGNFA010-001	2-4 weeks lead time
192	S25FS512SAGNFB010	S25FS512SAGNFB010-001	2-4 weeks lead time
193	S25FS512SAGNFM010	S25FS512SAGNFM010-001	2-4 weeks lead time
194	S25FS512SDSBHA210	S25FS512SDSBHA210-001	2-4 weeks lead time
195	S25FS512SDSBHA213	S25FS512SDSBHA210-001	2-4 weeks lead time
196	S25FS512SDSBHB210	S25FS512SDSBHB210-001	2-4 weeks lead time
197	S25FS512SDSBHB213	S25FS512SDSBHB210-001	2-4 weeks lead time
198	S25FS512SDSBHM210	S25FS512SDSBHM210-001	2-4 weeks lead time
199	S25FS512SDSBHM213	S25FS512SDSBHM210-001	2-4 weeks lead time
200	S25FS512SDSMFB010	S25FS512SDSMFB010-001	2-4 weeks lead time
201	S25FS512SDSMFB013	S25FS512SDSMFB010-001	2-4 weeks lead time
202	S25FS512SDSNFB010	S25FS512SDSNFB010-001	2-4 weeks lead time
203	S25FS512SDSNFB011	S25FS512SDSNFB010-001	2-4 weeks lead time
204	S25FS512SDSNFB013	S25FS512SDSNFB010-001	2-4 weeks lead time
205	S25FS512SFABHB210	S25FS512SFABHB210-001	2-4 weeks lead time
206	S25FS512SFABHB213	S25FS512SFABHB210-001	2-4 weeks lead time
207	S26KL128SDABHA020	S26KL128SDABHA020-001	2-4 weeks lead time
208	S26KL128SDABHA030	S26KL128SDABHA030-001	2-4 weeks lead time
209	S26KL128SDABHB020	S26KL128SDABHB020-001	2-4 weeks lead time
210	S26KL128SDABHB023	S26KL128SDABHB020-001	2-4 weeks lead time
211	S26KL128SDABHB030	S26KL128SDABHB030-001	2-4 weeks lead time
212	S26KL128SDABHM030	S26KL128SDABHM030-001	2-4 weeks lead time
213	S26KL256SDABHA020	S26KL256SDABHA020-001	2-4 weeks lead time
214	S26KL256SDABHA030	S26KL256SDABHA030-001	2-4 weeks lead time
215	S26KL256SDABHB020	S26KL256SDABHB020-001	2-4 weeks lead time
216	S26KL256SDABHB023	S26KL256SDABHB020-001	2-4 weeks lead time
217	S26KL256SDABHB030	S26KL256SDABHB030-001	2-4 weeks lead time
218	S26KL256SDABHM030	S26KL256SDABHM030-001	2-4 weeks lead time
219	S26KL512SDABHA020	S26KL512SDABHA020-001	2-4 weeks lead time
220	S26KL512SDABHA030	S26KL512SDABHA030-001	2-4 weeks lead time
221	S26KL512SDABHB020	S26KL512SDABHB020-001	2-4 weeks lead time
222	S26KL512SDABHB023	S26KL512SDABHB020-001	2-4 weeks lead time
223	S26KL512SDABHB030	S26KL512SDABHB030-001	2-4 weeks lead time
224	S26KL512SDABHM030	S26KL512SDABHM030-001	2-4 weeks lead time
225	S70FL01GSAGBHAC10	S70FL01GSAGBHAC10-001	2-4 weeks lead time
226	S70FL01GSAGBHBC10	S70FL01GSAGBHBC10-001	2-4 weeks lead time
227	S70FL01GSAGBHBC13	S70FL01GSAGBHBC10-001	2-4 weeks lead time
228	S70FL01GSAGBHMC10	S70FL01GSAGBHMC10-001	2-4 weeks lead time
229	S70FL01GSAGBHMC13	S70FL01GSAGBHMC10-001	2-4 weeks lead time
230	S70FL01GSDSBHBC10	S70FL01GSDSBHBC10-001	2-4 weeks lead time
231	S70FL01GSDSBHBC13	S70FL01GSDSBHBC10-001	2-4 weeks lead time
232	S70FL01GSDSBHMC10	S70FL01GSDSBHMC10-001	2-4 weeks lead time
233	S70FL01GSDSBHMC13	S70FL01GSDSBHMC10-001	2-4 weeks lead time
234	S70FS01GSAGBHB210	S70FS01GSAGBHB210-001	2-4 weeks lead time

235	S70FS01GSAGBHB213	S70FS01GSAGBHB210-001	2-4 weeks lead time
236	S70FS01GSAGBHM210	S70FS01GSAGBHM210-001	2-4 weeks lead time
237	S70FS01GSAGBHM213	S70FS01GSAGBHM210-001	2-4 weeks lead time
238	S70FS01GSAGMFM010	S70FS01GSAGMFM010-001	2-4 weeks lead time
239	S70FS01GSAGMFM013	S70FS01GSAGMFM010-001	2-4 weeks lead time
240	S70FS01GSDSBHB210	S70FS01GSDSBHB210-001	2-4 weeks lead time
241	S70FS01GSDSBHB213	S70FS01GSDSBHB210-001	2-4 weeks lead time
242	S70FS01GSDSBHM210	S70FS01GSDSBHM210-001	2-4 weeks lead time
243	S70FS01GSDSBHM213	S70FS01GSDSBHM210-001	2-4 weeks lead time
244	S71KL256SC0BHB000	S71KL256SC0BHB000-001	2-4 weeks lead time
245	S71KL256SC0BHB003	S71KL256SC0BHB000-001	2-4 weeks lead time
246	S71KL512SC0BHB000	S71KL512SC0BHB000-001	2-4 weeks lead time
247	S71KL512SC0BHB003	S71KL512SC0BHB000-001	2-4 weeks lead time
248	S79FL01GSDSBHAC10	S79FL01GSDSBHAC10-001	2-4 weeks lead time
249	S79FL01GSDSBHAC13	S79FL01GSDSBHAC10-001	2-4 weeks lead time
250	S79FL01GSDSBHBC10	S79FL01GSDSBHBC10-001	2-4 weeks lead time
251	S79FS01GSFABHB210	S79FS01GSFABHB210-001	2-4 weeks lead time
252	S79FS01GSFABHB213	S79FS01GSFABHB210-001	2-4 weeks lead time
253	S98FL256SDSMFBG00	S79FL256SDSMFBG00-001	2-4 weeks lead time
254	S98FL256SDSMFBG03	S79FL256SDSMFBG00-001	2-4 weeks lead time
255	S98FL512SDSMFBG00	S79FL512SDSMFBG00-001	2-4 weeks lead time
256	S99-50561	S25FS512SDSBHM210-001	2-4 weeks lead time
257	S99-50568	S70FS01GSDSBHM210-001	2-4 weeks lead time
258	SRC100074449-A	S70FS01GSDSBHB210-001	2-4 weeks lead time