



# SL1680 Silicon Product Qualification Report

PN: 527-002828-01 Rev F

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## 1. Introduction

The purpose of this document is to outline the qualification plans and results for the SL1680 consumer and industrial product, manufactured by TSMC using 12nm FFC process. This report confirms that the product qualification results for Synaptics part number SL1680 meets all necessary requirements and that the product is approved for production as both consumer and industrial grade.

The 12nm FFC process has been qualified by TSMC.

[Table 1](#) provides the qualification results based on the JEDEC standards.

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## 1.1. Full Device Qualification Report

Table 1. Qualification Report Summary

Stress	Reference	Abbreviation	Conditions	Requirements	
				# of Lots/ SS per Lot	Duration/Accept
Human Body Model ESD	JESD22-A114	ESD HBM	+/- 2KV; Ta= 25°C	3 units	Classification 2/Passed
Charged Device Model ESD	JESD22-C101	ESD CDM	+/- 250V; Ta= 25°C	3 units	Classification 1/Passed
Latch -Up	JESD78	LU	I-Test @ +/- 100mA; OVT @ 1.5xV;Ta = 125°C	3 units	0 Failed
High Temperature Operating Life	JESD22-A108, JESD85	HTOL	Tj = 125°C Operating VCORE: VDD= 1.19V VDD_IO = 2.16	3 lots/77 units	2000 hrs / 0 Failed
Low Temperature Operating Life	JESD22-A108, JESD85	LTOL	Tj = -40°C Operating VCORE: VDD= 1.19V VDD_IO = 2.16	1 lot/77 units per lot	1000 hrs / 0 Failed
Biased HAST	JESD22-A110	BHAST	110°C/85%RH	3 lots/ 25 units per lot	264 hrs / 0 Fail Electrical Test
High Temperature Storage	JESD22-A103	HTSL	150°C + Preconditioning if required	3 lots/ 77 units per lot	1000 hrs / 0 Fail Electrical Test
MSL3 Preconditioning <i>must</i> be performed prior to THB, HAST, TC, AC & UHAST	JESD22-A113	PC	Per Appropriate MSL level of the test vehicle per J-STD-020	3 lots/ 154 units per lot	0 Fail Electrical Test
Temperature Cycling	JESD22-A104	TC	Cond C.: -65°C to 150°C	3 lots/ 77 units per lot	500 cycles/0 Fail Electrical Test
Unbiased Temperature/Humidity (Unbiased HAST)	JESD22-A118	UHAST	130°C /85%RH	3 lots/ 77 units per lot	96 hrs / 0 Fail Electrical Test

## 2. Revision History

Revision	Description
A	Initial release.
B	Updated to include Industrial grade.
C	Removed duplicate entries from Table 1. Qualification Report Summary.
D	Corrected typo; duration is 1750 hours for High Temperature Operating Life in Table 1.
E	Updated <a href="#">Table 1. Qualification Report Summary</a> as follows: <ul style="list-style-type: none"> <li>High Temperature Operating Life: changed Duration/Accept Requirement to "2000 hours".</li> <li>Biased HAST: changed Conditions to "110°C/85%RH" and Duration/Accept Requirement to "264 hours".</li> </ul>
F	Updated JESD22-A113 ( <b>Stress</b> details) in <a href="#">Table 1. Qualification Report Summary</a> .



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